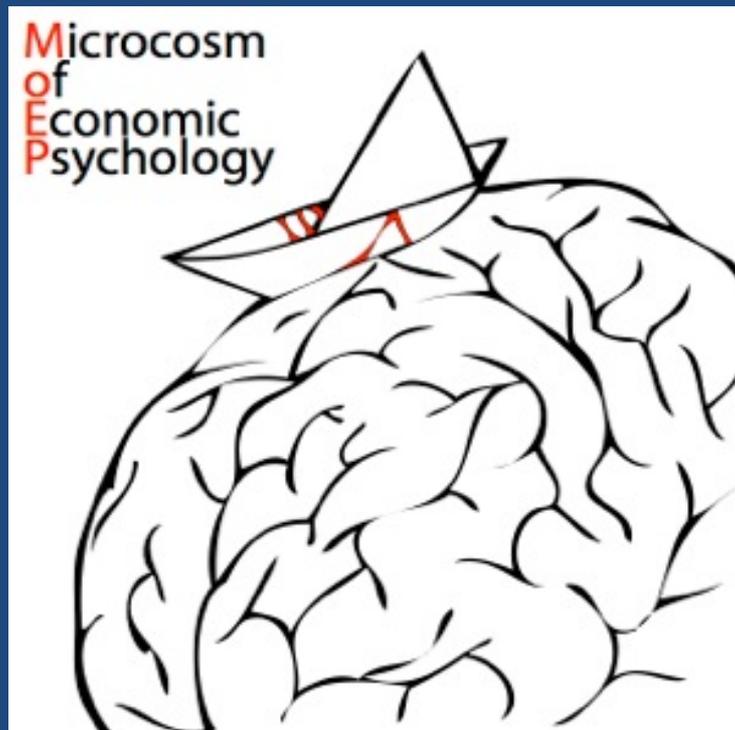


Agata Gasiorowska, Tomasz Zaleskiewicz (Eds.)

## Microcosm of Economic Psychology



Proceedings of the IAREP CONFERENCE WROCLAW 2012

*Agata Gasiorowska, Tomasz Zaleskiewicz (Eds.)*

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# Keynote Lectures

*Keynote lectures are listed in chronological order.*

## EVOLUTIONARY THINKING IN ECONOMIC PSYCHOLOGY: WHERE HAVE WE COME FROM AND WHERE ARE WE GOING?

Stephen Lea<sup>1</sup>

<sup>1</sup>Emeritus Professor of Psychology, University of Exeter, UK

Recent decades have seen rapid advances in research both in evolutionary psychology and in behavioural economics. In consequence, there has been a plethora of papers applying evolutionary thinking to our understanding of economic behaviour. Many different authors have contributed, but they have tended to pursue individual areas of interest with limited crossover between them. The present paper will seek to make a critical survey of this field: to identify the main lines of investigation and speculation, to find areas of consensus and conflict, and to highlight areas that have been relatively neglected and need further investigation. From this survey, my aim is to formulate our current best answer to a perennial question: In what sense is *Homo economicus* a product of natural selection?

## MONEY TALKS AND HAS A LOT TO SAY ABOUT PERSONAL GOALS AND INTERPERSONAL BEHAVIOR

Kathleen D. Vohs<sup>1</sup>

<sup>1</sup>University of Minnesota

Money plays a significant role in people's lives and yet only recently has experimental attention been given to the psychological underpinnings of money. We systematically varied what degree the concept of money was activated in participants' minds. We found that reminders of money made people work harder than they would otherwise toward personal goals. New work found that people reminded of money are quite sensitive to the presence of goals, and will exert more effort to achieve goal-framed activities (but not non-goal framed activities). This effect goes beyond competency goals and even extends to the goal to have fun.

Conversely, mere reminders of money render people interpersonally insensitive to others. For instance, people reminded of money were less helpful than others and feel no different whether socially included or excluded. New work shows that people reminded of money endorse a free market ideology more than they would otherwise. Consequently, they adopt a viewpoint of financial and economics inequalities akin to social darwinism in that inequities reflect justifiable differences in people's abilities or efforts.

In short, activating the mere concept of money has robust, and mostly negative, effects on interpersonal behaviors. But it exerts a strong, mostly positive, effect on personal motivation.

## REFLECTIVE AND IMPULSIVE DETERMINANTS OF ECONOMIC BEHAVIOR

Fritz Strack<sup>1</sup>

<sup>1</sup>University of Würzburg

An increasing number of anomalies have shed doubt on the power of the rational model to explain economic behavior. To integrate these deviant but isolated findings and to link them to established notions of rational choice, it is necessary to consider alternative conceptual accounts. In both psychology and economics, dual-process or systems models have gained increasing popularity. In my talk, I shall describe our own Reflective-Impulsive Model and discuss its implications for economic behavior.

## WOMEN'S SEXUAL STRATEGIES ACROSS THE MENSTRUAL CYCLE: *AN EVOLUTIONARY PERCEPTIVE*

Bogusław Pawłowski<sup>1</sup>

<sup>1</sup>University of Wrocław

The fluctuation of sex hormone levels across the menstrual cycle is not only related to physiological aspects of human female reproduction. Studies indicate that women's attractiveness, and their preferences for different male traits, can change across the menstrual cycle. During the fertile phase, women are perceived as more attractive in respect of body, face, olfactory, and vocal traits. The question that arises is whether these attractiveness fluctuations across the cycle are adaptive and "economic" from an evolutionary point of view, or whether they are just side effects of the hormonal fluctuations of the cycle.

At different phases of the menstrual cycle, women also seem to change their mate preferences. For example, at the fertile phase, they prefer more masculinized and dominant men. Since masculinization is a sexual ornament that requires a relatively high level of immunosuppressive androgens, masculinization is supposed to signal good genes. Is this change of preferences across the menstrual cycle "economic" from the point of view of reproductive or biological fitness? Are female sexual strategies related to preferences for direct benefits (e.g. resources) from men during the non-fertile phase, and indirect benefits (genes) when fertile? Does this cyclic preference change dependent upon other factors e.g. the type of sexual relationship, or the quality of a woman's long-term partner?

The dual sexuality strategy hypothesis explains cyclic changes in women's preferences as a hunt for good genes (HfGG) in the fertile part of the menstrual cycle. To test this hypothesis, we investigated whether various measurements of health in newborn babies was linked to the type of relationship of the parents. If the HfGG hypothesis is true, we should expect that in comparison to children born in long-term relationships, children born in short-term relationships are heavier and healthier at birth. The results of our study with a contemporary western society, however, do not support the 'hunting for good genes' hypothesis.

# Oral presentations

## BEHAVIORAL ECONOMICS FOR SMART PEOPLE? BEHAVIORAL ECONOMICS, THE RATIONALITY ASSUMPTION, AND PUBLIC POLICY

Morris Altman<sup>1</sup>

<sup>1</sup>Economics, Victoria University of Wellington

This paper reviews aspects of the literature in behavioural economics to better understand the importance of rationality, errors biases, ecological rationality, and economic efficiency and to delineate core methodological differences in behavioural economics. I critically review relevant elements of the literature and also elaborate upon the concepts of rational biases and errors and rational inefficiency. I argue that an important methodological divide has emerged in behavioral economics with significant public policy consequences. Following in the tradition of Kahneman and Tversky, many behavioural economists argue that decision making is fundamentally and persistently biased and error prone and therefore lacking in intelligence and rationality. Typical individuals are incapable of making key utility maximizing decisions, thus requiring decisions to be made on their behalf by more intelligent experts (benevolent paternalism). This worldview runs contrary to the neoclassical worldview as well as against to the pioneering research in behavioral economics exemplified in the work of Simon and March. They argue that individual behavior is typically intelligent and rational even if inconsistent with the normative rules of neoclassical rationality. I argue, building upon this tradition and extending the early methodological work of Von Mises and Hayek (more recently Vernon Smith and Gerd Gigerenzer) that it is important to distinguish between rational, intelligent, purposeful behavior and errors and biases in decision making. It is also important that the norms for correct behavior be based upon the imperfect cognitive wiring of decision makers and information imperfections (bounded rationality) as opposed the neoclassical norms. In this case, experimental evidence that purports to support the case for human irrationality is found wanting, as is the case for benevolent paternalism. Individual and social welfare can be enhanced through learning, institutional reforms and through corrections for market failures as opposed to outside parties imposing their preferences on the general public (Hayek's contributions are of importance here). Moreover, the experimental literature suggests that important facets of neoclassical theory require revision to take into account the actualities of human agency that are consistently inconsistent with neoclassical norms.

*Keywords: choice, framing, social dilemma, utilitarianism, ethics, individual differences*

## A NOTE ON A COMPARISON OF SIMULTANEOUS AND SEQUENTIAL COLONEL BLOTTO GAMES

Yumiko Baba<sup>1</sup>

<sup>1</sup>Economics, Aoyama University

### Abstract

Clark and Kai (2007) introduce the weakest link against the best shot property to the Colonel Blotto game. They assume that the attacker attacks all the battlefields simultaneously. We endogenize the attack pattern of the attacker and show that the attacker attacks one battle field at a time at equilibrium. Therefore, the attack pattern analyzed by Clark and Kai (2007) is never realized at equilibrium. We ran experiments to examine whether the subjects behave consistently to the theoretical predictions.

We construct a two stage model to extend the game introduced by Clark and Kai (2007) and to endogenize the attack pattern of the attacker. In the first stage, the attacker chooses the attack pattern. Given the attack pattern chosen in

stage 1, the attacker and the defender play the Colonel Blotto game with the weakest link against best shot property in the second stage. Based on our theoretical results, we ran experiments with two battlefields and examine whether the subjects behave as the theory predicts.

When we endogenize the attack pattern of the attacker, it is shown that the attacker chooses the sequential attack pattern at equilibrium. Therefore, the simultaneous attack pattern analyzed by Clark and Kai (2007) is never realized. Based on our theoretical results, we ran experiments with two battlefields and observe that the subjects behave inconsistently to the theoretical predictions. Both players overinvested and the variances were large. The attackers took a guerrilla strategy at 30% of the time in which they invested only in one battlefield. The defenders took a surrender strategy at 11% of the time in which they invested nothing. Both players invested more in period 1 than in period 2 in a sequential game. All of these are inconsistent to the theoretical predictions. The only observation consistent to the theory is the winning probabilities of an entire game.

Our theoretical result of the sequential attack chosen at equilibrium is important because our model explains serious practical examples such as terrorism, cyber attacks, and patent trolls. Identifying the reason for the subjects' contradictory behavior against theory is important. Although the literature attributes it to irrationality and/or misunderstanding of the subjects, we believe that framing also caused the problem. In the sequential game with the weakest link against best shot property, both players put too much priority on the first battle and extremely overinvested there.

*Keywords: choice, framing, intertemporal choice, risk perception*

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## 1 Introduction

The Colonel Blotto game is first introduced by Borel (1921). In the original version, two players simultaneously invest limited resources in multiple battlefields. In each battlefield, an auction CSF is assumed and a player who invests more to that battlefield wins. The payoff of the game is the proportion on the individual battlefields. The Colonel Blotto game is called as a constant-sum game if a player's resource is "use it or lose it" in the sense that any resources which is not allocated to one of the battlefields are forfeited. Borel and Ville (1938) solve a constant-sum game with three battlefields and symmetric resources. Then, Gross and Wagner (1950) extend the results of Borel and Ville (1938) to any finite number of battlefields. Finally, Roberson (2006) characterizes the unique equilibrium for any finite number of battlefields and asymmetric resources. It should be emphasized that there are many practical examples which share the basic characters of the Colonel Blotto game: players fight against each other in multiple battlefields with limited resource and the payment of a player is determined by the number of battlefields s/he wins. Marketing, election, lobbying, voting, R&D activities, patent trolls are several among many. For simplicity, we focus on an application of the Colonel Blotto game to military conflict and call two players as player A (the attacker) and player D (the defender) for the rest of paper. Clark and Konrad (2007) change two factors in the original Colonel Blotto game. First, they relax the assumption of "use it or lose it" resources and allow players to satisfy their resource constraints with strict inequality. Consequently, the game becomes non-constant sum. Secondly, they introduce the weakest-link against best-shot property into players' payoffs. Player A wins the game if she wins at least one battlefield while player D has to win all the battlefields<sup>1</sup>. As most of previous works do, they assume that player A simultaneously attacks all the battle fields at the same time and player D has to divide his resource across multiple battlefields. Then, they characterize the Nash equilibrium. It is noteworthy that the equilibrium expected payoff of player D is zero. Since the weakest-link against best-shot property gives a huge disadvantage to player D, he does not invest any resource and surrender with strictly positive probability at equilibrium if the number of battlefields is sufficiently large. Kovenock and Roberson (2010) characterize the equilibrium of a multi-front war of terrorism with an auction CSF. Their model is very general and includes the weakest-link/best-shot game as a special case. They consider networks of battlefields where each network with multiple battlefields has the weakest-link or the best-shot property for player D and weakest-link networks and best-shot networks coexist in a supra network. Levitin, G. and Hausken, K. (2010) analyze a sequential version of a constant sum, asymmetric Colonel Blotto game with the property of weakest-link against best-shot. They employ a lottery CSF as we do, but they consider limited strategy space where player D always invests all his resource and player A attacks one battlefield at a time. In addition, player A can only take geometric resource distribution strategies where the ratio of resource invested in the current period and that in the previous period is always constant

<sup>1</sup> Female pronouns are used for player A and male pronouns are used for player D without any intension of sexual discrimination.

and is denoted by  $\alpha^*$ . They show that player A's optimal strategy is characterized by  $\alpha^*$  depending on the parameter of the model. This implies that it is the best for player A to attack one battlefield at a time and distributes resource evenly across periods, or she attacks all the battlefields simultaneously and invests resource evenly across multiple battlefields in the restricted set of strategies of player A and player D they consider. We relax their assumption and allow both player A and player D choose any strategies. In addition, we consider non-constant sum game. Then, we show that both player A and player D choose  $\alpha^*$  when the number of battlefields is two. Further, we run experiments to test our theoretical predictions.

Lastly, Hart (2008) considers a class of integer-valued zero-sum Colonel Blotto game and characterizes the equilibrium. There are numbers of experimental works on Colonel Blotto games. Firstly, Chowdhury et al. (2009) conduct experiments on a constant sum Colonel Blotto game with asymmetric resources. Two players simultaneously allocate their resources across  $n$ -battlefields with the objective to maximize the expected battlefields won. They demonstrate that all major theoretical predictions are supported for the game with an auction CSF: player A took a guerrilla warfare strategy where she attacks at most one battlefield and actual payoffs are close to the theoretical equilibrium payoffs although the variances are considerably large compared to the theoretical prediction. Secondly, Kovenock et al. (2010) run experiments on a non-constant sum, asymmetric value Colonel Blotto game with the property of weakest-link against best-shot. They compare the experimental results of a game with an auction CSF and of a game with a lottery CSF and conclude that experiments support theoretical predictions when an auction CSF is used, but do not support them when a lottery CSF is employed. Although the theory claims that player A allocates her resource equally to each battlefield, the subjects took "guerrilla warfare strategy" at 45% of the time. Thirdly, Deck and Sheremeta (2011) carry out experiments on a non-constant sum, asymmetric value Colonel Blotto game with the property of weakest-link against best-shot. Instead of simultaneous attack of all battlefields at once, they assume that Player A attacks one battlefield at a time. They focus on a game with an auction CSF and show that experiments support theoretical predictions in the sense that the probability of successful defense increases when the number of battlefields decreases and/or the value of the prize from winning the game for player D increases. In addition, they theoretically show that the expected payoffs of both layers are the same as those in a game with the simultaneous attack. Our analysis is different from theirs in the following points. First, we construct a two stage model where the attack pattern of player A is endogenized. Player A decides her attack pattern in stage 1 and she allocates non-negative resource to the battlefields in each period in stage 2 subject to the attack pattern she chose in stage 1. Player A's attack pattern is defined as how many battlefields she attacks in each period of stage 2. Then, Baba (2009) characterizes the equilibrium mathematically when the number of battlefields is less than four. Further, she uses simulation and shows that player A chooses a complete sequential attack pattern in which she attacks one battlefield at a time when the number of battlefields is up to ten. Secondly, we use a lottery CSF as Clark and Konrad (2007) do and show that a simultaneous attack pattern is not an optimal strategy for player A if we endogenize an attack pattern of player A. This is a big contrast to the game with an auction CSF where the expected payoffs of player A are the same between the simultaneous attack and the sequential attack. Further, Baba (2011a) conducts an experiment on a non-constant, symmetric Colonel Blotto game with the simultaneous and the sequential attack patterns based on the theoretical results obtained by Clark and Konrad (2007) and Baba (2009). Arad and Rubinstein (2009) run experiments on a constant sum, symmetric Colonel Blotto game with an auction CSF based on the theoretical result in Hart (2008). Two players simultaneously determine how to allocate their resources to multiple battlefields. By using multi-dimensional iterative reasoning, they find reasons why a subject chose a particular strategy among many. Iterative reasoning starts from the level-0 strategy in which a subject invests equally to all battlefields. The level-1 strategy is the best response to the level-0 strategy. The level-2 strategy is the best response to the level-1 strategy, and all the higher level strategies are determined iteratively. Their experimental data conclude that a subject's reasoning is mostly up to level-3 and measuring the response time of a subject correlates to the choice of successful strategy. Kohil et al. (2010) conduct experiments on a constant sum, symmetric Colonel Blotto game with an auction type CSF on Facebook. Instead of monetary incentive used in Arad and Rubinstein (2009), they use reputation and entertainment incentives to analyze the effect of non-monetary incentives. The number of reinforced battlefields and distribution of unit digits in battlefields show that a subject uses iterative reasoning to choose a strategy as demonstrated by Arad and Rubinstein (2009), but the chosen strategy does not support the theoretical prediction of even allocation of resource across multiple battlefields. Furthermore, a subject behaves differently when he is against a friend, or he is against a stranger. The number of reinforced battlefields is larger when a subject plays against a friend.

Our model is most closely related to Clark and Konrad (2007). They assume player A attacks all the battlefields simultaneously. We endogenize the attack pattern of player A and construct a two stage model. In stage 1, player A chooses an attack pattern and decides how many battlefields she attacks in each period of stage 2. At the beginning of each period of stage 2, player A and player D simultaneously invest their limited resources in battlefields planned to be attacked subject to the attack pattern chosen in stage 1. To facilitate the understanding the difference between Clark and Konrad (2007) and our model, consider an example with three battlefields. Then, Clark and Konrad (2007) assume that player A has no choice in stage 1, but chooses to attacks all three battlefields simultaneously in period 1 of stage 2. On the other hand, we assume that player A can choose one from eight possible attack patterns in stage 1.

Let us denote an attack pattern by  $(n_1, n_2, n_3)$  in which player A attacks  $n_1$  battlefields in period 1 of stage 2,  $n_2$  battlefields in period 2 of stage 2, and  $n_3$  battlefields in period 3 of stage 2, where  $n_1, n_2, n_3 \geq 0$  and  $0 \leq n_1 + n_2 + n_3 \leq 3$ . Accordingly,  $(3,0,0)$ ,  $(2,1,0)$ ,  $(1,2,0)$ ,  $(1,1,1)$ ,  $(2,0,0)$ ,  $(1,1,0)$ ,  $(1,0,0)$ ,  $(0,0,0)$  are the feasible attack patterns. Note that  $(n_1, n_2, 0)$  and  $(0, n_1, n_2)$  are the same because we assume the future discount rate is 1 as literature does. Baba (2009) shows that player A chooses  $(1,1,1)$  at subgame perfect Nash equilibrium when the number of battlefields is up to 10. In this paper, we focus on the case with two battlefields. We characterize the subgame perfect Nash equilibrium of our two stage model, compare the equilibrium resource investment levels and the equilibrium expected payoffs of player A and player D in our model with those in Clark and Konrad (2007) for the symmetric game with two battlefields. First, player A takes the sequential attack pattern of  $(1,1)$  over the simultaneous attack pattern of  $(2,0)$ . Therefore, the game analyzed by Clark and Konrad is never realized if we endogenize player A's attack pattern. Secondly, the equilibrium expected payoffs of both players are strictly higher in a sequential model than those in a simultaneous model analyzed by Clark and Konrad (2007). Thirdly, the resource investment levels of both players are higher in a game with the sequential attack pattern than those in a game with simultaneous attack pattern. Baba (2009) shows that the equilibrium resource investment level of player A is close to zero in early periods and increases rapidly when the number of the remaining battlefields becomes small.

## 2 Objectives

Clark and Konrad (2007) introduce the weakest link against the best shot property to the Colonel Blotto game. The defendant has to win all the battle fields while the attacker only needs to win at least one battlefield and characterize the Nash equilibrium assuming that the attacker attacks all the battlefields simultaneously. We construct two stage game model and endogenize the attacker's attack pattern. We show that the attacker chooses a sequential attack pattern at subgame perfect Nash equilibrium. Therefore, the game analyzed by Clark and Konrad is never realized. Further, both players' payoffs are higher in a game with the sequential attack pattern than a game with the simultaneous attack pattern. We also conducted experiments and found that the subjects' behavior is inconsistent to theoretical predictions. Both players overinvested and the variances are large. The attackers took a guerrilla strategy at 30% of the time in which they invested only in one battlefield. The defenders took a surrender strategy at 11% of the time in which they invested nothing. Both players invested more in period 1 than in period 2. All of these are inconsistent to the theoretical predictions. The only observation consistent to the theory is the winning probabilities of an entire game. Practical examples of our model include serious problems such as terrorism, cyber attacks, and patent trolls and the huge gap between the theory and the experiments are important considering the significance of the problems.

## 3 Method

We use two methods to analyze the problem: theoretical analysis and experimental analysis. 3.1 constructs a endogenizes the attack pattern in a model introduced by Clark and Konrad (2007) and characterize the subgame perfect Nash equilibrium of the model. 3.2 conducted experiments based on the theoretical results in 3.1 and examines whether the subjects behave according to the theoretical predictions.

### 3.1 The Model

There are two players, the attacker denoted by player A and the defender denoted by player D. Player A and player D play a symmetric, non-constant sum Colonel Blotto game with  $n$  homogeneous battlefields with the weakest-link against best-shot property. The game consists of 2 stages. In stage 1, player A decides how many battlefields she attacks in each period. We call this as an attack pattern and denote it  $(n_1, n_2, \dots, n_s)$ , where  $n_l$  ( $1 \leq l \leq s$ ) is the number of battlefields player A attacks in period  $l$  ( $1 \leq l \leq s$ ). The argument in an example with three battlefields in the previous section holds to a general case of  $n \geq 3$  and we only need to consider an attack pattern of  $(n_1, n_2, \dots, n_s)$ , where  $s \leq n$ ,  $\forall 1 \leq l \leq s, n_l \geq 0$  and  $\sum_{l=1}^s n_l = n$ . Stage 2 consists of  $s$  periods.  $s$  depends on an attack pattern chosen by player A in stage 1. In one extreme,  $s = 1$  and player A chooses an attack pattern of  $n_1 = n, n_2 = n_3 = \dots = n_s = 0$ . This is one shot simultaneous Colonel Blotto game with the weakest-link against best-shot property analyzed by Clark and Konrad (2007) and we call it player A taking the simultaneous attack pattern. In the other extreme, player A chooses an attack pattern of  $n_1 = n_2 = n_3 = \dots = n_s = 1$ . This is the complete sequential attack pattern in which player A attacks one battlefield at a time. There are many intermediate attack patterns between  $s = 1$  and  $s = n$ . Mathematically, this is an order dependent partition of integer  $n$  problem<sup>1</sup>. For example, suppose  $n = 3$ . Then, the previous argument in an example with three battlefields shows that the feasible set of attack patterns of player A consists of  $(3,0,0)$ ,  $(2,1,0)$ ,  $(1,2,0)$ ,  $(1,1,1)$ ,  $(2,0,0)$ ,  $(1,1,0)$ ,  $(1,0,0)$ ,  $(0,0,0)$ . It is obvious that  $(0,0,0)$ ,  $(1,0,0)$ ,  $(1,1,0)$ ,  $(2,0,0)$  are dominated by  $(1,0,0)$ ,  $(1,1,0)$ ,  $(1,1,1)$ ,  $(2,1,0)$  respectively due to the weakest-link against best-shot property of the game. This implies that we can focus on attack patterns of

<sup>1</sup> The author appreciates Professor Robert Wilson to point it out.

$(n_1, n_2, \dots, n_s)$ , where  $s \leq n$ ,  $\forall 1 \leq l \leq s, n_l > 0$ , and  $\sum_{l=1}^s n_l = n$ . The number of feasible attack patterns increases rapidly as  $n$  increases, but lemma 1 in Baba (2009) shows that it suffices to examine attack patterns which satisfy  $n_1 \leq m \leq n, n_1 \leq m, n_2 \leq m, \dots, n_s \leq m+1, 1, n_2 \leq m+2, \dots, n_n = 0$ . Therefore, there are only  $n$  attack patterns we need to consider. Player A attacks  $m$  ( $1 \leq m \leq n$ ) battlefields in period 1 and attacks one battlefield at a time from period 2 on as long as there remain battlefields not yet being attacked. In period  $i$  ( $1 \leq i \leq s - n - m + 1$ ) of stage 2, player A invests  $x_i^f \in [0, K]$  ( $\forall 1 \leq i \leq n_1, \forall 1 \leq f \leq s$ ) in battlefield  $f$  and player D distribute resource  $y_i^f \in [0, K]$  ( $\forall 1 \leq i \leq n_1, \forall 1 \leq f \leq s$ ) in battlefield  $f$ . We assume  $K$  is large enough and never binds. When player A allocates resource  $x_i^f \in [0, K]$  ( $1 \leq i \leq n_1$ ) in battlefield  $f$  and player D distribute resource  $y_i^f \in [0, K]$  ( $1 \leq i \leq n_1$ ) in battlefield  $f$ , the winning probability of player A in battlefield  $f$  is  $p_i^A(x_i^f, y_i^f)$  and the winning probability of player D in battlefield  $f$  is  $p_i^D(x_i^f, y_i^f) = 1 - p_i^A(x_i^f, y_i^f)$ , where

$$p_i^D(x_i^f, y_i^f) = \begin{cases} \frac{y_i^f}{x_i^f + y_i^f} & \text{if } x_i^f > 0 \\ 1 & \text{otherwise} \end{cases} \quad \dots(1)$$

(1) is a well-known Tullock type CSF and is called a lottery CSF. We assume  $p_i^D(0,0)=1$  for convenience but any tie-breaking rule works. Note that  $(x_i^f, y_i^f) = (0,0)$  never happens at equilibrium; therefore, it does not affect the results. Note that  $p_i^D(x_i^f, y_i^f)$  is a function of only  $x_i^f$  and  $y_i^f$  and resource invested in other battlefields  $j \neq i$  does not affect the winning probability of the battle in battlefield  $f$ .

Suppose player A invests  $x_i^f$  in battlefield  $f$  ( $\forall 1 \leq i \leq n_1$ ) she attacks in period 1,  $x_i^f$  ( $\forall 1 \leq i \leq n_2$ ) in battlefield  $f$  in period 2,  $x_i^f$  in battlefield  $f$  ( $\forall 1 \leq i \leq n_1$ ) up to period  $s \leq n$  where  $\sum_{l=1}^s n_l = n$ . Similarly, suppose player D invests  $y_i^f$  in battlefield  $f$  ( $\forall 1 \leq i \leq n_1$ ) in period 1,  $y_i^f$  ( $\forall 1 \leq i \leq n_2$ ) in battlefield  $f$  in period 2,  $y_i^f$  in battlefield  $f$  ( $\forall 1 \leq i \leq n_1$ ) up to period  $s \leq n$  where  $\sum_{l=1}^s n_l = n$ . Then, player A's expected payoff is expressed as

$$E\pi_{n_1, n_2, \dots, n_s}^A(x_{n_1}, x_{n_2, n_3, \dots, n_s}, y_{n_1}, y_{n_2, n_3, \dots, n_s}) = \left(1 - \prod_{i=1}^{n_1} p_i^D(x_i^f, y_i^f)\right) v + \prod_{i=1}^{n_1} p_i^D(x_i^f, y_i^f) E\pi_{n_2, n_3, \dots, n_s}^A(x_{n_2, n_3, \dots, n_s}, y_{n_2, n_3, \dots, n_s}) - \sum_{i=1}^{n_1} \sum_{f=1}^{n_i} x_i^f,$$

$$\text{where } x_{n_1} = (x_1^1, x_1^2, \dots, x_1^{n_1}), x_{n_2, n_3, \dots, n_s} = (x_2^1, x_2^2, \dots, x_2^{n_2}, \dots, x_3^1, x_3^2, \dots, x_3^{n_3}), y_{n_1} = (y_1^1, y_1^2, \dots, y_1^{n_1}), \text{ and } y_{n_2, n_3, \dots, n_s} = (y_2^1, y_2^2, \dots, y_2^{n_2}, \dots, y_3^1, y_3^2, \dots, y_3^{n_3}) \quad \dots(2)$$

$E\pi_{n_2, n_3, \dots, n_s}^A(x_{n_2, n_3, \dots, n_s}, y_{n_2, n_3, \dots, n_s})$  is a continuation expected payoff of player A evaluated at the beginning of period 2 when there remain  $\sum_{l=2}^s n_l = n - n_1$  battlefields and player A chooses an attack pattern  $n_2, n_3, \dots, n_s$ , her resource investment vector is  $x_{n_2, n_3, \dots, n_s}$ , and player D's resource investment vector is  $y_{n_2, n_3, \dots, n_s}$  from period 2 on.

Similarly, player D's expected payoff is expressed as

$$E\pi_{n_1, n_2, \dots, n_s}^D(x_{n_1}, x_{n_2, n_3, \dots, n_s}, y_{n_1}, y_{n_2, n_3, \dots, n_s}) = \prod_{i=1}^{n_1} p_i^D(x_i^f, y_i^f) E\pi_{n_2, n_3, \dots, n_s}^D(x_{n_2, n_3, \dots, n_s}, y_{n_2, n_3, \dots, n_s}) - \sum_{i=1}^{n_1} \sum_{f=1}^{n_i} y_i^f, \quad \dots(3)$$

$E\pi_{n_2, n_3, \dots, n_s}^D(x_{n_2, n_3, \dots, n_s}, y_{n_2, n_3, \dots, n_s})$  is a continuation expected payoff of player D evaluated at the beginning of period 2 when there remain  $\sum_{l=2}^s n_l = n - n_1$ , player A chooses an attack pattern  $n_2, n_3, \dots, n_s$ , she chooses her resource vector  $x_{n_2, n_3, \dots, n_s}$ , and player D chooses his resource investment vector of  $y_{n_2, n_3, \dots, n_s}$  from period 2 on<sup>1</sup>. (2) and (3) exhibit the weakest-link against best-shot property in the sense that player A wins the game and acquires the prize  $v$  if she wins at least one of  $n_1$  battlefields she attacks in period 1. The game continues to period 2 only when player A loses all  $n_1$  battles in period 1. Similarly, the game continues to period  $i \leq s$  only when player A loses all of  $\sum_{l=1}^{i-1} n_l$  battles up to period  $i - 1$ . On the other hand, player D is in a disadvantaged position. He has to win all battles  $\sum_{l=1}^s n_l$  to be awarded the prize  $v$ . A subgame perfect Nash equilibrium is defined as follows.

To do so, we need to define a feasible attack pattern and a compatible resource investment vector w.r.t. a feasible attack pattern.

Definition. (A feasible attack pattern)

An attack pattern,  $(n_1, n_2, \dots, n_s)$ , is feasible if  $s \leq n$ ,  $\forall 1 \leq l \leq s, n_l > 0$  and  $\sum_{l=1}^s n_l = n$ .

<sup>1</sup> We assume that the budget constraint does not bind neither for player A nor player D as Clark and Konrad (2007) do.

Definition. (A compatible resource investment vector)

A resource investment vector of player A,  $\bar{x} = (x_1, x_2, \dots, x_n)$  is compatible with an attack pattern  $(n_1, n_2, \dots, n_s)$  if it is expressed as

$$\bar{x} = (\bar{x}_{n_1}, \bar{x}_{n_2}, \dots, \bar{x}_{n_s})$$

$(x_1^{n_1}(n_1, n_2, \dots, n_s), \dots, x_1^{n_2}(n_1, n_2, \dots, n_s), \dots, x_s^{n_1}(n_1, n_2, \dots, n_s), \dots, x_s^{n_s}(n_1, n_2, \dots, n_s))$ , where  $\bar{x}_{n_l}$  ( $\forall 1 \leq l \leq s$ ) is a  $n_l$  dimensional vector and  $x_l^{n_l}(n_1, n_2, \dots, n_s)$  is a function from an attack pattern to an amount of resource player A invests in battlefield  $\forall l, 1 \leq l \leq n_s$ , in period  $\forall l, 1 \leq l \leq s$ .

Similarly, a resource investment vector of player D,  $\bar{y}$  is compatible with an attack pattern  $(n_1, n_2, \dots, n_s)$  if it is expressed as

$$\bar{y} = (\bar{y}_{n_1}, \bar{y}_{n_2}, \dots, \bar{y}_{n_s})$$

$(y_1^{n_1}(n_1, n_2, \dots, n_s), \dots, y_1^{n_2}(n_1, n_2, \dots, n_s), \dots, y_s^{n_1}(n_1, n_2, \dots, n_s), \dots, y_s^{n_s}(n_1, n_2, \dots, n_s))$ , where  $\bar{y}_{n_l}$  ( $1 \leq l \leq s$ ) is a  $n_l$  dimensional vector and  $y_l^{n_l}(n_1, n_2, \dots, n_s)$  is a function from an attack pattern to an amount of resource player D invests in battlefield  $\forall l, 1 \leq l \leq n_s$ , in period  $\forall l, 1 \leq l \leq s$ .

Definition. (A subgame perfect Nash equilibrium)

A subgame perfect Nash equilibrium of a symmetric, non-constant sum, Colonel Blotto game consists of an attack pattern,  $\bar{n} = (n_1^*, n_2^*, \dots, n_s^*)$ , and a pair of resource investment vectors,  $\bar{x}^* = (\bar{x}_{n_1^*}, \bar{x}_{n_2^*}, \dots, \bar{x}_{n_s^*})$

$$(x_1^{n_1^*}(n_1^*, n_2^*, \dots, n_s^*), \dots, x_1^{n_2^*}(n_1^*, n_2^*, \dots, n_s^*), \dots, x_s^{n_1^*}(n_1^*, n_2^*, \dots, n_s^*), \dots, x_s^{n_s^*}(n_1^*, n_2^*, \dots, n_s^*))$$

and  $\bar{y}^* = (\bar{y}_{n_1^*}, \bar{y}_{n_2^*}, \dots, \bar{y}_{n_s^*})$

$$(y_1^{n_1^*}(n_1^*, n_2^*, \dots, n_s^*), \dots, y_1^{n_2^*}(n_1^*, n_2^*, \dots, n_s^*), \dots, y_s^{n_1^*}(n_1^*, n_2^*, \dots, n_s^*), \dots, y_s^{n_s^*}(n_1^*, n_2^*, \dots, n_s^*))$$

$$E\pi_{n_1^*, n_2^*, \dots, n_s^*}^A(\bar{x}^*, \bar{y}^*)$$

$$\geq E\pi_{n_1^*, n_2^*, \dots, n_s^*}^A(\bar{x}, \bar{y}^*) \text{ for any } \bar{x} \text{ compatible with } (n_1^*, n_2^*, \dots, n_s^*)$$

and

$$E\pi_{n_1^*, n_2^*, \dots, n_s^*}^D(\bar{x}_{n_1^*}, \dots, \bar{x}_{n_s^*}, \bar{y}_{n_1^*}, \dots, \bar{y}_{n_s^*}) \geq E\pi_{n_1^*, n_2^*, \dots, n_s^*}^D(\bar{x}_{n_1}, \dots, \bar{x}_{n_s}, \bar{y}_{n_1^*}, \dots, \bar{y}_{n_s^*}) \text{ for any } (\bar{x}_{n_1}, \dots, \bar{x}_{n_s}) \text{ compatible with } (n_1^*, \dots, n_s^*), \forall l, 2 \leq l \leq s$$

$$E\pi_{n_1^*, n_2^*, \dots, n_s^*}^D(\bar{x}^*, \bar{y}^*) \geq E\pi_{n_1^*, n_2^*, \dots, n_s^*}^D(\bar{x}^*, \bar{y}) \text{ for any } \bar{y} \text{ compatible with } (n_1^*, \dots, n_s^*)$$

and

$$E\pi_{n_1^*, n_2^*, \dots, n_s^*}^D(\bar{x}_{n_1^*}, \dots, \bar{x}_{n_s^*}, \bar{y}_{n_1^*}, \dots, \bar{y}_{n_s^*}) \geq E\pi_{n_1^*, n_2^*, \dots, n_s^*}^D(\bar{x}_{n_1^*}, \dots, \bar{x}_{n_s^*}, \bar{y}_{n_1}, \dots, \bar{y}_{n_s}) \text{ for any } (\bar{y}_{n_1}, \dots, \bar{y}_{n_s}) \text{ compatible with } (n_1^*, \dots, n_s^*), \forall l, 2 \leq l \leq s,$$

and

$$E\pi_{n_1^*, n_2^*, \dots, n_s^*}^A(\bar{x}^*, \bar{y}^*)$$

$$\geq E\pi_{n_1, n_2, \dots, n_s}^A(\bar{x}, \bar{y}) \text{ for any feasible attack pattern, } (n_1, n_2, \dots, n_s) \text{ and any } \bar{x}(n_1, n_2, \dots, n_s) \text{ and } \bar{y}(n_1, n_2, \dots, n_s) \text{ compatible with } (n_1, n_2, \dots, n_s).$$

and (b) require that the optimality of the pair of resource investment vectors of player A and player D in any subgame given the attack pattern chosen in stage 1 and (c) requires the attack pattern is optimally chosen by player A.

### 3.2 Experiments

Baba (2011a) conducts an experiment based on the model analyzed in 3-1. The experimental design is based on Sheremeta (2010). The aim of the experiment is to compare the behavior of the subjects in Colonel Blotto games with the sequential and the simultaneous attack patterns with the theoretical predictions obtained in section 3. Although we realized Deck and Sheremeta (2011) after our experiment, we still believe that it is important to conduct experiments on a sequential game with a lottery CSF.

Deck and Shremeta (2011) focus on experiments on a sequential game with an auction CSF and complement Knoevenock et al. (2010) which carry out experiments on a simultaneous game with an auction CSF and with a lottery CSF. Their experimental data does not support the theoretical predictions for a simultaneous game with an auction CSF, but subjects' behavior is consistent to the theoretical results for a game with an auction CSF. This is the reason why Deck and Sheremeta (2011) choose an auction CSF. Our reason to do experiments on a game with a lottery CSF is practical. It is rare in the real world that a player who invests most wins a battle for sure and there always exists risk of losing the battle no matter what one does. An example is terrorism. Suppose player A is a terrorist and player D is a country. Then, a country's military expenditure is usually higher than a terrorist's one. Nevertheless, history tells us

that a terrorist sometimes gives serious damage to a country. Another example is patent litigation. Suppose player A is a patent troller and player D is a major IT company. Then, a major IT company can spend more money on litigation than a patent troller can, but case records demonstrate that the winning probability of a patent troller is not zero. Taking seriousness of practical examples into account, it is important to identify the reasons for the gap between the theoretical predictions and actual subjects' behavior. Especially, examining whether subjects in role of player A realized that their expected payoffs were higher in a game with the sequential attack pattern than those in a game with the simultaneous attack pattern is the first step to analyze why subjects did not follow the theory. Experiments were carried out at Aoyamagakuin University and twelve subjects participated in each session which consists of 12 rounds of Colonel Blotto game with the complete sequential attack pattern and 12 rounds of a game with the simultaneous attack pattern<sup>1</sup>. At the beginning of each round of a session, a subject is. At the beginning of each round of a game with the sequential attack pattern, a subject is randomly matched with another subject and was assigned the role of player A or player D with equal probability. A subject received initial endowment of 20 experimental yen before making investment decision. Then, a subject and his/her opponent were asked to simultaneously invest any nonnegative amount of money in battlefield 1 in period 1 and the period 1 winner was determined by a lottery CSF described by (1). If player A wins the period 1 battle, she wins the game, the game is over in period 1, and player A acquires the prize valued 20 experimental yen. If player D wins the period 1 battle, the game continues to period 2 and subjects were asked to simultaneously invest nonnegative amount of money in battlefield 2. If player D wins the period 2 battle, he wins the game and obtains the prize valued 20 experimental yen. If player A wins the period 2 battle, she wins the game and obtains the prize valued 20 experimental yen. At the end of the experiments, 4 out of 12 rounds are randomly selected and payments are made at the rate of 1 experimental yen=5 yen. The experimental instructions for a game with the simultaneous attack pattern are similar to those for a game with the sequential attack pattern, but there is an obvious difference. Now, subjects were simultaneously asked to invest any nonnegative amount of money in both battlefields 1 and 2 in period 1 and period 2 does not exist. Player A wins the game if she wins at least one battle and player D wins the game if he wins both battles.

## 4 Results

### 4.1 The analysis of the model

This subsection analysis the model explained in 3.1. First, 4.1.1 analysis the case of 2 battlefields. 4.1.1.1 characterizes the equilibrium when the attacker chooses the simultaneous attack pattern and 4.1.1.2 characterizes the equilibrium when the attacker chooses the sequential attack pattern. Based on 4.1.1.1 and 4.1.1.2,

#### 4.1.1 $n = 2$ .

Let us focus on the case of  $n = 2$  in this paper. Baba (2008a) examines the case of  $n \geq 3$ . Since  $n = 2$ , player A has only two feasible strategies. Attacking battlefield1 in period 1 and attacking battlefield 2 in period 2 if she is defeated in period 1 battle, or attacking both battlefields simultaneously in period 1. The first strategy is denoted by  $(x_1, x_2) = (1, 1)$  and the second one is denoted by  $(x_1, x_2) = (2, 0)$  by our definition. We call the first strategy the sequential attack pattern and the second one the simultaneous attack pattern. We apply backward induction to characterize the subgame perfect Nash equilibrium and consider the stage 2 problem first. At the beginning of stage 2, an attack pattern is already chosen in stage 1 by player A. Accordingly, we have to examine two cases separately. One is the stage 2 problem given player A chose the sequential attack pattern of  $(1, 1)$  in stage 1 and 3-1-1 characterizes the subgame perfect Nash equilibrium of this subgame. The other is the stage 2 problem given player A chose the simultaneous attack pattern of  $(2, 0)$  in stage 1 and 3-1-2 characterizes the Nash equilibrium of this subgame. Based on the analysis in 3-1-1 and 3-1-2, 3-1-3 examines the stage 1 problem and summarizes the results in proposition1, collorary 1, and collorary 2.

#### 4.1.1.1 The sequential attack pattern.

Given player A chooses the sequential attack pattern in stage 1, stage 2 consists of 2 periods. We apply backward induction to stage 2 game and consider period 2 in stage 2 first. Player A solves the following problem in period 2 given player D allocates resource  $y_2$  in period 2.

$$\max_{x_2} \frac{x_2}{x_2 + y_2} x_2 \quad \dots(3-1)$$

F.O.C. of (3-1) w.r.t.  $x_2$  is expressed as

$$\frac{y_2}{(x_2 + y_2)^2} - 1 = 0 \quad \dots(3-2)$$

Similarly, player D solves the following problem given player A allocates resource  $x_2$  in period 2.

$$\max_{y_2} \frac{y_2}{x_2 + y_2} y_2 \quad \dots(3-3)$$

F.O.C. of (3-3) w.r.t.  $y_2$  is expressed as

<sup>1</sup> We independently design our experiments from Kovenock et al. (2010) and Deck and Sheremeta (2011) and our design is different from theirs. Further, we compromise 12 rounds of a session due to time and financial constraints.

$$\frac{x_2}{(x_2 + y_2)^2} v - 1 = 0 \quad \dots(3-4)$$

Solving simultaneous equations of (3-3) and (3-4) for  $x_2$  and  $y_2$  yields

$$x_2^* = y_2^* = \frac{1}{4} v \quad \dots(3-5)$$

The continuation expected payoffs of player A evaluated at the beginning of period 2 is calculated by inserting (3-5) into (3-1).

$$E\pi_{A2}^{SEO}(x_2^*, y_2^*) = \frac{1}{2} v - \frac{1}{4} v - \frac{1}{4} v \quad \dots(3-6)$$

Similarly, the continuation expected payoffs of player D evaluated at the beginning of is calculated by inserting (3-5) into (3-3).

$$E\pi_{D2}^{SEO}(x_2^*, y_2^*) = \frac{1}{2} v - \frac{1}{4} v - \frac{1}{4} v \quad \dots(3-7)$$

Let's consider period 1. Given (3-5), (3-6), and (3-7), player A's expected payoff is expressed as follows.

$$E\pi_A^{SEO}(x_1, y_1) = \frac{x_1}{x_1 + y_1} v - x_1 + \frac{y_1}{x_1 + y_1} E\pi_{A2}^{SEO}(x_2^*, y_2^*) = \frac{x_1}{x_1 + y_1} v - x_1 + \frac{y_1}{x_1 + y_1} \frac{1}{4} v \quad \dots(3-8)$$

Player A chooses  $x_1$  to maximize her expected payoff.

$$\text{Max}_{x_1} \frac{x_1}{x_1 + y_1} v - x_1 + \frac{y_1}{x_1 + y_1} \frac{1}{4} v \quad \dots(3-9)$$

F.O.C. of (3-9) w.r.t.  $x_1$  is expressed as

$$\frac{y_1}{(x_1 + y_1)^2} v - 1 + \frac{y_1}{(x_1 + y_1)^2} \frac{1}{4} v = 0 \quad \dots(3-10)$$

Similarly, player D's expected payoff is expressed as follows.

$$E\pi_D^{SEO}(x_1, y_1) = \frac{y_1}{x_1 + y_1} E\pi_{D2}^{SEO}(x_2^*, y_2^*) - y_1 = \frac{y_1}{x_1 + y_1} \frac{1}{4} v - y_1 \quad \dots(3-11)$$

Player D chooses  $y_1$  to maximize his expected payoff.

$$\text{Max}_{y_1} \frac{y_1}{x_1 + y_1} \frac{1}{4} v - y_1 \quad \dots(3-12)$$

F.O.C. of (3-12) w.r.t.  $y_1$  is expressed as

$$\frac{x_1}{(x_1 + y_1)^2} \frac{1}{4} v - 1 = 0 \quad \dots(3-13)$$

Solving a simultaneous equation of (3-10) and (3-13) for  $x_1$  and  $y_1$  yields

$$x_1^* = \frac{3}{8} v \quad \dots(3-14)$$

and

$$y_1^* = \frac{3}{64} v \quad \dots(3-15)$$

The equilibrium expected payoffs of player A is calculated by inserting (3-14) and (3-15) into (3-8).

$$E\pi_A^{SEO}(x_1^*, y_1^*) = \frac{3}{4} v - \frac{3}{64} v + \frac{1}{44} v = \frac{43}{64} v \quad \dots(3-16)$$

$$E\pi_D^{SEO}(x_1^*, y_1^*) = \frac{1}{44} v - \frac{3}{64} v = \frac{1}{84} v \quad \dots(3-17)$$

#### 4.1.1.2 The simultaneous attack pattern

Player A attacks both battlefields 1 and 2 in period 1 given she chooses the simultaneous attack pattern in stage 1. This is a special case analyzed by Clark and Konrad (2007) and the equilibrium is characterized by proposition 1 in Clark and Konrad (2007). In the following proposition, we denote player A's resource invested in battlefield  $i \in \{1, 2\}$  as  $w_i$  and player D's resource allocation to battlefield  $i \in \{1, 2\}$  as  $z_i$  to distinguish them from resource investments in a game with the sequential attack pattern.

Proposition 1. (Clark and Konrad (2007))

$$\text{Player A chooses } w_1 = w_2 = \frac{1}{8} v \quad \dots(3-18)$$

$$\text{and her equilibrium expected payoff is } E\pi_A^{SIM}(w, z) = \frac{3}{4} v - 2 \times \frac{1}{8} v - \frac{1}{2} v \quad \dots(3-19)$$

where  $w = \{w_1, w_2\}$  and  $z = \{z_1, z_2\}$ .

$$\text{Player D chooses } z_1 = z_2 = \frac{1}{8} v \quad \dots(3-20)$$

$$\text{And his equilibrium expected payoff is } E\pi_D^{SIM}(w, z) = \frac{1}{4} v - 2 \times \frac{1}{8} v = 0 \quad \dots(3-21)$$

#### 4.1.1.3 Stage 1 problem.

Based on the results obtained in 4.1.1.1 and 4.1.1.2, we can consider player A's problem in stage 1. Player A compares her equilibrium expected payoff from the sequential attack pattern and that from the simultaneous attack pattern and chooses the one which yields her a higher expected payoff. Namely, she compares (3-16) and (3-19). Then, (3-16) is obviously larger than (3-19). Therefore, she chooses the sequential attack pattern at equilibrium.

Interestingly enough, the sequential attack pattern brings higher expected payoff than the simultaneous attack pattern also to player D. We see this by comparing (3-17) and (3-21). The results are summarized in proposition 2, corollary 1, and corollary 2.

Proposition 2.

Suppose  $n \geq 2$ . Then, the subgame perfect Nash equilibrium is characterized as follows. Player A chooses the sequential attack pattern and attacks one battlefield at a time. She invests  $x_1^* = \frac{5}{64}v$  in period 1 and  $x_2^* = \frac{1}{4}v$  in period 2. Her equilibrium expected payoff is  $E\pi_A^{SEQ}(x^*, y^*) = \frac{43}{64}v$ . Player D invests  $y_1^* = \frac{3}{64}v$  in period 1 and in  $y_2^* = \frac{1}{4}v$  in period 2. His equilibrium expected payoff is  $E\pi_D^{SEQ}(x^*, y^*) = \frac{1}{64}v$ .

Collorary1.

The equilibrium expected payoffs of player A and player D are both higher in the sequential attack pattern than in the simultaneous attack pattern. Proposition 2 tells us that the simultaneous attacking pattern analyzed by Clark and Konrad (2007) is not optimal strategy for player A once we endogenize her attack patterns. Deck and Sheremeta (2011) do the similar exercise for a game with an auction CSF, characterize the subgame perfect Nash equilibrium, and conclude that the expected payoffs are the same for both player A and player D in a game with the sequential attack pattern and a game with the simultaneous attack pattern. Although their model deal with  $n \geq 2$ , they focus on two attack patterns of  $(1,1, \dots, 1)$  and  $(n, 0, 0, \dots, 0)$  in our notation and do not fully endogenize attack patterns. Baba (2009) fully endogenizes attack pattern and shows that the complete sequential attack pattern of  $(1,1, \dots, 1)$  is the optimal for player A up to  $n \leq 10$ .

Next, we compare the equilibrium total resource investment of player A and player D in the sequential attack pattern and in the simultaneous attack pattern. For player A, her equilibrium expected total resource investment is obtained by summing up (3-5) multiplied by  $\frac{1}{4}$  and (3-14). Note that  $\frac{1}{4}$  is the probability player A loses in the first period battle and the game continues to period 2.

$$E_A^{SEQ}(x^*, y^*) = \frac{23}{64}v \quad \dots(3-22)$$

Similarly, player D's equilibrium total resource investment is obtained by summing up (3-5) multiplied by  $\frac{1}{4}$  and (3-15).

$$E_D^{SEQ}(x^*, y^*) = \frac{15}{64}v \quad \dots(3-23)$$

On the other hand, player A's equilibrium total resource investment in the simultaneous attack pattern is calculated from (3-18).

$$E_A^{SIM}E_A^{SIM}(w^*, z^*) = \frac{1}{4}v \quad \dots(3-24)$$

Similarly, player D's equilibrium total resource investment in the simultaneous attack pattern is calculated from (3-20).

$$E_D^{SIM}E_D^{SIM}E_D^{SIM}(w^*, z^*) = \frac{1}{4}v \quad \dots(3-25)$$

From (3-22), (3-23), (3-24), and (3-25), we conclude that both player A's and player D's equilibrium resource investments are higher in the sequential attack pattern than in the simultaneous attack pattern. The following collorary summarizes the result.

Collorary 2.

Both player A's and player D's equilibrium total resource investments are higher in the sequential attack pattern than in the simultaneous attack pattern.

4.1.2 General case ( $n \geq 3$ ).

Baba (2009) analyzes general case of  $n \geq 3$ . She mathematically characterizes the subgame perfect Nash equilibrium of the two stage game when  $n \geq 3$ . Then, she shows that it suffices to consider attack patterns which differ in the number of battlefields attacked in period 1. Therefore, we only need to examine  $n$  attack patterns of  $(n_1, 1, 1, \dots, 1, 0, \dots, 0), 1 \leq n_1 \leq n$  and  $n_2 = \dots = n_{n-1} = 1$ . Namely, player A attacks  $n_1$  battlefields in period 1 and attacks one battlefield at a time from period 2 on as long as there remain battlefields not yet being attacked. She mathematically characterizes the stage 2 equilibrium resource investment given stage 1 attack pattern for any finite number of battlefields, and uses simulation to show that player A chooses the complete sequential attack pattern in stage 1 when  $n \leq 10$ .

4.2 The results of experiments

This subsection summarizes the results obtained by experiments in 3.2.

In a game with the sequential attack pattern, the theory predicts player A invests  $\frac{43}{64} \approx 2.81$  experimental yen in period 1 and 5 experimental yen in period 2 and player D invests  $\frac{15}{64} \approx 0.94$  experimental yen in period 1 and 5 experimental yen in period 2. Accordingly, the winning probability of player A in period 1 is 0.75 and the winning probability of player D in period 1 is 0.25. The winning probability of player A in period 2 is 0.5 and the winning probability of player D in period 2 is 0.5. Therefore, player A's winning probability of a game is  $0.75 + 0.25 \times 0.5 = 0.875$  and player D's winning probability of a game is  $0.25 \times 0.5 = 0.125$ . Our experimental data show that player A invests 10.50 in period 1 and 7.36 in period 2 on average. Player D invests 8.75 in period 1 and 6.11

in period 2 on average. 0.61 is the average winning probability of player A in period 1, 0.46 in period 2, and 0.76 for an entire game. Although the theoretical prediction tells us that the variances of invested resources of player A and D are both 0, our data show that player A's investment distributes between 1 and 20 in period 1 and between 4 and 18 in period 2. Player D's investment distributes between 0 and 17 in period 1 and between 3 and 15 in period 2. Player D took a surrender strategy 11% of the time in period 1 where he chose zero investment in period 1. In a game with the simultaneous attack pattern, the theory predicts both player A and player D invest 2.5 experimental yen on each battlefield. Therefore, player A's winning probability of a game is 0.75 and player D's winning probability of a game is 0.25. Our experimental data show that player A invests 8.4 and Player D invests 7.4 in each battlefield on average. Let us compare the subjects' behavior with the theoretical predictions. Firstly, these overexpenditures both in a sequential and in a simultaneous games are consistent to the previous works of experiments on contests (Deck and Sheremeta (2011), Gneezy and Smorodinsky. (2006), Kovenock et al. (2010), Potters et al. (1998), and Sheremeta (2010)). Overexpenditure of both players are explained to be mistakes made by the subjects and non-monetary value of winning placed by the subjects. Secondly, the average total amount of resource investment in a game with the sequential attack pattern is  $10.5 \mid 0.25 \times 7.36 \mid 8.75 \mid 0.25 \times 6.11 \quad 12.34 \mid 10.28 \quad 23.14$ . Similarly, player A and player D invest  $7.43 \mid 8.42 \quad 15.85$  in a game with the simultaneous attack pattern. Hence, the subjects invest more in a sequential attack game than in a simultaneous attack game, which is consistent to the theoretical results. Thirdly, the winning probability of player A for an entire game was 72% and this is close to the theoretical prediction of 75%. Fourthly, player A took a guerrilla warfare strategy where she attacked only one battlefield 30% of the time. Player D took a surrender strategy 25% of the time where he invests nothing at all to any battlefield. These are pointed out by Kovenock et al. (2010) in a game with four battlefields, but our percentages are smaller than theirs because there are only two battlefields in our experiments. Fifthly, both player and player D invested more in period 1 than they did in period 2 in a sequential game and it contradicts to the theoretical result.

## 5 Conclusion

We consider a symmetric, non-constant sum, Colonel Blotto game with two battlefields. We extend the model proposed by Clark and Konrad (2007) and endogenize an attack pattern of player A. Our game has two stages. In the first stage, player A chooses an attack pattern. In the second stage, player A and player D simultaneously invest their resources in multiple battlefields subject to the attack pattern chosen in period 1. Then, player A takes the sequential attack pattern over the simultaneous attack pattern analyzed in Clark and Konrad (2007). Baba (2009) uses simulation and shows that player A takes a complete sequential attack pattern and attacks one battlefield at a time in equilibrium. Baba (2011a) conducts experiments based on the model analyzed in section 3-1 in this paper and finds that theoretical predictions are not supported by the experimental data.

Lastly, Baba (2008) and Baba (2011b) introduce new elements to contests. Baba (2008) analyzes contests with multiple contest designers. The prizes are heterogeneous and the timing to hold contests is endogenized. Then, a contest designer whose prize value is higher than her rival<sup>1</sup> holds a contest earlier in the equilibrium. Baba (2011b) carries out experiments and compares the sequential and simultaneous move of contestants in the classical Tullock type contest, which is a special case of Morgan (2003).

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<sup>1</sup> Female pronouns are used for contest designers and male pronouns are used for contestants without any intension of sexual discrimination.

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## INDIVIDUAL CHARACTERISTICS AND IMPULSE BUYING TENDENCY:

### ALL IS NOT IN THE IMPULSIVENESS...

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Buying is a routine part of everyday life. The impulsive purchase is a type of purchase that is more and more widespread in our western society. Impulsive buying has been described as making unplanned and sudden purchases that are accompanied by a powerful urge and feeling of pleasure and excitement (Rook, 1987). Everyone has impulsive behaviors occasionally.

Impulse buying is often triggered in and by a specific shopping environment (Betty & Ferrell, 1998). Many researches (e.g. Punj, 2010) have attempted to determine if people who frequently engage in impulsive buying behavior have some common personality traits. Many of them underline the influence of impulsivity and extraversion on this buying behavior (e.g. Verplanken and Herabadi, 2001). Experiencing positive or negative affects has been also identified as a variable that strongly influences impulse purchasing. Experiencing positive affects cause people to produce behaviors aimed at maintaining a positive mood state (Gardner and Rook, 1993). The effects of negative affects on behavior are unclear.

The aim of this research is trying to investigate the relationship between general impulse buying tendency and impulsivity, extraversion, positive affects and negative affects.

Data were collected through a self-report survey. 205 people take part to this survey. The survey instrument consisted of items designed to measure (1) personality traits through some specific facets of the BIG5 (Costa & McCrae, 1992) (2) The tendency to engage in impulse buying assess by the “buying impulsiveness scale” developed by Rook & Fisher (1995), respondents rated their level of agreement with each of these 9-items on a 5 points scale, and (3) shopping excitement.

According to the results presents in the literature, results show a positive relation between impulsive buying and impulsivity but more interesting, results show a correlation between negative affect and impulsive buying. Furthermore it seems that a moderator effect could be underline. Indeed, impulsive buying behavior is linked to shopping excitement.

This research, although a classical approach of this concept, is interesting because it put in evidence the moderator role of shopping excitement. Furthermore, it underlines correlation between personality traits, positive and negative affect and impulsive buying behavior.

*Keywords: overconsumption, individual differences, consumer buying behavior, impulse buying, impulsivity, personality traits*

## ROLE OF FEAR IN STOCK INVESTMENTS

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### Abstract

The main aim of our research was to examine the role of emotions (specifically: fear from stock market investments) on the stock portfolio selection and actual performance of selected portfolios. Fear as a negative emotion should lead to lower diversification, home bias preference and lower returns. Furthermore, we examined also the role of other factors behind the portfolio selection and its returns: sex, education, experience, theoretical knowledge, attitude towards risk, social preferences, belief in luck and intuition.

Hypothesis 1: Fear influences investment returns (controlled for other factors).

Hypothesis 2: Fear and other factors influence the level of diversification.

Hypothesis 3: Preferences for Czech (domestic) and foreign stocks are influenced by fear (controlled for other factors).

We created an Internet experimental trading platform similar to the stock trading platform of the biggest Czech broker. 178 participants chose their portfolios by June 6, 2011 and filled in the questionnaires. They could choose from 40 different stocks from 4 countries: Czech Republic, Germany, US and Poland. Each country was represented by 10 companies that are included in the main stock indices. Investors knew before the portfolio selection that their portfolios would be examined after 1 and 6 months. After both periods three winners were given a financial reward.

The collected data were analyzed by the linear regression. We checked for the multicollinearity problem with negative results. In first hypothesis the actual returns after 1 and 6 months were regressed on fear and other factors. In second hypothesis the Herfindahl indices of diversification computed for individual portfolios were regressed on the selected factors. In third hypothesis the aggregate portfolio weights of stocks from individual countries were regressed on the selected factors.

Returns on 6 months were significantly negatively influenced by fear of investors. Returns after 1 month were not influenced by fear. We did not find any evidence on the impact of fear on the level of diversification. Afraid investors invested more in German and less in US stocks.

The results after 6 months indicate that investors that revealed fear of stock market investments were less likely to win in future. However, this results need to be confirmed by deeper studies.

One possible explanation of this phenomenon is that fear can lower ability to predict future stock market movements. Other possible explanation that is consistent with quantum psychology and some spiritual (New Age) theories is that fear as a negative emotion may drive away the investment success.

*Keywords: investments, financial forecasting*

## 1 Introduction

In this paper we present results of research that strives for bringing deeper insight in what is behind the investment decision making on stock markets. In particular, we investigate the role of emotions behind the stock investments. We explore how the fear associated with trading on stock markets influences returns from the investments and composition of the chosen portfolios.

Emotions connected with stock investments and attitude towards the stock market can have impact on the investment returns. The fear of incurring losses can lead to the situation, where investor is starting to behave

irrationally and is disregarding predetermined investment strategy. Investors that are making their decisions under the influence of negative emotions such as fear are expected to be less successful in terms of returns of their portfolios. We also expect that fear prior to the investment decisions can influence the investment decision in terms of country preferences and diversification. In particular, we expect that familiar stocks would be selected much more in state of fear (negative emotion). We test if emotions affect the magnitude of portfolio diversification.

To get the best data for tests of our hypothesis we created a Czech internet platform in which 178 participants chose their portfolios from 40 different stocks that are traded on real stock market. The selected portfolios were evaluated after 1 and 6 months according to actual real stock market movements of particular stock. The selected portfolios and their performances were tested on fear as an explanatory variable. Apart from the factor of fear we tried to identify other factors that were behind the investment decisions and could influence the performance of the portfolios. Our main research question is: "Does fear influences stock investments? "

## 2 Literature Survey

How do the investors make their decision about the stock portfolio selection? From the perspective of traditional finance stemming from the work of Markowitz (1952) they should maximize their expected utility functions according to their levels of risk aversion. Levy & Sarnat (1970) were first to point to the fact that that, according to the widely accepted CAPM model, investors should diversify internationally in much higher extent. Investors tend to prefer investments into the stocks of their country instead of international diversification in broader scale. Since then, the resulting home bias puzzle was shown by many studies, Lewis (1999) and Oehler, Rumber & Wendt (2008), for example.

In Behavioral economics there is profound evidence that irrationalities considerably affect behavior of individuals and their decision making. Barberis & Thaler (2002) made first survey of behavioral explanations of "irrational" investment decisions. Gigerenzer & Gaissmaier (2011) wrote about the heuristics and not "rational" calculations are behind most of individual decisions. In psychology big five traits were defined: openness, conscientiousness, extraversion, agreeableness and neuroticism (Costa & McCrae, 1992). These personality traits can influence the investment behavior, but the tests for personality traits were not included into our experiment due to time complexity limits.

Böhm & Brun (2008) provided a detailed survey of literature about the research of the role of intuition and affect on risk perception and decision making. The study of affect and emotion in decision making started out with regret and disappointment theories within an economic framework (Bell, 1982; Loomes, & Sugden, 1982) and Johnsen and Tversky's seminal work on affect in risk perception (Johnsen & Tversky, 1983). Mellers, Schwartz & Ritov (1999) developed a theory according to which people are assumed to choose the option with greater subjective expected pleasure.

Now, the issue of affect and emotion in decision making can even be regarded as a "hot" topic (Peters, Västfjäll, Gärling, & Slovic, 2006). Matzler & Mueller (2011) present in their recent paper that there is a relationship between personality traits (extraversion, neuroticism, openness to experience or intellect, agreeableness and conscientiousness) and the observed behavior. The psychological factors can influence the investment decision making process.

Our research is linked most directly with the following three papers. Firstly, In the paper from Bollen, Mao & Zeng (2011) authors claim that the decision made on individual basis are affected by the mood state of the society. They analyzed with POMS<sup>1</sup> the large-scale twitter posts and based on it find out correlation between predictability DJIA closing prices. Secondly, Zaleskiewicz (2011) provides evidence about the ability to predict future stock movements during the financial crisis. He finds evidence that the experienced investors made slightly better predictions of the movements of the stock market than the lay-out investors. Thirdly, Cao, Han, Hirshleifer & Zhang (2011) in their paper model fear of unfamiliar events as a result of individual inclination to focus on the worst-case scenarios. Their model predicts that under uncertainty investors would diversify less and reveal home biasness.

## 3 Objectives and Methodology

### 3.1 Fear and other factors

We test several hypotheses concerning the emotional factors behind the investment decisions of experimental investors. In the questionnaires we inquired whether the stock investment is subjectively viewed as something that evokes emotions of fear<sup>2</sup>. According to study by Karagozoglu & Riedl (2010), for example, several types of emotions are highly correlated. People distinguish mainly between two emotional states: positive (joy-happiness) and negative (anger-fear). We expected that negative emotions are best represented by the emotion of fear. However it was

<sup>1</sup> POMS – Profile of mood states - psychological rating scale – used to assess transient, distinct mood states.

<sup>2</sup> If the respondent answer yes for question I-18 they are considered to show positive emotions prior to the investment decision. If they answered yes to question I-19 they are considered to show negative emotion towards stock investments (see Appendix A).

difficult to create a question that would indicate a positive attitude towards stock investments. Therefore our main hypothesis about the impact of positive attitude was reversed and we test the impact of fear.

Even though the focus of the experiment was to look into fear as explanatory factor of investment decision, we understand that there can be several other potential influencers. We selected factors that could possibly impact decision. Out of all investigated factors for this research we have chosen emotion, specifically represented by fear. Other investigated factors will be used for different research paper.

Other factors that we assumed to influence investment decision making<sup>1</sup>:

- **Sex:** Male may invest differently than women. The study of Estes & Hosseini (1988) provides evidence that women had significantly lower confidence in an investment task than men, after controlling for all other relevant variables and characteristics including the amount of the investment decision itself.
- **Czech nationality:** Czech investors can prefer investments into Czech equities (Home Bias)
- **Study of economics:** Education can make investors more rational in the sense that they know the basic financial theories
- **Knowledge of stock market:** high self perceived grade level of financial knowledge can make investors overconfident
- **Experience with investments on stock market:** According to Nicolasi, Penga Zhu (2009) investors learn to invest based on their trading experience.
- **Belief in luck:** If investor believes that the stock investments depend mainly on luck and not on knowledge or experience, he should not put too much effort in rational evaluation.
- **Social identity:** This factor can lead to the preference for Czech stocks based on the social preference for Czech companies. This factor is closely linked to home bias preferences that decrease the level of portfolio diversification.
- **Attitude towards risk:** Risk averse investors invest in stocks with lower variance
- **Recommendation of brokers:** Harvey, Rattray, Utans & Yasser (2009) find that a strategy based on recommendation of brokers could be in top quartile of all UK mutual funds trading with European stocks.
- **Recommendation of friends:** Trust in someone you know more than in someone you don't know.
- **Intuition:** Investor does belief in irrational possibility to win on the market.

### 3.2 Hypothesis 1: Investment returns are influenced by fear

As mentioned above in the survey of literature there are studies that provide evidence that investors are influenced also by their emotions and their decision making isn't based only on pure rational calculus. If emotional states have impact on the decision we should see significant impact on returns from the investments.

Firstly, we analyzed our experimental data by the method of OLS linear regression<sup>2</sup>. Prior to the OLS regression we investigated the eventual problem of multicollinearity. These mainly because in our analysis we used in majority binary variables obtained as answers to yes/no questions. According to Farrar-Glauber test (1967) we computed the determinant of the correlation matrix of explanatory variables. In case that we have a problem of multicollinearity the determinant should be close to 0. There is no test if this value is low enough to indicate for multicollinearity. We therefore ran also second test for multicollinearity, which was based on comparing the coefficients of  $R^2$  from regressions where one explanatory variable becomes the explained variable<sup>3</sup>. If we have  $j$  explanatory variables, we get  $j$  coefficients of  $R^2$ . If there is at least one coefficient  $R^2$  that is close to 1 it signals for multicollinearity. Empirical rule is to compare  $R^2$  of original regression with  $R_j^2$  of auxiliary regressions. Multicollinearity is indicated if  $R^2 \leq R_j^2$  for at least one  $j$  (explanatory variable).

We tested two subhypothesis of Hypothesis 1. In subhypotheses 1a and 1b we tested if the emotions influenced the actual (ex post) performance of their portfolio. In 1a we took the returns after 1 month and in 1b we used the returns after 6 months. If the impact of emotions was significant it would be interpreted, that the emotions influence the ability to predict the future movements in stock prices. In both hypotheses we expected that fear should lead to lower returns. In these hypotheses we could also see if the investment experience had an effect on predictability of investments as was done in study by Zaleskiewicz (2011) because we also added the investment experience as an explanatory variable.

<sup>1</sup>The exact formulation of the questions that were source for the following analysis can be found in bold letter in Appendix A and B.

<sup>2</sup>Econometrical analysis was done in SPSS 16.0.

<sup>3</sup>The original regression:  $Y = \alpha + \beta_1 X_1 + \dots + \beta_k X_k$ , where  $Y$  is the explained variable (returns, index of diversification, portfolio weight of specific country) and  $k$  is number of explanatory variables  $X$ .

The regression to identify the multicollinearity:  $X_j = \alpha + \beta_1 X_1 + \dots + \beta_{k-1} X_{k-1}$

### 3.3 Hypothesis 2: Fear influences diversification

It is interesting to see if the investors prefer to pick only few stocks or diversify it in a vast pool of stocks. To measure the level of diversification we calculated the Herfindahl index similarly to the study of (Woerheide & Persson, 1993) as a sum of squares of the portfolio weights. If investor choose 100 % of only 1 stock, the value of the index will be 10 000. If he selects 20 % of first stock and 80 % of second stock the value of the index will be 6 800. The closer the index is to 10 000 the less the investor diversify among different stocks. Our hypothesis was that emotion of fear should drive investors to diversify more (lower levels of diversification index). As a method we used linear regression (OLS).

### 3.4 Hypothesis 3: Fear drives preferences for Czech stocks

We tested if there is a preference of the investor for stocks from the Czech Republic. We computed the sum of weights of all individual Czech stocks in aggregate portfolio. The sum of weights was 100. Based on study of Cao, Han, Hirshleifer & Zhang (2011) we expected to find a home biased preference of Czech investors who are afraid. The emotion of fear should lead to preference for familiar companies. We used linear regression (OLS).

### 3.5 Hypothesis 4: Fear drives preferences for geographically closer companies

We compute a variable of geographically weighted portfolios where Czech stocks in portfolio would have a weight equal to zero and US stocks would have a weight of 1 as the geographically furthest country<sup>1</sup>. The computed variable looks as follows:

$$GEOportfolio = 0,42 * GERMAN + 0,57 * POLISH + US$$

We regress this variable on fear and other factors (OLS). Fear should lead to lower values of this variable because the investors who invest under the emotion of fear should prefer investments in companies that are geographically closer.

## 4 Design of the experiment

We devised an experiment to investigate the investment preferences of an experimental group of investors. The task was to invest virtual 100 000 Czech crowns into 40 different stocks<sup>2</sup>. These virtual investments were valid from June 6, 2011 and were evaluated in two rounds: after 1 and 6 months<sup>3</sup>. After each round the investment portfolios were evaluated based on the real performance of the selected stocks on the stock markets and three best portfolios won the prizes<sup>4</sup>.

The experiment was conducted via web based platform<sup>5</sup>, which was created specifically for experimental purposes. Platform simulated an environment of the online brokerage platforms in the Czech Republic. Platform was available in the Czech language only. For each of the 40 stocks we provided with the following types of information<sup>6</sup>: name of company with basic information about the company, industry sector, total sales, net profits, earnings per share, chart with historical prices<sup>7</sup>, mean monthly return and monthly volatility (standard deviation), Alfa and Beta from CAPM

<sup>1</sup>We got the formula for the distance as follows. First, we "guessed" the distance to be  $D=0*Czech+0.5*German + 0.5*Polish + 1*US$  where Czech, German, Polish and US are weights of stocks of given "nationalities" in a portfolio and regressed D against the explanatory variables. Having got significant results, we run the regression so that the constants multiplying the weights were estimated instead of their postulation. In particular, we regressed US against  $(-g)*German + (-p)*Polish +$  explanatory variables. As a result of the estimation, we obtained the distance as  $D=0.42*German + 0.57*Polish + US$ , i.e. the estimated values came out quite close to our guess. This means that Germany is for investors in the Czech Republic closest. US is twice as far as Poland. We cannot take just the ratio of geographical distances because the countries are „closer“ in terms of perceived distance. It may take 4 hours by car from Prague to Berlin or 11 hours by plane to get to New York. Germany is closer than Poland which can be also measured by the travelling time or the distance between capital cities we would get a distance 270 km for Germany and 510 km for Poland.

<sup>2</sup>The 40 stocks were chosen from 4 stock indices: PX (Czech Republic), DAX (Germany), WIG (Poland) and DOW JONES (USA). This selection was based on the offers of the main Czech online brokerage firm, so we assured that the same options have also the real small Czech investors.

<sup>3</sup>These two investment periods should help to avoid only speculative investments. The combined time horizon ensured that the experimental investors should take into account really short and longer time horizons. We could not select longer time horizon (1 and more years), because of the limited time horizon of the researchers.

<sup>4</sup>The winners got these awards in both phases: 1. 5 000 CZK (200 €), 2. 3 000 CZK (120 €), 3. 2 000 CZK (80 €). Each participant could theoretically win in both phases, so the maximum attainable reward was 400 €.

<sup>5</sup>[www.investice-akcie.cz](http://www.investice-akcie.cz)

<sup>6</sup>We gathered the information from various internet sources: [www.fio.cz](http://www.fio.cz), [finance.yahoo.com](http://finance.yahoo.com), [www.bcppp.cz](http://www.bcppp.cz).

<sup>7</sup>For last ten years if the data was available. Some stocks started to be traded (or be part of the stock index) after year 2001. For these stocks we provide with the longest data set we found.

model (Markowitz, 1999)<sup>1</sup>, macroeconomic information, correlation of the stock indices and the recommendation of the brokers. The participants were allowed to search additional information about the companies on other web sites if they needed more information. Before we ran the experiment we used several beta testers to check for clarity of the instructions and if everything worked well.

The participants of the experiment were mostly selected from the group registered on [www.experiment.eu](http://www.experiment.eu) and other investment oriented Internet platforms (mostly university students that were willing to participate on experiments). We also used a method of poster propagation at the universities in Prague. Total number of participants was 178 of which 88 % were university students. 72 % of participants were male.

The experiment was conducted in three runs. In first run we gathered basic information from the participants through a questionnaire (see Appendix A for details). Participants were asked for demographical information and information about their overall attitude towards investing and investment. In the second run participants had to select portfolio of stocks according to the information provided to them. In third run of the experiment we gathered the information about the investment decisions the participants had made in the second run (see Appendix B for details).

To avoid multiple submissions, the participants were asked also for their bank account numbers. To these bank accounts we sent the money rewards of the best 3 experimental investors after both (1 and 6 months) investment phases.

## 5 Results

### 5.1 Experimental investments portfolios

Overall data of 178 participants revealed following information about investment decisions and beliefs of experimental investors:

- 1) Each of 40 stocks was selected at least by one participant
- 2) Most favorite stock was the stock of CEZ<sup>2</sup> (on average: 8,4 %)
- 3) Average portfolio: 25,7% Czech, 28,5% German, 16,1 % Polish, 29,6% US
- 4) Preferences of industry sectors: 1. Energy (34 %), 2. Technology (28%), 3. Financial Sector (14%)
- 5) Most of the participants (75 %) believed that the precondition of being successful on stock market was mainly luck and not knowledge nor experience.

### 5.2 Results of the multicollinearity tests<sup>3</sup>

Determinant of the correlation matrix was 0,54. According to the Farar- Glauber test we could not say if this was far enough from 0 which would be a case of perfect multicolliearity.  $R_j^2$  of auxiliary regressions were all below 0,18. This result was compared with  $R^2$  of the regressions and was discussed in the following sections.

### 5.3 Results of hypothesis 1

The results of linear regression testing the subhypothesis 1a are in the following table. The returns were computed as a 1 month change so that 0,01 indicates a 1 % increase in portfolio value.  $R^2=0,209$  which is higher than 0,18 did not indicate possible problems with multicollinearity. ANOVA F test of this model indicated p-value of 0,001.

Variable:	Beta	St. Error	P-value
Constant	0,003	0,013	0,827
Fear	0,002	0,004	0,531
Sex	-0,006	0,004	0,161
Age	0	0	0,556
Czech nationality	-0,008	0,005	0,084
Study of economics	-0,006	0,004	0,161
Knowledge of stock market	0,003	0,002	0,155
Experience on stock market	-0,012*	0,006	0,043

<sup>1</sup>CAPM model: returns of the individual stock= alfa + beta (returns of the market (index) – risk free rate). Returns of the indexes DJI, WIG 20, PX and DAX were found on [finance.yahoo.com](http://finance.yahoo.com). As a risk free assets were taken t-bill in USA ([www.federalreserve.gov](http://www.federalreserve.gov)), EURIBOR in Germany ([www.euribor-rates.eu](http://www.euribor-rates.eu)), PRIBOR in Czech Republic ([www.cnb.cz](http://www.cnb.cz)). All risk free rates were taken as 3 M (because it was closest to the average of 1 and 6 month investment horizon).

<sup>2</sup> Czech energy company, the stock with highest total market capitalization on Czech stock market ([www.cez.cz](http://www.cez.cz)).

<sup>3</sup> Correlation matrix and  $R^2$  coefficients of auxiliary regressions can be found in Appendix C.

Belief in luck	0,005	0,005	0,246
Social identity	-0,002	0,006	0,709
Attitude towards risk	0,003	0,001	0,053
Recommendation of brokers	0,01**	0,004	0,009
Recommendation of friends	-0,024	0,012	0,044
Intuition	0,004	0,005	0,396

Table 1: Coefficients of linear regression of returns after 1 month

Source: Analysis based on data from questionnaires. \* indicates results that are significant on 95 % level. \*\* indicates results that are significant on 99 % level.

As we can see in the Table 1 the most important variable was the investment experience. The participants who indicated that they had already invested on stock market earned 1,2 % less in one month (14 % p.a.). On the other hand, those who trusted in recommendation of brokers earned almost 1 % more (12% p.a.). After 1 month we could not see any effect of fear on profitability of participants.

The results of linear regression testing the subhypothesis 1b are in the following table.  $R^2=0,215$  which is higher than 0,18 did not indicate possible problems with multicollinearity. ANOVA F test of this model indicated p-value of 0,000.

Variable:	Beta	St. Error	P-value
Constant	-0,08	0,069	0,251
Fear	-0,062**	0,021	0,003
Sex	-0,04	0,023	0,082
Age	0	0,001	0,881
Czech nationality	-0,023	0,026	0,387
Study of economics	-0,014	0,023	0,532
Knowledge of stock market	0,003	0,01	0,771
Experience on stock market	-0,108**	0,033	0,001
Belief in luck	-0,004	0,025	0,86
Social identity	-0,023	0,033	0,488
Attitude towards risk	0,006	0,007	0,397
Recommendation of brokers	0,018	0,02	0,375
Recommendation of friends	-0,083	0,064	0,197
Intuition	0,077**	0,026	0,003

Table 2: Coefficients of linear regression of returns after 6 months

Source: Analysis based on data from questionnaires. \*\* indicates results that are significant on 99 % level.

Investment experience was again a significant negative factor. Participants with experience earned 10,8 % less (-21,6 % p.a.). These results corresponded with our hypothesis. Those under the influence of fear earned 6,2 % less (12,4 % p.a.). This result was significant on 99 % level. Further we discovered that intuition can increase the returns by 7,7 % (15,4 % p.a.).

The findings in both periods indicated that experience with stock investment do not lead to higher returns. Quite the opposite! "Experts" earned less than "lay-out" investors.

## 5.4 Results of hypothesis 2

The  $R^2=0,094$  of linear regression testing the hypothesis 2 was lower than 0,18 and indicated possible problems with multicollinearity. Furthermore, the ANOVA F test of this model indicated p-value of 0,284, so we could not make any conclusions about factors that were behind motivation to diversify.

### 5.5 Results of hypothesis 3

The results of linear regression testing the hypothesis 3 are in the following table.  $R^2=0,258$  which was higher than 0,18 did not indicate possible problems with multicollinearity. ANOVA F test of this model indicated p-value of 0,000.

We did not find evidence corresponding to our main hypothesis, because fear did not have any significant effect. However, we found some interesting evidence about those participants who preferred investments in Czech stocks. We saw that the most important factor to select Czech stocks was the experience on stock market. The participants who already invested on stock market tend to prefer Czech stocks (on average they invested 28,4 % more in Czech stocks). This could be due to the fact that they had already gathered some historical knowledge about these stocks and were much more familiar with them than with stocks in other countries. This indicates the familiarity bias. Furthermore, we found out that Czech investors (10% more) and especially those that indicated that they invest into Czech firms to support Czech companies invested much more in Czech stocks (additional 14 % more). These results can be interpreted as an inclination for home bias preferences, which are not due to experience, which is absorbed in the previous main explanatory factor. We can also see that people who believe in the recommendations of brokers invest less in Czech stocks. To sum up results for preferences in Czech stocks, we did not find a significant role of fear, but role of experience, familiarity and home biasness. The most preferred stock was CEZ, which is probably the most known Czech company.

Variable:	Beta	St. Error	P-value
Constant	17,236	12,783	0,18
Fear	4,061	3,826	0,29
Sex	4,425	4,256	0,3
Age	-0,073	0,113	0,517
Czech nationality	9,918*	4,837	0,042
Study of economics	2,052	4,181	0,624
Knowledge of stock market	-0,839	1,921	0,663
Experience on stock market	28,402**	6,025	0
Belief in luck	-5,029	4,59	0,275
Social identity	14,094*	6,11	0,022
Attitude towards risk	0,8	1,32	0,546
Recommendation of brokers	-8,305	3,656	0,025
Recommendation of friends	-2,911	11,888	0,807
Intuition	-6,714	4,814	0,165

Table 3: Coefficients of linear regression of Czech stocks in portfolio

Source: Analysis based on data from questionnaires. \* indicates results that are significant on 95 % level. \*\* indicate results that are significant on 99 % level.

### 5.6 Results of hypothesis 4

The results of linear regression testing the hypothesis 3 are in the following table.  $R^2=0,216$  which was higher than 0,18 did not indicate possible problems with multicollinearity. ANOVA F test of this model indicated p-value of 0,000.

Variable:	Beta	St. Error	P-value
Constant	35,2**	10,538	0,001
Fear	-7,3*	3,373	0,032
Sex	-0,384	3,728	0,918
Age	0,091	0,101	0,368
Czech nationality	-7,806	4,158	0,062
Study of economics	5,725	3,531	0,107
Knowledge of stock market	1,401	1,612	0,386
Experience on stock market	-18,5**	5,242	0,001

Belief in luck	1,121	4,062	0,783
Social identity	4,415	3,841	0,252
Attitude towards risk	0,361	1,149	0,754
Recommendation of brokers	6,276	3,225	0,053
Recommendation of friends	-11,247	8,802	0,203
Intuition	9,8*	4,196	0,02

Table 4: Coefficients of linear regression of geographically weighted portfolio

Source: Analysis based on data from questionnaires. \* indicates results that are significant on 95 % level. \*\* indicate results that are significant on 99 % level.

The data reveals that we can confirm our hypothesis that those investors who were afraid of stock market investments invested significantly less in stocks of distant companies. Also those who have experience with trading on stock market invested more into closer companies. On the other hand, those who have faith in intuition invested more in distant companies.

## 5.7 Additional findings

We examined also the correlation of fear with other characteristics of the aggregate portfolios data. We did not find any significant correlation between sector preference and fear. However, we found a significant (on 99 % level) positive correlation between fear and selection of German stocks. Furthermore, we found a significant (on 95 % level) negative correlation between fear and selection of US stocks. This we can interpret as an emotional memory of the financial crisis- fear was associated with US stocks. On the other hand, those who were afraid perceived German stocks as a safe haven.

We also tested if the investors are influenced by the trend of last quarter. We ran a Spearman's correlation between the trend from last three monthly returns with the weight of the particular stock in portfolios. This correlation is significantly positive on 99 % significance level. This finding corresponds with the results of our previous experiment (Bata, 2011) that investors believe in trend.

Furthermore, we found interesting evidence about the relationship between fear and intuition. In Tables 2 and 4 intuition and fear have influence returns and geographically weighted portfolio in opposite directions.

## 6 Discussions

In this paper we present results of an Internet investment experiment. Our main focus was examining the impact of emotions (specifically the emotion of fear) on the composition and returns of the selected stock portfolio. We did not find any evidence on the impact of fear on the level of diversification. We found mixed evidence about the impact of fear on the returns. Returns on 6 months investments were significantly negatively influenced by fear that was consistent with our first hypothesis. We understand that these hypotheses need further research before we can make a strong conclusion that the fear truly influences the chances to win on a stock market.

The data from the investment experiment also revealed that there is some degree of home bias and familiarity bias among Czech investors. Czech investors and especially those who revealed the social attitude preferred Czech stocks and in particular the stocks of the biggest Czech company: CEZ. Fear also influenced the composition of investments portfolios. Investor who was influenced by the emotion of fear invested more in closer companies. Those participants who claimed that the stock market evoked the feeling of fear invested more in German stocks and less in US stocks. The results also indicate that trading experience did have a significant negative impact on returns.

Following the results presented in this article, the area of future interest is to continue in examining the effects of attitude and emotions on the investment decisions. The main future research question would be: how the overall sentiment and attitude towards brands (company names) can influence the decision about investors' portfolio selection. This research would be performed by using localized POMS on following three areas: 1. Social networks – Twitter, Facebook, 2. Investor forums 3. Sentiment analysis of news articles.

The other future research interest is to continue to examine the effects of attitude and emotions on the investment decisions. According to New Age theories, spiritual leaders and even some people in business positive attitude towards a goal is necessary if we want to succeed in anything. This theory should hold in daily life. Therefore it should work also on the stock market. There is also an emerging field known as quantum psychology according which the emotions can influence the world around us. In particular, fear can on sub consciousness level lead people to choose portfolios that are not likely to win.

## 7 Appendices

### Appendix A: Questionnaire 1

1. Email
2. **Sex**
3. **Age**
4. **Nationality**
5. Occupation
6. **Are you student?**
7. Type of school
8. Field of study
9. **How would you grade your knowledge about the stock market (1 is best, 5 is worst)?**
10. How do you increase the value of your free financial funds?
11. What is your average year return of your investments (in %)?
12. **Have you invested on stock market?**
13. How long have you invested on stock market (in month)?
14. Why do you invest on stock market? a. Short term profit b. Long term profit
15. What is the value of your investment?
  - a. 1-20 000 CZK
  - b. 20 001-50 000 CZK
  - c. 50 001-100 000 CZK
  - d. 100 001-250 000 CZK
  - e. more than 250 000 CZK
16. Who do you think is more successful in stock market investments (men or women)?
17. **The precondition of being successful on stock market are mainly:**
  - a. **Knowledge and experience**
  - b. **Luck**
18. Does the notion of stock market investment evoke feelings of pleasant excitement?
19. **Does the notion of stock market investment evoke feelings of fear and unpleasant uncertainty?**
20. Do you believe in long-term prosperity of Czech companies?

### Appendix B: Questionnaire 2

1. In the investment game you decided based on (you can choose more options):
  - a. Chart
  - b. Average returns
  - c. Volatility (st. deviation)
  - d. Personal knowledge of firm
  - e. Basic information about firm
  - f. Historical dividend
  - g. Total sales in past year
  - h. Industry sector
  - i. Alfa (from the CAPM)
  - j. Beta (from the CAPM)
  - k. Macroeconomic info
  - l. Correlation of indices
  - m. Other
2. **Your decision was made based on (you can choose more options)**
  - a. **Recommendations from the brokers**
  - b. Your own investment experience
  - c. **Recommendation from friends**
  - d. **Intuition**
  - e. Chat about the stock
  - f. Other
3. **Do you agree with this statement:**  
**"I prefer to invest in Czech stock so I can support Czech companies"?**
4. Do you agree with this statement:  
**"I prefer to invest in stocks from different countries so I can diversify the risk"?**
5. Did you take into account the exchange rate risk while making the investment decision?
6. How big share (in %) of your year income are you willing to invest in stocks?
7. Would transaction costs discourage you from the real world stock investments?
8. **What is your attitude towards risk on the scale from 1 to 7 (1=I try to avoid risk, 7 = I search for risk)?**
9. In which investment instruments do you invest (or would you invest on condition that you have sufficient funds on your account)?
  10. Stocks
  11. Obligations
  12. Financial derivatives
  13. Commodities (gold, oil, etc.)
  14. Properties
  15. Pension fund
  16. Open investment fund
  17. How risky are the stocks in your opinion ( on the scale from 1 to 7, 1= lowest risk)?
  18. How risky are the obligations in your opinion ( on the scale from 1 to 7)?
  19. How risky are the financial derivatives in your opinion ( on the scale from 1 to 7)?
  20. How risky are the commodities in your opinion ( on the scale from 1 to 7)?
  21. How risky are the properties in your opinion ( on the scale from 1 to 7)?
  22. How risky are the pension funds in your opinion ( on the scale from 1 to 7)?
  23. How risky are the open investment funds in your opinion ( on the scale from 1 to 7)?
  24. Bank account number on which the reward would be sent
  25. Email

**Appendix C: Pearson correlation matrix and R<sup>2</sup> of auxiliary models**

Correl	X <sub>1</sub>	X <sub>2</sub>	X <sub>3</sub>	X <sub>4</sub>	X <sub>5</sub>	X <sub>6</sub>	X <sub>7</sub>	X <sub>8</sub>	X <sub>9</sub>	X <sub>10</sub>	X <sub>11</sub>	X <sub>12</sub>	X <sub>13</sub>	R <sup>2</sup>
X <sub>1</sub>	1	-0,2	0,1	-0	0	0,1	-0,1	0,1	-0	-0,2	-0,1	0,2	0,1	<b>0,1</b>
X <sub>2</sub>	-0,2	1	0	0,1	-0	-0,2	0,2	-0	-0	0,2	-0	-0,1	-0,1	<b>0,1</b>
X <sub>3</sub>	0,1	0	1	0	-0,2	0	0	-0	0	-0	-0,1	0	-0	<b>0,1</b>
X <sub>4</sub>	-0	0,1	0	1	0	-0,1	0,1	0	-0,1	-0	0	-0,1	0	<b>0</b>
X <sub>5</sub>	0	-0	-0,2	0	1	-0,2	0	0	-0,2	-0	-0	0	0,1	<b>0,1</b>
X <sub>6</sub>	0,1	-0,2	0	-0,1	-0,2	1	-0,2	-0	0,1	-0,1	0,1	0,1	0,1	<b>0,2</b>
X <sub>7</sub>	-0,1	0,2	0	0,1	0	-0,2	1	0	-0	0	-0,1	0	-0,1	<b>0,1</b>
X <sub>8</sub>	0,1	-0	-0	0	0	-0	0	1	-0,1	-0,1	-0,1	0,1	0,1	<b>0,1</b>
X <sub>9</sub>	-0	-0	0	-0,1	-0,2	0,1	-0	-0,1	1	-0	-0,1	0,1	0	<b>0,2</b>
X <sub>10</sub>	-0,2	0,2	-0	-0	-0	-0,1	0	-0,1	-0	1	-0	-0,1	-0	<b>0,1</b>
X <sub>11</sub>	-0,1	-0	-0,1	0	-0	0,1	-0,1	-0,1	-0,1	-0	1	-0,1	-0,1	<b>0,1</b>
X <sub>12</sub>	0,2	-0,1	0	-0,1	0	0,1	0	0,1	0,1	-0,1	-0,1	1	0,1	<b>0,1</b>
X <sub>13</sub>	0,1	-0,1	-0	0	0,1	0,1	-0,1	0,1	0	-0	-0,1	0,1	1	<b>0,1</b>

- X<sub>1</sub> Fear
- X<sub>2</sub> Sex
- X<sub>3</sub> Age
- X<sub>4</sub> Czech nationality
- X<sub>5</sub> Study of economics
- X<sub>6</sub> Knowledge of stock market
- X<sub>7</sub> Experience on stock market
- X<sub>8</sub> Belief in luck
- X<sub>9</sub> Social identity
- X<sub>10</sub> Attitude towards risk
- X<sub>11</sub> Recommendation of brokers
- X<sub>12</sub> Recommendation of friends
- X<sub>13</sub> Intuition

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## CROSS-CULTURAL VALIDATION OF THE “SLIPPERY SLOPE FRAMEWORK”: EVIDENCE FROM COUNTRIES ACROSS DIFFERENT CONTINENTS

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The present study investigates the main assumptions of the “slippery slope framework” (Kirchler, Hoelzl & Wahl, 2008) within a cross-cultural setting by manipulating trust in and power of authorities with four different scenarios (trust high/power high; trust high/power low; trust low/power high; trust low/power low). Besides testing the framework’s assumptions, the study aims at identifying general differences in intended tax compliance behavior between countries over all conditions and assessing interactions country x condition to study differences concerning the manipulations of trust and power.

The study consists of a survey comprising data from different countries (e.g., Austria, Brazil, France, Germany, Hungary, Italy, Poland, Romania, Russia, Thailand) across several continents. The majority of the participants in each country were undergraduate and master students in Economics and/or Business Administration, aged between 17-25. The data was collected approximately in the same period, in a paper-and-pencil fashion. It took subjects 25 minutes on average to fill in a questionnaire. Students participated on a voluntary basis, no incentives being provided. In order to assess the data, we used econometric analysis methods.

Our findings show that the highest tax compliance and the lowest level of tax evasion occurred in the condition of high trust in authorities and high power of authorities, just as expected. Higher voluntary compliance can be observed in high trust conditions, whereas higher enforced compliance can be identified in high power conditions. Furthermore, participants in the low trust/low power condition displayed the lowest intention to comply and the highest intention to evade taxes. This pattern of results is in line with the assumptions of the slippery slope framework.

The results of the study support the assumptions of the slippery slope framework and reveal that both factors - trust and power - are important determinants of tax compliance in various cultural conditions as well as tax climates. Moreover, they suggest that governments should try to gain their citizens’ trust by enhancing fair procedures and service-oriented behavior. As a consequence, citizens could comply voluntarily even in cases where detection by the authorities would be rather unlikely.

*Keywords: tax behavior, trust, morality*

## HOW WHO I AM INFLUENCES WHAT I BUY: THE IMPORTANCE OF ETHICAL SELF-IMAGES AND RETAIL FORMAT IN ORGANIC CONSUMPTION

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We explore the importance of ethical self-images on individuals' willingness to pay for organic and/or ethically produced food products. We argue that organic and/or ethical labels increase the willingness to pay, especially for those individuals that have a strong and salient moral identity. Further, we consider whether the influence of moral self-images on willingness to pay is moderated by the type of retail format, i.e. discounter, supermarket, or small-scale, independent retailer. We hypothesize that credence, a main characteristic of the latter type of retailer, is essential for moral self-images to translate into a higher willingness to pay for organic and ethical products. This occurs because organic and ethical product characteristics are much harder to verify than, for example, price and appearance (Darby and Karni, 1973).

Due to their interesting history in the food industry (Harvey, Quilley, and Beynon, 2002), tomatoes are an ideal product. We conduct a hypothetical discrete-choice experiment (e.g. Rousseau and Vranken, 2011) to determine the importance of various attributes on participants' (undergraduate economics students) decisions to buy tomatoes. Firstly, we use a measure of moral identity from Aquino and Read (2002) to determine the importance of the ethical self-image for each individual. In the discrete-choice experiment, conducted in paper-and-pencil format, we provide individuals with the choice of purchasing nothing or a given weight of tomatoes, characterized by a set of attributes (organic label, ethical label, appearance, retailing environment, price) with varying levels. We thus investigate whether the type of retailer moderates the effect of a given food label on individuals' willingness to pay, distinguishing between high versus low moral identity.

The results are not yet finalized. We expect that ethical self-images are impactful to the decision of whether to purchase a tomato, especially when organically and/or ethically labeled. We hypothesize that those individuals with more developed ethical self-images are more willing to pay for tomatoes with these attributes, especially when combined with credible labeling in small-scale retailing environments.

If we are correct, and ethical self-image and retailing environment are vital to explaining organic and ethical consumer behavior, this study facilitates a better understanding of the complexities of organic and ethical consumption. Furthermore, it proposes potential determinants for the evolution of ethical consumption, including how willingness to pay might vary depending on the retail context. In short, the combination of ethical self-image, organic and ethical labels, and retail contexts helps resolve existing puzzles of why consumer behavior varies by context.

*Keywords: choice, ethics, individual differences*

## DO COUPLES POOL THEIR INCOMES? EXPERIMENTAL EVIDENCE FROM GERMANY

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Income pooling within the family is one of the key assumptions, not only of traditional economic theory but also of many tax-welfare systems. Very broadly, income is classified as pooled if each euro that enters the household is treated equally, no matter where it comes from and to whom it is handed. The income pooling assumption has been widely rejected in empirical studies. However, a direct test has not been proposed for industrialized countries, yet. Our paper fills this gap. It provides a direct test of income pooling between spouses, using experimental evidence from real couples' behavior in Germany.

The German institutional environment is particularly well suited for our analysis due to the joint taxation of married couples and the mutual assessment even of non-married partners' incomes in the case of eligibility for social transfer payments. We ran experiments with established couples (married and unmarried) to investigate how they divide money and time under a given resource allocation and how this division changes with a differing resource allocation.

We performed a five-round experiment with 95 real, established couples in Germany. In each round, the couples received the same amount of money, though with differing allocations between the spouses, to make consumption choices for private goods.

We observed the choices to depend strongly on the spouses' relative resources for about half the sample. Moreover, non-pooling was positively related with the homogeneity of the spouses' characteristics (in terms of age, education, working hours) and negatively with their average education and income levels.

Our paper provides a clear rejection of household models, which represent the family as a single consumer. It is also a clear rejection of the basic assumption underlying most tax-transfer systems, namely that the distinction of any money entering the household does not depend on the source and the recipient. However, couples with higher income and higher education levels in our experiment were more likely to take decisions independent of the given money allocation.

*Keywords: altruism, cooperation/competition, inequity aversion*

## ATTITUDES, PERCEPTIONS, EVALUATIONS AND POLICIES OF BUYING IN RELATION TO CHILD WORK

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### Abstract

Little research has been conducted on the opinions of young people living in industrialized countries about child work, which is a still widespread phenomenon in many countries. Child work is a component of many productive activities that have their final step in the distribution of products in western countries, therefore the awareness of this phenomenon, of its diffusion and of its outcomes can represent a relevant factor in the formation of attitudes and buying behaviors among the marketing target of these products. This research relates to attitudes, perceptions, evaluations of young Italians, aged 14-27, in relation to child work, as well as to the consequent adoption of preventative buying policies.

The research was conducted through the use of a questionnaire, administered to a sample of about 1,600 students. The questionnaire measured the variables of general knowledge about child work, causal attributions regarding this phenomenon, perceived efficacy of preventing measures meant to reduce it, attitudes toward child work and attitudes toward the adoption of policies of buying related to child work. These dimensions were assessed through a series of different type of scales.

The findings of this research give a series of instruments for understanding the levels of awareness and the critical factors of diffusion of the information about this phenomenon. Specifically, mass media play a crucial role on the representation of child work, negative attitudes towards child work are closely associated to mental representation of poverty and exploitation, but more positive attitude if work is perceived as pleasant and freely chosen by the child.

Much can be done with the findings of this research in order to raise the awareness about the diffusion and the relevance of child work, as well as in order to stimulate actions related to it. In this perspective, this study can be also a starting point for further research about more dimensions related to child work and about modifications of the awareness and the representations about it.

*Keywords: materialism, morality, utilitarianism, ethics, socially responsible business*

## 1 Introduction

Child work, contrary to a widespread perception of this phenomenon, is not a product of the industrial revolution. In fact, child work has always been present in the history of human kind, but it is only since the industrial revolution that critical evaluations of child work have emerged. Another widespread prejudice relates to the more or less total absence of child work in developed countries (Dorman, 2001). On the contrary, however, child work is also present in a not-insignificant measure in developed countries, such as Denmark, Italy, and the United Kingdom.

### 1.1 Evolution of child work and approaches toward it

According to research carried out at the end of the 1990s in Italy by one relevant Trade Union Confederation (CGIL), it is estimated that the number of minors working in an illegal way in Italy ranges from about 350,000 to 550,000 units

(Paone & Teselli, 2000). The subject of child work was, and still is, under the attention of politicians, non-governmental organizations (NGOs), third-sector and voluntary organizations, inter-governmental organizations such as UNICEF and ILO, as well as media and international public opinion. A particularly significant step in this regard was the approval of the ILO Convention n.182 relating to the elimination of the worst forms of child labour. The ILO Convention 182, together with the International Convention on the Rights of Childhood and Adolescence, approved by the UN General Assembly in 1989 which address among the many themes dealt with also that of child work constitute the international instruments that have received the greatest number of ratifications in the shortest time. The prevalent approach adopted towards child work is of the repressive type. On the basis of this approach, child work must be progressively but also definitively abolished, because it is considered a risk factor for the moral, physical and psychic development of the child. In this abolitionist view, working and studying are considered as two opposing realities, which mutually exclude each other (Congdon Fors, 2010). The universal validity of this approach, however, has been called into question as this distinction has attracted criticisms for being still too vague and generic. Opposed to the abolitionist position it is possible to find the movements of child workers in the developing countries that have re-vindicated their right to work. On this position, the international coordination of NATs (Ninos y Adolescentes Trabajadores) is active. Analogous experiences are present in Latin America, Africa, and Asia. Those who defend child work usually affirm that it constitutes a way not only of fleeing or alleviating poverty, but also a form of participation in the family and social life, as well as an experience that can promote a positive representation of the self. This second approach is based on the critical evaluation of the work experience of the minor, understood as a moment of socialization and of human formation even before the professional one (Liebel, 2007).

## 1.2 Child work and psychology

Psychology has not dedicated much attention to the subject of child work. As for the relation between work and the development of the minor, an analysis of the indices of 30 manuals and texts of developmental psychology published in Italy between the years 2000 and 2005 showed that not even one of them dealt with the theme of child work. The analysis of 13 manuals and texts on work and organizational psychology used in Italy showed that none of these volumes dealt with the theme of the worker who is a minor. From an analysis carried out earlier on the indices of eight relevant manuals of developmental psychology published in the English language between 1987 and 1995, it emerged that the word 'family' occurred 157 times, the word 'game' 126 times, the word 'school' 108 times, while the word 'work' only appeared once. The word 'work' does not enter into the categories that define childhood. The author of this sample study arrived at the conclusion that, according to these texts, children who work either constitute an invisible reality or a pathological situation (Woodhead, 1998). On the other hand, observing the few research studies carried out in the field of psychology by directly interrogating minors, it emerged that they show a decidedly more positive attitude towards work (Hobbs et al., 2007; Jacquemin, 2004; Invernizzi, 2003). Above all, however, from such research studies, conducted almost exclusively in developing countries, it emerged that children do not have an uncritical attitude towards the conditions in which they work, they are not 'passive victims', instead they know how to use the possibilities offered to them by the work environment and experience and, even more so, they are able to construct a sense and meaning for the work they do. Finally, from the research studies carried out, it was shown that work, even the youngest children, plays an important role in the construction of identity and of role within the family and the social environment (Liebel, 2007). Analogous results have demonstrated that from even the very few research studies carried out in the industrialized countries, it has emerged – among other things – that the children hold they have a right to be able to work (Leonard, 2004). In a more general way, it emerged that the problem is perhaps not so much that of protecting children and therefore keeping them away from work (by limiting the hours or excluding them from work), but rather that of making them capable of facing the work market in such a way that they are able to manage their own professional experience in an effective way (Libòrio & Ungar, 2010; Benevene, 2008). It is certain, however, that if little is known about the opinions and attitudes of children in developing countries, much less is known about the opinions and attitudes of young people in the industrialized countries. To know their point of view would contribute to the redefining of the terms of the question (Ungar, 2008). In Italy the very few research studies conducted with this approach have been developed only in the sociological field, while there is an almost total absence of those carried out in the psychological field.

## 2 Objectives

The objective of this research is to study the attitude of young students in an industrialized country (such as Italy) towards child work, to verify in what measure they share a social representation of child work that is marked by exploitation, poverty and the impossibility of reconciling study with work, so as to investigate the willingness and the criteria of acceptability towards carrying out of an eventual work experience.

The following hypotheses were tested:

- a) The knowledge of child work comes from the school and the media rather than from persons who are close (relatives, friends).

- b) Child work is perceived as a widespread phenomenon above all in the developing countries.
- c) The representation that derives from child work is negative, in so far as child work appears to be characterised above all by situations of social backwardness as well as cultural and economic difficulty. This representation is linked to a negative attitude towards child work and is favourable to the adoption of behaviors of buying aimed at its prevention and repression.
- d) Young people think that children work because they are induced to do so by negative surround factors, rather than by an autonomous choice.

Young people are favorable to the adoption of behaviors of buying that might prevent child work.

As regards the willingness to assume such behaviors the aim is to verify the weight of such variables as: the perceived effectiveness of such measures, the attribution of causality of child work, the negative evaluation of child work. Furthermore, we also propose to explore the existence of an eventual willingness to consider child work as acceptable when some criteria are respected, such as the possibility for the child to exercise a free choice, the possibility to carry out a gratifying work that (at least apparently) cannot be traced back to situations of poverty or exploitation. Most young people hold that the choice whether to work or not should not be imposed by law, but should be left to the decision of the minor or to the minor together with his/her family.

### 3 Method

#### 3.1 Participants

Adolescents and young adults living in Southern, Central, and Northern Italy participated to the study (N = 1589). The study involved 647 females (40.9%) and 933 males (59.1%); 9 are missing. Age was distributed as follows: 5 participants (0.3%) were less than 14 years old; 1229 participants (77.7%) were between 14 and 17 years old; 342 participants (21.5%) were between 18 and 21 years old; 3 participants (0.2%) were between 22 and 25 years old; 2 participants (0.1%) were more than 26 years old; 9 are missing. Education level was distributed as follows: 677 participants (42.6%) were attending the first two years of high school; 912 participants (57.4%) were attending the last year of high school. For what it concerns the type of school attended, participants were distributed as follows: 801 participants (50.5%) were attending schools with low vocational orientation (classical or scientific lyceums); 350 participants (22.1%) were attending schools with medium vocational orientation (technical/commercial institutes); 436 participants (27.5%) were attending schools with high vocational orientation (professional/industrial institutes).

#### 3.2 Data collection

The data on which this article is based were gathered through a self-administered paper-and-pencil questionnaire. The socio-demographic characteristics (age, educational level, type of school) were purposively balanced among the participants during the process of data collection. Trained interviewers directly approached the participants at school, and distributed the questionnaires in classroom during lesson time. The participants were asked to take part in a university survey on young people's attitudes towards child work. They were assured of the anonymous nature of the survey and were asked to fill in a questionnaire. The questionnaire comprised various sections with structured and open-ended questions. To the purposes of the present paper, data concerning the following measures will be specifically presented:

- General knowledge regarding the phenomenon of child work. This was measured through 8 items, asking participants to state how frequently they had heard about the presence of child work in different parts of the world. Response were coded on a 6-step scale ranging from 1 = never to 6 = very often. Some examples of items are: 'How frequently did you heard about the presence of child work in Western countries?' 'How frequently did you heard about the presence of child work in Italy?'; 'How frequently did you heard about the presence of child work in developing countries?'
- Causal attributions regarding the phenomenon of child work. These were measured through 14 items, listing a series of potential factors determining child work. Participants had to rate their opinion through a 6-step response scale, ranging from 1 = a totally non-influential factor to 6 = a maximum determining factor. Some examples of items are: In your opinion, to what extent child work is determined by "coercion from adults"; "economic poverty of the country"; "desire of learning a job"; "desire of economic independence".
- Perceived efficacy of preventive measures meant to reduce child work. This was measured through 12 items, listing a series of potential measures aimed at preventing the exploitation of child work. Participants had to rate their opinion through a 6-step response scale, ranging from 1 = totally un-effective to 6 = totally effective. Some examples of items are: 'In your opinion, to what extent the following measures may help in preventing the exploitation of child work: "prohibiting by law child and adolescent work"; "information and mobilization campaigning"; "boycotting products made via child work"; "Administer sanctions to companies employing child work".
- Attitudes towards child work. These were measured through a semantic differential introduced by the following statement: 'How would you define child work?'. Responses were recorded on 7-steps bipolar scales

featuring 27 couples of adjectives. Some examples of adjectives are: ‘bad/good’; ‘useless/useful’; ‘dangerous/safe’.

- Attitudes towards the adoption of policies of buying preventing child work. These were measured through 10 items. Response were coded on a 5-step Likert-type scale, ranging from 1 = completely agree to 5 = completely disagree. Some examples of items are: ‘Young people should refuse to buy goods made through the exploitation of child work’; ‘Young people should convince their friends not to buy goods made through the exploitation of child work’; ‘Consumers have the right to know whether a good has been made through the exploitation of child work’.

A final section of the questionnaire measured participants’ socio-demographic characteristics.

## 4 Data analysis

Factor analysis (PCA) were performed and Cronbach’s alfa were computed in order to assess the dimensionality and internal consistency, separately for the following scales: causal attributions, perceived efficacy of preventive measures, attitudes towards child work, and attitudes towards the adoption of policies of buying. Then average scores were computed for each of these variables, and used in hierarchical multiple regression models to test the hypotheses. Table 1 shows the descriptive statistics for each variable.

Variables	Range	Mean	St. Dev.
Frequency of child work – Italy	1-6	2.69	1.2
Frequency of child work – Western Countries	1-6	2.76	1.1
Frequency of child work – Developing Countries	1-6	4.44	1.0
External causal attributions	1-6	4.19	1.0
Internal causal attributions	1-6	3.25	1.2
Perceived efficacy of preventive measures	1-6	4.34	.89
Attitudes towards child work	1-7	2.88	.82
Attitudes towards the adoptions of preventive policies of buying	1-5	3.87	.79

Table 1. Mean scores and standard deviations for the variables considered.

## 5 Results

### 5.1 Dimensionality and internal consistency of the scales

For the “causal attribution regarding child work scale”, 2 correlated factors emerged from the Principal Component Analyses ( $r_{12} = .34$ ). The first factor, explaining the 40.0% of the variance, groups 9 items stating that the causes of child work are independent from children’s want. It was labeled as “External causal attributions”; Cronbach’s  $\alpha$  was .87. The second factor, explaining the 13.3% of the variance, groups 3 items stating that the causes of child work are to be attributed to children themselves. It was labeled as “Internal causal attributions”; Cronbach’s  $\alpha$  was .73. A 1-factor structure emerged for the perceived efficacy of preventive measures, attitudes towards child work, and attitudes towards the adoption of policies of buying scales, explaining the 38.1%, 41.1%, 47.2% of variance, respectively. Cronbach’s  $\alpha$  were .83, .94, and .87, respectively. Items with low factor loadings ( $\lambda < .40$ ) were excluded from further analyses.

### 5.2 Knowledge of Child Work

Those interviewed were asked to indicate the frequency with which they had head of child work in the mass media, from friends, relatives, teachers, and organisations that deal with minors. They were asked to indicate the frequency on a scale from 1 to 6 (from ‘never’ to ‘very often’). The first place was given to teachers (42%), followed by organisations that deal with minors (32.5%), and TV (32.5%). Next came newspapers (29.4%), relatives (26.5%), while friends (22%) came in the last place. Overall, only 41% of the sample claimed to be sufficiently informed on the subject. As showed in table 1 (lines 1-3), child work was perceived as a phenomenon occurring with higher frequency in Developing countries, compared to Western countries ( $t(1446) = 55.09$ ;  $p = .000$ ) and Italy ( $F(1507) = 46.33$ ;  $p = .000$ ), respectively. No significant differences (at a level of  $\alpha = .01$ ) emerged between the perception of child work frequency in Italy and Western countries ( $t(1477) = 2.18$ ;  $p = .03$ ).

### 5.3 Representation of the Phenomenon

The first factor of the ‘causal attribution regarding child work scale’, labeled as ‘External causal attributions’, explains the 40.0% of the variance. It groups 9 items stating that the causes of child work are independent from children’s want: coercion exerted by adults; cultural poverty of the family; abandon or disinterest of families; pressure of the

multinationals; disinterest or connivance of governments; lack of inspection at work places; economic dependence of poor countries; choice to maximize the profits made by employers; lack of adequate laws and their implementation. The second factor, labeled as ‘Internal causal attributions’ and explaining the 13.3% of the variance, groups 3 items stating that the causes of child work are to be attributed to children themselves: desire for economic independence; desire of learning a job; school failure.

### 5.4 Attitude towards Child Work

For the most part, respondents said they were ‘completely’ or ‘sufficiently’ in agreement with the adoption of preventive policies of buying (see Table 1, line 8.) A Hierarchical Multiple Regression was performed to predict participants’ attitudes towards the adoption of preventive policies of buying, considering socio-demographic factors in a first block of predictors (age, gender, and school type), and psychological variables in a second block of predictors (internal and external causal attributions, perceived efficacy of preventive measures, and attitudes towards child work). Standardized regression coefficients and associated p-values are displayed in table 2.

Predictors	Step 1		Step 2	
	$\beta$	P	$\beta$	P
<i>Step 1</i>				
Age	-.09	.000	-.01	n.s.
Gender	.08	.019	.07	.014
School type	-.02	n.s.	.03	n.s.
<i>Step 2</i>				
External causal attributions	-	-	.09	.004
Internal causal attributions	-	-	.26	.001
Perceived efficacy of preventive measures	-	-	.36	.001
Attitudes towards child work	-	-	.02	n.s.
Total $R^2 = .37$ ; $F_{(7, 881)} = 74.14$ ; $p < .001$				

Table 1 Multiple regression predicting attitudes towards the adoption of policies of buying aimed at preventing child work.

Note: gender was coded 1 = males and 2 = females.  $R^2$  at Step 1 = .017. n.s. = not significant.

The predictors inserted in block 1 (socio-demographic factors) accounted for a very small, although significant, portion (1.7 %) of variance in the criterion ( $R^2 = .017$ ;  $F(3, 881) = 5.1$ ;  $p = .002$ ). Age and gender emerged as significant predictors ( $\beta = -.09$  and  $.08$ , respectively), with younger and female subjects having more positive attitudes towards the adoption of preventive policies of buying. Adding the predictors inserted in block 2 (psychological variables) accounted for a significantly higher proportion of variance in the criterion ( $R^2 = .37$ ;  $F(7, 881) = 74.1$ ;  $p = .000$ ). Of the socio-demographic predictors, only gender remained significant ( $\beta = .07$ ). Among the psychological variables, and in line with the hypotheses, perceived efficacy of preventive measures emerged as the strongest predictor of attitudes towards the adoption of preventive policies of buying ( $\beta = .36$ ). Furthermore, as expected, perceiving the causes of child work as “external” is related to more positive attitudes towards the adoption of preventive policies of buying ( $\beta = .26$ ), while a weaker, although significant, effect emerged for “internal” causal attributions ( $\beta = .09$ ). No effect was detected for attitudes towards child work.

### 5.5 Acceptability of Child Work

Asked to express an opinion as to who should take the decision that a child should begin to work, 30.8% of those interviewed held that the criteria should be determined by law and a small percentage of the sample (11%) held that it was more adequate to entrust the matter to a tribunal or a judge for minors. However 51% held that it should be the minor him/herself who should decide (20%) possibly together with the family (31%). Besides, 77% of the sample indicates that the minors who work in show business are considered very fortunate, and 64% hold that work, which brings popularity and fame to the minor, cannot be considered a true and proper work.

## 6 Discussion

The majority of the sample interviewed affirmed that they possessed a limited knowledge of child work, even if it was not completely inaccurate. This data finds confirmation in the fact that only 50% of the sample correctly identified Asia as the continent in which the greatest number of child workers is present. This corresponds also to the data made known by UNICEF (1997) and the ILO (2010).

It's important to note that the sources of information on child work, according to what those interviewed stated, come in the most part from the school, NGOs and the media. In particular, the NGOs in Italy were, and still are very active in involving schools in campaigns of information and awareness raising about child work, as well as in the promotion of policies of buying, aimed at counteracting the exploitation of child work in developing countries.

Even if it is not possible to deduce this from an analysis of the data, it would be worthwhile later on investigating whether there exists a correlation between the information received through these interventions, predominantly aimed at presenting the reality of the developing countries, and the representation of child work as a phenomenon of little significance in Italy and in the industrialized countries.

The fact that the sample considered child work as a phenomenon linked above all to the developing countries is in fact surprising, not only because one is dealing with an objectively erroneous data (Dorman, 2001) but also because in Italy the media, the trade unions, the political world and, more in general public opinion have dedicated considerable attention to the spreading of the results of a research study by the CGIL according to which at least 350,000 minors are working illegally in Italy (Paone & Teselli, 2000).

The representation of child work as a phenomenon linked to the situation of developing countries emerges also from the analyses of the causal attribution of child work, in particular from the weight of the items that attribute child work to external causes, such as: the coercion exerted by adults; the cultural poverty of the family; the abandonment or disinterest of families; the pressure of the multinationals; the disinterest or connivance of governments; the lack of inspection in the work places; the economic dependence of poor countries; the choice made by employers to maximize profits; the lack of adequate laws and their enforcement.

From the analyses of the data, it emerged in fact that the participants hold that a distinction is possible within the causes that push minors to work, in particular between the external and internal ones. The external causes, as we have seen, have a greater weight with respect to the internal ones and would seem to present the figure of the child worker as the victim of a bad social, economic and family situation. In other words, the child worker would seem to be a subject that submits unwillingly to his condition as a worker. The internal causes (desire to learn a job, desire for economic independence, failure at school), linked to the individual choice of the child worker, are in fact weaker and, in any case, include a negative element, such as failure at school. Very often, in fact, in the debate on child work, the specialized press and the media in general mention the difficulty/impossibility of reconciling study with work. It emerges clearly from the data collected that the sample interviewed expressed a generally negative attitude to child work. Nevertheless, such an attitude is not significantly related to the willingness to adopt behaviors of buying aimed at preventing and repressing the use of child exploitation. Those interviewed view with favour the adoption of such policies of buying, but the willingness to adopt them is correlated to a positive evaluation of their effectiveness and to the attribution of the causes of child work to external factors linked to the economic, social and cultural context.

It is possible to hypothesize that such a negative attitude is not rigid, but rather that it offers spaces of acceptability towards child work, but on condition that some criteria are respected, such as the free choice of the child, or the doing of gratifying work such as that offered by the show business world.

As has been seen, some data would seem to suggest this hypothesis. Besides, as regards possible intervention on child work, 41.3% of those interviewed considered it opportune to adopt different criteria, according to the cultural, economic and social situation of the country, while 32% expressed a different opinion.

As regards this second attitude, however, it would be necessary, later on, to deepen the research, especially in regard to the criteria of acceptability and the valuation of work done by children. In fact, it can be hypothesized that the child can show a decidedly more negative attitude towards work that is compatible with study, entertainment, social and family relations.

It is necessary, therefore, to investigate those aspects – both positive and negative – of work done by minors in such conditions that do not put at risk the moral, psychic and physical development of the child. For this reason it would be important to know the opinions, valuations, attitudes of children that work or have worked combining work with study, because the presumed incompatibility of these two experiences seems to be one of the strongest motivations for the unacceptability of a work experience made by a child. There is a lack of real knowledge of those who - in conditions of 'normality' - carry out light works that are compatible with the personal well-being of the minor.

For this reason too, among the future directions of the research, there should be inserted the working out of a more articulated and more operational definition of child work. Such a definition ought to take into account also the opinions of the children, and makes it possible to establish the threshold not only between work and exploitation, but also between the acceptability and non-acceptability of work itself, also in relation to the social, cultural and economic variables of the context in which the children live.

A strong limit to this research and, more in general, to the study of attitudes towards child work is, in fact, the lack of a clear, univocal and universally accepted definition of 'child work' as well as the 'child worker'. The term 'child work', even when it is explicitly distinct from exploitation, is sometimes superimposed on this, making conceptually weak both the terms and the threshold between these two phenomena. As a result of this confusion, it was not considered opportune to insert questions on the eventual past or present work experiences of those interviewed.

A further consequence of this confusion is the lack of a study of the perspectives of minors who work, except in those very contexts of exploitation, marginalization and social risk.

A qualitative research, probably carried out through free or semi-structured interviews, could constitute a second phase of this first exploratory investigation, of which the present research study is a part.

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## THE EFFECT OF EMOTIONS ON ECONOMIC EXPECTATION: A FIELD STUDY

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The current study is a field study conducted four months after a fire disaster has occurred on Mount Carmel in Israel in December 2010. In the Carmel disaster, 44 people lost their lives, and approximately 17,001 people were evacuated from their homes. The objective of the study was to examine and compare emotions and their impact on economics expectations of participants in two sub-groups: those who were harmed by the fire, and those who were exposed to the fire event but who suffered no damage or injury.

The sample consisted of two groups of people, all living within a 20 km range the Mount Carmel, near Haifa, Israel. The "harmed" group included 73 people who suffered damages or economic loss because of the fire; the "not harmed" group included 104 people, who did not suffer damage in the event. Participants were asked to complete a questionnaire including demographic background, emotions' levels they felt during the fire event, and economic expectations with respect to the Israeli economy, the Israeli stock market, and their own economic situation.

We found that not only that are the anger and fear levels evoked by the fire disaster for the “harmed” group higher than for those of the “not harmed” group, but also that the highly negative emotions affects the expectations for economic improvement, and that the “harmed” group is more pessimistic regarding improvement in their own economic situation and also pessimistic about the Israeli economy and stock market (although both groups live in the same area). In addition, our results indicate that only a higher level of negative emotions (as in the “harmed” group) affected the expectations for general economic improvement. A lower level of negative emotions (as in the “not harmed” group), affected only expectations for self-economic improvement, but not for improvement in the general economic situation.

The findings may suggest that negative emotions affect not only economics decision-making, as shown in previous literature, but also affect the economic expectations. It could be argued that economic expectations are the mediator between emotions and economic behavior. High level of negative emotions, induce lower expectations for improvement in the economic situation. Lower expectations for improvement in the economic situation leads to different economic decision-making than higher expectations, e.g., different decisions on saving, spending etc.

*Keywords: financial forecasting, uncertainty*

## EXIT FROM HIGH STREET: AN EXPLORATORY STUDY OF SUSTAINABLE FASHION PIONEERS

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Increased consumer demand for ethical products has been witnessed across industries – yet for the fashion industry, sustainable consumption remains an elusive concept. There appears to be a growing segment of consumers however, who not only consume but also advocate sustainable fashion practices. By studying these sustainable fashion pioneers based on the MOAB (Motivations, Opportunities, Abilities, Behavior) model (Thøgersen & Olander, 2002) the aim of our exploratory research was to gain an understanding of the expressed behavior of sustainable fashion pioneers along the different phases of consumption, uncovering how these consumers’ express their internal motivations and abilities as well as external opportunities and barriers that facilitate or hinder them from consuming fashion in a sustainable manner.

Given the paucity of research of this group of consumers, exploratory in-depth interviews supported by online monitoring helped to illuminate the motivations, abilities, and external facilitators and barriers that play a role in their reported behavior. Participants were found through an in-depth scan of online content. The resulting sample of ten participants engaged in an hour long in-depth, semi structured interviews.

Findings included: “motivations” of well-being, the belief of consuming less and distrust for large multi-national retailers, “abilities” of knowledge and self-efficacy. The external barriers of the “Western consumption paradox,” and the social positioning fashion employs were seen as o to mainstream consumption of sustainable fashion.

Within the ten respondents, two slightly divergent groups appeared: One group “consume less/consume better” chose to purchase fewer, high quality goods from artisanal or small producers rather than from mass retailers on high street. The other group of respondents, labeled “used/DIY” (Do It Yourself), opted to exit the market by purchasing garments that had already been used or making their own garments. Other behavioral tendencies reported included limited washing with cold water, eco soaps and hang drying. Common disposal patterns included swapping with friends, selling or donating to charities or second-hand shops, mending or up cycling, recycling. A “zero-binning” policy was adopted by all.

Findings suggest that “fashion” and “sustainability” present a paradox for the consumer and thus communication must be considered by retailers—particularly those heavily involved in cyclical on-trend demand. A holistic social and environmental approach was preferred by all. Finally, “style” (not fashion) is still very important. Current eco offerings were often considered “too few” “too expensive” or too unaesthetic.

*Keywords: conspicuous consumption, materialism, trust, ethics, self-regulation, self-control*

## CAREER DEVELOPMENT AND SUBJECTIVE WELL-BEING OF UKRAINIAN EDUCATIONAL ORGANIZATION MANAGERS

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An objective of the study was to investigate educational organization managers' subjective well-being in relation to distinctive aspects of their professional career.

The investigation was done on a sample of 482 secondary school principals (51.7% females and 48.3% males) grouped according to their length of service and age. The respondents' subjective well-being was determined with Satisfaction With Life Scale (SWLS, Diener, R. A. Emmons, R. J. Larsen, and Griffin); distinctive career orientations with Career Anchors Self-Assessment (E. H. Schein), and career development attitudes with a self-description method. The obtained data were analyzed using correlation and cluster analyses and ANOVA (SPSS-13.0).

The mean score of educational organization managers' subjective well-being on the SWLS was 23.3, with a standard deviation of 4.8. The investigation found distinctions in school principals' subjective well-being depending on their gender, age and length of work. Females were shown to have higher levels of subjective well-being than men ( $p < 0.01$ ). The similar tendency was found in relation to the respondents' length of work.

The projective instrument of a free description of a successful principal's life found out a mere 61.9% of the respondents to identify the career development with a vertical career and getting certain positions.

The cluster analysis identified four clusters representing groups of the principals in accordance with their career orientations: 'stable' (40.9 % of the respondents), 'entrepreneurs' (17.9 %), 'professionals' (13.4 %), 'life styles integration oriented' (9.6 %), and 'service-oriented' (18.1 %). It should be noted that the service-oriented respondents suited the character of work in education the best increasing their subjective well-being (ANOVA,  $p < 0.01$ ). It's noteworthy that the service-oriented principals were less vertical career-oriented (19 % of the respondents), than 'stable' (67.6 %), 'entrepreneurs' (74.3 %), 'professionals' (73.7 %), and 'life styles integration-oriented' (71.1 %) respondents. The lowest levels of subjective well-being were found in the entrepreneurs and life styles integration-oriented principals (ANOVA,  $p < 0.01$ ).

It is advisable to encourage educational organization managers' development in order to prevent their career-development-relevant problems and increase their subjective well-being. This can be effectively done in the system of post-graduate pedagogical training, in particular during refresher training using a special training course.

*Keywords: development, individual differences*

## SOCIAL IDENTITY MODEL PREDICTING INTERETHNIC ECONOMIC TRUST

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The objective of this research is to propose a theoretical model based on Social Identity Theory, which can be used predicting general interethnic trust and economic trust behavior in the concrete situation of interethnic interaction. Interethnic trust is seen as an important determinant of economic prosperity and well-being in multiethnic societies.

Methodologically this model can be tested using standard questionnaires aimed at revealing values, attitudes toward outgroup members (including cognitive and affective components), general trust to outgroup member (including economic trust), and experiment (trust game) focused on economic trust to outgroup member in concrete situation of interaction. Concerning trust to outgroup member it should be relevant to compare trust to outgroup and ingroup member as well as general trust to people.

Social Representations Theory offers methodology opening meaning of outgroup member: association revealing central core and peripheral system and qualitative analysis of mass media images. Mass media analysis is mostly focused on print material (newspapers, magazines, internet) and much less on audio-visual (radio, TV, internet) material, which could be, even more influential in formation of outgroup member image.

Theoretical model of social identity consists of meaning content, styles of interpersonal interaction in which it is revealed and behavior in concrete situation of interaction. Meaning content includes system of values and attitudes, while values lie in the center (most stable component), attitudes (more apt to changes) lie in the layer next to the

center. Third layer, style of interpersonal interaction, is even more apt to changes than the previous ones. The outer layer, behavior in a concrete situation, is the most apt for changes.

This model is assumed to be applicable if combined with Social Representations Theory by studying social representations of outgroup members and how trustworthy they are. Partly it is achievable by analyzing outgroup member image created via mass media.

This model was based on scientific works of Moscovici, Jovchelovich, de Rosa, Kirchler, Tajfel, Turner, Allport, Hagendoorn, Korostelina, Rokeach, Jolibert, Baumgartner, Grube, G. Rothman and others.

In conclusion it can be mentioned that testing this model requires complex study with corresponding methodology in multiethnic societies. It could be especially interesting to compare results in multiethnic societies with different levels of economic prosperity, different levels of interethnic tension, and peculiarities of interethnic economic trust to outgroup members among immigrants and toward immigrants.

*Keywords: trust, trust game*

## EMOTIONS AS SOCIAL (MIS)INFORMATION: THE SOCIAL APPRAISAL OF EMOTIONAL MESSAGES IN COMPETITIVE CONTEXTS

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People sometimes strategically use others' emotional messages, for example, to infer their limits in negotiations. However, because relevant studies have experimentally manipulated emotional messages it remains unclear whether real senders' messages indeed communicate veridical information or whether they are themselves subject to strategic considerations. Our goal is to examine the degree to which senders consciously misreport their true feelings in order to gain competitive advantages in strategic interactions.

In two experiments we created competitive interactions with incentives to send deceptive messages. In Study 1, 96 participants repeatedly played anonymous dictator games with a subsequent punishment opportunity for responders. Responders' punishment power was either high or low and they either could communicate emotion profiles or privately submitted emotion profiles concerning their position in the game (within-subjects). In Study 2 we examined the mediating role of social appraisals - that is considerations about the effects of one's emotional messages on others. In a lottery-based online 3-player 2-stage game ( $N = 163$ ), 2 responders either had high or low power and either could or could not communicate emotions. Incentives for appearing weak or strong were mixed. First, responders were interested in being selected by proposers to enter into the game (stage 1). Appearing weak could be advantageous at this stage. However, stage 2 was designed in such a way that appearing weak could be expected to result in lower proposer offers.

Results of Study 1 showed that responders with low punishment power submitted more positive emotion profiles when these were transferred to their opponents than when they were private. However, deception was incomplete in that the communicated profiles did not reach the positivity levels of responders with high punishment power. Study 2 revealed that those with high power who were able to communicate emotions underreported positive emotions whereas those with low power overreported positive emotions, rendering the two groups effectively indistinguishable to proposers. These effects were partly mediated by social appraisals.

The studies demonstrate that using others' emotional messages to infer their relative power carries the risk of being deceived. Further, such deception is at least partly strategic and based on reflective processes. At a more general level, this research raises questions about the social functionality of emotional expressions in competitive contexts.

*Keywords: cooperation/competition, dictator game, emotional intelligence*

## ECONOMIC PERSPECTIVES CONCERNING EQUITY ISSUES WITH REGARD TO GLOBAL CLIMATE PROTECTION

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### Abstract

Based on behavioral economics political decisions and the decision-making process can be reproduced in an appropriate way. Instead of the traditional theory there is a rejection of the homo oeconomicus, who is only concerned about his own physical utility. Moreover numerous studies in the field of experimental economic research show that individuals are conducted by non-monetary motives like altruism, inequity aversion or reciprocity.

Analyzing international agreements, or especially international climate change agreements, requires an identification of the motivation for states to contribute to climate protection. The implementation of fairness and equity principles are already important issues of negotiation. Therefore, one aim of the economics of climate change is to identify the motives of agents in international climate policy, and to illustrate them appropriately. Based on this, it will be easier to understand the actual situation. Moreover, the explored knowledge can be used to create future climate agreements. First, we want to highlight the distinctions between a normative approach (i.e. top-down consideration) and a positive one (i.e. bottom-up reflection). Normative economics preset principles like equity, equality or need and analyze its effects on the individual countries or on a group of states. In contrast positive economics are more concerned about the intrinsic motivation for cooperative behavior. For example, the question why do some countries take the position of a leader in global climate protection? To close this gap, an interdisciplinary exchange will be unalienable. Hence we will refer to psychological studies, which consider cooperative behavior from a different point of view.

The main issue of this paper is to illustrate the heterogeneity in the perceptions of fairness. We reveal this in a so-called fairness-dilemma, in which we show which perceptions of fairness are compatible with each other and where are the points of conflict. Here it is also important to examine the compatibility of the positive approach with normative principles.

If there is a resulting burden sharing rule, which allocates the costs of climate protection according to fairness perceptions or equity principles, it is also necessary to take into account the monetary consequences. A self-serving bias will lead states to prefer the equity principle with the lowest monetary lost. This "hidden" self-interest can also be a strong motivation for or against an equity rule.

*Keywords: fairness, cooperation/competition, inequity aversion, reciprocity, trust, social dilemma*

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## 1 Introduction

Human-induced climate change creates impact on all level of scales across the world: ecological, economic and social. Industrialized countries are regarded to be responsible for the human-induced change. The impacts of climate change, however, mainly harm the developing countries. In these countries emissions are low while the vulnerability is high. Consequently justice and fairness concerns play a major role in international climate politics aiming, among others, at the reduction of the greenhouse gases. In Durban, 2011, the countries agreed to negotiate a new climate treaty until 2015. This is not an easy task since climate politics suffer from the adverse incentives of public good provision. In terms of game theory the problem of taking cooperative mitigation measures is often described in terms of a prisoners' dilemma (see *section 2*). In order to solve this dilemma it is important to focus on what motivates cooperative action. Already Wilke (1991) points out that greed, efficiency and fairness are important drivers of resource allocation problems. In this paper we take a closer look at the fairness issue.

Often it is expected that decision makers who do not follow their self-interest only do better in reaching agreement on collective action. This hope draws back to experimental findings rejecting the idea of man as homo oeconomicus which in neoclassical theory is also used to explain behaviour in climate politics (e.g. Buchholz & Peters, 2003; Endres & Ohl, 2003; Finus, 2001). The experimental findings have led to a wider model of man as e.g. introduced by Fehr &

Schmidt (1999) and Bolton & Ockenfels (2000). An application on the climate policy context by Lange, Vogt & Ziegler (2006) reveals that chances for taking climate policies measures indeed improve if a special perception of fairness is taken into account compared to models which focus on national self-interest only. In this paper, however, we maintain that fairness considerations in climate politics may also block the process of international cooperation as lately seen in Copenhagen, 2009. In contrast to the prognosis of experimental research, we argue, that solving of the prisoners' dilemma in climate politics may not be supported by justice and fairness considerations of the nations. On the contrary, in addition to the prisoners' dilemma we may have a fairness dilemma to solve. To outline our argument we present findings on the impact of fairness on human behaviour from a normative and a positive point of view.

In *section 2 we introduce climate politics as a social dilemma*. In *section 3 we focus on criteria for the justification of a specific distribution of benefits and burdens arising from global climate politics from an ethical, respectively normative (third party) point of view*. In *section 4 we take the positive point of view and focus on what political decision makers may think is fair and how their subjective appraisals of fairness may influence cooperative behaviour in climate politics*. We close with a summary and outlook for future disciplinary and interdisciplinary research (*section 5*).

## 2 Social dilemma in climate politics

Social dilemmas are often analyzed with methods of game theory that show that different structures of social dilemmas exist. The most simple dilemma type is a Prisoners' Dilemma (PD) game.<sup>1</sup> Within the PD game, from the individual point of view, it is always - i.e. independent of what the other people do - the best choice to not contribute to reach a common goal. The existence of such a dominant strategy was also identified in the climate context (e.g. Barrett, 1997; Finus, 2001; Hoel, 1997).

Later studies, however, showed that a dominant strategy may not be an essential feature in climate politics. Endres & Ohl (2003) for instance showed that cooperative behaviour in the climate context can be described by a variety of games, ranging from classical PD games to Chicken Dilemma, to variants of the Assurance game (e.g. the Stag Hunt), to No conflict games. In these games the possibility of co-operation ranges from zero to hundred percent which implies that decision makers in climate policy may show a differentiated behaviour. Moreover Lange & Vogt (2003) showed that cooperative action in climate politics can be explained by ERC-Theory.

These approaches shed light on cooperative action in public good dilemma and deliver explanations for climate cooperation under the Kyoto-Protocol. Since incentives for both, cooperation and defection, exist, asymmetric outcomes (e.g. in the distribution of national welfare) arise, frequently, because some decision makers are better off than others. Experimental studies dealing with asymmetric settings, for instance, are ultimatum and dictator games (Güth, Schmittberger & Schwarze, 1982).<sup>2</sup>

Investigations in such settings reveal that decision makers do not merely follow their individual self-interest. In addition they are regarded to show a genuine desire for justice and fairness. Since the rate of cooperation in these games is regularly higher than expected under the assumption of homo oeconomicus behaviour it seems straightforward that the results found by Lange, Vogt & Ziegler (2006) indeed may hold in the climate context. In the following, however, we argue that the fairness issue may hamper global climate politics by nationally divergent notions of justice and fairness. We approach this theme from a normative and a positive point of view.

## 3 Climate politics and justice consideration: the normative point of view

If every region of the world would be equally affected by and responsible for climate change a just solution of the social dilemma in climate change mitigation might be easy. However not only the environmental effects of human-induced climate change diverge, also the economic situations and responsibilities for past emissions differ extremely. The complexity even increases if future generations are considered as well. Therefore the ethical question arises: What weights should be assigned to the interests of passively affected people or regions by designing a new climate policy treaty?

Economists are often criticized to see the world from the classical homo oeconomicus perspective only. This prejudice might be true for some representatives of our discipline but as an overall judgment it is inapplicable and even no innovative direction in economic science. In fact the connection between a liberal economic theory and an equity orientated science of human behaviour exists for a long time. Adam Smith, the pioneer of modern economics and famous for his writings on market economy "Wealth of Nations" (Smith, 1776) is also the author of the psychological-

<sup>1</sup> For an introduction into game theory and the prisoners' dilemma see e.g. Luce & Raiffa (1989), Holler & Illing (2000).

<sup>2</sup> In those games one decision maker (the proposer) usually makes an offer to a second person (the responder). Most often the offer concerns the distribution of money (the resource) between the proposer and the responder. Having received the offer of the proposer the resource is provided (usually by an external third party) and shared in accordance with the offer (dictator game) or the responder, in a second step, has to decide whether he or she accepts the offer (ultimatum game). If the responder accepts the offer of the proposer, then (as in dictator games) the resource is provided and shared in accordance with the offer; if it is rejected both are left in the status quo.

oriented work "Theory of Moral Sentiments" (Smith, 1759) in which Smith illustrates the large impact of self-control and empathy on succeeding in social interaction processes.

Another theory which attracts large economic interest is the "Theory of Justice" by John Rawls (1971). Under the aspect of welfare maximization he delivered normative principles of justices. His explanations are based on the assumption of equal rights. That is everyone has the same right to use his or her opportunities and if there are no differences in the endowments every person should receive the same income. Moreover, appropriate solutions should be Pareto efficient, only, so that no one ends up worse than in his or her initial situation. Although Rawls only refers to the egalitarian rule he delivered important incentives for new research especially in environmental economics (Solow, 1974).

Thus the idea of connecting economic theory and equity issues arose long time ago. The importance of this connection increased in the last decades, mainly because of the need to solve environmental problems on a global scale and to reach agreement among nations differing in cultural, social and economic background. Today behavioural and experimental economics are pushed ahead to explain cooperative behaviour in a globalized world. Especially in the economics of climate change and biodiversity protection a confrontation with justice and fairness concerns is inevitable (see e.g. Ittner & Ohl (2006) in the climate context and Ohl et al. (2008) in the biodiversity context).

Here, we take a closer look at the importance of fairness issues in climate politics. Negotiating climate change agreements implements two problems. One is an international consensus on climate mitigation measures. The other is the financing of adaptation measures in the most vulnerable countries. At the United Nations Climate Change Conference (Conference of Parties 15) 2009 in Copenhagen discussions on how to share the mitigation goal and the costs for adaption measures among the parties severely hampered the negotiations. Thus, the critical question is: Is there a unique understanding of how the right share of efforts and costs should look like – at least in theory in order to give appropriate policy advice?

One important tool to deal with issues of distributional fairness is welfare theory. Behind a veil of ignorance an impartial spectator determines the usage of scarce production factors and the allocation of the resulting output among the economic subjects (Harsanyi, 1955 and Rawls, 1971). Regarding climate change protection the impartial spectator would have to determine the level of emission reductions and the allocation of emission reduction shares among the countries. The same holds true for the financing of adaptation measures. To do this a social welfare function needs to be maximized. This function takes into account the interests of all members of the society including the external effects of greenhouse gas emissions. The agents' interests are represented by an utility function, which measures the welfare of an individual or a group of individuals and is defined by a certain consumption level. Consumption includes the usage of private goods as well as the availability of environmental quality. Because of the industrial production of private goods and the corresponding emission of pollutants a negative external effect arises which leads to climate change, a reduced environmental quality, respectively. Emission reduction requires a decrease in the production of private goods or investments in new technologies. The emerging costs have to be allocated efficiently and just. Regarding the efficiency issue the impartial spectator maximizes the social welfare function. To meet the second aim as well, the welfare function can be broadened by the integration of an utility weight which refers to a specific justice norm (see e.g. Sandmo, 2007 for the application of welfare functions in the context of climate change policy).

Using this method it is possible to integrate criteria like the egalitarian rule or the need principle. Regarding the need principle, for example, the utility of nations with low income would weigh higher than the utility of industrial countries (like in Anthoff et al., 2009 or Anthoff & Tol, 2010). The need principle also justifies a larger amount of pollutions for the developing countries to reduce the poverty in these regions.

Beyond that, further normative justice criteria are in discussion (for an overview of the relevant justice principles in climate politics see e.g. Cazorla und Toman, 2001, Ringius et al., 2002, und Aldy et al., 2003). The ability to pay and the benefit principle are two examples from the public finance theory (see e.g. Sandler, 2004 or Kaul et al., 2006). The first rule claims that the amount of emission reductions is connected with a nation's financial ability. In contrast, following the benefit criteria may require states with large damages, resulting from climate change, to adopt the highest costs of mitigation since these countries benefit most from emission control. Although this principle is very common in public finance, it is difficult to apply it in climate change agreements. The reason is that the most affected regions are the developing countries which do not have enough power (in terms of income and/or emission reduction potential) to take over the highest mitigation burden. This points out that in the climate context rules of justice may not be likewise applicable with regard to all countries.

The polluter pays principle is a further norm often referred to in environmental economics. According to this rule one country's mitigation should be based on its emission level. One controversial subject, however, is to what extent historical emissions, which would account for historical responsibility, should be considered. In addition, regarding the distribution of emission rights, the need principle and the equality principle play a prominent role in climate politics. The equality criterion gives each nation the same right to emit GHGs, i.e. emission rights should be related to a countries population.

Despite this interregional comparison an intergenerational evaluation can be implemented into the social welfare function as well. The reason for this is the accumulation of all GHG emissions in the atmosphere. This affects future generations who are not responsible for the present actions. To take account of this circumstance a discount factor should regard future utilities and costs. But how high is the just weight? Usually future utilities and costs are evaluated less than present issues. However, in the climate context a different point of view emerged. Present and future inhabitants should have an equal right to consume a high climate quality every time. Therefore the future situations should be weighted like the present, which would result in no or only a slight discounting which is regarded as the just intergenerational allocation by e.g. Pigou, 1920, Ramsey, 1928 as well as Stern, 2006 and Asheim/Buchholz, 2003. On the other hand, the enemies of an undiscounted utilitarianism also justify their recommendation with equity issues. Measuring the welfare they consciously accept an unequal treatment of different generations, to avoid injustice for the present global population. This idea is based on the assumption of a productive economy where savings generate positive returns. However, it cannot be sure that the capital productivity will always be positive considering the progress of the climate change (for further discussion see Buchholz/Schumacher, 2009).

In sum there is neither a common understanding on what is the just solution in climate politics from a normative theoretical point of view nor are rules of justice likewise applicable with regard to all countries involved in climate negotiations.

#### **4 Climate politics and fairness perceptions in economic experiments: a positive point of view**

Global climate change policy requires international cooperation. Hence, a lot of different countries have to come together and have to agree upon activities for climate protection. Moreover they need to solve the burden sharing problem which is not an easy task in regard of the large cultural, economic and social heterogeneity among the parties. For example, nations near the equator are affected more by the environmental effects than regions in the north. This results in heterogeneous adaptation costs. Another asymmetric situation lies in the nations' endowments. Whereas industrial countries have the financial ability to reduce GHG emissions, developing countries do not have this possibility. However, some of these regions harbour a great potential for emission reduction. Usually the industry in the wealthy countries already uses green production technologies. So the costs to reduce additional emissions are quite high. Despite this there are a lot of old technologies in the former Soviet Countries and in other emerging nations, which could be substituted easier by more efficient technologies. Hence, there is a huge potential to reduce emissions in these regions. But as already mentioned they often do not have the financial ability to switch to a green production.

Not only that there exists heterogeneity in the financial ability, in the affection by the climate change and in the productivity of mitigation, but also with regard to the perceptions of how a fair agreement in climate change negotiations should like. One example is the different points of view of China and the USA. Both are presently main emitters of GHGs, but their situations with regard to economic development are very different. Whereas the USA is an industrialized country for a long time, China's economy just rose up in the last decades. So in the eye of the Chinese government it is considered fair if mainly the great polluters of the past pay for climate protection, because they are responsible for the present GHG stock in the atmosphere. Therefore, China declared that they will only join an international climate agreement if the USA commits itself to significant mitigations. On the contrary, the USA also hinged its cooperation decision on the declaration of China to reduce emissions because China is now and will be in the future a main emitter of the greenhouse gases. Already these two countries differ enormously in their perception of justice. China refers to the polluter pays principle according to historical emissions, while the US government argues for the consideration of actual pollution and for reciprocity. This example underlines that the heterogeneity in the perception of fairness is expected to increase with the number of negotiating countries, also because theory is unable to deliver a common understanding of how a just solution in international climate politics should look like.

The fact, however, that fairness plays an essential role in the politics of climate change is evident (e.g. Brekke & Johansson-Stenman (2008) and Lange, Vogt & Ziegler (2006)). Consequently, to illustrate the situation in international climate negotiations appropriately, recognition of the incentives for cooperation has to consider the heterogeneity of the involved parties. In the following a bunch of experimental studies will be surveyed, which try to meet these requirements.

Analyzing human decisions on fair allocations, experimental economics construct game theoretic situations in the laboratory. The advantage of this procedure is the better control of framework conditions. The usual economic games to play are the ultimatum, dictator and trust game.

Based on the dictator game a pure analysis of the existence of other regarding preferences is possible. Usually it is a two player game in which one participant is allocated a certain endowment and can share it with the other person. Player 2 has no opportunity to influence player 1's decision. An obvious rational strategy for player 1 is to keep the whole endowment, so that player 2 receives nothing. This would be in line with the assumption of a homo oeconomicus. Nevertheless many studies figured out that only a minority of individuals act like this (see Forsythe et

al., 1994; Hoffman et al., 1994; Bolton et al., 1998, Andreoni & Miller, 1998). These results indicate the existence of other regarding preferences of player 1.

The ultimatum game has nearly the same setting like the dictator game. Player 1 receives a certain amount of gaming money (so called tokens) to share with player 2. In contrast to the dictator game, player 2 can decide whether he accepts this offer, than the tokens are allocated as proposed, or not, than no one gets anything. According to rational behaviour player two should accept every offer larger than zero. Experimental results show that the first players mostly offer an allocation larger than predicted (see Forsythe et al., 1994) and that the majority of second players reject an offer near to zero, i.e. an unfair offer (Güth et al., 1986 or Ochs & Roth, 1989). That indicates, as well, that human decisions are not purely based on selfish behaviour. Moreover Forsythe et. al (1994) found out, that on average, offers are higher in the ultimatum than in the dictator game. Consequently the proposal of player 1 is related to the possibility of player 2 to reject this offer.

This interdependence is emphasized in the so-called trust games, which are supplement to ultimatum games. Again player 1 gets a special amount of tokens and proposes to share them with the second player. This transfer is multiplied by a parameter larger than 1. In the next stage player 2 decides how much tokens he wants to send back to player 1. The share the first player transfers to player 2 can be regarded as a measure for trust, whereas the answer of player 2 can be interpreted as trustworthiness or reciprocity (Kanagaretnam et al., 2009).

Corresponding to the framework, different fairness perceptions can be illustrated. In general the trust-game reveals trust and reciprocity, the dictator and ultimatum game point out inequity aversion. Additionally the ultimatum game also shows conditional decision making because of the rejection possibility of player 2.

These general examples point out that fairness perceptions matter however that there is heterogeneity as well. According to Lange, Vogt & Ziegler (2006) this conclusion holds true for people involved in the international climate policy, too. Their data result from a world-wide survey of agents involved in climate politics. The findings of these authors suggest that the egalitarian rule and the poor loser's rule, which benefits the poor countries, are the two most accepted rules of fair behaviour.

In addition, Kamas & Preston (2011) recently evaluated people's reasons for distributive and reciprocal fairness, by using ultimatum, dictator and trust games. Based on a first played dictator game they classified the individuals' preference into self-interested, inequity averse, efficiency maximizing and compassionate social surplus maximizing. Egoists and efficiency maximizer make the lowest proposals in the ultimatum game and are per definition not interested in distributive fairness. Consequently, their positive offers in the ultimatum and the positive answers in the trust game seem to be based on reciprocal motives, rather than on inequity aversion. Moreover almost all responses in the trust game were positive among all preference groups, which indicate a strong evidence for reciprocity.

Another study by Kanagaretnam, Mestelman, Nainar & Shehata (2008) applied to the trust-game an additional ring-game to account for heterogeneous preferences in a more general way. Their results indicate that individuals with heterogeneous social preferences can be motivated differently to cooperate. The ring-game had been developed by Griesinger & Livingston (1973) and Liebrand (1984) to identify social value orientations. This game has been used frequently by social psychologists. In the ring game two anonymous persons were matched together. They had no information about the other one's decision but knew that both actions contribute to the individual final outcome. Every person had to choose an allocation from a so-called value orientation ring (see figure 1 in the appendix). Based on this decision a certain amount of gaming money was allocated to the proposer and the difference to 100 was sent to the other player. According to this five preference categories were derived: altruistic, aggressive, individualistic, cooperative and competitive. The main result of the subsequent trust game was that trust is highly correlated with the reciprocal response. In addition, the individual's preferences play a major role, hence an increased trust leads to higher answers of pro-social persons. Contrary to this, pro-self persons reduce their response if the first player's trust increases.

Another opportunity to illustrate the cooperation problem of the climate change protection is a public good game. Within this type of experiment a certain number of participants interact. Depending on the framework of the respective experiment they know each other or not. Fischbacher & Gächter (2010) preferred in their study an anonymous setting to examine the role of social preferences and beliefs by voluntary cooperation. Their results give an important hint to the relevance of appropriate incentives to increase the cooperation level. To determine the subjects' social preferences they conduct a so-called P-experiment. In the following C-experiment the persons have certain beliefs according to the experiences from the previous P-experiment. Both experiments include repeated public good games, where the subjects are able to invest in a public good (like the climate protection) or in a private good. Each participant is endowed with the same amount of token. The investment in the public good yields a lower marginal return than an investment in the private consumption. Per definition of a public good, the return depends on the contribution of all group participants. The rational standard assumption is therefore, that everyone is a free rider and contributes nothing to the public good. The results from the P-experiment indicate a substantial heterogeneity in the preferences to cooperate, as well as in the actual decisions. Conditional cooperation is the predominant social behaviour in both experiments. Consequently the beliefs about the behaviour of the others are a major baseline for their own decision. Moreover, the conditional cooperation preferences were underestimated in the P-experiment,

hence they arise even more frequently in the C-experiment. Back to the question how beliefs and heterogeneous preferences influence a decreasing cooperation level, the study reveals that most persons are only imperfect conditional co-operator and adapt their contribution just partially. To conclude this it is essential to recognize the role of conditional cooperation and beliefs for understanding the free ride dynamics.

Another study to examine the relevance of fairness in human behaviour was assigned by Falk, Fehr & Fischbacher (2008). They analyzed positive as well as negative reciprocity in combination with distributive fairness. Therefore, they initiated a so-called moon-lighting game. Compared to the trust game both players can punish the other person by taking tokens away. Additionally they used the strategy method that is player 2 had to define his answer to every possible allocation of player 1. They examined a significant relation between player 1's decision and the reciprocal behaviour of player 2. So according to the authors the first decision has a kind of signalling effect. This result is questionable, because player 2 chooses his response (according to the strategy method) before he can in fact observe player 1's actual decision.

Carlsson, Kataria, Lampi, Lofgren & Sterner (2011) examined the preferences especially for normative burden sharing rules in the climate context. They applied a choice experiment in which a random sample of Swedish citizens had to select a sharing rule. They had to choose between an allocation of mitigation commitments proportional to historical emissions, a CO<sub>2</sub>-reduction level based on actual emissions or a mitigation level according to the egalitarian principle, which means equal per capita emissions in all countries. Carlsson et al. also analyzed the preferences for the need principle as a general sharing rule and found out that mostly rich countries refer to this rule. Despite this, participants from poor regions prefer an equal allocation of emissions rights. Carlsson et al. (2011) have not induced the answers by a game theoretic setting but accounted for the asymmetric endowments of the countries in the climate change politics. The study emphasizes in a climate context that fairness perceptions differ across countries.

The demonstrated experiments are only a small selection of the experimental literature concerning other regarding preferences in human behaviour. Nevertheless these studies show that differences in the perceptions of fairness are evident and important drivers of cooperative action. Moreover, research regarding the climate context suggests that the assumption of heterogeneous preferences is also expected to hold true for agents in international climate politics. Therefore, different fairness perceptions need to be considered when evaluating cooperative action in the climate policy context. Although, the experimental literature puts a large focus analyzing cooperative behaviour in social dilemma there is still a lack in the consideration of asymmetric situations. The above-mentioned experiments for instance do not sufficiently account for the asymmetric endowments of the decision makers in the climate context or their different levels of productivity in climate mitigation. Therefore it remains hard to judge how a consensus in climate negotiations among nations with different fairness perceptions may look like. And, in addition, how cooperative action could be fostered and stabilized by adequate incentive mechanisms.

## 5 Summary and outlook

Above we have shed light on different concepts of fairness, the role these concepts play in climate politics and their ability to solve the underlying social dilemma in cooperative climate action. We found that the complexity of finding a cooperative solution in global climate politics increases with the heterogeneity of fairness considerations. These considerations could either strengthen or hamper each other and with that make conflict resolution in climate politics a challenging task. If, for example, free riders are expected to be sanctioned as a strategy to increase the rate of cooperation and to introduce fairness on a global level, we may end up in the undesired result that the punishment reduces perceived unfairness with respect to the free rider but in turn – with regard to the group of co-operators – creates a new source of perceived unfairness. Generally, this limits the potential of fairness for conflict resolution in situation of social dilemma and led us to the conclusion that in addition to the social dilemma in public good provision a fairness dilemma may exist in climate politics. So, a critical question is whether different fairness perceptions can be mediated by specific rules of treaty design.

From a normative point of view the most discussed rules for cost or effort sharing are:

- the egalitarian rule with equal emission rights per capita
- the sovereignty rule which leads to an equal share of mitigation efforts based on the actual emission levels
- the polluter pays principle with absolute mitigation efforts according to actual or past emissions and
- the ability to pay principle where the reduction of emissions is based on a nations income, i.e. its financial ability.

In addition we focused on social preferences from a positive point of view to focus on what motivates cooperative action of decision makers. The mostly discussed preferences are:

- positive and negative reciprocity (Rabin, 1993; Charness & Rabin, 2002; Buchholz & Peters, 2005)
- altruism (Becker, 1974; Andreoni, 1989)
- conditional cooperation (Falk, Fehr & Fischbacher, 2008)
- inequity aversion (Bolten & Ockenfels, 2000; Fehr & Schmidt, 1999).

So far it is unclear how the most discussed justice principles and fairness preferences go hand in hand in the climate context. However, it is obvious that inequity aversion is not compatible with the ability to pay principle or

opportunistic behaviour. To emphasize the dilemma let us assume a simple situation with two different fairness types, one is inequity averse and one has altruistic preferences, both aim at cooperative action. Like in the prisoner's dilemma the efficient solution is reached if both cooperate, this means if they agree on one distribution rule. Both fairness types can choose between an equal sharing of the costs and efforts (according to the egalitarian rule) and one referring to the need principle. Assume that the utility of one player is the highest if they agreed on the sharing rule he or she prefers. If the agreement refers to the fairness perception of the other player the utility is even lower than without an agreement (see figure 2 in the appendix). Following these assumptions a simple one shot game would lead to an inefficient solution like in the prisoner's dilemma without any cooperation. The complexity even increases if more fairness perceptions are considered.

To avoid this inefficient result, appropriate incentives must be applied. It has to be analyzed how this fairness orientated agents can be motivated to cooperate. Are financial transfers really expedient, or is it better to implement other incentives?

Moreover economic development of the countries varies with time. China, for example, is now in a different situation as in 1997. Today China is a large emitter of greenhouse gases and the world expects it to join a new climate treaty. During the negotiations of the Kyoto Protocol, however, China was regarded as an emerging country and therefore not expected to commit itself emission reductions. Is this to be judged as a shift in the perception of fairness? And if so, what would this mean for economic analyses of global climate politics and the stimulation of international cooperation?

So far the answer to these questions seems to be the search for one justice principle on which the international treaty should focus on and the global community of nations could commonly agree on. In regard of the divergent interests of the nations, however, climate politics may be unable to find a common denominator that mediates the different fairness perceptions of the nations. A fairness dilemma may thus hamper global climate politics which has been widely neglected in the literature so far.

To gain more insight in the potential of fairness considerations to solve social dilemma in the future requires studying fairness issues in different facets and by different disciplines. So far, it is most often only one aspect of fairness that is in the centre of interest by one discipline. In the climate context, however, we have to deal with the fairness perceptions of different parties: local, regional, national and global stakeholders. These may be intertwined in individual, group specific and lobby preferences as relational concepts which are determined by the choice of the social reference group and interact with other motives (Ittner & Ohl 2006).

In addition, economic analyses most often focuses on mechanism design for cooperative action under the assumption that all individuals act like homo oeconomici. But how do political decision maker react on efficiently designed policies when they are not only concerned about their monetary payoff? It is not evident that fairness orientated individuals can be motivated to cooperate by efficiency considerations only as is usually assumed when designing financial transfers for example. Future research thus needs to broaden the perspective and to analyze the motivation of cooperative behaviour under the assumption of a wider model of man. It may turn out that fairness orientated individuals could be motivated more to cooperate if someone takes the leadership role than by giving financial support or imposing credible sanctions. A further research question is how to create trust for fulfilling of the commitments among fairness and selfish oriented nations? Credible sanctions as a trust building mechanism, for example, most often also harm the countries that voluntarily joined the cooperation. As a result the motivation to cooperate in an international agreement may be reduced even if countries behave in accordance with a wider model of man. To solve this debacle it is necessary to offer other opportunities for the creation of trust among heterogeneous parties. So far, much research within the field of social dilemmas and the role fairness plays for conflict resolution is done within a laboratory context using experimental approaches or computer simulations. These experimental approaches have their credit when testing theories and show that there is fatal "decay of cooperation" (Fehr et al., 2003, p. 786) over time even if fairness is in play. Therefore it is necessary to further explore the role of fairness for cooperative action.

To bring economic research in the project RECAP15 forward we greatly appreciate interdisciplinary cooperation with psychologist to, firstly, identify the motives driving global climate politics and, secondly, to design adequate incentives for participation in international climate agreements

6 Appendix

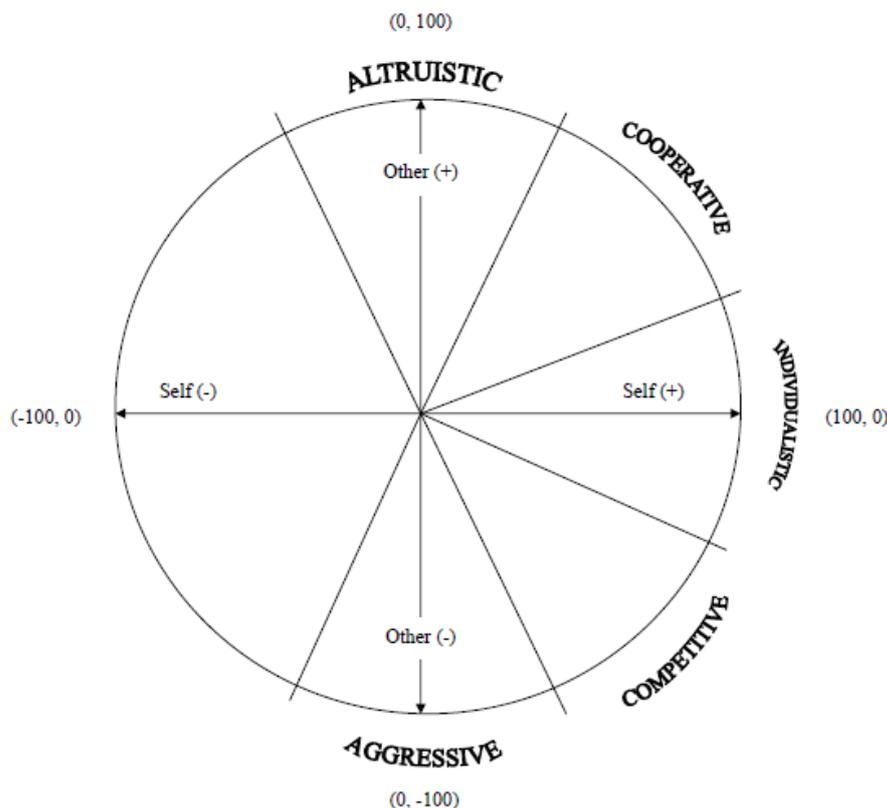


Fig. 1: the orientation value ring: the horizontal axis indicates the amount of gaming money allocated to oneself and the vertical axis the difference to 100 to allocate to the other person Source: Kanagaretnam et al. (2011)

		Player 2 (altruistic)	
		EGA	NEED
Player 1	(inequity averse)	EGA (4/1)	NEED (2/2)
		NEED (2/2)	(1/4)

Table 1: Illustration of a fairness dilemma in a one shot game, with the strategies "egalitarian sharing" or "altruistic sharing".

Both players have dominant strategies according to their preferences. Therefore the utility of the inequity averse player is the highest if they agree upon the egalitarian rule and for the altruistic player if they agree upon the need principle. The reduced utility if their preferences are not met leads to the inefficient solution (EGA/NEED) so that they cannot agree upon one criterion.

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## PROBLEM SOLVING IN GROUPS: THE LEADERSHIP TRAP

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### Abstract

The field experiment aims to test two research hypotheses on the relationship between group characteristics and performance, namely:

1. To test the impact of team organization upon performance measured at the three different moments and in two different conditions (time pressure vs. no time pressure). To check this first hypothesis the relationship among type of task, group structure, and its evolution in time have been tested.
2. To verify the impact of group identity and within-group diversity upon team organization. For this last purpose, one third of the groups were matched randomly, while the remaining were formed according to a similarity criterion unrelated with the task. Only half of the non-random groups were informed about the criterion used.

We present the results of a field experiment on groups of students engaged in a complex task, whose execution spanned over an entire academic semester. A class of 400 undergraduate students, divided in groups of five people whose composition remained fixed throughout the experiment, were asked to perform a market analysis following a pre-defined format and a set of standard rules, submit a report and take a final individual exam. Each group was free to choose how to organize teamwork throughout the semester. Their performance was evaluated at three moments in time and in three different ways. First, two weeks after team formation implemented at the beginning of the course, a group test was administered requiring performance under pressure and time constraint. Second, at the end

of the semester a group report was handed out and submitted by groups. Third, during the following exam sessions a final evaluation captured both group and individual performance.

Our main results are summarized as follows: first, groups with high-skilled students and in which one of them acted as leader/coordinator perform better under time pressure. Second, leadership is subsequently reinforced as a consequence of the initial good performance, giving room to the formation of a star like organization. This structure, however, has a negative impact upon both group and final individual performance. Hence, final group results are negatively affected by their reliance on a leader, who has been responsible of an initial good performance in a time-constrained test. Finally, a priming effect emerges to be a key determinant of the members' agreement on the group structure, but not on the structural design per se.

*Keywords: cooperation/competition, individual differences*

## 1 Introduction

We present the results of a field experiment on groups of students engaged in a complex task whose execution spanned over an entire academic semester. A group of 400 students, divided in teams of five persons whose composition remained fixed throughout the experiment, were to perform a complex market analysis following a pre-defined format and a set of standard rules, and submit a final report. We consider their performance as evaluated at two moments in time: first, through a group test that was administered two weeks after team formation, and which required performance under pressure and time constraints; second, through the evaluation of the final group report. The field experiment aims to test two research hypotheses on the relationship between group characteristics and performance, namely:

1. To verify how group characteristics influence team organization. Among them we consider individual skills and intra-group diversity. Moreover we control for group identity, which was primed artificially by employing the Minimal Group Paradigm (Tajfel et al. 1971). For this purpose, one third of the groups were created according to a random criterion, while the remaining groups were formed according to a similarity criterion unrelated with the task. Only half of the non-random groups were informed about the criterion used.
2. To test how team organization affects performance in two tasks of different complexity and performed under two different conditions (time pressure vs. no time pressure). To test this hypothesis the relation among type of task and group structure and its evolution over time has been identified.

Our main results are summarized as follows. Groups with high-skilled students and able to coordinate individual work, perform better under time pressure. Primed identity has no role on measured performance. The coordination pattern successfully experimented in the initial task is subsequently reinforced and fixed in organizational structures. In particular,, leadership, which gets reinforced as a consequence of initial good performance, fosters the formation of a star-like organization. This vertical structure, however, has a negative impact upon group final performance. Hence, final group results are negatively affected by group reliance on a leader who has emerged endogenously due to initial good performance in a time-constrained test. Finally, priming group identity turns out to be a key determinant of the group members' level of agreement on the group structure, but not of the specific group structure per se.

The paper is organized as follows: section 2 reviews some of the relevant literature, section 3 presents the experimental design; section 4 details the research questions; section 5 illustrates our results, and section 6 offers some concluding remarks.

## 2 Literature Review

In this work we draw upon several and complementary streams of research belonging to the vast economic, organizational and management literature on the relation between group incentives, group structure and group performance. The question of how to adequately motivate employees and, more generally, of to how to best exploit the advantages of teamwork without incurring in its disadvantages is among the most widely studied by both economics and management scholars, and its importance within the field has grown enormously in more recent times, given that over 50 percent of large firms in the US seem to rely on some form of teamwork (Dumain 1994; Ostermann 1995).

It is beyond the scope of this section to review this immense and fast growing literature in detail; more modestly, we limit ourselves to pointing out specific sets of issues which have received the most attention so far: first, studies on incentives and motivation have tried to identify the relative efficiency of different incentive schemes (e.g., fixed versus piece-rate salaries, and individual versus group incentives; see Holmstrom and Milgrom, 1987, Kandel and Lazear, 1992) in order to motivate groups and to minimize the incidence of free riding. Examples of firms applying group incentives can be found in Che and Yoo (2001) and Barnes et al. (2001). Among studies dealing with motivation and group norms, Lawler (1971), Kandel and Lazear (1992) and Knez and Simester (2001) have pointed out how mechanisms such as peer pressure, mutual monitoring and social norms of cooperation can work to reduce the impact of free riding and make group incentives more effective.

Given the difficulty of identifying direct measures of effectiveness from field data due to the presence of several confounds, the issue of group incentives and motivation has been extensively investigated using laboratory and, more recently, field experiments. The gift-exchange literature has provided tantalizing, though not conclusive, evidence on the role of reciprocity in the employee-employer relationship (e.g., Camerer and Weber 2010 and Engelmann and Ortmann 2009 for reviews). In the domain of experimental studies of coordination, moreover, several organizational mechanisms (e.g., group bonuses, communication, leadership, information, group commitment) have been tested for their relative ability to foster successful group coordination on efficient norms (see Devetag and Ortmann 2007 for a review), following an important contribution by Knez and Camerer (1994) which suggested that teamwork in organizations is more likely to resemble features typical of coordination games (aligning expectations toward one out of many possible equilibria) rather than those of social dilemmas.

Among experimental studies on teamwork, increasing attention has been given in recent times to the impact of “soft” variables, such as group and organizational culture, group identity and social effects - on team incentives and performance. For example, Babcock et al. (2001) aim to test the role of social effects on team performance in a field experiment involving exogenous team formation and repeated social interaction over time; they find that social effects – defined as the motivation arising from the fear of letting down respected teammates – are as effective as direct pecuniary effects. Andersson et al. (2010) test the role of pro-social priming and its interaction with personal prosocial orientations on group productivity in a traditional lab experiment. Their findings point out the importance of the interaction among preferences, organizational culture, and financial incentives in fostering group productivity. Finally, Chen and Chen (2010) find a positive impact of group identity, primed according to the Minimal Group Paradigm (Tajfel et al. 197), on equilibrium selection in a coordination game of the weak-link type.

Recently, the use of field experiments employing real tasks in natural contexts has increased due to a renowned concern for the limited external validity of laboratory experiments (See Harrison and List, 2004 for a review).

### 3 Experimental design

As stated in the introduction, our main purpose is to test a number of hypotheses on the existence of a relation between team organization and performance, and among group identity, within-group diversity and team organization in a field experiment involving groups interacting over an extended period of time and engaged in a complex task. Our experiment spanned over an academic semester at the Faculty of Economics at the University of Trento, and it involved all the first year students<sup>1</sup> enrolled in the applied course “Markets Lab”. During this course students learn the basics of economic data analysis and learn to compute some of the simplest and most fundamental economic and statistical indexes, such as inflation rate, per capita GDP, purchase parity power, growth indexes, etc. All the 464 students are supervised by four faculty members and divided into four classes, each of which is subsequently divided into four subclasses; each subclass is supervised by a TA during lab sessions. The number of formal lectures is limited, the course is therefore structured as a typical interactive lab in which students are supervised by the TAs and work in small groups (usually 5 members) that remain fixed throughout the course. The definition of the groups was implemented by the experimenters and the criteria are specified below.

Evaluation is divided as follows. First, two weeks after team formation, a midterm group test was administered in the form of Excel computation of indexes, interpretation of graphs, etc. The test was administered under strict time constraints and an incentive scheme was created such that the best performing groups would receive Euro 50 (Euro 10 for each member of the group)<sup>2</sup>. Second, throughout the course, groups had to work at a group report, based on a standard format,<sup>3</sup> to be handed out at the end of the semester and which was evaluated separately. Third, a final exam was administered consisting in an individual test. Hence, each student’s final individual evaluation was a function of the group grade obtained in the midterm test, the grade assigned to the final group report, and the grade obtained in the individual exam.

On the first day of class, general information about the experiment was publicly given by the instructor, and students had to fill in a questionnaire involving a series of demographic questions, together with some general knowledge questions and a set of questions asking for personal preferences. In the questionnaire students were also asked to state their intention to participate in the experiment in order to gain an extra mark, and their intentions to comply with all the experiment rules. The general knowledge questions were inserted to control for students initial level of general knowledge and preparation, and were drawn from a sample of questions widely used in psychology experiments entailing general knowledge quizzes. In particular, the questions belonged to different categories (sport,

<sup>1</sup> The participation in the experiment was voluntary. Students who did not intend to participate were not included in the sample, and their data on performance not recorded.

<sup>2</sup> The monetary incentive was given in addition to the obvious incentive represented by test evaluation and grading.

<sup>3</sup> The paper, 10 pages length, had fixed sections, and each one had to contain a minimal set of information. Groups could gather additional information with respect to the minimal requirement. Reports written in this semi-fixed formats were highly comparable. Cross evaluation confirmed high correlation on how reports were graded by different persons. To avoid systematic biases among classes, in our analysis we controlled for teachers.

music, geography, science, etc.) and were selected in such a way that every category was adequately represented. The order of questions randomly varied across different classes. The set of questions related to personal preferences was used by the experimenters to form part of the 104 groups divided into 16 subclasses. More specifically, the questions regarding personal preferences included a question on 1) whether they preferred a seaside destination or a mountain destination for vacation, 2) whether they preferred watching a basketball or a volleyball match on TV, 3) whether they preferred Windows or Mac as operating system, and 4) whether their zodiac sign was a “water”, “earth”, “air”, or “fire” sign (a translation of the complete questionnaire is available upon request). The four questions on personal preferences were used to form the groups in line with the Minimal Group Paradigm methodology<sup>1</sup>.

The MGP method to prime group identity is based on forming groups according to preferences given to items such as those in the four questions above. Individuals who give the same answer to a specific question are grouped together. The MGP method was initially developed to identify the weakest possible form of group identity that could be implemented artificially. Several experiments have shown conclusively and convincingly that even such a mild form of group identity is able to produce a modification in preferences and behavior, the most frequent and important of which is the so-called In-group bias, according to which individuals tend to treat members of their own group (formed according to MGP) more favorably than members of other groups (see Tajfel et al. 1971). More recently, group identity has been shown to produce efficient coordination on payoff-dominant equilibria in coordination games (Chen and Chen 2010). Notwithstanding the huge amount of experiments employing MGP, to our knowledge there are no studies investigating the power of MGP in real groups interacting over time in a real group task. Our purpose is to test the extent to which such a minimal form of group identity is able to survive despite the concurrence of the naturally occurring and endogenous group identity emerging out of repeated social interaction among group members. The existence of a significant influence of priming in such a real world group setting would constitute novel and important evidence on the possibility to manipulate group identity in real world contexts through priming mechanisms.

Criteria	Aware/Unaware	Class				Total number of groups
		Class1	Class2	Class3	Class4	
Zodiac- Water	Aware	-	5	-	-	5
	Unaware	2	-	5	4	11
	<b>Total</b>	<b>2</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>16</b>
Zodiac-Air	Aware	-	-	5	-	5
	Unaware	7	5	-	4	16
	<b>Total</b>	<b>7</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>21</b>
Zodiac-fire	Aware	4	-	5	-	9
	Unaware	-	5	-	5	10
	<b>Total</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>19</b>
Zodiac - earth	Aware	4	-	5	-	9
	Unaware	-	5	5	4	14
	<b>Total</b>	<b>4</b>	<b>5</b>	<b>10</b>	<b>4</b>	<b>23</b>
Sport on TV - basket	Aware	3	5	9	9	26
	Unaware	-	16	5	-	21
	<b>Total</b>	<b>3</b>	<b>21</b>	<b>14</b>	<b>9</b>	<b>47</b>
Sport on TV - volleyball	Aware	7	-	10	4	21
	Unaware	6	-	-	5	11
	<b>Total</b>	<b>13</b>		<b>10</b>	<b>9</b>	<b>32</b>
Operating system- Macintosh	Aware	9	5	-	4	18
	Unaware	-	-	9	-	9
	<b>Total</b>	<b>9</b>	<b>5</b>	<b>9</b>	<b>4</b>	<b>27</b>
Operating system- Windows	Aware	3	14	5	4	26
	Unaware	7	-	10	6	23
	<b>Total</b>	<b>10</b>	<b>14</b>	<b>15</b>	<b>10</b>	<b>49</b>
Vacation - seaside	Aware	5	9	9	8	31
	Unaware	13	10	14	5	42
	<b>Total</b>	<b>18</b>	<b>19</b>	<b>23</b>	<b>13</b>	<b>73</b>
Vacation - mountains	Aware	4	-	-	5	9
	Unaware	-	-	-	-	-
	<b>Total</b>	<b>4</b>			<b>5</b>	<b>9</b>
Random	<b>Total</b>	22	48	38	35	122
Not participant	<b>Total</b>	-	5	-	-	5
	<b>Total number of groups</b>	<b>96</b>	<b>132</b>	<b>134</b>	<b>102</b>	<b>464</b>

Table 1: Total number of subjects in groups formed according to each criterion, and divided by class and awareness

Within each of the four classes, groups belonged to three different treatments: Random, Aware, Non Aware. One third of the groups were formed according to a random criterion, while the other two thirds were formed based on

<sup>1</sup> The Minimal group paradigm (MGP) methodology is usually implemented in social psychology and used for analyzing the minimal required conditions for discriminating between groups (Tajfel et al. 1971).

the four questions on personal preferences. In particular, candidates to non-random groups in the four classes were divided on the basis of their answers to a “preference” question, and subjects having expressed the same preference randomly matched together in groups of five. Of the groups formed according to the preference criterion, half of them were aware of the criterion used to create the groups, the remaining half were not. All the random groups were aware of the random criterion applied. The information on the criterion was conveyed the week after the questionnaire was administered by means of an official letter given to each group, printed on University paper, stating the list of group members, some general information about the experiment, and, for the Random and Aware groups only, informing the group of the criterion that had been used to form the group.

The total number of groups formed according to each criterion, divided by class and awareness, is shown in Table 1.

## 4 Research questions

Based on the experimental design explained in the previous section, the field experiment aims at evaluating the relationship between group characteristics and performance. While a complete assessment of this relationship should address individual as well as group performance, in this paper we limit our scope to the analysis of group performance, leaving aside the influence of group performance on individual learning.

Our research is aimed at understanding the effect of team characteristics (in terms of, e.g. internal structure and coordination mode, leadership, group identity, skill and personality features heterogeneity) upon performance. We posit that, initially, groups try to agree on a way to structure their assigned task, not always successfully. This creates an “imprinting” that lasts for the whole duration of the task accomplishment phase. Proceeding backwards, we formulate the following research questions.

First, we investigate the impact of team structure upon group performance. To address this research question, group structures were identified by means of a questionnaire administered to each participant at the end of the semester. Students were asked to depict the relationships among group members while working (group network structure) by either choosing among a set of suggested structure templates, or by drafting their own template. Three main prototypical structures were identified: a star-like structure (*star network*), where relationships among participants are hierarchized under a single component which assumes the role of leader/coordinator; a pairwise structure (*small world network*), in which all members of the group reciprocally interact; and a residual set of structures, with no clear pattern, where generally groups split in small cliques (*cliques network*). The average level of consensus on the type of structure was very high among team members, which gives support to the validity of our elicitation method. Our hypothesis were: first, that groups able to create a structure perform better in the group task compared to groups unable to agree on a structure; second, that according to the diversity approach to problem solving (Page, 2007), “small world” groups outperform hierarchical groups by showing higher ability to explore and test different solutions in a complex problem solving landscape, and lower probability to be driven by the leader to a local, suboptimal solution.

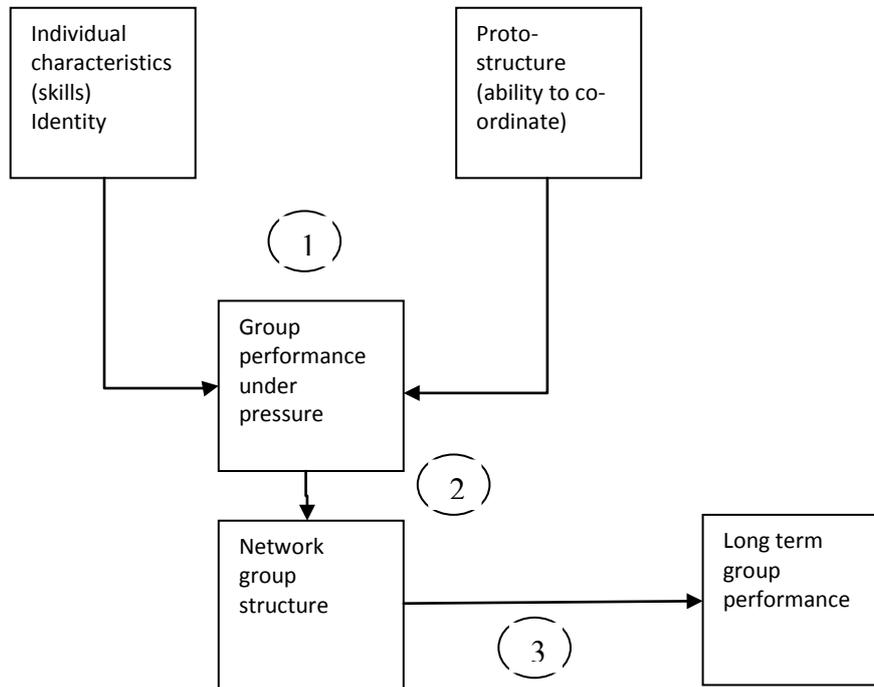
Second, we address the issue of what drives the group “imprinting” of different organizational structures. In order to assess this, shortly after the group formation (two weeks), groups were administered a test to be performed under time pressure. Our research hypothesis is that the introduction of time constraints has a decisive influence on group structuring, and that a positive outcome of the task reinforces the type of structure (if any) that the group has implemented to perform the task.

A final set of question is aimed to investigate the role of several variables in determining performance in the task under pressure. The first set of variables relates to students skills, both as group average skills and as presence of highly skilled members in the group: to this aim we used group average and maximum high school grade as indicators. Second, we test the role of endogenous and self-organized division of labor during the test performed under time pressure: groups indeed had the opportunity to “self-organize” according to a “division of labor” scheme: they had the possibility to use two computers, and they could divide labor according to different criteria, for example by splitting answers, or by assigning different tasks (e.g., computation of indexes, construction of graphs, etc.) to different members. In order to rapidly agree upon a division of labor mechanism, some coordinating role was likely to emerge, though not necessarily in the form of a strong leadership<sup>1</sup>. We hypothesize that the coordinating mechanisms that appears in this phase gets reinforces as a function of the positive effect it has on performance. Finally, we want to test whether priming group identity would influence the subsequent coordination mechanism, for example by favoring shared and horizontal coordination. To this aim, we test the impact of both group identity (based on the criteria used to form the groups) and of within-group diversity upon team organization. More specifically, we test whether the Minimal Group Paradigm is effective in inducing the emergence of a specific group coordination structure (Chen et al. 2010).

<sup>1</sup> For example, a “soft” leadership as well as a paritarian agreement are also possible and equally likely ex-ante.

The sequence of research questions can be now graphically depicted according to sequence of events occurred in the experiment (Figure 1). The sequence of three models we present in Section 5 test, respectively, the relations 1, 2, and 3.

We expect that the presence of some level of coordination, together with specific individual characteristics of the members of a group during the test allows the agreement on a structure – either a star network or a small world – involving all group members, with a positive effect on performance. We then expect, according to the diversity hypothesis, paritarian star-like structures to have a positive effect on the performance in long term, complex tasks.



## 5 Results

We run a set of regressions to identify the variables affecting short-term performance (as measured by the midterm test under time pressure), emerging group structure, and long term performance.

First, the determinants of the midterm test are analyzed to identify the factor impacting short-term performance under pressure. Hence, we study the grade obtained in the test (*test*) as a function of four groups of variables: group-formation criteria; previous skills and knowledge; professor fixed effect; and within-group coordination level. First, two variable are used to define group formation: *aware* indicates the awareness by members of a group about the specific criterion used to form the group, and *random* indicates all the groups formed by applying the random criterion<sup>1</sup>. Second, a dummy for each professor is included in order to control for differences due to class allocation. Third, each group skills and knowledge are included through the variables *m\_bachelor* and *max\_bachelor*, respectively indicating the mean and the maximum mark obtained at the bachelor's degree exam within each group. Finally, the level of *coordination* among group members is obtained from one question of the final questionnaire. It was asked whether when carrying out the test, some members of the group took care of organizing the work and splitting it among group members by making use of the two computers available. We assume that the level of coordination achieved at this early stage of team work can be thought as representing a form of proto-organization. The results of the regressions are summarized in Table 2, listing a tobit regression with the variable *test* as dependent variable. The tobit model has been chosen to control for the low variability of the variable *test* and it is censored at 0.

<sup>1</sup> A reminder is due here: all the random groups are aware of the random criterion used to for their group.

	<b>Tobit test</b>
coordination	1.902*** (0.579)
m_bachelor	0.012 (0.040)
max_bachelor	0.123*** (0.040)
aware	-0.972 (0.688)
random	0.221 (0.713)
professor1	3.045*** (0.807)
professor2	3.543*** (0.816)
professor3	1.176** (0.761)
professor4	- -
constant	-8.688*** -3.001
N.observations	444
PseudoR <sup>2</sup>	1.94%

Table 2: Tobit model

Notes: Standard errors in parentheses. \*Significant at the 10-per cent level. \*\*Significant at the 5-per cent level. \*\*\*Significant at the 1-percent level.

The presence of coordination among all group members has a positive and significant effect on short-term performance under pressure. Therefore, given the existence of a significant correlation between group coordination and performance, it is plausible to assume that the coordinating mechanism emerging in this phase gets reinforced as a consequence of its positive effect.

Another interesting result emerges by looking at correlations between performance and skills. While average group skill (as measured by the average bachelor's degree mark) is not significantly correlated with performance, the correlation between group performance and the skill level of the "best" group member is positive and significant. Hence, the presence of a very bright group member is able to compensate for low skills levels of other participants. It is an open research question whether the best group member is more likely to be selected as leader.

Priming does not seem to have any relevant effect on group performance. Finally, fixed professor effects are in place and in fact all the three non-omitted variables *professor1*, *professor2* and *professor3* have a positive effect, significant at 5% level.

The second step of our analysis exploits the fitted value of the test derived from the previous tobit regression to identify the determinants of the three different group structures. Table 3 reports the results of three logit models having the three dummies representing the three structures (*small world network*, *star network*, and *clique network*) as dependent variables. This regression aims at analyzing whether the various structures are influenced by the result of the midterm test and by other group variables. Additional variables include the level of *agreement* on group structure (1 if more than half of group members state the same group structure in the questionnaire, 0 otherwise); the variance of the bachelor mark (*var\_bachelor*), which is aimed to capture group diversity, and four qualitative group variables assuming values from 1 (very low) to 5 (very high) and derived from students' responses in the final questionnaire: level of learning at the group level (*group learning*), global evaluation of team work (*group evaluation*), climate emerged within the team (*group harmony*), and need for individual, independent effort by each group member (*individual work*).

	Logit		
	<i>small world network</i>	<i>star network</i>	<i>clique network</i>
test_fitted	0.205*** (0.060)	0.125* (0.066)	-0.234*** (0.067)
agreement	0.048 (0.250)	0.541** (0.262)	1.239*** (0.278)
var_bachelor	0.001 (0.001)	0.001 (0.001)	-0.001 (0.001)
group learning	0.777** (0.374)	-0.499 (0.320)	-0.684** (0.335)
group evaluation	2.917*** (0.459)	-0.501 (0.380)	-1.024*** (0.393)
group harmony	-0.236 (0.332)	0.173 (0.303)	-0.296 (0.300)
individual work	- -	1.461*** (0.555)	- -
constant	-15.265*** -1.671	0.462 (0.951)	7.160*** (1.249)
N.observations	428	444	428
PseudoR <sup>2</sup>	31.30%	8.61%	18.66%

Table 3: Logit models.

Notes: Standard errors in parentheses. \*Significant at the 10-per cent level. \*\*Significant at the 5-per cent level. \*\*\*Significant at the 1-percent level.

All three columns of Table 3 confirm the significant effect of the preliminary test. In particular, the higher is the evaluation obtained in the test, the higher is the chance of emergence of either a small world or a star network. The significant but negative coefficient of the variable *test* on the third structure, the clique network, specifies the opposite relation between performance in the test and emergence of a poorly coordinated structure (presence of sub-teams). This confirms the hypothesis that the need to accomplish a group task under time pressure has a relevant influence on group structuring, and that good performance in the task reinforces group reliance on the structure (if any) initially emerged.

Notwithstanding the insignificant impact of skill variance on all structures, the other qualitative group variables do have significant correlations with the three structures. First, a small world structure (first column of Table 3) is significantly correlated with a positive global evaluation of teamwork. In addition, higher group learning is positively correlated with a paritarian coordination structure. Differently, a star network structure is not significantly correlated either with group learning or with overall group evaluation (second column of Table 3). Instead, the presence of a leader is positively and significantly correlated with members' agreement on the emerging structure and with the need of individual work. A hierarchical coordination usually implies, indeed, additional individual effort by some group members, presumably by the leader herself. In addition, star networks are usually agreed upon by group members so that the emerging leader results to be legitimized. Finally, the last column of Table 3 reports the variable influencing the emergence of clique structures. Also in this case the agreement among group members positively impacts the effective implementation and reinforcement of the sub-groups structure. However, a good evaluation of global team work does not seem to positively impact this kind of structure: the chance of creating a clique network is indeed negatively and significantly correlated with the general evaluation of the team work.

Finally, the last step is aimed at identifying a relation between fitted values of structure *i* and final, long-term group performance (*final groups report*). Three OLS models are used to investigate how final performance is impacted by the fitted values of the three structures. In addition to that, a scale model commonly used in the experimental literature is applied to control for individual inclinations measured by different personality traits (Rydval et al., 2009). Four of the five variables defining the models are included in the OLS. First, *need for cognition* measures subjects' level of intrinsic motivation and commitment. Second, *perseverance* measures the natural tendency of each member to persist in a specific task without giving up when difficulties emerge. *Sensation seeking* measures the tendency of a subject to prefer and search exciting, highly risky, and usually out of control, actions. Finally, *math anxiety* measures the negative feelings that a subject experiences when dealing with mathematical problems. All four variables are included in the model by computing the group mean value for each of them separately. The results of this final step are illustrated in Table 4.

	OLS		
	<i>final group report</i>	<i>final group report</i>	<i>final group report</i>
fitted_small world	0.036 (0.258)	-	-
fitted_star network	-	-1.041** (0.485)	-
fitted_clique network	-	-	-0.069 (0.327)
need for cognition	0.148** (0.061)	0.147** (0.060)	1.147** (0.060)
perseverance	-0.257*** (0.070)	-0.248*** (0.070)	0.256*** (0.070)
sensation seeking	0.011 (0.036)	0.001 (0.036)	0.011 (0.036)
math anxiety	-0.007 (0.018)	-0.004 (0.018)	-0.069 (0.018)
constant	23.344*** (3.034)	23.531*** (2.965)	23.377*** (2.989)
N.observations	410	410	410
Adj R <sup>2</sup>	2.17%	3.27%	2.18%

Table 4: OLS models

Notes: Standard errors in parentheses. \*Significant at the 10-per cent level. \*\*Significant at the 5-per cent level. \*\*\*Significant at the 1-percent level.

The most interesting results emerge by focusing on the impact of the fitted values of the three structures on the mark of the final group report. Interestingly enough, the star network, which emerged and was reinforced after the intermediate test, has a negative and significant effect on final long term performance. The positive result obtained after the intermediate test may have strengthened the role of the leader, but it is possible that excessive reliance on the leader may have been detrimental, presumably by lowering perceived individual commitment and accountability. This result is well in line with studies on leadership, which show that leaders tend often to be held responsible for group performance regardless of their actual true responsibility. An implication of this “fundamental attribution error” may consist in a dilution of responsibility, which in turn might induce students to decrease their effort levels.

Sensation seeking and math anxiety play no role in all the three considered cases, while final performance is strengthened by individual commitment but weakened by individual perseverance. Finally, neither the small world nor the clique network has a significant impact on final performance. However, despite the statistically significant coefficients, both coordination structures, paritarian and hierarchical, have a positive impact on long-term performance.

## 6 Conclusions.

We have presented the results of a field experiment on teamwork aimed at testing how the structure of the group influences group performance in tasks of different complexity, to be carried out in different time spans. Groups able to co-ordinate their work score well on average. Co-ordination, however, can be achieved by means of more or less hierarchical structures. We have shown that: a. good performance obtained in a task performed under time pressure reinforces group reliance on the model of coordination experimented; b. groups that converge to and agree upon a hierarchical structure exhibit lower performance in the more complex, long term task.

Simple tasks can be easily split among group members, and time pressure forces groups to adopt some form of labor division. To this aim, it is likely that the presence of a member able to act as leader and to coordinate and organize task division can be of value. However, when confronted with more complex and articulated tasks, a strong leadership can be detrimental to group performance. Having to search for solutions, a strong leadership can discourage independent search for solutions on the part of group members, who can rest on the strong advocacy of the leader. This dilution of responsibility can “trap” problem solving on local optima, and reduce the chances to explore a wider region of the solution landscape. Moreover, a strong leadership can foster internal conflicts. Groups organized on a more egalitarian basis seem more able to cope with complex situations, and to activate parallel processes of search, which are much more efficient than the hierarchical exploration of the space of solutions. Groups unable to coordinate in the first stage, by contrast, score badly in the intermediate test, and the bad score reinforces the establishment of conflicting cliques, having a negative effect on performance in the long-term task.

While we were able to isolate some dynamics of group structuring and its influence on team performance, contrary to our expectations, we didn’t find evidence of a role of primed identity either on performance, or on group structures.

We have hints (not presented here) that primed identity influences the agreement on group structure. Primed identity, hence, is not a neutral variable. Priming induces some internal dynamics, but we hypothesize that in the long run, in the presence of multiple and repeated interactions, and of the many occurrences that can influence the building of a group identity, priming dilutes its effects. This question paves the way to further studies, aimed at understanding what is the right “intensity” of priming that is needed to be effective in a real environment as opposed to the artificial lab situation. Although we believe our results are broadly convincing, much further work needs to be done to check for their robustness, both through a refinement of our estimations, due to the many disturbances that characterize a field experiment, and through a replication of the experiment, both in field and in the laboratory. Finally, the issue of the relationship between group organization and individual learning is a further topic worth investigating in future research.

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## THE SMALL DIFFERENCE: HOW DOES GENDER AFFECT PREFERENCES FOR SCHOOL MILK?

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### Abstract

A well balanced diet is an essential need for children and dairy products are a part of it. While, on average, younger children consume almost enough dairy products consumption regularly declines over the years and will subsequently become insufficient.

One possibility for children to consume more dairy products is school milk. This research project was carried out to gain information about preferences for school milk and influencing factors. It highlights preferences for different school milk products and school milk attributes differentiated for male and female youths. Knowing these differences helps to (1) create preferred products and (2) to create milk promoting campaigns appropriate for special target groups.

The analysis is based on an online-survey with 500 youths. A choice experiment was used to gain quantifiable information on relevant product attributes and to analyze different groups in depth. Alternatives regarded in this study were a conventional school milk, a novel school milk and a yoghurt. Used attributes were price, fat content and sweetening agent, with two or three levels. Respondents were also able to reject the presented products.

A Nested Logit (NL) Model was used for estimation. It was estimated for all youths together and then separately for boys and girls.

Analysis for all youths showed utility increasing and decreasing attributes and various influencing factors regarding the decision to choose a novel product. But surprisingly, no gender differences were found.

Separating boys and girls in the estimation various differences became apparent. Preliminary analysis shows, for instance, that the decline of expected product utility due to an increasing fat content is significant for girls but not for boys. For the latter, utility declines significantly due to the use of an artificial sweetener. Preferences for the presented products are also different; yoghurt is more preferred by girls.

Boys who choose the novel products prefer lower fat and/or sugar contents while girls with a preference for novel products choose products with lower calorie intake in general. Satisfaction with the own figure influences just girls' product decision significantly.

Results show that preferences for dairy products vary a lot between boys and girls. Although both groups like these products they prefer different alternatives with different product attributes. Low fat products and yoghurt should be offered to reach more girls. Products sweetened with sugar are important to reach boys. Reasons for this will be discussed in the full paper.

*Keywords: choice, advertising, children, individual differences*

### 1 Introduction

Due the special requirements of children for animal proteins, vitamins and minerals, dairy products should be part of a well-balanced children's diet. Dairy products provide these nutrients in a relatively optimal combination (HEINE, 1999). Although on average younger children tend to consume almost sufficient dairy products, consumption quite often declines with increasing age and often becomes insufficient (MENSINK ET AL., 2007). Especially girls, who have a high need for calcium<sup>1</sup>, quite often do not fulfil daily requirements (DGE 2008; ALEXY, CLAUSEN AND KERSTING, 2008). Subsidised school milk is one possibility to increase overall milk consumption. The school milk programme developed by the European Union covers various types of milk products, including drinking milk, ranging from plain milk, through flavoured milk and on to fermented milk products (EUROPEAN COMMISSION, 2008, EUROPEAN COUNCIL, 1977). All children visiting nursery, primary, secondary or vocational schools are entitled to receive a maximum of 250 ml of subsidized school milk products per school day. Reduced over time the subsidy is currently 18.15 cents per kg milk.

<sup>1</sup> High calcium intake in the youths may prevent osteoporosis

In Germany, however, the number of schools and pupils participating in the school milk programme has dropped substantially. Between 1993/94 and 2008/09, school milk sales declined by 72 % to 36,746 tonnes of full milk equivalent<sup>1</sup>. In order to identify caveats and to develop recommendations for improved programme features, the German Federal Ministry of Food, Agriculture and Consumer Protection initiated a comprehensive research project ("Focus on school milk") for the period 2008-2011. The accompanying research is designed to analyse the whole value chain of school milk with a special regard on the consumer, the pupils and parents. Characteristics determining their school milk demand were to be assessed. Among others, one essential outcome was that gender significantly affects school milk demand (CHRISTOPH ET AL 2010; SALAMON ET AL. 2011, 2012; WEIBLE ET AL. 2011).

The following paper is based on one of the satellite projects within the overall project and focuses on dairy consumption of parents and children alike, as well as their demands for those products. The main objective is to develop strategies for improved dairy consumption over the course of time.

## 1.1 Background

Several national nutritional surveys detected gender-specific differences in food patterns of youths. With regard to milk, yoghurt, butter milk and similar products, the so-called "Eskimo study" indicates a higher consumption by boys aged 6 to 11 years and 12 to 17 years as compared to girls of the same age (MENSINK ET AL. 2007). Gender-specific differences in the breakfast behaviour of German pupils were depicted by WEINDLMAIER AND FALLSCHEER (1997). Around 10 percent more boys than girls drink milk as part of breakfast. Moreover, girls rarely drink milk at school. In Germany, girls aged 10 to 12 fall short of dietary recommendations<sup>2</sup>, whereas boys' consumption is only slightly below the recommendations. Regardless of the gender, half of the teens between 12 and 18 do not achieve the recommended values (DGE 2008; ALEXU, CLAUSEN AND KERSTING 2008).

PUDEL AND WESTENHÖFER (1998, p. 39) describe that people continue to exhibit those eating habits they learned in their childhood; children who drink milk and consume dairy products regularly will continue to do so as adults. Moreover, it has been suggested that food preferences may be more easily modified during childhood than later on. Thus, children are a target group for intervention programmes aiming to increase the intake of milk and milk products (GRIFFIN 1999; WIND ET AL. 2006).

## 2 Objectives

The objective of the following paper is to investigate how new school milk products can stimulate the demand for school milk for youths. This, in turn, may directly improve their nutritional conditions. Thus, the paper focuses on attitudes towards different attributes of school milk products. Since preferences and needs change in the course of life, an up-to-date view of consumers' willingness to buy novel school products, and the perceived attributes of school milk products, is desired. Due to the already mentioned findings of the main project, we expect to find gender specific results concerning the preferences for milk attributes as well. If this is the case, findings may help in designing products to overcome the female reluctance to consume sufficient milk products.

Hence, the main issue is to capture the differences between male and female youths with regard to their preferences for school milk. Here the difference between the perceived utility of various school milk attributes is considered. In an online survey including a choice experiment, respondents were asked to choose school milk products with different attributes. This approach allows attributes preferred by consumers in a choice decision (high or low fat content, use of artificial sweetener) to be identified. Also choice influencing factors will be identified. In general, results were supposed to be used for product-specific implications to increase school milk consumption.

This paper is structured as follows: first, a short background on the topic will be provided in Section 1, and then, in Section 2 an overview on gender differences, especially among youths, can be found. In Section 3, the underlying methodological framework will be presented in detail. A short overview of the collected primary data is given in Section 4. Results of the econometric model are shown in Section 5. A final Section 6 provides qualifications and conclusions.

## 3 Method

In the following subsection, the methodological approach is presented consisting of two components. First, choice experiments, an approach to measure utility and willingness to pay, will be introduced to the reader. And second, an econometric model for analyzing choice experiments, the nested logit model, will be shortly explained.

### 3.1 Choice Experiments

Measurement of product utility and consumers' willingness to pay (WTP) is the purpose of choice experiments (CEs). CEs are a type of stated preference methods that arose out of conjoint analysis. In contrast to the latter, the

<sup>1</sup> Data originated from German Ministry of Food, Agriculture and Consumer Protection, February 8, 2011.

<sup>2</sup> Girls should consume 425-450 millilitres of milk and boys 450-500 millilitres per day.

respondents do not rank or rate the different alternatives; they must decide on one of several alternatives (ADAMOWICZ et al., 1998; LOUVIERE, 2001). During the 1970s, originally, CEs were developed to solve logistic problems (BEN-AKIVA and LERMAN, 1974) and in the 1980s they were developed further by LOUVIERE and HENSHER (1982). After initial, almost exclusive, use for transportation problems (BEN-AKIVA and LERMAN, 1974; BEN-AKIVA, 2000; MOREY and ROWE, 1993; MCFADDEN, 1999). In recent years CEs have also been applied in other research areas such as environmental economics (ADAMOWICZ et al., 1997; HANLEY et al., 1998) or food consumption (LUSK et al., 2003; LUSK and SCHROEDER, 2004). CEs have several advantages compared with other approaches: (i) it is easier for respondents to choose the most preferred product than to rank many different alternatives as in conjoint analysis (ADAMOWICZ et al., 1998; HAIR et al., 1998, p. 394); (ii) CE are less susceptible to respondents' strategic behaviour, which is a major problem in contingent valuation method applications (BREYER et al., 2005, p. 61); (iii) compared to the alternative methods it is easier to check for internal consistency, to compute single attribute parameters, to detect substitutive relationships between different attributes and to allow for respondents' heterogeneity using different econometric models (HANLEY et al., 1998a). HANLEY et al. (1998b) concluded that contingent valuation would be more suitable to evaluate overall concepts while the favoured method to assess particular attributes would be CEs. Therefore, CEs are used in this study.

The starting point of a CE is consumer preference. In this paper, preferences for a special product, more precisely school milk products, are determined. The "sources of preferences" for a product are its different attributes. These can be, e.g., fat, sugar or calcium content, flavouring, price, the type of product (drinking milk versus yoghurt), etc. Levels of the attributes might be different between various products. Drinking milk, for instance, typically has a fat content of 3.5 %, 1.5 % or 0.3 % in Germany. A consumer will choose the product that has the best combination of attributes and attribute levels. This is, of course, very customized. One consumer will prefer a low fat content, another consumer the lowest price and a third regards solely the flavour. We also assume that the product that provides the maximum utility to the consumer is preferred. This concept of attributes and levels was first established by Lancaster in the 1960s (LANCASTER, 1966) as a new approach to consumer theory. In the 1970s this approach was extended by McFadden's random utility model (MCFADDEN, 1974).

Both Lancaster and McFadden describe the alternatives chosen by using a number of attributes  $k$ . Individual  $n$  chooses alternative  $i$  resulting in utility  $U_{ni} = U(X_{ni})$ , where  $X_{ni}$  is a vector describing the attributes embedded in alternative  $i$ . Applying McFadden's random utility model, utility is composed of a deterministic and a random part  $U_{ni} = V_{ni} + \epsilon_{ni}$ . Here  $V_{ni} = f(X_{ni})$  is deterministic and depends on the product attributes whereas  $\epsilon_{ni}$  presents the random component. Total product utility is the sum of all single utilities that arise from different attributes (HENSHER et al., 2006; LOUVIERE, 2001).

If the product price is one of these attributes, willingness to pay (WTP) can be measured (BENNETT and ADAMOWICZ, 2001; LUSK et al., 2003). From

$$U_{ni} = \beta_{price} \cdot price + \sum_{k=2}^K (\beta_{k,ni} \cdot X_{k,ni}) + \epsilon_{ni}$$

one can derive willingness to pay by dividing the parameter  $\beta_{price}$  and  $\beta_{k,ni}$

$$WTP_{k,ni} = \frac{\beta_{price}}{\beta_{k,ni}}$$

All product used within this choice experiment for WTP estimation are school milk products or are intended to be used for this purpose. Attributes selected for the CE are listed in Table 1, whereas content levels of the attributes were chosen based on widely available products in Germany and other countries. The product price was included as an attribute as well.

Attribute	Levels
Products	Novel school milk, yoghurt, conventional school milk
Price (in cents)	30, 35, 40
Fat content	0.3 %, 1.5 %, 3.5 %
Sweetening agent	Sugar, artificial sweetener

Table 1: Attributes and attributes levels.

Source: Own illustration.

Choice scenarios were constructed using orthogonal main-effects designs (compare HENSHER et al., 2006, p. 116), which led to 27 product combinations. To facilitate the decision making process, the number of choices had been limited to three. Respondents had three choice options in each decision, two novel school milk products (novel school milk and yoghurt) and one conventional (conventional school milk). The latter was a constant 'opt-out' option in all sets. A sample question from the CE is given in Figure 1.

Please check the option (A, B, or C) that you would most likely purchase.			
Product attribute	Novel school milk 250 ml	Novel yoghurt 150 ml	Conventional school milk 250 ml
Price in Cents	40	30	35
Fat content	0.3 %	1.5 %	3.5 %
Sweetening agent	sweetener	sugar	sugar
I would choose.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Figure 1: Sample choice experiment question.

Source: Own illustration.

### 3.2 Nested Logit Model

Choice experiments can be analyzed with different models; e.g., Multinomial, Nested or Mixed Logit Models (Ryan and Skatun, 2004; Campell et al., 2006). One major part of our analysis is to explain why some respondents refuse to buy novel school milk products. Following von Haefen et al. (2005), a Nested Logit model (NL) is appropriate in this case. The utility function  $U_{ni} = V_{ni} + \varepsilon_{ni}$  discussed earlier is the starting point for the NL. The following analysis is based on the assumption that different product alternatives can be divided in different segments. In the case of school milk there is one segment that is free from any novel product and other segments containing novel as well as conventional school milk (compare Figure 2). Thus, the decision tree allows the purchase of conventional school milk based on two different attitudes, once because of the total rejection of novel products and once because of selection of the most favoured product attributes. Those who refuse to choose one of the presented products at all are not included within Figure 2, they are also excluded when analysing the model.

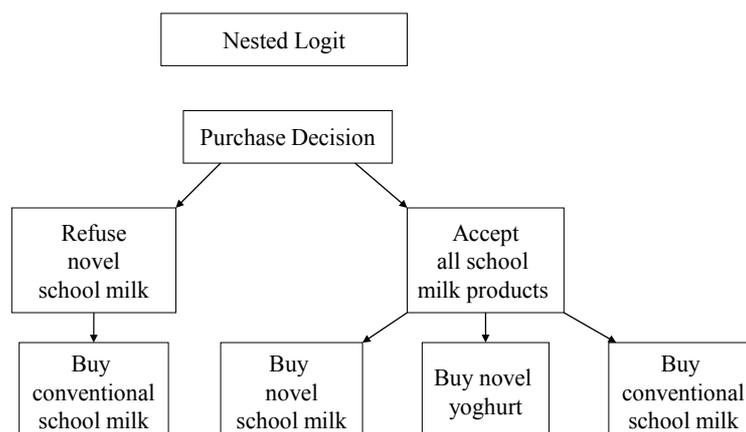


Figure 2: Purchase decision process.

Source: Based on RYAN and SKÁTUN (2004).

Total utility is  $U_{s,i} = V_{s,i} + \varepsilon_{s,i}$  where  $s$  describes the different segments ( $s = 1, \dots, S$ , in our case: refuse novel school milk versus accept all school milk products). Probability  $P_{i,s}$  that a particular alternative of a particular segment is chosen results from the arithmetic product of the probability that alternative  $i$  from segment  $s$  is chosen and the probability that segment  $s$  is chosen at all.

$$P_{i,s} = P_{s,1} + P_{s,2}$$

Using a logit model, this decision problem can be written as

$$P_{i,s} = \frac{e^{V_{s,i}}}{\sum_{j=1}^J e^{V_{s,j}}}$$

While estimating  $P_{i,s}$  two different decision problems have to be considered. The first is the decision about whether a novel product is accepted in general, and the second is the particular purchase decision. These two decisions can be linked using the concept of expected maximum utility (=EMU) that is also known as inclusive value (IV-Parameter). The IV-parameter describes the degree of substitution between the offered alternatives. Formally, the IV-Parameter can be noted as

$$IV_s = \ln \sum_{i=1}^I \exp^{V_{s,i}}$$

After integrating this parameter in the mentioned product groups (just conventional versus all products) consumer's probability to choose the segment  $S$  is

$$P_{i,S} = \frac{e^{(\beta_i + \gamma_i S)} \cdot \sigma_{i,S}}{\sum_{j=1}^J e^{(\beta_j + \gamma_j S)} \cdot \sigma_{j,S}}$$

(HENSHER et al., 2006, p. 479; LOUVIERE et al., 2000, p. 186; URBAN, 1993, p. 141, TUTZ, 2000, p. 194).

An IV-Parameter within the [0,1] boundary is the sufficient condition for a NL. Then, the decision to buy the conventional product or one of the novel products is influenced by the expected product utility. If it is not statistically significantly different from 1, a multinomial logit model is appropriate. This indicates that the decision is not exclusively determined by the characteristics of the regarded individual but also by the expected product utility. If the IV-Parameter is not significantly different from zero, there are two independent choice models for the two decision problems. In this case the expected product utility does not influence the decision regarding the product choice (HENSHER et al., 2006, p. 493; RYAN and SKÅTUN, 2004)<sup>1</sup>. According to RYAN and SKÅTUN (2004), Figure 3 shows these different decision problems and the appropriate statistical models.

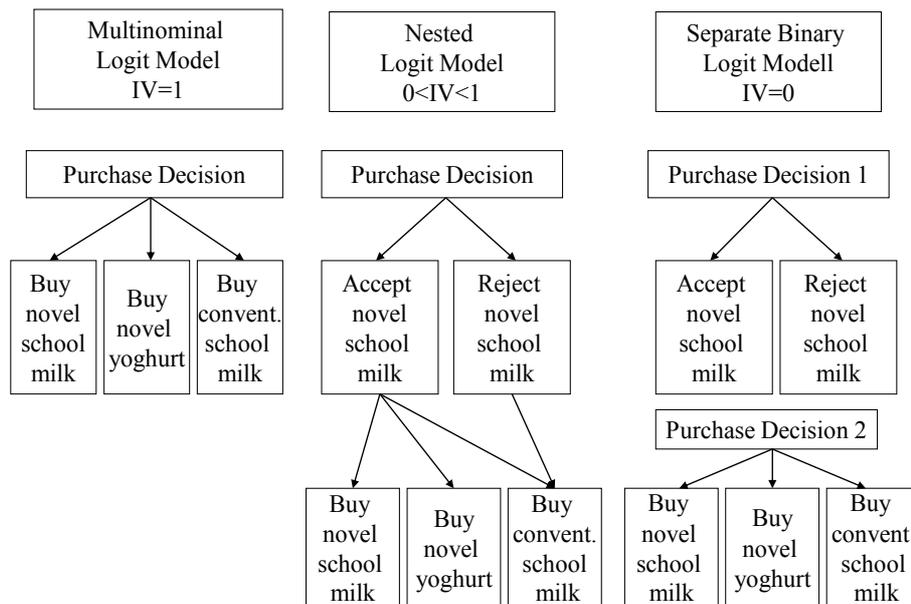


Figure 3: Choice modeling considering lexicographic preferences

Source: Based on RYAN and SKÅTUN (2004).

## 4 Results

After having explained the methodological framework, this section presents the collection of primary data, some descriptive statistics, and the final econometric results.

### 4.1 Data and descriptive results

The analysis is based on an online-survey developed in 2010 and filled in by 509 youths aged 15 to 18 years in Germany. As cognitive pretesting showed that children younger than 15 years were not able to give consistent answers within CE's they will not be considered within this analysis. Participants were equally distributed regarding age, gender and regions. Questionnaires included three parts: First, information on regularly consumed milk products, preferred product attributes and general attitudes towards milk products and nutrition were collected. Also the question of whether the youths assess themselves as overweight was raised. The second part comprises a choice-experiment (CE). The third part contained socio-demographic variables such as age, gender, household size, (im)migration background, school year and type of school.

Table 2 presents some descriptive characteristics of the data set. 50 % of our sample is female. The mean age is 16.28 years, the mean household size 3.64 and the mean number of brothers and sisters 0.73. A total of 7 % of these respondents seem to have a migration background as they indicated that a language other than German is spoken at home. 60% of the youths assess themselves as normal weight, 31% as overweight and 9% as underweight. So, most of our youths assess themselves as being of normal weight, but being overweight seems to be a more important topic

<sup>1</sup> For a more precise discussion please see Christoph et al. 2011.

products with low fat, low sugar or low calorie content. Here, low sugar content has the highest priority followed by low fat content while low calorie content has the lowest priority (44%). Low product price is important for three-quarters of the respondents and the product brand for about one quarter. Most of them like milk products (0.92%) and/or would like to consume them daily (0.78). About two third are interested in healthy nutrition and/or pay attention to healthy nutrition.

Variable	Definition	Youths
Gender	1 if female, 0 if male	0.50
Mean age	years	16.28
Mean household size	persons	3.64
Immigration background	1 if appropriate	0.07
Number of brothers and sisters	persons	0,73
Think I'm too corpulent	1 if appropriate	0.31
Think I'm too thin	1 if appropriate	0,09
My figure is ok	1 if appropriate	0,60
Low sugar content is important	1 if appropriate	0.55
Low fat content is important	1 if appropriate	0,47
Low calorie content is important	1 if appropriate	0.44
I'm interested in a healthy nutrition	1 if appropriate	0,67
Take care of healthy nutrition	1 if appropriate	0,63
Product brand is important	1 if appropriate	0,23
Low price is important	1 if appropriate	0.73
Like milk products	1 if appropriate	0.92
Would like to eat milk products daily	1 if appropriate	0.78

Table 2: Sample characteristics.

Source: Own calculations. Just those variables that were significant in the econometric models are presented in this table.

## 4.2 Econometric results

In the choice experiment, 24 youths refused to choose any of the three presented products. Hence NL estimation is carried out with 485 youths (1419 choices in total). Results are presented in Table 3.

The model explains 24.4% of total variance. The IV-Parameter remains within the [0,1] bound but is not significant. Following HENSHER et al (2006, p. 547) the Wald-test has to be carried out subsequently in this case. It tests the hypothesis whether the IV-parameter is statistically equal to zero by dividing the IV-parameter through the standard deviation. The critical value is  $\pm 1.96$  for the 95% confidence interval.

$$\frac{\text{IV - Parameter}}{\text{Standard deviation}} = \frac{-0.0169}{0.3774} = -0.0447$$

With a value of -0.0447 the statistic is below the critical value of 1.96. This implies that the Null-hypothesis, i.e., that the IV-parameter is equal to zero, cannot be rejected. This result means in our context that consumers who always chose the conventional school milk take two independent decisions. First they decide whether to buy a novel school milk product at all and then they select the specific product based on its attributes (in our case they have no choice between different products). For more information regarding IV parameter interpretation please see CHRISTOPH ET AL. 2011.

Parameter estimates presented in Table 3 are valid for those respondents who at least once chose a novel product. Both novel products have a positive constant implying that product utility is higher for those who consume the novel product compared to the conventional one (constant of the conventional product is normalized to zero). This result is expected because consumers who do not reject the novel products are explicitly analyzed. The estimated price parameter is negative. Increasing this attribute declines product utility. Product utility also declines with use of an artificial sweetener. The attribute increasing fat content, however, is not significant.

Parameter		Coefficient	Standard Deviation
Utility from school milk			
Constant of novel school milk utility	Metric	0.78***	0.10
Constant of novel yoghurt utility	Metric	0.26**	0.10
Price	Categorical	-0.09***	0.01
Fat content	Categorical	-0.05	0.03
Sweetening agent	Dummy	-0.28***	0.09
Factors that influence probability to choose novel school milk			
Constant	-	1.36**	0.67
Overweight	Dummy	0.75***	0.21
Take care of healthy nutrition	Dummy	-0.50***	0.18
Low fat content is important	Dummy	0.56**	0.22
Low sugar content is important	Dummy	0.79***	0.21
Low price is important	Dummy	-0.44**	0.19
Like milk products	Dummy	1.01***	0.34
Would like to eat milk products daily	Dummy	-0.67**	0.27
IV-Parameter Non-Refusers		-0.02	0.38
R <sup>2</sup>		0.24	
Wald-Test (IV-Parameter/Standard Deviation)		-0,04	

Table 3: Results of Nested Logit Estimation.

Source: Own calculations. \* Significance Level = 0.1; \*\* Significance Level = 0.05; \*\*\* Significance Level = 0.01.

Probability to choose a novel school milk product is increased for those youths who say that for milk products a low fat or sugar content is important. These youths also like milk products and assess themselves more often as overweight. However, they do not eat dairy products every day and they pay less attention to a healthy diet. Reasons for this behaviour might be a focus on calories<sup>1</sup>.

Surprisingly we did not find any gender effect. Although cross tables, carried out before analysis, indicated strong gender effects. Compared with boys, girls assess themselves more often as overweight (significance level: 0.01). They prefer significantly more often artificial sweetener (significance level: 0.1), low fat milk products (significance level: 0.1) and skimmed milk products (significance level: 0.05). Additionally, low calorie, fat and sugar contents are more important to them (all three times significance level: 0.05). One possible conclusion may be that the gender effect is masked by other variables and, therefore, is not observable within NL analysis. To prove whether there are differences between boys and girls an additional NL analysis was carried out separately for boys and girls. Results are presented in table 4 and 5.

Parameter		Boys	Girls
Utility from school milk			
Constant of novel school milk utility	Dummy	0.81*** (0.14)	0.76*** (0.14)
Constant of novel yoghurt utility	Dummy	0.17 (0.15)	0.35** (0.15)
Price	Metric	-0.09*** (0.02)	-0.08*** (0.02)
Fat content	Metric	-0.01 (0.05)	-0.09** (0.05)
Artificial sweetening agent	Dummy	-0.45*** (0.14)	-0.12 (0.13)

Table 4: Results of Nested Logit Estimation.

Source: Own calculations. Standard error in parentheses. \* Significance Level = 0.1; \*\* Significance Level = 0.05; \*\*\* Significance Level = 0.01.

<sup>1</sup> The parameter „low calorie content is important,“ was once included in the model, therefore (due to high correlation) the variables “low sugar/fat content is important” were excluded. The parameter for “low calories” was expectably positive. This implies that these youths pay attention to their calorie intake irrespective of other factors.

Parameter	Boys	Girls
Factors that influence probability to choose novel school milk		
Constant	-	-
	1.95** (0.89)	3.11*** (1.09)
Low fat content is important	0.85** (0.41)	-
Low sugar content is important	1.08*** (0.36)	-
Low calorie content is important	-	0.93*** (0.26)
Brand is important	0.44* (0.26)	-
Low price is important	-	-0.84** (0.33)
I take care of healthy nutrition	-0.95*** (0.33)	-0.67** (0.31)
I'm interested in healthy nutrition	0.81** (0.34)	-
Like milk products	-	2.90*** (0.60)
Would like to eat milk products daily	-	-1.99*** (0.53)
My size is ok	-	-1.79*** (0.38)
My size is too thin	-	-2.30 (0.65)
Number of brothers and sisters	-0.24** (0.10)	-
IV-Parameter Non-Refusers	0.02 (0.46)	0.05 (0.63)
R <sup>2</sup>	0.25	0.27

Table 5: Results of Nested Logit Estimation.

Source: Own calculations. Standard error in parentheses. -: not significant and therefore not included in the final analysis; \* Significance Level = 0.1; \*\* Significance Level = 0.05; \*\*\* Significance Level = 0.01.

In total a comparison of boys and girls revealed several differences between these two groups. While the novel school milk increases boys' utility significantly compared to the conventional milk product (constant of the conventional product is normalized to zero) the constant for the yoghurt is not significant. This indicates that in general boys of this age prefer the novel school milk compared to the conventional milk. We cannot draw this conclusion for the yoghurt as our result was not significant. The results for girls are similar. Although girls' utility is significantly increased by the new products compared to the conventional school milk, the effect for the novel school milk is lower than for boys. In contrast to results for the boy, utility is also significantly increased by the yoghurt. So we can conclude that girls of this age in general prefer the novel school milk and the yoghurt to the conventional school milk. As expected, increasing price will decrease product utility for both groups, but the effect is quite low. Nevertheless, for the boys the effect is a little bit higher. While an increasing fat content has no significant influence on boys' product utility at all, it decreases girls' product utility significantly. For the use of an artificial sweetener it is the other way around. While this has no influence for the girls all, boys' product utility is decreased significantly.

Only one variable has a more or less equal impact on boys and girls probability to choose a novel product: Both boys and girls have a decreased probability if they state that they pay attention to healthy nutrition.

Outcomes for the other variables differ between boys and girls: Boys who choose the novel products say that for milk products low fat and/or sugar contents are important whereas the low sugar content has a stronger effect. In contrast, girls say that milk products in general should have low calorie content.

In contrast to girls' choices, for boys the product brand is important. But the influence is less important compared to the fat and sugar content. For the girls, the probability of belonging to the group which chooses at least once a novel product is increased for those who state that they like milk products. This variable exhibits no influence on the boys.

Their probability is increased if they are interested in a healthy nutrition. In contrast to the attributes described above, the probability decreases with an increasing number of brothers and sisters. This variable has no influence on girls' probability. For girls, probability is decreased if they say that a low price is important for them and if they themselves claim to be too thin or to be satisfied with their figure. The appraisal of the one's figure has no influence on the boys' group membership.

## 5 Conclusions and qualification

As this paper focus on gender differences the discussion will highlight results of the two separate nested logit analyses. School milk choice is driven by various factors and possible explanations for this are also quite different.

It is seen as contradictory that boys have an increased probability for choosing a novel product if they are interested in healthy nutrition on the one hand, but a decreased probability if they pay attention to healthy nutrition on the other hand. Being interested in a topic does not automatically result in corresponding behaviour. It may be that those who are interested primarily want to lose weight or they realize that their own nutrition is different from what they know about healthy nutrition. Another explanation might be that artificial sweeteners and low fat products are seen as unhealthy by those who pay attention to their nutrition.

It is also surprising that girls have an increased probability of choosing novel products if they like milk products, but a decreased probability if they would like to eat milk products daily. Of course it is possible that the first statement (like milk products) is influenced by social desirability. Another reasonable explanation for our finding is girls focus on calories. Maybe that they would not consume milk products daily because they are afraid of the calorie intake involved. It is also discussed whether girls are more influenced by the media or social network groups.

It is interesting that boys seem to distinguish between fat and sugar contents while girls seem to focus on overall calorie content. One explanation might be that lots of boys exercise at gyms at this age. And most of them focus on muscle growth and muscle force. In this context a low fat, low sugar and protein enriched diet is popular. Girls of this age also exercise but most of them focus on their weight, quite often to reach a small size. So the latter prefer food with an overall lower calorie content. Boys as well girls focus on their figure, but as their targets are different they focus on different aspects with regard to milk products.

While boys' assume that size has no effect on their probability to choose a novel product, these variables influence girls' probability significantly. Those who assume themselves to be underweight or normal weight have a decreased probability. This is quite obvious as the novel products are primarily reduced in their calorie content due to artificial sweetener and/or fat reduction. There is no reason for girls who don't assess themselves as overweight to choose these products. That girls focus more on their diet and on their weight is not new.

We have to remark critically on the manner in which attitudes were analysed. We only asked questions using a five- or four-point Likert Scale ranging from "I totally agree" to "I do not agree at all". Answers were coded to dummies (I totally agree/I agree and I do not agree at all/I do not agree). This technique is quite common but nevertheless not very robust from a scientific point of view. It would have been much better if we had first designed a psychosociological construct using an item battery. Then an exploratory factor analysis would have been an adequate way to analyze respondents' attitude towards, e. g., fat or sugar content.

The following conclusions can be drawn based on our results:

- School milk products with reduced fat content, but sweetened with sugar, are most likely to become preferred products. Products sweetened with artificial sweeteners are only interesting for a smaller share of youths.
- Attitudes towards fat and sugar influence youths' choice decision. Those boys who at least once chose a novel product prefer low fat and sugar contents, girls focus on overall calorie contents.
- Offering more different products in schools is one possibility to increase school milk consumption. It might also increase total consumption of milk products, if school milk were to be consumed additionally to the daily consumption of milk products at home. This would lead to a better supply of milk products for the children. If there are compensation effects in daily milk consumption, benefits of school milk increase will be questionable.

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## DIGITAL RIGHTS MANAGEMENT IN GAMES: A MATTER OF TRUST AND POWER

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Digital Rights Management (DRM) is a controversial issue for digitally distributed software, particularly for PC games. Publishers are conflicted about whether to combat piracy with high power approaches that seek to deter pirates through persecution and punishment, or high trust approaches that reduce piracy through a sense of obligation and commitment to the gaming community. Building on a theoretical framework on the effects of trust and power on compliance (Kirchler, Hoelzl, & Wahl; 2008), our objective was to systematically study the impact of different types of DRM schemes on an otherwise identical PC game.

We ran a web-based experiment with 3,988 participants who read about a fictitious PC game. They were exposed to one of four DRM descriptions with a strict or lenient DRM implementation and a trustful or distrustful rationale. After reading the description, participants filled out a series of scales measuring game appeal, piracy intention, and malevolence towards the publisher. Additionally, participants reported on a number of important individual difference variables, such as video game preferences and general attitude towards piracy.

Results showed that high power (strict) DRM schemes reduced game appeal compared to low power (lenient) DRM schemes. Piracy intentions were influenced by pre-existing attitudes towards piracy, but not the type of DRM scheme. High power DRM schemes increased malevolence towards the game publisher compared to low power DRM schemes. Overall, effects of trust based rationalizations for DRM were weaker than those for power. However, pairing a distrustful rationale with a strict, high power DRM scheme led to a larger decrease in game appeal and a larger increase in malevolence towards the publisher.

In terms of their ability to actually influence piracy intentions, the specific type of DRM scheme employed made virtually no difference. However, more strict, high power DRM schemes can have powerful effects on factors that can influence potential purchase decisions, such as overall game appeal and malevolence towards the publisher. Our results suggest that publishers should carefully consider the negative repercussions of incorporating a high power DRM scheme into their games.

*Keywords: choice, framing, trust, individual differences*

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### Abstract

The present paper presents the results of a field experiment on Cumulative Prospect Theory in Mexico, where it analyzes the effects of socio demographic characteristics over uncertain outcomes. It makes a contribution to the analysis of emotions at the time of choosing a prospect.

The experiment was conducted in a public and a private university to undergraduate students. The final experimental sample was of 570 individuals. The experiment was divided into three sections: socio demographic characteristics; random emotional treatment; and an unpaid lottery selection.

Emotional framing was given randomly to two thirds of the sample. There were two kinds of treatments: a moderate one and a high one. The moderate treatment contained newspaper information about the current state of violence in Mexico (i.e. informing there are 40,001 deaths due to the drug war). The high treatment framing contained the violence information and a negative economic prognosis for youth unemployment worldwide. After reading the news clippings, the students were asked about their emotional reaction in terms of sadness, fear or anger.

Our paper closely follows the method of Tanaka, Camerer and Nguyen (2010) for the elicitation of the parameters of a Cumulative Prospect Theory function (CPT). In the experiment the respondents faced three series containing ordered scenarios of paired lotteries; subjects had to choose the scenario where they stopped preferring the first lottery over the second one. With this information it is possible to elicit the function's parameters. We calculate the main parameters in the CPT function: the curvature of the function over positive prospects ( $S$ ), the coefficient of loss aversion ( $L$ ), and the parameter in Prelec's reweighting function ( $A$ ).

The average individual in our sample has values of 0.47, 2.29, and 0.71 for  $S$ ,  $L$ ,  $A$  respectively. These results are consistent with the main findings in the CPT literature.  $L$  and  $A$  are statistically different from 0 and 1 respectively, thus rejecting expected utility theory in favor of CPT. Finally, we conduct a regression analysis in order to understand how characteristics and emotions of subjects affect  $S$  and  $L$  separately.

On one hand, we find that risk aversion on gains diminishes with age and income, but it increases with sadness. On the other, an individual in a public university has a lower loss aversion on average (take more risks with losses). Emotions related to anger also reduce loss aversion.

*Keywords: framing, risky choice, prospect theory, loss aversion, risk perception, individual differences*

## 1 Introduction

Understanding human preferences over uncertain outcomes is a key issue to many subjects in the field of economics. Risky attitudes can create speculative bubbles and crashes on financial markets Long et al. (1991). High risk aversion can explain why some countries do not invest on business opportunities, capital or human capital (see Shaw (1996), Hartog and Diaz-Serrano (2007) or Yesuf and Bluffstone (2009) for some empirical examples). In fact, the effects of a public policy differ depending on the level of risk aversion in a society (credit incentives, fiscal taxation programs, etc.). These are only a few examples of why we should care about decision making under uncertainty, and there are still many unanswered questions in the field.

Risk aversion is generally associated with the properties of the utility function, which are consistent with the Expected Utility Theory (EU) Harrison and Rutstrom (2008). When taking such a classical approach one might need to use assumptions in other economic theories that are not as realistic. In recent literature there are many well-documented examples under diverse scenarios that suggest Prospect Theory (PT) as the best way for modelling choice under uncertainty. Thus, to achieve a deeper knowledge of human preferences, a behavioral approach like PT seems essential. However, literature covering differences in specific characteristics at the time of decision making is still under development and remains mostly unclear.

One important aspect that has been left out is the role of emotions when talking about Prospect Theory, mainly because it is difficult to measure them. It is well documented that humans behave completely differently depending on their emotional status<sup>1</sup>. Under specific circumstances people, cities, or even countries can get emotionally affected. This massive emotional impact is one reason why economics should care about the effects emotions have when taking risky decisions. Public policy, market prognosis, or mechanism design may have different results when considering the risk emotional impact on risk behavior.

<sup>1</sup> For example depressed people tend to overeat Smith (2009)

The general goal of this paper is to measure risk aversion using Prospect Theory. In order to achieve this, we conducted a controlled experiment in two universities in Mexico City. The experiment design allowed us to get the parameters of the Cumulative Prospect Theory (CPT) value function and the probability weights for each individual. The CPT function is characterized by three parameters: the curvature of the function that assigns value to the prospects (i.e. lotteries) ( $\alpha$ ), the coefficient of loss aversion ( $\lambda$ ), and the one parameter of Prelec's reweighing function ( $\beta$ ). The average individual in our sample has values of .47, 2.29, and .71 for  $\alpha$ ,  $\lambda$ ,  $\beta$  respectively. Also, with this experiment, we were able to gather the respondent's socioeconomic variables, and how they felt emotionally after reading about different dramatic situations.

This paper tries to explain how some observable characteristics (age, gender, etc.) are related to the parameters of a Cumulative Prospect Theory function, and also how unobservable characteristics (such as emotions) can affect risky decision making from a behavioral economics' perspective. To our knowledge, this is the first paper with these characteristics, and it also may be the first risk aversion analysis for Mexico. This paper makes a contribution to the literature of Prospect Theory, the literature of behavioral economics, and to public policy design research, especially in Mexico's case. Literature of the relevant economic theory is reviewed in section 2, experimental design is explained in section 3, data analysis is presented in section 4, main results are shown in section 5, and finally, section 6 summarizes this paper. Appendix 1 provides eliciting information and appendix 2 contains the actual questionnaire.

## 2 Literature and Economic Theory review

### 2.1 Prospect Theory

Findings in the psychology field led Kahneman and Tversky (1979) into developing Prospect Theory. From now on we will use the word *prospect* as a synonym for lottery, in order to better match with PT.

One important part of PT literature was finding evidence against the classical Expected Utility Theory (EU). This empirical literature tests the hypothesis that the reweighting probability parameters are different from 1, as in EU. The other part of the literature tries to explain how some individual characteristics affect the degree of loss aversion or risk aversion, and this is the approach that our paper takes, but we also reject Expected Utility Theory.

Nevertheless there are two main problems with PT that, in general, sparks heated discussion among researchers: PT does not allow prospects with many outcomes (So it loses realism. In financial markets, for example, there are several many possible outcomes); and secondly, PT does not guarantee stochastic dominance (a very convincing tool when evaluating). So if we only use Prospect Theory our results may not be extrapolated in cases where many outcomes are presented, like in the financial problems cited above.

One refinement of the theory known as Cumulative Prospect Theory (CPT), proposed by Tversky and Kahneman (1992) eliminates the previous problems of the original model. The general model of CPT is described with the next equation.

$$V(x_i) = \sum_{i=0}^n \pi_i(p) v(x_i) + \sum_{i=-m}^0 \pi_i(p) v(x_i) \quad (3)$$

Where the first sum is over the positive prospects (prospect with only non negative outcomes) pondered by no linear probabilities weights (from 0 to  $m$ ), and the second part is for the negative part of the prospects (only non positive outcomes,  $m$  to 0). Hence a parametric function of the CPT has parameters that identify the curvature of the value function of prospects, parameters that identify the weights of the probabilities, and parameters that indicate the degree of loss aversion.

The literature of PT is surrounded with different methods for elicit the parameters that identify the risky decisions. Abdellaoui et al. (2008) proposed a method that concentrates on eliciting the certainty equivalent (CE) for gains, then they recovered the CE for losses, and finally, they linked both of them. In this procedure a subject is presented with two lotteries, one with certainty and one with risky. The first part is on the gain domain, so only positive prospects are shown; the second part offers a certain loss and a prospect with a low probability of losing less and a high probability of a major loss. Finally the third part is a mixture of both. We did not use this method because we believe that it is harder to reveal the actual certainty equivalent.

Tanaka et al. (2010) proposed the CTN Eliciting Method. In CTN there are three ordered sequences of lotteries. In the first two they identify the parameter of the curvature in the gains domain, and the one parameter of Prelec (1998) probability weighting function. In the last sequence they identify the loss aversion parameter. This is a simpler procedure but it has some restrictive assumptions. Even though we are fully aware of these restrictions we used this method for our research and it will be fully detailed in section 3.

In the experiment of Tanaka et al. (2010), the elicited parameters were 2.65 for loss aversion and .59 for the curvature on positive gains, after calculating data from rural Vietnamese villages and a national survey. Their empirical regression allowed them to conclude that being Chinese improves the convexity of the loss function, and being older reduces the level of risk aversion. However, their experimental population comes from a very particular sample.

Some important considerations to take when doing experiments are argued in Holt and Laury (2002). In their paper they recover the CRRA's coefficient over a 177 people sample using three different treatments. They concluded that individuals do not respond realistically when hypothetical payments are used; however, this is only true for high outcomes. We considered this at the time of implementing our experiment.

## 2.2 Emotions and Behavioral Economics

Framing effects are quite useful to get relevant information from the agents. DellaVigna (2009) discusses many experiments where, by modifying the way a question is framed, the results vary completely.

Using the Wechsler Adult Intelligence Scale, Dohmen et al. (2010) created a risk aversion experiment with cognitive implications. In their experiment, around 1000 people chose between ordered pair lotteries, allowing the authors to propose a measure of risk willingness. Then respondents were asked to take a cognitive exam, where the authors found a correlation of -0.2333 with the level of risk willingness. In our paper we asked the self-reported average grade of the respondent's last semester, allowing us to delve a little into the cognitive-risk aversion relationship in Mexico's case.

Under behavioral theories, emotions can affect the decisions made by the agents. Lerner et al. (2003) shows that frightened people are more risk adverse and that people with anger are more risk seekers. In this same spirit, our paper makes a contribution to this subject by taking advantage of the unfortunate situation in Mexico, and by eliciting risk preferences under emotional treatments.

In Feagin (1988) he established the differentiation of an emphatic and a sympathetic reaction to feelings. There it is argued that people can imagine beliefs and, with those, generate an empathic emotion with a fictional character. People worry about the troubles of fictional characters mainly because they believe that something bad will happen to them. However, these beliefs are not real, they are just imagined, but this fictional beliefs lead to real emotions.

Our experiment tries to frame the respondents into set desired emotional states (angry, sad and afraid) in order to gauge how their risk or loss aversions vary. It is worth mentioning that hardly any questionnaire is free from external framing effects but usually randomization eliminates this issue.

## 3 Experiment Design

Our experiment was conducted in two different universities in Mexico City during November 2011. All respondents were students of their corresponding universities. The main difference between both universities it is that one is public and the other is private. We went to classrooms and asked if we could conduct an experiment, if we got a positive answer we would return, usually 25 minutes before the class ended. We had no special order of selection; we walked randomly around the universities knocking on classroom's doors. However it is important to mention that our sample contains 38% economic major<sup>1</sup> students. The experiments took no longer than 20 minutes, and they were divided in three sections: social-demographic characteristics, emotional framing, and risk aversion.

The main part of the experiment consisted on choosing lotteries. In many experiments described on the literature, respondents are payed after completing them<sup>2</sup>, we decided against doing so, mainly because in Mexico's universities such procedures are not common or culturally appropriate. We are aware that Holt and Laury (2002) found that behavior towards risk taking gets highly affected when really high incentives are offered as a possible outcome. Nevertheless, in our experiment the biggest payoff is only \$1,700 pesos (around \$130 US), which, although it is not a huge amount, it is large enough to be very desirable but also very reasonable for a lottery contest (especially in students). In that sense we believe our experiment reflects accurately the main results.

It is worth mentioning that two pilots were conducted a month before the experiment. The first of the experiment's pilot took place in a classroom of the *Centro de Estudios Económicos at El Colegio de Mexico*. Some recommendations were made about the instructions and the pool of available answers<sup>3</sup>. With the student's responses and recommendations we constructed a new design of the experiment. The second pilot was conducted in another class of the *Centro de Estudios Económicos*, where no more improvements were suggested, implying that the respondents felt comfortable with the experiment.

### 3.1 Sociodemographic Characteristics.

The first part of the experiments consisted in several questions about personal socio demographic characteristics. With these questions we were able to identify the age, sex and their bachelor's major. These allow us to segregate the people in large groups for distinct interpretation of the parameters of the CPT function.

<sup>1</sup> This is mainly because we are more acquainted with the professors that teach economics

<sup>2</sup> Some times the prize of the lottery. And Some times just for attending

<sup>3</sup> One important methodological finding in this pilot was that the directions of the experiment were to long, consuming an important fraction of time for comprehension

In order to find control variables, we asked for information about level of education the agent's parents had. Also, there were some income proxy questions, like the number of rooms or cars in their household<sup>1</sup>. Finally we asked about their future salaries expectations, the lapse between finishing the Bachelor degree and finding a job, and if they worked during the week. These answers helped us to identify the agent's actual disposition for taking the experiment; this will be better discussed on section 4.

### 3.2 Emotional Framing

To create an effective framing effect we took advantage of the actual social situation in Mexico. We only gave this framing treatment to two thirds of the experiment's sample. There were two kinds of framing treatment, a strong one and a moderate one. The strong one contained two questions, while the moderate one only contained one. The respondents were unable to identify if their peers received a different questionnaire.

In both treatment questions, the available answers were negative feelings (sadness, fear or anger). Our framing design is not infallible, so from time to time it would not work with some students. To identify this issue we included the indifferent answer, which helped reduce false answers.

The first question, available in both treatments, is as follows:

*From 2006 and 2010 almost 40,000 people died, due mainly to the drug war. Insecurity levels haven't gone down in any state; on the contrary, the country is living the biggest violence wave ever seen. How does this mainly makes you feel?*

The former question may be shocking, but not all students might be aware of its magnitude, mainly because they may be unrelated with the topic<sup>2</sup>. To avoid this issue, in the strong treatment we added an even better known situation.

The second question available (only in the strong treatment) reads as follows:

*The financial crisis of 2008 has left ramshackle the international financial markets. The news paper, El Economista, published that 2010 showed the biggest unemployment rate of young people worldwide. Also, experts predict another economic recession for 2012. How does this mainly makes you feel?*

We believe this question would impact in an acute way the students because most of them seek to enter the workforce after finishing their degrees (almost 97% of them, according to our survey). It is worth mentioning that these questions were asked before the risk aversion section, so we expect these questions to have a direct impact over the decisions made when choosing lotteries.

### 3.3 Risk Aversion

In order to elicit the parameters of the CPT function we conducted a replica of the experiment designed in Tanaka et al. (2010). As we have mentioned, the implementation is easy and simplifies the function to only three parameters. For the reweighing in the probabilities, Prelec's one parameter function is used. This function is derived axiomatically, and in the paper the author shows that it mostly replicates the main results from Khaneman and Tversky, and that sometimes it behaves better. One important assumption is that the agents rethink the probabilities in the same way for gains or losses. The probability weighting function is

$$\pi'(p) = \pi(p) \frac{1}{\alpha p \ln(1/p)} \quad (4)$$

In this experiment the prospects only contain two possible outcomes, so the equation 3 simplifies to:  $v(y) + \pi(p)(v(x) - v(y))$  (for  $xy > 0$  and  $|x| > |y|$ ) or  $v(y) + \pi(p)v(x) + \pi(q)v(y)$  where  $p$  and  $q$  are the true probabilities of the outcomes  $x$  and  $y$ . Tanaka et al. assume a piecewise power function defined as follow:

$$v(x) = \begin{cases} x^\alpha & \text{for } x > 0 \\ -\lambda(-x)^\beta & \text{for } x < 0 \end{cases} \quad (5)$$

With this specification,  $\alpha$  and  $\lambda$  represent the concavity of the value function and the degree of loss aversion respectively. Also if  $\alpha = 1$  (linearity on the probabilities) and  $\lambda = 0$  we are under an EU scenario. In this particular case the relative risk aversion coefficient is  $\tau = 1 - \alpha$

To elicit the three parameters we use the TCN method. First, the respondent faced three series of paired lotteries as shown in Table 1. Each row contained the possible outcome in Mexican Pesos for lottery A and lottery B. The outcome's probabilities in both lotteries were fixed throughout the series. The TCN experiment design enforced monotonic switching by asking the subjects in which question they would change from lottery A to lottery B. Respondents could change to lottery B in the first question or they could stay with lottery A throughout

<sup>1</sup> In Mexico most of the students do not know about their family income

<sup>2</sup> In Mexico City there is no direct war, so students that does not read the news papers or watch the news could be less comprehensive of the subject.

Option A		Option B		Expected payoff difference (A-B)
<i>Series 1</i>				
<i>P=3/10</i>	<i>P=7/10</i>	<i>P=1/10</i>	<i>P=9/10</i>	
40	10	68	5	7.7
40	10	75	5	7.0
40	10	83	5	6.0
40	10	93	5	5.2
40	10	106	5	3.9
40	10	125	5	2.0
40	10	150	5	-0.5
40	10	185	5	-4.0
40	10	220	5	-7.5
40	10	300	5	-15.5
40	10	400	5	-25.5
40	10	600	5	-45.5
40	10	1000	5	-85.5
40	10	1700	5	-155.5
<i>Series 2</i>				
<i>p 0/10</i>	<i>p 1/10</i>	<i>p 7/10</i>	<i>p 3/10</i>	
40	30	54	5	-0.3
40	30	56	5	-1.7
40	30	58	5	-3.1
40	30	60	5	-4.5
40	30	62	5	-5.9
40	30	65	5	-8.0
40	30	68	5	-10.1
40	30	72	5	-12.9
40	30	77	5	-16.4
40	30	83	5	-20.6
40	30	90	5	-25.5
40	30	100	5	-32.5
40	30	111	5	-39.5
40	30	130	5	-53.5
<i>Series 3</i>				
<i>P=1/2</i>	<i>P=1/2</i>	<i>P=1/2</i>	<i>P=1/2</i>	
25	-4	30	-21	6.0
4	-4	30	-21	-4.5
1	-4	30	-21	-6.0
1	-4	30	-16	-8.5
1	-8	30	-16	-10.5
1	-8	30	-14	-11.5
1	-8	30	-11	-13.0

Table 1: Three Series of Pairwise Lottery Choices (in Mexican Pesos)

With the parametric function in the first series it is possible to find an interval for  $\alpha$  and  $\beta$ . It is worth noting that we only used round mid points for this interval. For example, a subject changing from A to B in the 7th scenario of the first series, would first have this rationalizable  $[\alpha, \beta]$  combinations: (0.4,0.4), (0.5,0.5), (0.6,0.6), (0.7, 0.7),(0.8, 0.8), (0.9, 0.9) or (1,1). Now if this same subject changes from A to B in the 7th scenario, in the second series his rationalizable combinations of  $[\alpha, \beta]$  are: (0.8,0.6), (0.7, 0.7), (0.6, 0.8), (0.5, 0.9) or (0.4, 1). By intersecting both parameters we get

the approximation of the parameters  $(\alpha, \sigma)$   $(0.7, 0.7)$ . Appendix 3 shows the possible combinations of  $\alpha, \sigma$  in each question.

Finally the loss aversion parameter  $\lambda$  is partially identified with the third series. For this the TCN method assumes that  $\sigma$  is correctly identified in the previous series. Using the value of  $\sigma$  we are able to identify  $\lambda$  in an interval. The series 3 was constructed to assure similar values of  $\lambda$  across different levels of  $\sigma$ . Table 2 shows examples of the interval of  $\lambda$  given some fixed values of  $\sigma$ .

Switching Scenario	$\sigma = .1$	$\sigma = .5$	$\sigma = 1.5$
0	$\lambda \leq 0.123$	$\lambda \leq 0.184$	$\lambda \leq 0.445$
1	$0.123 < \lambda \leq 1.237$	$0.184 < \lambda \leq 1.346$	$0.445 < \lambda \leq 1.771$
2	$1.237 < \lambda \leq 1.955$	$1.346 < \lambda \leq 1.733$	$1.771 < \lambda \leq 1.85$
3	$1.955 < \lambda \leq 2.371$	$1.733 < \lambda \leq 2.384$	$1.85 < \lambda \leq 2.91$
4	$2.371 < \lambda \leq 4.584$	$2.384 < \lambda \leq 3.281$	$2.91 < \lambda \leq 3.947$
5	$4.584 < \lambda \leq 5.717$	$3.281 < \lambda \leq 4.9$	$3.947 < \lambda \leq 5.49$
6	$5.717 < \lambda \leq 10.1693$	$4.9 < \lambda \leq 9.17$	$5.49 < \lambda \leq 11.7872$
7	$10.1693 < \lambda$	$9.17 < \lambda$	$11.7872 < \lambda$

Table 2: Lambda Identification given Sigma

#### 4 Data Analysis

Over 700 subjects answered the experiment; however, at the time of data analysis, 93 questionnaires were discarded because they showed a clear disregard of the experiment’s directions or an unwillingness to take the experiment seriously. The discarding process consisted in noticing inconsistencies over the sociodemographic questions<sup>1</sup> or by noting errors made during the risk aversion section of the questionnaire<sup>2</sup>.

Variable	Mean/Mode (if multicategorical)	Standard Deviation
Gender	.55	.4984
Age	20.84	2.1590
Years before graduating	2.34	1.2242
Last semester’s GPA	84.64	9.8223
Scholarship	.31	.4638
Number of siblings	1.62	1.1144
Hours worked that last week	4.73	11.0924
Desires to work after graduating	.96	.1878
Number of cars in the family household	2.18	1.6123
Number of bedrooms in the family household	3.56	1.3437
Expected number of months looking for a job	3.74	3.9366
Expected salary	14354.84	13421.87
Father’s education level	University	/
Mother’s education level	University	/
Major	Economics	/
Living with	Father and Mother	/
Who pays for their studies	Father	/

Table 3: Descriptive Statistics

Our final experimental data consists of 607 subjects, where 53 percent of the sample comes from the private university and the rest from the public one. Using the whole experiment data we present summary statistics in Table 2. The means are predictable because our target is Mexican students. Fifty-five percent of the respondents are male and the average age reaches almost 21 years (in Mexico most students begin college at 18). Only 30 percent of our experimental sample had scholarships and, in average, worked 4 hours a week (the mean here is low because most of them do not work at all). On average, after they graduate they expect to earn \$14,535 Mexican Pesos. It is worth noting that the standard deviation is huge, but we believe this occurs because of the difference in their majors.

Working with emotions or with unobservable variables is complicated, for many critics may argue that the respondents may not be actually feeling the emotions when answering. Nevertheless, some literature on psychology argues against that. Field studies on drama advertising like Escalas and Stern (2003) finds high emotional reactions

<sup>1</sup> For example people that reported a huge expected salary for their first job or a ridiculous time before graduating

<sup>2</sup> For example they marked multiple switching points when they should only mark one

when reading a fictional dramatic situation. It also shows that the emotional response is sympathetic and empathic in contrast with the previous studies that only found empathic reaction. Shu et al. (2009) also found a change in moral behavior when an ethic code is read before taking a test. Also recall from Feagin (1988) that real emotions can be produced from fictional situations. With these observations in mind, our only concern may be the causality of the emotion over risky attitudes. To address this issue, we present Table 4 that contains the results of the test about means of the randomization on the emotional treatment.

Variable	Control	Emotional Treatment	
Age	20.77 (0.16161)	20.86 (0.1037)	20.7 (0.16161)
Years before graduating	2.39 (0.088)	2.30 (0.060)	
Last semester's average grade	85.00 (0.726)	84.46 (0.490)	
Scholarship	0.31 (0.032)	0.31 (0.023)	
Father's education level	3.33 (0.065)	3.43 (0.045)	
Mother's education level	3.18 (0.067)	3.30 (0.044)	
Number of siblings	1.62 (0.080)	1.62 (0.054)	
Number of bedrooms in the family household	3.54 (0.105)	3.57 (0.062)	
Number of cars in the family household	2.05 (0.106)	2.25 (0.082)	
Hours worked that last week	5.10 (0.793)	4.50 (0.548)	
Living with	1.74 (0.077)	1.76 (0.055)	

Table 4: Randomization Test At Means By Emotions

Table 4 confirms that the treatments on emotions are indeed causal results, and the effects over the parameters will be indeed from the treatment. It is important to take into account that we do not randomize the whole experiment, thus income or age may differ between genders, universities or majors.

## 5 Results

The average elicited value for the curvature of the value function ( $\sigma$ ) is 0.471, which is reasonably close to the findings of Tanaka et al. (2010). If we assume that the EU's axioms hold, the relative risk aversion coefficient  $\tau$  is .53. This result is statistically significantly different from 0. It suggests that an assumption on risk neutrality may not be accurate even in the expected utility frame work. A kernel distribution of the parameter is presented in Figure 4; the majority of the respondents are located around .5. This result is common in risk aversion literature and supports the correct implementation of our experiment. In order to make the link of the mentioned characteristics with the curvature of the CPT function we conducted the following OLS regression

$$\sigma = \theta + \sum X_i \beta_i + \sum E_i \gamma_i + U \tag{6}$$

Where  $X$  denotes observable characteristics and  $E$  denotes emotions. Table 5 presents the information of four different models:

The first includes only sociodemographic characteristics (No Treatment).

The second adds emotions referring to questions about violence (Low Treatment).

The third model includes dummy variables of emotions reported in both questions (Both Treatments).

The fourth model captures only the intersection of both questions (High Treatment).

It is worth mentioning that in High Treatment we only considered emotions when people answered the same emotion in both questions, otherwise they were considered as if the framing effect failed (i.e. an input of zero). We found that

the former treatment is more suitable because it captures the same emotion of the respondents and it is not mixed, as in the third treatment. For that same reason we believe the third model is the less competent for our analysis. We also conducted an OLS regression just with the dummy variable if the respondent revived a treatment; in both cases (one question or two) there were no significant effect. This response is due by the fact that emotional reactions may have opposite effects, sad people may be less risk averse but angry agents may be more risk lovers.

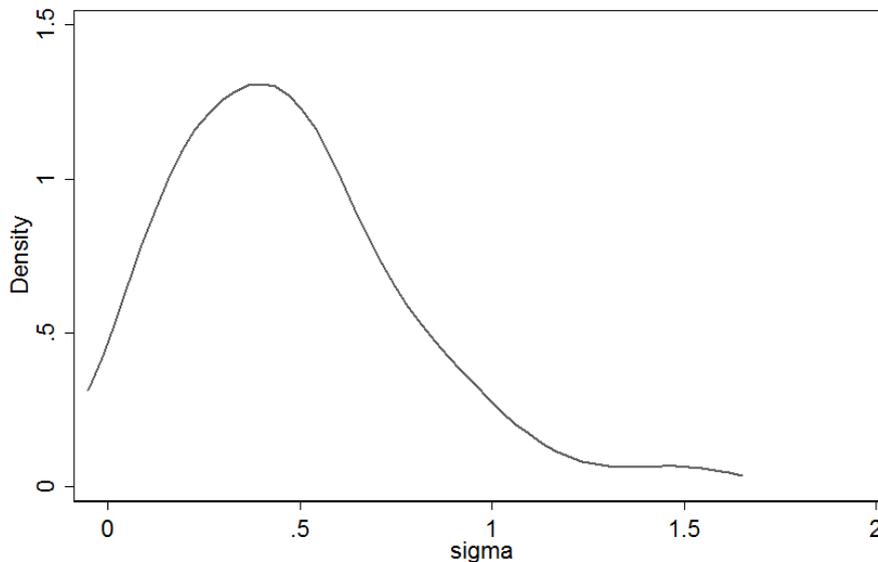


Figure 4. Sigma Kernel Density Estimate (Gaussian kernels with a bandwidth of 0.15 , the kernel estimation was conducted with 607 observations from the final data set where sigma was different from missing).

In these three models there exists a positive impact from the age over the curvature of the value function, the coefficient increases in .01 for an additional year over the average agent. The same effect occurs with the years left to graduate (.02 for an additional year). Both effects can be interpreted as a decrease in risk aversion level when talking about gains, but also they may be interpreted as a decrease in risk willingness when talking about losses. These results are in agreement with the literature and they are very intuitive. The common explanation for this phenomenon comes from the idea that older people are more capable of taking more risks when there is an opportunity of winning, but they also have the experience to know that sometimes it is not so terrible to lose a little when faced with the possibility of losing plenty.

Additionally, in the four models the level of  $\sigma$  increases with the proxy variables of income (automobiles or rooms). This result is congruent with the literature, so we feel comfortable with the interpretation. We believe this occurs because it is easier to bet when an individual has a solid patrimony, or it can be seen as a decrease in their need to pay risk premium in order to avoid a loss over a reference point. Nevertheless, this does not mean that rich people are risk lovers on gains or risk averse on losses, just less risk averse and less risk loving, respectively.

An important finding of the present paper is the link between sadness and  $\sigma$  (-0.10). On average, risk aversion over gains strongly increases when people are sad. As a consequence, the public policy relying on credit incentives or risky business opportunities may not have the desired acceptance if the populace is under some general depression. Our result may also imply that sad people will take more risks when trying to avoid losses. This effect might explain why people avoid taxes in economic recessions or cheat when retaking tests. Numerous situations in real life can get people sad: a natural disaster, an unemployment situation, economic crisis, etc. We believe it may be important when planning to implement a public policy to check the general animus of the population or the target population.

VARIABLES	No Treatment	Low Treatment	Both Treatments	High Treatment
Gender	-0.0327 (0.0255)	-0.0305 (0.0257)	-0.0290 (0.0250)	-0.0298 (0.0255)
Years From Graduation	0.0278** (0.0129)	0.0273** (0.0127)	0.0274** (0.0121)	0.0289** (0.0126)
Age	0.0150** (0.00751)	0.0144* (0.00738)	0.0144* (0.00738)	0.0155** (0.00733)
Last Semester Average GPA	0.00117 (0.00094)	0.000951 (0.000969)	0.000996 (0.00125)	0.00116 (0.000927)
Number of Bedrooms	0.0224* (0.0129)	0.0229* (0.0130)	0.0235** (0.00943)	0.0236* (0.0129)
Number of Automobiles	0.0192* (0.0103)	0.0186* (0.0103)	0.0192** (0.00802)	0.0188* (0.0103)
Anger	/	0.0194 (0.0320)	0.0225 (0.0269)	0.0408 (0.0352)
Sadness	/	-0.103*** (0.0389)	-0.0954** (0.0399)	-0.104** (0.0495)
Fear	/	0.00370 (0.0304)	0.00222 (0.0253)	0.0173 (0.0305)
Constant	-0.107 (0.202)	-0.0714 (0.201)	-0.0810 (0.212)	-0.129 (0.198)
Observations	577	577	577	577
R-squared	0.034	0.047	0.046	0.045

Table 5: Regression Analysis

The average  $\lambda$  elicited is 2.29, which is close to the parameter elicited in Tanaka Camerer Nguyen (2.4), but it is closer to the findings of Khaneman and Tversky (2.26). This parameter is statistically different from 0 at 99 percent of confidence, thus supporting Cumulative Prospect Theory against Expected Utility Theory. Figure 5 presents a kernel distribution of the lower limit of  $\lambda$ ; it shows that agents have a loss aversion coefficient around 2.5, then it starts descending. So the hypothesis of Khaneman and Tversky, that states that people feel twice as strongly losing something than winning the same thing, seems appropriate for our experiment.

We found again no evidence of a significant change in  $\lambda$  just for receiving the treatment. The same argument was used and found no reaction because of the opposite reactions that may emerge just by reading the treatment.

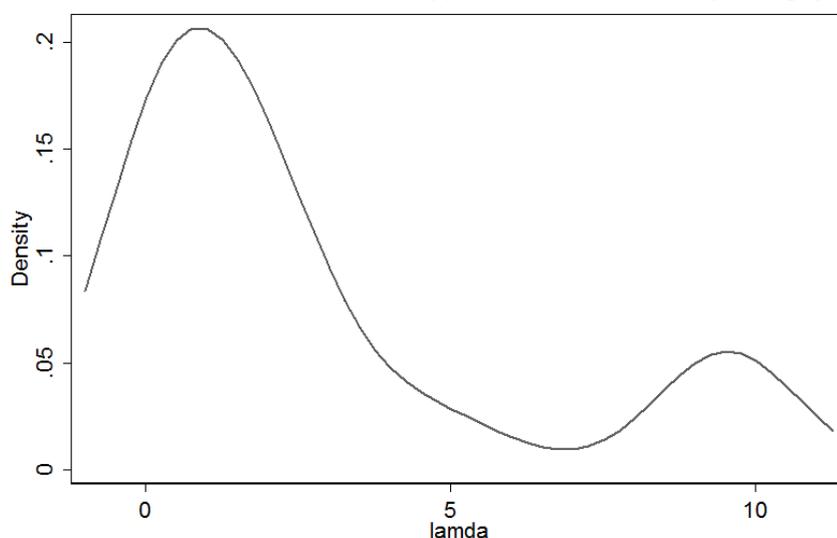


Figure 5. Lambda lower bound Kernel Density Estimate (Gaussian kernel with a bandwidth of 1.1, the kernel estimation was conducted with 607 observations from the final data set where lambda was different from missing).

To estimate the relation between the characteristics and the loss aversion coefficient it is necessary to use an interval maximum likelihood regression. Again, we present the same four models of equation 7, each one for different emotional treatment or none:

$$\lambda = \theta + \sum X_i \beta_i + \sum E_i \gamma_i + U \tag{7}$$

The most notable effect is the difference between the degree of loss aversion from a public university and the private one. In particular, when the average agent comes from a private school the degree of loss aversion increases 1.25. This implies that people from private universities suffer more from a loss, relative to a gain, than people studying at a public college. This effect may be a cultural phenomenon or something correlated with the nature of the university. The particular private university that we studied continuously sells the idea that their students are the best students<sup>1</sup>, and this idea might reinforce the student's self-confidence. In the doctoral thesis of Ahn (2010) the same effect over self-confidence is found in a repeated laboratory experiment<sup>2</sup>. For further research, it would be interesting to look if this effect does indeed persist once the individual has left college or if it vanishes with experience. High levels of self-confidence could be found in entrepreneurs or with the quants in Wall Street, we then expect that these individuals would suffer more the endowment effect<sup>3</sup>. Great examples can be found in Ariely and Carmon (1994), Hossain and List (2010) and Kahneman et al. (1990).

VARIABLES	No Treatment	Low Treatment	Both Treatments	High Treatment
Gender	0.591 (0.402)	0.596 (0.404)	0.558 (0.398)	0.542 (0.404)
Years From Graduation	-0.122 (0.209)	-0.114 (0.210)	-0.117 (0.208)	-0.141 (0.208)
Age	-0.0715 (0.110)	-0.0682 (0.110)	-0.0643 (0.109)	-0.0682 (0.110)
Last Semester Average GPA	0.0225 (0.0159)	0.0248 (0.0162)	0.0221 (0.0163)	0.0229 (0.0164)
Number of Bedrooms	-0.0601 (0.145)	-0.0664 (0.144)	-0.0608 (0.144)	-0.0558 (0.145)
Number of Automobiles	-0.219* (0.129)	-0.203 (0.128)	-0.242* (0.127)	-0.225* (0.129)
University	1.306*** (0.483)	1.200** (0.482)	1.234*** (0.479)	1.258*** (0.482)
Anger	/	-0.369 (0.474)	-0.566 (0.412)	-1.101*** (0.4969)
Sadness	/	1.172 (0.821)	1.054 (0.704)	-0.183 (0.978)
Fear	/	0.583 (0.471)	0.947** (0.405)	-0.0562 (0.458)
Constant	-0.107 (0.202)	1.064*** (2.990)	1.469*** (2.962)	1.687*** (2.962)
Observations	577	575	575	575

Table 6: Interval Regression Analysis

In the high emotional treatment (which is indeed the more accurate, given the fact that individuals report the same emotion in both questions) anger reduces the degree of loss aversion on 1.101. This implies that angry individuals are less sensitive to losses. The natural question emerges: why would angry people hate less a bet like (x; .5, -x; .5) than a neutral agent? This question cannot be easily solved and it is left up for discussion, however the implications are quite clear. For example, sometimes people choose a government that eventually disappoints them; angry people would perhaps be the first to try to revoke the government's power. So it would not be surprising that under electoral

<sup>1</sup> This was actually a marketing campaign

<sup>2</sup> In this experiment agents play the same game, eventually acquiring deeper understanding of the rules

<sup>3</sup> the hypothesis that a person's willingness to accept compensation for a good is greater than their willingness to pay for it once their property right to it has been established

campaigns opposing parties tried to evoke anger against the current governing party. Economically, angry people suffer less from the endowment effect, so they would not hold their bonds too long when prices fall.

One proxy variable of income decreases the level of loss aversion. This effect goes in the same direction as in Tanaka et al. (2010). In their paper they argue that richer villages tend to invest more, given the fact that they are less loss averse. In our wealthy group of student population that idea is indeed found, and even more so (recall from the findings of  $\sigma$  that they are also less risk averse over gains or less risk loving over losses). This suggests that poor people would be reluctant to try risky business opportunities and would dislike losing, so a greater compensation for losses is needed for poor people in terms of utility for taking those risks. This is an important implication for public policy; a greater effort must be done in order to make the poorest people invest or take risks.

Finally, the average value of the Prelec's one reweighing parameter  $\alpha$  is .713, extremely close to the findings in Tanaka et al. (the average reweighing function is shown on Figure 6). It is clear that individuals overestimate probabilities before a probability of .4 (overestimating even more in probabilities near to zero), then they start to underestimate probabilities (underestimating more probabilities around .8). This parameter is statistically different from 1 at 99% of confidence so Expected Utility Theory is rejected here. The kernel distribution of  $\alpha$  is presented in Figure 7, where it clearly shows a great accumulation around .7 and it diminishes in both sides.

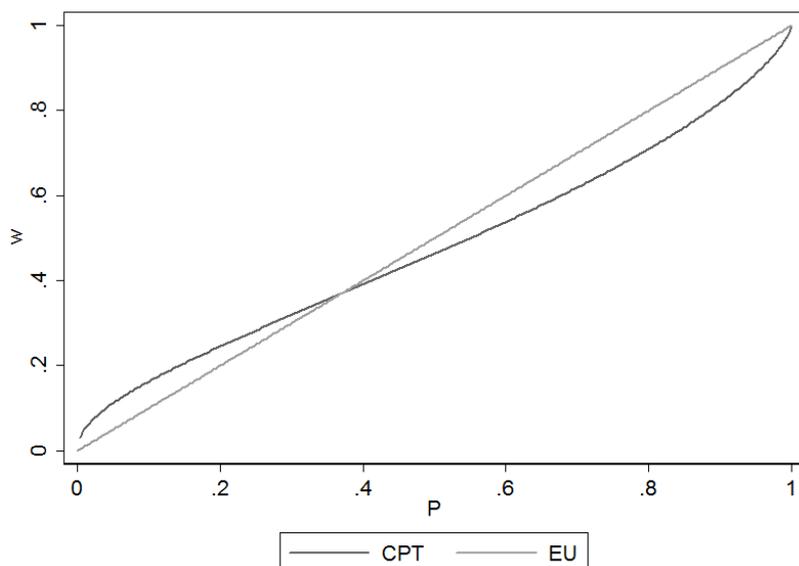


Figure 6. Average reweighing function (simple average of  $\alpha$  taken from the final data set).

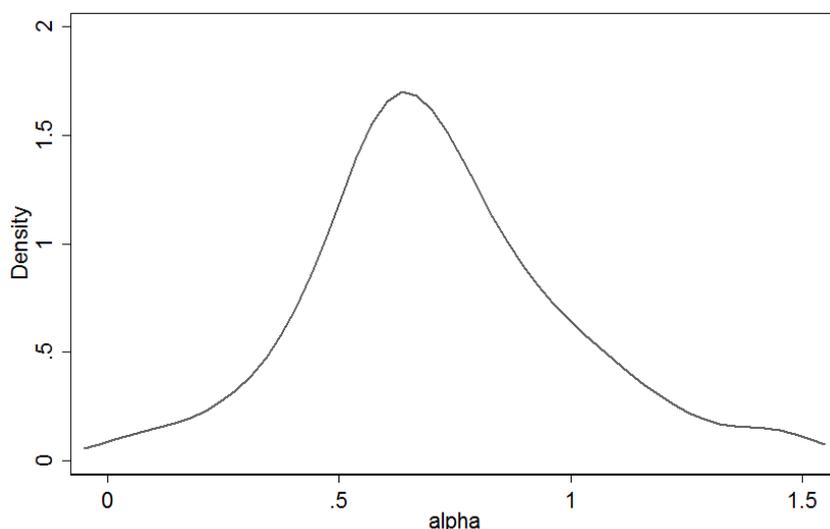


Figure 7. Alpha Kernel Density Estimate (Gaussian kernels with a bandwidth of 1, the kernel estimation was conducted with 607 observations from the final data set where alpha was different from missing).

We conduct the same regression analysis on  $\alpha$  but we did not find any significant effect. We believe that the way humans observe and reconstruct probabilities is way more complicated than the attitudes towards risk, and it is a job probably best left for neuroeconomist to investigate. Figure 8 presents the average elicited CPT function, where it clearly shows concavity on the gains, convexity on negative values, and the function is steeper over losses, as in the original CPT paper.

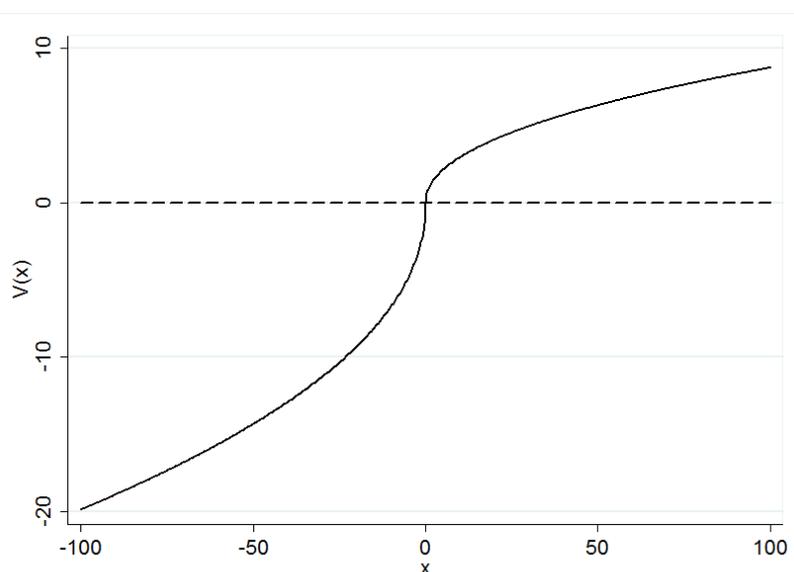


Figure 8. Average Value Function (simple average taken from the final data set).

## 6 Discussion and Concluding Remarks

We conducted a controlled experiment in two universities to elicit the parameters of the value and reweighing function. On average we found  $(\alpha, \lambda, \alpha) = (.471, .229, .713)$  implying that on average in our experiment people are risk averse on gains, risk loving on losses, they suffer from loss aversion and they do not use true probabilities at the time of evaluation. These parameters are very close to the findings of Kahneman and Tversky, Tanaka et al. and the vast literature on Prospect Theory. It is worth mentioning that these estimates of the parameters are the first values found for Mexico, and they are not far from international findings. These results imply that Economic Theory should take into account Prospect Theory in order to reflect reality more accurately.

Later in the paper we present a discussion around factors that might affect the process of taking risky decisions. In particular we found evidence that older and richer people are less averse and lean towards less risk taking. We believe this occurs due to their perspective about facing risk, whereas this could be due to their experience or that they are in a more comfortable position for making bets. This explanation is commonly shared between the core authors of behavioral economics. However, the evidence supporting that feelings may change the degree of risk aversion is still in development. This paper argues that sadness increases risk aversion over gains and increases risk loving behavior over losses, but we are still uncertain as for the why; further neuroeconomical investigation may be required to explain this phenomenon. This finding could explain some situations where people take more risk, or avoid them (e.g. to risk cheating to avoid a loss when unemployed seems a natural behavior).

We presented evidence that people from the public university are less loss averse than people from the private university. We believe this is due to the degree of the student's confidence. If this is true, a natural question arises: If having a low degree of confidence affects the loss aversion behavior, then what are the economic implications? The literature suggests that people would be reluctant to invest more, and would be more competitive in order to avoid losses. However, in this paper we are far from establishing that public universities are less confident than private ones, we can only confidently say that the former are less loss averse than the latter. We would also need to know if this effect is persistent through life, or disappears (or conversely, grows) with age.

We found that anger diminishes loss aversion, thus implying that agents with these characteristics would present less endowment effect. History, Psychology and Philosophy have given numerous examples where angry repressed people tend to react faster than sad people. This work contributes with the causal finding that angry people will indeed be less loss averse; this could just be a sympathetic reaction, or it could be that anger fuels the strength to quickly forget the loss and instead focus on the possible actions. Further neuroeconomical work may be needed to answer this question. We also found that income goes in the same direction; the vast literature supports this idea, and here we claim that Mexico is no exception.

Risk and loss aversion could explain why people do not invest more or why poor people remain poor. We found that wealthier people are less sensitive to losses and can take more risks; conversely sad people will take fewer risks. This finding should be very important for public policy design: if poor people need to risk in a public policy the effect would be even lower if they are sad.

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**8 Appendix 1**

The following table shows the elicited values of  $\sigma$  and  $\alpha$  of the switching point, from series 1 and series 2.

$\sigma$	Switching question in Series 1															
	Series 2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Never
1	1.50	1.40	1.35	1.25	1.15	1.10	1.00	0.95	0.90	0.85	0.80	0.75	0.65	0.55	0.50	0.50
2	1.40	1.30	1.25	1.15	1.10	1.00	0.95	0.90	0.85	0.80	0.75	0.70	0.60	0.55	0.50	0.50
3	1.30	1.20	1.15	1.10	1.00	0.95	0.90	0.85	0.80	0.75	0.70	0.65	0.55	0.50	0.45	0.45
4	1.20	1.15	1.05	1.00	0.95	0.90	0.85	0.80	0.75	0.70	0.65	0.60	0.50	0.45	0.40	0.40
5	1.15	1.05	1.00	0.95	0.90	0.85	0.80	0.75	0.70	0.65	0.60	0.55	0.50	0.40	0.35	0.35
6	1.05	1.00	0.95	0.90	0.85	0.80	0.75	0.70	0.65	0.60	0.55	0.50	0.45	0.40	0.35	0.35
7	1.00	0.95	0.90	0.85	0.80	0.75	0.70	0.65	0.60	0.55	0.50	0.45	0.40	0.35	0.30	0.30
8	0.95	0.90	0.85	0.80	0.75	0.70	0.65	0.60	0.55	0.50	0.45	0.40	0.35	0.30	0.25	0.25
9	0.90	0.85	0.80	0.75	0.70	0.65	0.60	0.55	0.50	0.45	0.40	0.35	0.30	0.25	0.20	0.20
10	0.85	0.80	0.75	0.70	0.65	0.60	0.55	0.50	0.45	0.40	0.35	0.30	0.25	0.20	0.20	0.20
11	0.80	0.70	0.65	0.65	0.60	0.55	0.50	0.45	0.40	0.35	0.30	0.25	0.20	0.15	0.15	0.15
12	0.75	0.65	0.60	0.55	0.50	0.50	0.45	0.40	0.35	0.30	0.25	0.20	0.20	0.15	0.10	0.10
13	0.65	0.60	0.55	0.50	0.45	0.45	0.40	0.35	0.30	0.25	0.20	0.15	0.15	0.10	0.10	0.10
14	0.60	0.55	0.50	0.45	0.40	0.35	0.35	0.30	0.25	0.20	0.15	0.10	0.10	0.10	0.05	0.05
Never	0.50	0.45	0.40	0.40	0.35	0.30	0.30	0.25	0.20	0.15	0.10	0.10	0.05	0.05	0.05	0.05

$\alpha$	Switching question in Series 1															
	Series 2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Never
1	0.60	0.75	0.75	0.85	0.90	0.95	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.40	1.45	1.45
2	0.60	0.70	0.75	0.80	0.85	0.90	0.95	1.00	1.05	1.10	1.15	1.20	1.25	1.35	1.40	1.40
3	0.55	0.60	0.70	0.75	0.80	0.85	0.90	0.95	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.30
4	0.50	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	1.05	1.10	1.15	1.20	1.25	1.25
5	0.45	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	1.05	1.10	1.15	1.20	1.20
6	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	1.05	1.10	1.15	1.15
7	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	1.05	1.10	1.10
8	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	1.05	1.05
9	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	1.00
10	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	0.95
11	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.90
12	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.85
13	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.80
14	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.75
Never	0.05	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.45	0.55	0.55	0.65	0.60	0.60

## 9 Appendix 2

The Actual Questionnaire

24 de octubre de 2011 [EL COLEGIO DE MÉXICO]

Buenas tardes, la información solicitada tiene como propósito contribuir a un estudio científico sobre las perspectivas del salario de los estudiantes al ingresar al mercado laboral, por su aportación y tiempo, muchas gracias.

### Primera Parte

#### Instrucciones

Conteste las siguientes preguntas de manera más sincera posible marcando únicamente una opción, o en su defecto contestando en el recuadro.

- 1) Indique por favor su sexo  Masculino  Femenino
- 2) ¿Qué edad tiene? \_\_\_\_\_
- 3) ¿Qué carrera profesional se encuentra cursando? \_\_\_\_\_
- 4) ¿Cuántos años le faltan para terminar su carrera? \_\_\_\_\_
- 5) ¿Cuál fue su promedio el semestre pasado? \_\_\_\_\_
- 6) ¿Cuenta con alguna beca?  Si  No
- 7) ¿Qué Grado de estudios completados tiene o tenía:
 

Su Padre:  Primaria o menos  Secundaria  Prepa  Universidad o más

Su Madre:  Primaria o menos  Secundaria  Prepa  Universidad o más
- 8) ¿Cuántos hermanos tiene o tenía? \_\_\_\_\_
- 9) Sin incluir baños, cocina y sala ¿Cuántos cuartos para dormir tiene la casa de su familia nuclear? \_\_\_\_\_
- 10) ¿Cuántos automóviles en total tiene toda su familia nuclear o inmediata? \_\_\_\_\_
- 11) De la semana anterior ¿Cuántas horas remuneradas trabajó? \_\_\_\_\_
- 12) ¿Actualmente usted vive con?
 

Padre y Madre  Madre  Padre  Ninguno
- 13) ¿Quién de su familia es el principal responsable de sus gastos?
 

Padre y Madre  Madre  Padre  Hermano(s)  Nadie (independiente)
- 14) ¿Desea trabajar cuando termine de estudiar?  Si  No
- 15) ¿En cuánto tiempo cree conseguir empleo (meses)? \_\_\_\_\_

16) ¿Cuánto dinero espera ganar en su primer trabajo al mes? \_\_\_\_\_

Desde 2006 a 2010 han muerto cerca de 40,000 personas en el país debido a la guerra contra el narco, los niveles de inseguridad no se han reducido en ningún estado, por el contrario se está viviendo una ola de violencia como nunca antes se había visto en todo el país.

17) ¿Qué sentimiento principalmente le genera lo anterior?

\_\_\_ Enojo    \_\_\_ Tristeza    \_\_\_ Temor/Incertidumbre    \_\_\_ Indiferencia

La Crisis Económica de 2008 ha dejado a los mercados financieros e internacionales temblorosos. El periódico El Economista publicó una nota que el 2010 fue el año de mayor desempleo juvenil mundial en la historia. Asimismo, los expertos indican un riesgo de recesión económica en 2012.

18) ¿Qué sentimiento principalmente le genera lo anterior?

\_\_\_ Enojo    \_\_\_ Tristeza    \_\_\_ Temor/Incertidumbre    \_\_\_ Indiferencia

### Segunda Parte

**Instrucciones:** A continuación se presentan 3 series de loterías, cada serie contiene dos loterías (lotería A o lotería B) que asignan probabilidades a **ganancias o pérdidas en Dinero (Pesos)** en distintos escenarios. Su tarea es identificar en qué escenario deja de preferir la lotería A para preferir la lotería B. Marque el número del escenario donde usted comienza a preferir la lotería B, si nunca prefiere la lotería B no marque ningún número.

#### Primera Serie

Escenario	Lotería A		Lotería B	
	Probabilidad de .3	Probabilidad de .7	Probabilidad de .1	Probabilidad de .9
1	40	30	68	5
2	40	30	75	5
3	40	30	83	5
4	40	30	93	5
5	40	30	106	5
6	40	30	125	5
7	40	30	150	5
8	40	30	185	5
9	40	30	220	5
10	40	30	300	5
11	40	30	400	5
12	40	30	600	5
13	40	30	1,000	5
14	40	30	1,700	5

2

Segunda Serie

<i>Lotería A</i>			<i>Lotería B</i>	
<i>Escenario</i>	<i>Probabilidad de .9</i>	<i>Probabilidad de .1</i>	<i>Probabilidad de .7</i>	<i>Probabilidad de .3</i>
1	40	30	54	5
2	40	30	56	5
3	40	30	58	5
4	40	30	60	5
5	40	30	62	5
6	40	30	65	5
7	40	30	68	5
8	40	30	72	5
9	40	30	77	5
10	40	30	83	5
11	40	30	90	5
12	40	30	100	5
13	40	30	110	5
14	40	30	130	5

Tercera Serie

<i>Lotería A</i>			<i>Lotería B</i>	
<i>Escenario</i>	<i>Probabilidad de .5</i>	<i>Probabilidad de .5</i>	<i>Probabilidad de .7</i>	<i>Probabilidad de .3</i>
1	25	-4	30	-21
2	4	-4	30	-21
3	1	-4	30	-21
4	1	-4	30	-16
5	1	-4	30	-16
6	1	-4	30	-14
7	1	-4	30	-11

## DOES RETAIL CONTEXT SHAPE CONSUMER CHOICE FOR SUSTAINABLE PRODUCTS?

Beate El-Chichakli<sup>1</sup>, Elfriede Penz<sup>1</sup><sup>1</sup>Marketing, WU Vienna, Austria

It is widely accepted that the sustainability debate has changed mainstream consumers' attitudes and preferences in developed economies. However, irrespective of personal dispositions, much of our daily consumption choices are shaped by contextual conditions. With regard to sustainable consumer goods, the influence of the marketing context is still under-researched (Thøgersen, 2010). This research project thus seeks to analyze if the retail marketing context shapes consumers' response to sustainable consumer goods.

The conceptual model is based on behavioral learning theory, whereby a series of dynamic hypotheses is derived from the Behavioral Perspectives Model (Foxall, 1994, 1999). In principal, consumers develop a learning history from their repeated experience with sustainable products in the retail marketing context. This dynamic learning history determines if consumers' choices are reinforced by contextual marketing stimuli in a given situation. The resulting patterns of reinforcement increase or decrease a consumer's probability of choosing sustainable products over time. In order to test the hypotheses, we analyze 2 years of consumer packaged food purchase data from 1138 stable members of the Austrian GFK household panel. The marketing variables considered are: retail assortment, average price, sustainability brands, promotion for sustainable and for conventional products and a social marketing campaign. Sustainable products are categorized from a mainstream consumer perspective (van Dam and van Trijp, 2011), i.e., products that visibly communicate one or several eco-social benefits by means of verifiable claims or standards.

Fitting a multilevel longitudinal model, we find that at the beginning of the observation period households differ significantly in their levels of sustainable product purchases. They can be grouped into four experience clusters. However, households' responses to sustainable products change considerably over time. Thereby, it is not the initial experience level, but the marketing reinforcement patterns that significantly impact whether a household increases or decreases the share of sustainable products in its shopping basket

We present a dynamic analysis of consumer behavior towards sustainable products. Our analysis suggests that preferences for sustainable products are not persistent over time, neither for heavy nor for light users. Retail marketing can shape the behavior of different consumer groups and thereby develop the market for sustainable products

*Keywords: choice, intertemporal choice, ethics, socially responsible business*

## THE EFFECTS OF WORKAHOLISM ON HEALTH AND PERFORMANCE

Alessandra Falco<sup>1</sup>, Luca Kravina<sup>1</sup>, Damiano Girardi<sup>1</sup>, Stefano Bortolato<sup>2</sup>, Nicola De Carlo<sup>1</sup><sup>1</sup> University of Padova, FISPPA, Section of Applied Psychology, Italy<sup>2</sup> Psiop - Institute for The Intervention on Organizational Disease, Italy**Abstract**

Recently, Schaufeli et al. (2008) defined workaholism as "the tendency to work excessively hard in a compulsive way". Most authors have focused their attention on the negative consequences of workaholism, both in terms of health and in terms of negative work-family spillover.

Instead, the studies conducted in order to investigate the relationship between workaholism and job performance are few, and with contradictory results. Schaufeli et al. (2006) found a positive relationship between workaholism and performance, but only in relation to the extra-role performance. Shimazu et al. (2009) detected a negative relationship in a first study, but in a second study they found no direct relationship, only a weak relationship mediated by coping strategies. As noted by the authors, the transversal limit of the various studies is the usage of self-report measures, which causes the possibility for factors such as social desirability, common method variance and negative affectivity to influence the results obtained.

The present study aims to detect the direct relationship between workaholism and performance, using both the self-evaluation of the worker and the hetero-evaluation of the supervisor as a performance measure. It also aims to test the direct effect of workaholism on the psycho-physical health measured by the organizational physician, as well as the possible mediating effect of psycho-physical health between workaholism and performance.

The study involved all the workers (N=340) of an Italian organization.

Workaholism was assessed by using an Italian version of the DUWAS (Kravina et al., 2010) Job performance was assessed using a single item from the Work Performance Questionnaire. In order to assess the psycho-physical health of the workers, the organizational physician used the V.I.S. Method, which allows to identify five types of symptoms.

Structural equation modeling was used. The results show no direct effects between workaholism and performance, measured through self-assessment as well as through hetero-evaluation. Direct effects between workaholism and the psycho-physical health measured by the organizational physician are instead found. Finally, the mediating role of psycho-physical health is not confirmed.

The study has provided insights about the consequences of workaholism through the usage of hetero-evaluation of performance measures and psycho-physical health, never used to date in the study of workaholism. The results suggest that workaholism is directly and strongly associated with psycho-physical disease. However, performance does not appear to be compromised. Probably the possible effects on performance should be better detailed through a longitudinal research design.

*Keywords: individual differences, self-control*

## 1 Introduction

Workaholism denotes the uncontrollable desire to work incessantly. Recently, Schaufeli, Taris, and Bakker (2008, p. 208) defined workaholism as *“the tendency to work excessively hard in a compulsive way”* highlighting two core dimensions: working excessively and working compulsively.

Most authors have focused their attention on the negative consequences of workaholism, both in terms of health and in terms of negative work-family spillover. Instead, the studies conducted in order to investigate the relationship between workaholism and job performance are few, and with contradictory results, while some other studies, with a theoretical focus, are not supported by experimental data.

In a preliminary study, Scott, Moore, and Miceli (1997) argue that the relationship between workaholism and job performance depends mainly on the typology of workaholism: in this framework, it is possible to associate Compulsive - dependent Workaholics to lower levels of job performance, especially taking into account the great amount of time placed on the work. Similarly the Perfectionist Workaholics have lower levels of job performance in the moment in which the organization does not allow an adequate level of control on their own work. In contrast, Achieved Oriented Workaholics show greater levels of job performance when their organization has a system of rewards based on the achievement of objectives.

Ng, Sorensen, and Feldam (2007), emphasize that the relationship between workaholism and job performance can be influenced by the time dimension. In the short term it is possible to imagine a positive relationship between the two variables, and conversely a negative relationship in a long term perspective. This differentiation may be due, according to the authors, to perfectionism, to low confidence in colleagues and to a more critical level of mental and physical health that characterizes Workaholics and influence their work and that of their team.

Schaufeli, Taris, and Bakker (2006) found a positive relationship between workaholism and performance, but only in relation to the extra-role performance. Shimazu and Schaufeli (2009) detected a negative relationship in a first study, but in a second study Shimazu, Schaufeli, and Taris (2010) found no direct relationship, only a weak relationship mediated by coping strategies. As noted by the authors, the transversal limit of the various studies is the usage of self-report measures, which causes the possibility for factors such as social desirability, common method variance and negative affectivity to influence the results obtained.

As mentioned by Gorgievski and Bakker (2010) on Workaholism and its relationship with Job Performance, it is possible that different effects of excessive work and compulsive work can be found in relation to task performance, innovativeness, and contextual performance.

To our knowledge, there are no studies that investigate the relationship between workaholism and Job Performance through a combination of methods of self- and hetero-evaluation of job performance, typically analyzed only by using self-report instruments. At the same time, to our knowledge, it is not possible to find any study that links Workaholism and hetero-evaluation of mental and physical health of the Workaholic workers.

Regarding the relationship between self- and hetero-evaluation of Job Performance, literature suggests that the correlations between self- and hetero-evaluation are characterized by a positive correlation between the two methods, the effect of which varies according to the samples analyzed and to the evaluators themselves (self-peer, peer-supervisors, ...) (e.g. Heidemeier & Moser, 2009).

## 2 Objectives

The present study aims to detect the direct relationship between workaholism and performance, using both the self-evaluation of the worker and the hetero-evaluation of the supervisor as a performance measure. It also aims to test the direct effect of workaholism on the psycho-physical health measured by the organizational physician, as well as the possible mediating effect of psycho-physical health between workaholism and performance.

## 3 Method

The study involved all the workers (N=309) of an Italian organization. Workaholism was assessed by using an Italian version of the DUWAS, revisited (Kravina, Falco, Girardi, & De Carlo, 2010). Job performance was assessed using a single item from the Work Performance Questionnaire (Kessler et al., 2003). In order to assess the psycho-physical health of the workers, the organizational physician used the Part 4 of the V.I.S. Method (Sarto et al., 2011), which allows to identify five types of symptoms: depressive, anxiety, gastrointestinal disorders, cardiovascular disorders and ergonomics disorders.

## 4 Results

Structural equation modeling was used in order to analyze the relations between the variables investigated. Correlation, means and standard deviations of the variables under study are shown in Table 1.

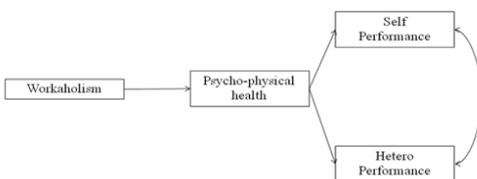
		Mean	S.D.	1	2	3	4
1	Self performance	8.18	1.09	1			
2	Hetero performance	6.87	1.06	.597 <sup>***</sup>	1		
3	Psycho-physical health	1.61	.38	-.166 <sup>**</sup>	-.111	1	
4	Workaholism	3,24	.94	.033	-.016	.351 <sup>***</sup>	1

Table 1: Correlations, means and standard deviations.

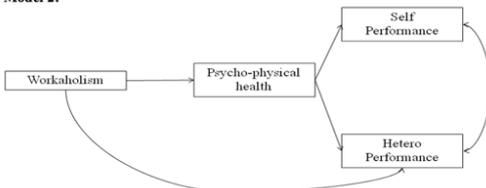
\*\*\*  $p < .001$ ; \*\*  $p < .01$ ; \*  $p < .05$

The analysis of the correlation matrix reveals some statistically significant relationships between the variables analyzed. In particular, it reveals a positive and significant correlation between self- and hetero- evaluation of job performance ( $r = .597, p < .001$ ). It shows a significant and positive correlation between Workaholism and the mental and physical health assessed by physicians ( $r = .351, p < .001$ ) and a significant and negative correlation between psycho-physical health and self-evaluation of job performance ( $r = -.166, p = .003$ ). There were no significant correlations between Workaholism and performance indicators, be they the result of self-assessment ( $r = .033, p = .561$ ) or hetero-assessment ( $r = -.016, p = .784$ ), and neither any correlation between mental and physical health of the worker and hetero-evaluation of Job Performance ( $r = -.111, p = .051$ ).

Model 1:



Model 2:



Model 3:

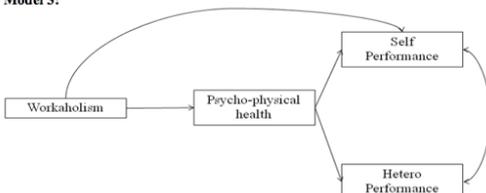


Figure 1: Tested models.

In order to achieve the purposes of this study, 3 different models were tested and compared with the aim to assess whether the psycho-physical health mediates the relationship between WKC and performance, and if such mediation is total or partial: the theoretical models are shown in Figure 1.

In Model 1 (M1), Workaholism predicts in a positive and statistically significant way the psycho-physical health of workers, which predicts the self-evaluation of performance but not the hetero-evaluation of performance.

The test of the indirect effect through the distribution-of-product method (Tofighi & MacKinnon, 2011) was conducted, and it detected a negative but not significant indirect effect of workaholism on hetero-evaluation of Job Performance through psycho-physical health, while a significant and negative indirect effect on self-evaluation of Job Performance through the psycho-physical health was found.

The hypothesis of mediation was thus confirmed in relation to self-evaluations of performance but not to hetero-evaluations of performance.

In order to verify if the mediation of the psycho-physical health is total or partial, the two alternative models M2 and M3 were tested, using the difference of the chi-square test (Table 2).

The model M2 is less parsimonious from a theoretical point of view compared to the model M1, as one more parameter is estimated and the index of the chi-square is not better than M1, for which reason the model M1, the most parsimonious, is confirmed: the hypothesis of partial mediation of psycho-physical and hetero evaluation of the Job Performance is not confirmed.

Also the model M3 is less parsimonious from a theoretical point of view compared to the model M1, as one more parameter is estimated and the index of the chi-square is not better than M1, therefore the hypothesis of mediation of psycho-physical health and self Performance evaluation of Job is not confirmed. The best fit of the model M1 was evaluated through the chi-square difference between the models, as reported in Table 2.

Model	$\chi^2$	Df	$\Delta \chi^2$
M1	3.578	2	
M2	3.046	1	$\Delta \chi^2_{M1-M2}$ Not significant
M3	0.195	1	$\Delta \chi^2_{M1-M3}$ Not significant

Table 2: Chi-square difference between M1, M2 ed M3.

The model M1 is, therefore, be the best, as it shows good fit indices of the theoretical model to the data:  $\chi^2 (2, n = 309) = 3.578, p = .17, RMSEA = .050; NNFI = .97; CFI = .99; SRMR = .030$ . The results are presented in Figure 2 which reveals a strong positive relationship between Workaholism and psycho-physical health of workers and shows how the psycho-physical health predicts the self-assessment of performance but not the hetero-evaluation of performance.

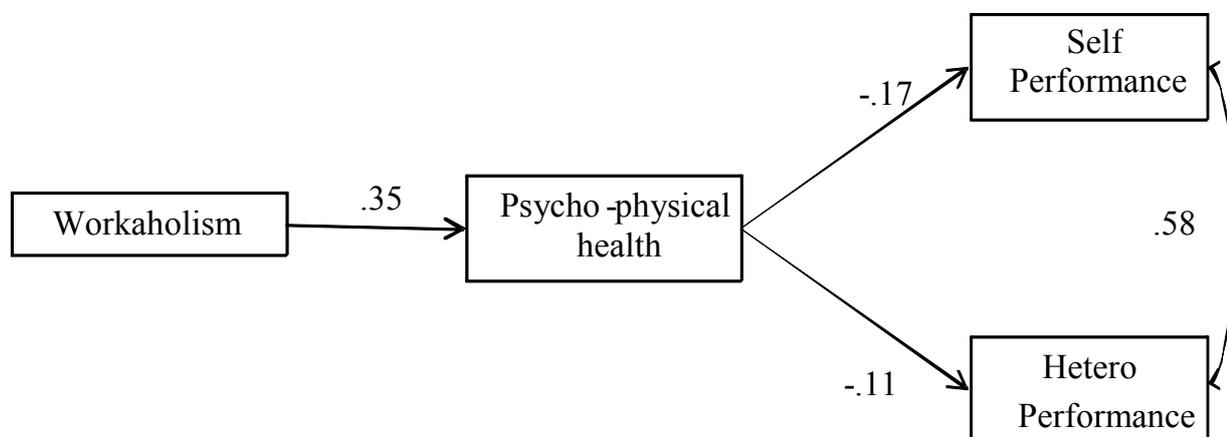


Figure 2: Model M1 - Path Diagram.

The results show no direct effects between workaholism and performance, measured through self-assessment as well as through hetero-evaluation. Direct effects between workaholism and the psycho-physical health measured by the organizational physician are instead found.

Finally, the mediating role of psycho-physical health is not confirmed.

## 5 Conclusions

The study has provided insights about the consequences of workaholism through the usage of hetero-evaluation of performance measures and psycho-physical health, never used to date in the study of workaholism. The results suggest that workaholism is directly and strongly associated with psycho-physical disease showing substantial agreement with what emerges in the literature about the same relationship (e.g. Schaufeli et al., 2006). The psycho-physical health of workers also predicts the self-evaluation of performance but not the hetero-evaluation of performance. This result can be interpreted by the fact that the Workaholics show higher levels of work-related stress which, in turn, influences their perception of their job performance, while this is not reflected in the hetero-evaluation by third parties. Compulsive and excessive work leads to a more critical level of psycho-physical health and well-being and consequent work-related stress, resulting in a perception of less performance.

From these results it is then possible to show how workaholism is not a favorable condition for organizations and businesses as Workaholics, while putting in place working behaviors that often go beyond the demands of organizations, are not distinguished from other workers for better work performance. In summary, the Workaholic have a level of psycho-physical health (assessed by occupational physicians) more critical, which adversely affects job performance (assessed through self-evaluation). The workaholism therefore is a well-dressed form of addiction (Robinson, 1998) which, however, presents its most critical levels in the sphere of individual well-being. From an organizational perspective, different strategies can be implemented in order not to exacerbate or encourage Workaholic behaviors: it is therefore possible to suggest within organizations to establish systems that encourage collaboration between groups rather than reward strategies of the type "winner-takes-all" (Ng et al., 2007), rewarding role behavior rather than extra-role behavior; systems that encourage a greater balance between work and private life (Burke, 2001) with the aim of ensuring a greater recovery of the energy released in the work thus mitigating the possible negative effects on mental and physical health of the worker.

The originality of this study lies not only in having examined the relationship between workaholism and job performance (relationship rarely explored in literature), but also in having provided new evidence about the link between the variables under study through the use of different sources of information which, to our knowledge, have never been taken into account simultaneously in studying the relation between workaholism and Job Performance.

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## CAN WE BE DEBIASED? HOW ECONOMIC PSYCHOLOGY CAN INFORM FINANCIAL EDUCATION PROGRAMS

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### Abstract

The paper discusses findings in economic psychology, behavioral change and the reasons why it is advisable to include psychological insights in financial education programs. It describes two separate on-going pilot programs in Brazil that involve research in action and already do combine financial education and such insights to address the delivery of financial education to high school students, in one case, and to treat over indebtedness issues, in another. So, it aims to discuss potential and actual contributions offered by economic psychology to financial education with two concrete examples from Brazilian projects that have included these notions in their pilot programs, to debate how actual financial capability could be achieved by large groups, for instance including *System 1* or the *hot self* in the employed approaches, and to trigger discussions around strategies, context design and policy-making regarding financial education.

Combination of: analytical-descriptive method, for discussing the theoretical background and proposing innovative tools for financial education; research in action in the shape of pilot-programs, for initial application and monitoring; evaluation (done by other researchers and using control group, in one of the cases)

Behavior and its cognitive and emotional underpinnings are essential for financial education and the development of true financial capability, so financial education programs need to address behavioral change, but most programs still do not do it. They must address *System 1*, and groups rather *System 2* only, using different methods, strategies and tools. Economic psychology/behavioral economics already have a great deal of research data that could be useful in this respect. Permanent monitoring of programs is crucial for their success. Financial education programs for high school students can benefit from psychological insights, as it could be observed in the Brazilian ENEF. Professionals working on the treatment of over indebted consumers can benefit from training in economic psychology, as it could be observed in the Brazilian pilot program dedicated to this issue

It would be of interest to test suggestions to include economic psychology/behavioral economics in financial education programs listed in this paper. Economic psychology/behavioral economics may contribute to *de-biasing* processes within financial and economic decision-making in individuals and groups. Policy-makers ought to include concerns over behavior in their agendas.

However, it is necessary to further investigate how financial education can be effectively delivered and how people could actually incorporate this knowledge and improve their financial capability in their daily lives.

*Keywords: intertemporal choice, dual process, loan and debt, overconsumption, adolescents, self-control*

## 1 Introduction

The paper<sup>1</sup> discusses the reasons why it is advisable to include psychological insights in financial education programs, and describes two separate on-going pilot programs in Brazil that already do combine financial education and such insights to address the delivery of financial education to high school students, in one case, and to treat over indebtedness issues, in another.

Economic psychology and behavioral economics provide research findings on psychological limitations around decision-making and on strategies that might counter them, therefore on address behavioral change too. These data have been growingly employed in policy-making agenda regarding finance and economics.

The reason for bringing together economic psychology/behavioral economics and financial education stems from two complementary scenarios: there has been an important debate around the efficacy of financial education programs, questioning whether they would have the power to actually change financial behavior by improving people's financial

<sup>1</sup> Earlier versions of some parts of this material have been presented (Ferreira & Lima, 2009; Ferreira et al., 2010a; Ferreira et al., 2010b), before the programs were concluded.

capability, and secondly, after observing that this has often not been the case, then how behavior could be in fact changed.

Behavioral change is thus discussed in the paper, along with some cornerstones of the area (economic psychology/behavioral economics), and how, in spite of that, financial education initiatives still use them rather timidly. Concrete suggestions of potential applications are offered, focusing *de-biasing* strategies, i.e., those that could reduce cognitive and emotional limitations routinely found throughout decision-making processes in the majority of people, regardless of education or socioeconomic background.

After discussing the above mentioned Brazilian projects, the paper closes with further suggestions that also include economic psychology in financial education programs that can be used in Brazil or in other countries as well.

### 1.1 Economic psychology and why information alone is not enough to change behavior

Our choices are not always consistent (Kahneman & Tversky, 1979), and we do not always choose what is best for ourselves (Thaler & Sunstein, 2008, Loewenstein & Haisley, 2008, Kahneman, 2011). Very low rates of savings, of pension plans and of insurance on one hand, along with the enormous challenges posed by the events from 2008 on in the world economy and finance, indicate that as a whole we have fallen short of succeeding in gaining even reasonable financial capability, the goal of financial education programs.

What could explain such bleak scenario? Economic psychology can offer some hints. The discipline has been researching cognitive – and more recently, emotional too – limitations for decades now, particularly as they affect perception and judgment, generating biases and misleading decision-makers into unfavorable choices.

Besides, as contexts routinely present a large array of different demands and complexity, often simultaneously, we are forced to resort to simplifications in order to deal with all the stimuli and challenges that come our direction. This is why a large number of *heuristics*<sup>1</sup>, or rules of thumb, are used, although they wind up generating biases along the process of decision-making.

Findings indicate that the resulting biases may jeopardize each step of the process: while acquiring information, processing it, making choices, and even in post-choice period (cf. Earl, 2005 for an excellent concise list), distorting data in different ways, and leaving decision-makers quite vulnerable to internal pressure (coming from impulses seeking prompt relief) and external pressures (as imposed by social parameters, among others), illusions and *systematic errors*<sup>2</sup>, bringing financial, environmental, social and personal losses along the way. In other words, as information is edited to cut the process short, the decision-maker ends up with *edited* simplified representations of available options to assess and then choose the seemingly best, but it will be among these less than accurate alternatives (Kahneman & Tversky, 1979). The risk of making mistakes is then clearly not negligible.

Several such errors have been identified and named, and we mention just a few of them: *excessive optimism* (Kahneman, 2007); *overconfidence* (Thaler & Sunstein, 2008; Schwartz, 2008); *loss aversion* (Kahneman & Tversky, 1979); *mental accounting* (Thaler, 1990); *hyperbolic subjective discount of time* (Ainslie, 2005); *anchoring* (Kahneman & Tversky, 1979; Ariely, 2008); *framing effects* (Kahneman & Tversky, 1979); *sunk costs fallacy* (Kahneman, 2011). The list of examples is long, and these are but only a few of them.

It is important to note, however, that we do not claim humans to be irrational, but rather, that we all have limited rationality. This is so not only following Simon (1978), who mentioned two major sources for this condition – insufficient cognitive capacity to deal with all the necessary information to make optimal decisions, and/or insufficient resources (time, money etc.) to seek all this information, in case we did have that competence – but especially because we are basically driven by impulses and emotions (Bion, 1970).

Reason, language, abstraction and logic have only come to be part of our mental architecture as of recently, in face of the evolution of human species. Therefore, rationality is still frail and unstable when compared to much more ancient mechanisms that regulate instincts, impulses and affects (Burnham, 2008.).

Also, we seem to have two different major cognitive processes in action in our mind, which researchers have been naming as *System 1* or *intuitive*, and *System 2* or *deliberate* (Kahneman, 2002; Kahneman, 2011), or a *hot self*, and a *cold self* (Thaler & Sunstein, 2008, Ariely, 2008)<sup>3</sup>.

<sup>1</sup> The name comes from the Greek *heureka*, that means “I have discovered or invented!”.

<sup>2</sup> *Systematic errors* are so named because most people make them most of the time, in approximately the same way, so that they can be almost predicted in many cases.

<sup>3</sup> Other researchers may offer yet other nominations, like Epstein, 1994 *apud* Slovic, 2002, who considers them to be *experiential* (holistic; affective, that is, pleasure-pain oriented and mediated by “vibes” from past experiences, resorting to concrete images, metaphors, and narratives, faster in processing and oriented toward immediate action, and valid through self-evidence), on one hand, and *rational* (analytic, logical, with behavior mediated by conscious appraisal of events, able to resort to abstract symbols, words, and numbers, slower and oriented toward delayed action, requiring justification via logic and evidence) on the other. And significantly earlier, over a century ago, Freud (1911) also discussed equivalent modes of mental operations, later followed by Klein (1963) and Bion (1961).

*System 1* comprehends rapid, automatic and effortless operations based on association; learning is slow and difficult, while control and changes are hard to implement, just as one might find in perceptual processes and intuition; since these operations are conditioned by high accessibility, they are more frequently resorted to.

*System 1* is also responsible for passive experience, i.e., over which we do not hold deliberate control, as is the case with perception, association, emotion, judgment, that all come by effortlessly too. Additionally, it is myopic, and tends to stick to the short term only. But it is the actual “doer”! The part of the mind that is active when the time comes to act.

Regarding skills, in *System 1* they could be trained to the point of becoming automatic; however, this training depends a great deal on the possibility of receiving lots of feedback, coming as soon as possible after the behavior at stake.

As for feedback though, it is clearly easier to establish links and identify patterns so as to better recognize and grasp feedback in contexts where regularity prevails, making learning with experience more feasible a task. Unfortunately, this is not the case with economics and finance, where variables are plenty and complex, not to mention the near impossibility to predict future events. This will no doubt render learning and the development of awareness more critical.

*System 2*, on the other hand, is slow, less often used, serial, effort-dependent and it involves greater deliberation, flexibility and control, as it associates to reasoning, conceptual representations, time and language. These functions require further reflection, such as when we have to solve math problems, for example. In this case we have attention, memory and careful judging all at work, as we need to focus and analyze the situation to come to some conclusion. Effort is required here to control impulses, and since effort and attention are also finite resources, when one concentrates on a task using *System 2*, it becomes hard to properly accomplish another one at the same time<sup>1</sup>.

*System 2* is also more capable of planning and of taking the long run into consideration, although it may often remain in the realm of intentions alone, with yet further implications for financial education, as we shall further discuss ahead.

Also, since in some cases *System 2* can correct operations that had been under *System 1*, this is another topic to receive attention from policy-makers as well – in which conditions could this be done and what could help to make it a more frequent strategy?

Because unfortunately, it does not seem to be possible to “educate” *System 1*. It could be updated with more information, with help coming from *System 2*, so that one might be able to start identifying “dangerous” behaviors and situations, when one is more vulnerable to biases and errors, and therefore become more capable of avoiding them before it becomes too late, i.e., before *System 1* alone starts running the show. Because after reaching this point, it becomes almost impossible to take hold of it, or to try and change it.

That is why it is called the *hot self* – it considers only the immediate scenario, burns with drives and anxiety in the present, and is unable to postpone attempts to fulfill them. So this starts to answer our original question: why is it so difficult to change behavior?

Whatever behavior is already installed, it becomes automatic and part of *System 1* operation. Trying to change it will have to face the enormous power of automatic functioning, which is also rather energy-saving (it spares the organism the trouble and hardship of moving around unknown conditions, whereas falling into automatic operations has been selected by the species as more convenient for immediate survival purposes), in other words, it goes against natural impulses and ancient experience. Finally, this is not at all new: changing behavior and habits requires effort until the new one becomes incorporated.

Information might change some things – beliefs, values and even attitudes and intentions. However, what the person will in fact do when she is right there and then to act is another story, and there is no warranty that she will do what she had originally intended to, or follow the recommendations she has been given or read previously. And this is yet another point – has she indeed read it in the first place??

For this reason behavioral factors and psychological insights have been included in the financial education agenda over the past few years, and there is no indication that they will ever part with it!

## 1.2 Where we stand

Nevertheless, the essence of this partnership – establishing what changes behavior and how this could be done, so that people could gain greater financial capability and therefore make more informed, favorable and sustainable decisions – has not been fully attained so far, as we are all still in the middle of investigating this issue. We do have some hints though, and it is also clear that further information ought to be collected directly with the target public of financial education programs. Since they are most familiar with their current habits, some of them may be quite knowledgeable on how to make ends meet (particularly among low-income groups), and much of their wisdom could

<sup>1</sup> This has direct implications for financial education programs, and here an interesting topic could be raised: regarding financial management, how could contexts be designed in order to avoid this kind of overload?

be fruitfully shared with others, as they also have the best skills to communicate in their own communities (Collins et al., 2011).

On the other hand, we face a general scenario that is even more challenging regarding financial education because, despite the crisis over the past few years, we have been for the past decades right in the middle of the most exuberant period of over consumption and over indebtedness ever before, along with general seeking for immediate fulfillment in all respects – and preferably, at no cost! This condition, of course, does not exist, it is only an illusion.

But having to postpone pleasure and gratification, to face complex situations and not to have clear enough awareness of scenarios, are all so deeply disliked by most people, that also tend to hate to choose in general – or to have too many options or too much information –, that it is a tough job to try and face reality and its demands as they come.

This is why fast ways to find satisfaction and even magic solutions look very appealing to us, to a nearly irresistible degree in fact, so that choosing apparently easier ways to find anxiety relief and prompt gratification drives most of our psychological operations, behaviors and decisions – all that in spite of future consequences and costs (Ferreira, 1999, 2007, 2008).

The point is – future consequences cannot be easily seen at the moment, and it is even harder to assess the weight of their unfolding, so we tend to adopt a myopic perspective and to keep to a present-only type of focus.

We could say that we have a kind of emotional traffic light in our mind that works this way: when I experience signs of pain, or any kind of threat of displeasure coming my way, it is as if the red light went on, and I try to avoid this situation; if I cannot do it concretely, at least I prevent it from entering or remaining within my conscious level, and anyhow do not relate to that perception, as if it did not exist. On the other hand, when immediate satisfaction – or promises that this will be coming my way soon – are seen, it is the green light that goes on now, and this perspective may look irresistible, even if it may turn to be an illusion, or even worse, plain fraud and deceit (Bion, 1961a; Ferreira, 2007; 2011).

Moreover, we seem to be constantly in the middle of conflicts that oppose long term to short term considerations, with surpassing victory for the latter, while routinely falling short of properly identifying risk when it comes our way (Kahneman, 2009<sup>1</sup>), which only makes things even more difficult for decision-makers.

As a result, we face a long list of problems while trying to make the best choices – at the same time, these very problems are exactly the reason why many financial education programs fail, despite attempts to tackle them. Here are some of them, that interfere directly in financial capability issues (cf. (Ferreira et al., 2010a):

- distortions in information processing (Tversky & Kahneman, 1974; Simon, 1978; Kahneman and Tversky, 1979; Earl et al., 2007);
- the power of primitive emotional impulses over mental operations at large (Finucane et al., 2000; Slovic, 2002; for further underpinnings on this matter, cf. also Freud, 1911, 1915; Bion, 1961; Klein, 1963; Ferreira, 2007);
- prevailing automatic *System 1* over careful planning from *System 2*, or hot self vs. cold self, and all the conflicts involving self-control, and short vs. long term decisions (Kahneman, 2002, 2011; Slovic, 2002; Thaler & Sunstein, 2008; Freud, 1911; Klein, 1963); some results may unfold into problems around planning and excessive optimism, with gross miscalculations involving future plans, budgets and financial planning, with overestimated resources and underestimated difficulties and risks (Kahneman, 2007; Thaler & Sunstein, 2008; Ariely, 2008);
- cognitive dissonance (Festinger, 1957), at the root of many *heuristics*, as the attempt to reduce distress generated by internal conflict between contradictory perceptions (f.i., suppressing the awareness of risk while engaging in activities that do involve it, when the attraction towards desired benefits is felt to be stronger, as we may see in several kinds of investments, financial crisis, and swindler stories alike; cf. Shiller, 2000; Slovic et al., 2004, Thaler & Sunstein, 2008);
- group and herding behavior (Akerlof & Shiller, 2009; Shiller, 2000; Freud, 1921; Bion, 1970, 1975);
- reality perceived in different ways due to individual, group and cultural differences regarding reacting to stimuli, grasping and decoding data, and making choices, with major implications for financial education programs.

This is why financial education is so hard a task. If it were only a matter of teaching at one end, and learning and putting into practice at the other end, all problems would be solved, because listing the proper content for such programs is perhaps the easiest part. There is no argument about what people should learn in this respect: budgets, credit, saving, investments, insurance, pension plans and so on. Ideally, just about everyone could qualify as target public too, because there is always important information to be delivered on all these topics throughout life.

The hard parts remain unattended though, and could be shrunk to these:

- how can financial education be effectively delivered?
- and how could people actually incorporate this knowledge and improve their financial capability in their daily lives?

To search for answers, we now review two Brazilian pilot-programs that have combined economic psychology and financial education, and have had preliminary assessments of their initial results, following the goals listed below.

<sup>1</sup> Kahneman put it quite straightforwardly: people run risks because they do not realize that they are risks (oral presentation in Brazil, 2009).

## 2 Objectives

1. Discuss potential and actual contributions offered by economic psychology to financial education with concrete examples from two Brazilian projects that have included these notions in their pilot programs.
2. Debate how actual financial capability could be achieved by large groups, f.i., including *System 1* or the *hot self* in the employed approaches.
3. Trigger discussions around strategies, context design and policy-making regarding financial education.

## 3 ENEF: The Brazilian National Strategy for Financial Education

The Brazilian National Strategy for Financial Education (ENEF) was launched in 2007. It set both space-related goals (teaching to consume and save in an ethical, well-informed and responsible manner; training disseminators; training for citizenship; offering concepts and tools for an autonomous decision-making process based on a change of attitude) and time-related goals (teaching short-, mid- and long-term planning; developing the culture of prevention; providing the possibility of change to the current condition) (Vasco, 2011).

In late 2008, the idea of including economic psychology in the pilot-program that was beginning to be developed for high school students was devised and started to be designed.

Based on the assumption that technical information on finance is not enough to actually change behavior, due to all the above mentioned factors (bounded rationality, all the vastly documented anomalies and inconsistencies in economic behavior, biases in perception, memory and judgment of data, and the influence of emotions on decision-making), in the Brazilian national strategy (ENEF), contributions originated in research on economic psychology have been added to the three books offered to high school students, in the shape of *blinkers*, thus called because they are red boxes highlighted on the pages.

These blinkers are intended to raise awareness, offer favorable conditions to the appearance of insights both over systematic errors and over strategies to better deal with them, and to trigger discussions on the psychology of economic decisions.

The program initially aimed at that population, and is currently about to reach elementary schools as well. The books have been prepared by specialists on education, along with specific consultants for finance, communication and economic psychology. Teachers of any topic can work with them<sup>1</sup>. The three books have been carefully designed and have turned out to be quite attractive and accessible, both visually and content-wise.

They address daily life situations, involving the financial aspects of family and social life, personal belongings, work, entrepreneurship, projects, public goods, national and international economics, over different time spans (short, medium and long term).

There are seventy-two *learning opportunities*, that comprehend items such as: a recap of what is actually done in that respect by the student at that point, another one to check what has been discussed in class, potential adaptations to regional differences, social and environmental responsibility, possibilities of dissemination of this knowledge for each student, autonomous decision-making (that intends to translate the notions into individual and context use), and the *economic psychological blinkers*.

There are more than 40 such blinkers spread over the three volumes, and they draw attention to issues such as: compulsive and impulsive buying (including notions like the fact that our desires have an unconscious root, and can never be fully satisfied, plus the importance of comparing prices before purchasing); the real meaning of taking credit (it is not like you have become any richer, since it will have to be paid back later – and with interest, that can be as high as 12% a month, in Brazil!); *anchoring* (and how we are susceptible to reference values, which can be easily manipulated by publicity, f.i.); *framing* (upon the example of prices routinely being displayed as \$xxx,99, that induce us to believe it is significantly cheaper than the full price); several on *mental accounting* (the importance of planning carefully and on real basis, i.e., net rather than gross income, that looks more attractive, since it is higher; the risks of relying on future income and destining it to too many goals, that will prove to be unattainable at the end, along with temptations seen in advertising, all this resulting in possible debt problems; the difference between having bills of higher value and bills of lower value in the wallet, as the latter tend to be spent faster and more carelessly); the power of group pressure upon consuming and, often enough, buying things one does not need, along with marketing mechanisms to encourage this kind of consumption; the difference between feasible dreams and unrealistic ones.

It is assumed that most of the information is not generally known by this population (high school students), and possibly neither by their families, so it is expected that these notions will arouse their interest, making them pay closer attention to their own economic behavior, while also bringing the topic home to discuss among family and friends. These students would thus act as multipliers disseminating this knowledge even further, and a spillover effect is expected to take place in families and even in communities too.

<sup>1</sup> The ideal format would be to have at least two teachers, from different areas, exploring the material in each school.

A pilot version of the program has begun at over 400 high schools, in six different states, while another equivalent amount of schools played as control groups, for thorough evaluation purposes, assessing a total of around 900 schools, under the supervision of the World Bank<sup>1</sup>.

The first results from this evaluation, that covered one semester late in 2010, were promising. After a rather short period of time (four months), a slight though significant difference between treatment and control groups could be detected – the average level of financial proficiency was found to be higher in the treatment group (60.4), when compared to the control group (56.1) (The World Bank Group, 2011).

Going beyond the figures, teachers' testimonies were impressive too – several of them had to initially overcome their own difficulties to deal with financial matters in order to be able to teach their students, but to their own surprise, they had indeed succeeded in doing so.

Students also displayed amazing responses after such short exposure to the topic, and some of them made simple videos, with their mobile phones, representing all they had learned, like overconsumption linked to emotions and other issues.

We may then come to the conclusion that ENEF has been successful at this first round, and although the economic psychology blinkers have not been separately evaluated, the hypothesis that they may have contributed to this satisfactory result stands to be further observed.

Yet, the issue of evaluation in financial education programs however crucial, remains as a challenge for specialists in the area for several reasons, starting with one of the hardest to tackle: how reliable are self-reported answers? As we have seen, excessive optimism and overconfidence (so commonly found among people in general), could easily jeopardize more impartial judgment over one's financial capability, and therefore, critically bias evaluation results.

On the other hand, how much would other assessment tools cost? For instance, in-depth interviews, direct observation, longitudinal studies, all these imply high costs. However, there may be room for designing active experiments not bound to cost so much, like this one that we would very much like to see in action:

1. Along with the regular program, also give some *seed money* to these high school students – it would not have to be a large amount, just enough for them to begin a savings account;
2. Arrange to have this type of account easily opened and offer some incentive for them to keep on saving along time;
3. Observe how they manage this money;
4. Discuss with a sample of them afterwards to find out what exactly they have done with it, their impressions from the experience, how they felt about it and whether any lessons could be learned;
5. For researchers, focus would be kept on habit-forming behavior, and whether the experience had had any real meaning to them or not, and also, if they had extended the possible lessons to other areas of their life, be it in the financial area or in general; f.i., if they have started to plan more carefully, use credit with greater responsibility, grow an interest in more sophisticated financial products and services, take the long term perspective more into consideration;
6. The purpose here would be to gain direct insight and assessment on how these young people actually “walk the talk”<sup>2</sup>.

It would be interesting to include this type of direct evaluation of actual behavior, and others of this nature yet to be devised, so a more precise picture could emerge of causal relations, the real effects of different strategies, and therefore, resources (financial and otherwise) could be better allocated for financial education programs.

#### 4 Treating over indebtedness

The *Pilot-Program for Treating Over Indebtedness* is the result a proposal based on research by Law professor Claudia Lima Marques, initially implemented by two judges<sup>3</sup>, who introduced a new format of having collective hearings bringing together all the over indebted consumer's creditors at once, after he/she has given evidence of being willing to reorganize his/her financial life. This hearing is mediated by either a judge or a conciliator, and may happen within the course of a legal action or not.

The goal of the program is to reduce social exclusion of individuals and families provoked by over indebtedness, which in turn prevents them from getting formal jobs or new credit to solve their financial problems, thus creating a very hard to break vicious circle. On the other hand, the possibility of feasible renegotiation of their debts, while also assuring a minimum living stipend, might lead to their reinsertion in the social and economic system, where it would be possible to have a chance to regain financial and personal balance (Bertoncello & Lima, 2007). Collective hearings,

<sup>1</sup> This evaluation has been under the responsibility of CAEd (2011), supervised by the World Bank.

<sup>2</sup> This is slightly similar to the United Kingdom's Child Trust Fund (CTF), “designed to ensure that all British children will have savings upon reaching their eighteenth birthday and to facilitate the development of good savings habits” (Tufano & Schneider, 2008), where each child receives 250 pounds at birth, which parents must somehow allocate. Besides encouraging saving, this program also brings parents into the finance universe, when they have to decide how to invest the money.

<sup>3</sup> Clarissa C. Lima and Karen Bertoncello.

rather than ordinary legal action, should turn this reinsertion more agile, while also relieving the overburden over the judiciary system.

Another major goal of the project is contributing to the debate over public policy-making related to this issue, in an attempt to reduce over indebtedness rates initially in São Paulo city (regarding the program discussed here), and particularly among low-income groups.

Going beyond the legal and social aspects, consumer protection specialists realized, at Procon-SP, that it was quite necessary to address psychological factors within the scope of the treatment of this issue, and therefore when it finally had its official start, in 2010, economic psychology was included in the project, focusing economic behavior related to credit and debt, and all the psychological limitations that may lead consumers to fall into this condition, along with all the other context variables (large offer of credit and products, heavy marketing techniques, general encouragement to consume etc.)<sup>1</sup>

For this reason, economic psychology is now part of the training offered to Procon's taskforce responsible for first greeting consumers who come to the institution seeking for help and orientation, and TJ's conciliators, who mediate the hearings. Both groups are also trained in more routine areas such as mediation, financial math and consumer rights.

The aim here is to broaden the views of all that are involved in the project (f.i., reducing pre-conceived ideas and stereotypes regarding over indebtedness) and to encourage discussions around these issues, so as to enhance the program, lending it greater consistency, both over a long term and in an in-depth perspective. In other words, it is based on the assumption that basic notions on mental functioning, encompassing both cognitive and emotional aspects, biases in decision-making, and economic behavior, particularly when related to the issue of the project, would be useful to these professionals, helping them to better handle the trial of consumers, in the first case, and to mediate the hearings, in the latter.

This training would also provide them with an opportunity to discuss strategies to turn learning from experience and changing behavior more efficient not only for further incorporating them into the project, but also throughout its application, since it was a pilot-program, and therefore destined to be subject to close scrutiny.

Following the initial sorting and identification of over indebted consumers, 300 of them were selected to participate in the pilot-program in early 2011. Their first assignment was to attend a joint meeting coordinated by the above mentioned psychology oriented impulse experts (cf. note 11), and by Procon technicians (on practical details for better organizing the necessary documents and procedures). This aimed to prepare consumers for the collective hearing that would take place on a later date. At that meeting the importance of only accepting feasible agreements was also stressed, jointly with that of taking precautionary measures so as not to incur on the same problem again later on<sup>2</sup>.

Holding collective hearings with the over indebted consumer and all his/her creditors is in itself quite an innovative perspective, but having also added this other innovation – economic psychology trained professionals working on it – renders us an interesting opportunity to observe the usefulness of such tool in action.

At the close of the pilot-program, that lasted eight months between October 2010 and June 2011, 364 consumers were initially interviewed, having 288 participated in all steps of the program. A total of 1260 contracts were registered, which had the following outcomes: 359 agreements (with 68 (19%) for one payment only; 284 (79%) for payment in installments; 7 (2%) with either pardoning or acknowledgement of the impossibility to get paid back; 137 (38,2%) "acknowledged sum" going beyond the "agreed upon sum", often because consumers did not have full awareness of their legal backlogs); 440 creditors did not show up; 364 hearings did not come to good term; 97 consumers did not show up. (Núcleo de Tratamento do Superendividamento, 2011)

As for the evaluation of the economic psychology training, both groups who received it (technicians and conciliators) considered it relevant and useful for their respective tasks, and would recommend carrying it on over further versions of the program. They reported that it was important to have a clearer view on the psychology of debt, how the consumers' mind might be working regarding the use of credit, consumption, and seeking help to sort their situation, plus the underpinnings of decision-making also during the hearings themselves.

The program has been considered partially successful, with yet room for improvement, but at the same time a clear evolution regarding the issue and a definite cornerstone in the debate around over indebtedness. Next steps include a review of the pilot-program towards improvement for later application – and it is clear at the moment that it will be kept running –, and also further actions regarding treating over indebtedness. One of them directly involves economic psychology again, and it is at the moment being designed. It is a booklet stressing all the behavioral issues studied by

<sup>1</sup> Other specialists, experts in impulse problems (compulsive buying and gambling), with a background in areas such as psychiatry, psychology and finance, and who already worked on these issues at the largest public hospital in Latin America (Hospital das Clínicas), in São Paulo, were also called in to collaborate because of the potential risk of having over indebted consumers suffering from these pathologies in the programme, which might then require special attention in order to avoid potential recurrence.

<sup>2</sup> In parallel, Procon also held meetings with several sectors from society involved with credit offer and debt problems, such as banks, credit card companies, credit bureaus, public services providers, commercial segments, universities, lawyers, economists, ngo's, in order to discuss the issue and seek solutions for it.

economic psychology, written in simple language and colloquial style, along with illustrations. It may possibly take the shape of a comic book or short graphic novel, though directed to adults or youths. It is intended to help consumers to better manage their money and avoid over indebtedness from a behavioral point of view.

## 5 Results – And looking ahead

Designing, implementing and evaluating financial education programs should include all we know about behavior and what we are beginning to learn with these initial experiences – the two projects regarding ENEF and over indebtedness – that have already used this approach to some extent. In fact, economic psychology data could offer relevant contributions to all areas encompassed by financial education, comprehending not only the development, dissemination and evaluation of programs, but also issues related to regulation and supervision as well.

As discussed before, given the struggle between a very complex world on one hand, and our bounded rationality that tries to cope with it by means of simplification – and therefore loss of unbiased judgment of data –, accuracy in mental operations ought not to be expected, while powerful impulses, automatic behavior and emotions will most likely always have an impact on these outcomes.

As far as behavioral change goes, we know that some tools – like immediate and complete feedback, incentive and reward – could be useful allies in this respect, yet they are not so easy to use in large scale. On the other hand, we are also aware of the power of imitation, examples, identification and even contagion, particularly in mass conditions, along with the specific impact of narratives (Shiller, 2000; Akerlof & Shiller, 2009), which make these topics relevant to be further investigated, so as to be used in more precise ways for financial education purposes.

Insisting and repeating are also to be considered. Making financial education – with psychological insights, of course – so pervasive, that it will become an everyday topic, therefore people will be more familiar with it and the whole issue would turn more “natural”. This is one first necessary step towards greater awareness; given this condition, it is not impossible to expect behavior change to follow as well.

For this purpose, different channels to disseminate information, such as television, radio, internet, training trainers and so on, must be employed, never resorting to formal language, or presenting too much data nor too many options at once. Instead, tailor-made formatting for different targets (after preliminary surveys identify needs, challenges and resources of that group) and permanent monitoring are highly desirable. Nevertheless, there still can never be any complete guarantee that once there has been a change, that will be definite and we can no longer worry about it. Far from it, in fact. Careful monitoring and assessing is necessary for as long as the program is active.

Preferential targets are the *hot self* and groups, since these are the real “doers” in most cases, although the least accessible to change, thus all the special measures listed and discussed in this paper. Definitely, different strategies must be developed that shall go beyond providing plain technical information and orientation.

Considering this last point, and also two major ingredients that are quite relevant for financial education initiatives – low-budget (in the sense of using resources in a parsimonious and clever way, because there is a great deal to accomplish, much of it rather urgently, and as we know, resources are indeed scarce, therefore must be used to their most efficacy) and mass outreach –, strategies able to reach the *hot self* and groups in mass scale must be devised and tested. Three possible ones are:

1. Crowdsourcing – upon sharing insights on topics such as economic behavior, money management, financial planning, products and services, psychological traps and how to avoid them etc., this type of data, developed through voluntary and mutual cooperation, could be consolidated as strategies to reduce systematic errors and encourage better financial practices, while specialists coordinate and follow the whole process closely, so it could in turn be disseminated back to all participants, and possibly also used in policy-making;
2. Intensive use of internet and social networking – to disseminate the above mentioned topics in the shape of videos, podcasts, sketches, testimonies, story-telling, all in simple language, encouraging interaction, and adapted to different types of public;
3. Choice architecture, also known as libertarian / light / asymmetrical paternalism (Thaler & Sunstein, 2008; Loewenstein & Haisley, 2008; Beshears et al., 2008; Choi et al., 2005; Sunstein & Thaler, 2003; for a longer discussion, also cf. Ferreira et al., 2010a) – this issue usually provokes intense debates, and we here suggest that possible combinations of education, psychological insights and choice architecture might render even better results, with the additional benefit of having people learn too, and develop more mature behavior towards autonomy and emancipation; as mentioned above, strategies involving crowdsourcing, the internet and social networking to build collective choice architecture, nudges and antidotes to systematic errors are one example of such possibility.

## 6 Conclusions

ENEF and Procon’s treatment of over indebtedness are two examples of first steps towards this debate over innovative methods and tools for improving financial education aided by economic psychology/behavioral economics. Their goal has been to include *System 1* or the *hot self* in the employed approaches, rather than directing them exclusively to well-intentioned *System 2* or the *cold self*, that get so easily trampled by the impulses coming from the first. Alongside, they also aim at triggering discussions around strategies, context design and policy-making, so that at

the end people can begin to choose more wisely, and also share this experience with others, making learning easier and more accessible to all. The more people discuss these matters, the greater a chance for it to make sense, become incorporated, applied, and have better tools developed. This would be financial capability truly in action.

The programs also mean that it is feasible to devise new strategies for better reaching the population and helping people to deal with their financial issues in a more beneficial way.

Economic psychology and behavioral economics are both research and application areas, and we would like to see them aiming at sustainable development and inclusion of the population. As they promote greater awareness of how people operate both psychologically and economically, they give evidence of being engaged towards emancipation of citizens, who then become more capable of taking responsibility for their actions and learning with this experience. Therefore, there is a greater chance of reducing perception and judgment biases and thus of making better choices too. In this respect these areas share similar goals with the financial education agenda.

Nevertheless, there is still much to be accomplished and we have barely begun to scratch the surface. Debate around this topic is urgent and essential though, since financial education with behavioral insights is world-wide relevant – sustainable financial and economic behavior of individuals and groups mean that sustainable development of nations is also in the horizon.

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## PERCEIVED FUTURE EMPLOYABILITY, JOB INSECURITY, AND WELL-BEING

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As a direct result of the economic recession of 2008, many organizations worldwide had to restructure themselves and trim their workforce in order to reduce costs, increase efficiency, and stay competitive. Massive job cuts, job insecurity, economic hardship, and poor physical and psychological health are just a few of the potential consequences of changing economic conditions (e.g., downsizing, mergers, tight labor conditions, etc.). Research has found that certain groups of individuals are disproportionately affected by changing market forces; that is, the young,

the long-term unemployed, the disabled, etc. Likewise, dispositional factors (e.g., self-efficacy) may affect perceived future employability and job insecurity due to the economic recession. The current study tested a theoretical model that explored the relationship among perceived future employability and job insecurity on psychological health and job-related outcome variables (i.e., job satisfaction and dedication). The model also explored the effect of self-efficacy on perceived future employability and psychological health.

The model was tested in an employed sample of Canadian university students who completed a confidential, online for course credit. In an attempt to cross-validate the model, the model was tested in a sample of German students.

Results of path analysis revealed that the data fit the model well in the initial sample, and no modification indices were suggested. Examination of parameter estimates indicated that both perceived employability and job insecurity mediated the effects of self-efficacy on psychological health, job satisfaction, and dedication. When the model was tested in German students, the data did not fit the model as well as it did in the Canadian sample; however, the fit was adequate. In order to improve the fit of the model, one modification (i.e., a direct path from self-efficacy to dedication) was suggested and adopted. Overall, the pattern of results was similar in the two samples. Specifically, perceived employability was negatively associated with job insecurity. Perceived job insecurity was also negatively associated with psychological well-being and 2 job-related outcomes (i.e., job satisfaction and dedication). And finally, self-efficacy was positively related to perceived future employability and psychological well-being.

Job insecurity mediated the effects of perceived employability on job satisfaction and general health. The theoretical and practical implications of our findings will be discussed.

*Keywords: uncertainty, psychology of money, economic crisis, individual differences*

## SERVICE ORIENTATION, TRUST AND TAX COMPLIANCE IN THE NETHERLANDS

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Tax administrations and researchers of the behavior of taxpayers recognize the necessity of changing tax authorities' approach from enforcement to service orientation. Despite widespread agreement on the effect of service orientation, empirical investigations of the impact of a service orientation on tax compliance are missing. The present paper aims to investigate the influence of a perceived service orientation of tax authorities on tax compliance intentions.

Representative samples of 807 Dutch private taxpayers and 1377 Dutch entrepreneurs participated in a survey on various consumed types of services, trustworthiness of tax authorities, perceived service orientation and their willingness to pay taxes according to the law.

Results strongly support a positive impact of a service orientation on tax compliance: perceived service orientation is related to an increment of tax compliance intentions over and above the variance explained through socio-demographic, economic and psychological factors. Additionally, for both private taxpayers and entrepreneurs it is shown that the link between service orientation and tax compliance may not be direct but mediated by authorities' perceived trustworthiness.

Investment in appropriate services may contribute to a cooperative climate that stimulates voluntary compliance as a moral obligation.

*Keywords: tax behavior, trust*

## NEAR-SIGHTED VERSUS FAR-SIGHTED STOCK PORTFOLIO CONSTRUCTION

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In general people prefer positive short-term to positive long-term outcomes. Such positive time discounting may apply in to preference for short-term versus long-term bonuses for stock investments. In our research reported here we investigate investments in stocks with a positive short-term value development to investments in stocks with a positive long-term value development. When constructing a portfolio of short-term and long-term stocks, we hypothesize that a tendency to diversify would to some extent suppress positive time discounting such that a mix of short-term and long-term stocks is preferred to only short-term stocks. We also hypothesize that the diversification tendency is strengthened if uncertainty is increased.

In two laboratory experiments undergraduates role-played being stock investors constructing a portfolio by only purchasing a short-term stock, a long-term stock or a combination of both. In Experiment 1 40 participants were presented forecasts of both stocks' 4-year value development, in within-groups designs without any information about uncertainty or with information about expected best and worst outcomes. Annual bonuses were varied as another within-groups factor, being the same for both stocks or higher for the long-term stock. In Experiment 2 with another 48 participants, an additional within-groups factor was information about the percentage of other investors choosing the short-term and long-term stocks.

A preference for the short-term stock was observed in both experiments. In Experiment 1 it was somewhat counteracted by a higher bonus for purchases of the long-term stock when there was no uncertainty. When there was uncertainty there was no effect of the bonus but a stronger tendency to diversify, that is to pick both stocks to the portfolio. This result was replicated in Experiment 2 also showing that diversification was higher when the percentage of other investors purchasing the short-term and long-term stocks was 50% (maximal uncertainty) compared to when it was 100% versus 0% or the reverse.

Our results show that a diversification tendency in the face of uncertainty counteracts the preference for immediate positive outcomes over deferred positive outcomes. A contributing factor in Experiment 1 may be that, as we have found previously, uncertainty about future outcomes by itself reduces preferences for immediate outcomes. Still, this factor would not account for the uncertainty effect in Experiment 2 related to the choices by other investors. Research investigating short-termism in stock investments should recognize the important role diversification, even being naive, may play for short-termism when portfolio construction is focused.

*Keywords: investments, market efficiency, intertemporal choice, uncertainty*

## I DON'T CARE ABOUT MY INTELLIGENCE, I CARE ABOUT MONEY. THE SYMBOLIC POWER OF MONEY AS INTRAPERSONAL RESOURCE SUBSTITUTE

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According to the research conducted by Vohs, Mead, and Goode (2006), reminders of money cause people to behave self-sufficiently, in other words to make efforts to attain personal goals and prefer separation from others. Further research on money activation suggests that money can substitute for social acceptance and can reduce the physical pain. Interpersonal rejection and physical pain increase the desire for money, and money reminders reduce distress over social exclusion and the physical pain of immersion in hot water (Zhou, Vohs, & Baumeister, 2009). Probably, money also substitutes for other social resources such as, for example, social attractiveness, friendship, and social support, as well as inner resources such as intelligence or self-esteem (Zhang, 2009).

Two studies verifying the symbolic power of money as substitute for own intelligence were conducted. First study ( $n = 56$ ) tested the influence of subtle reminders of money on the performance in reasoning test (Raven matrices test) as well as the expectation of own performance in such test. In the second study ( $n = 66$ ) we used 2 (money reminders vs

control) x 2 (success vs. failure in reasoning test) between subject design and examine the level of positive and negative affect as well as self-esteem as dependent variables

The result of study 1 showed that after money prime, participants tried to solve significantly lower number of tasks ( $F(1,54) = 5.918, p=0.018$ ), but we have noticed no significant differences between experimental and control group in terms of correct answers in reasoning test. However, participants reminded about money—comparing to those from control condition—believed that they had managed to solve less tasks ( $F(1,54) = 3.163, p=0.081$ ) and that they would solve less tasks if they had more time ( $F(1,54) = 4.491, p=0.039$ ). In the second study, we found significant interaction between money primes and the information on performance in Raven test in case of negative affect ( $F(1,62) = 5.506, p=0.022$ ) and self-esteem ( $F(1,62)=3.222, p=0.078$ ). As expected, participants from control group experienced higher level of negative affect and lower level of self-esteem when informed about failure than when informed about success in reasoning test. However, these effects disappear after money prime.

The conclusion from the two studies is that money has symbolic power as a special resource that influences not only the social preferences, but also might be used for intrapersonal regulation. Money makes us indifferent to information about our intelligence level and might substitute this inner resource.

*Keywords: psychology of money, money reminders, intelligence, self-regulation*

## ARE ALL RESOURCES EQUALLY GOOD? MATERIALISTIC LIFE ORIENTATION, VALUATION OF RESOURCES AND SUBJECTIVE WELL-BEING

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A number of research projects show a definite link between materialism and a low sense of well-being, however explanations of the nature of such a link are still not fully satisfactory. The presented research study was conducted in the COR theory framework and based on the supposition that the way people manage their resources is a key factor for understanding the phenomenon of a lower well-being in materialistically-oriented people. The COR theory by Stevan Hobfoll assumes that people strive to retain, protect, and build resources and that a potential or actual loss, or a lack of gain, of resources is a source of psychological stress. However, within this theoretical framework relatively little attention is put on the problem of the subjective valuation of resources – the assumption is that all resources are equally good. Hence, in the presented study an emphasis was put on: (a) the valuation of resources by people differentiated in respect to materialism level, (b) the consequences of the relationship between the valuation and possession of certain resources and the materialism level for their subjective well-being (SWB).

Two studies were conducted on samples of adult subjects (aged 21-60 and 22-45). Materialism was measured using a questionnaire developed by the first author, which related to four aspects of materialism (values, a perception of the world, decision criteria and self-presentation). In order to describe the valuation and possession of resources a Polish version of Hobfoll's COR-Evaluation questionnaire adapted by Dudek, Koniarek and Gruszczynska was applied. To measure SWB a Polish version of SWLS by Diener, Emmons, Larson & Griffin was used. Certain demographic variables were also controlled.

The results showed that materialistically-oriented subjects differed significantly from the non-materialistic subjects in the valuation of resources related to power and prestige (significantly higher value), as well as family and spiritual resources (significantly lower value). The SWB was explained by the materialism level in subjects, possession of valuable resources and a subjective perception of their income. The relationships between materialism and types of resources was sensitive to age of the subjects.

The COR theory seems to provide a promising framework for understanding the link between materialism and low well-being, however further research is necessary to confirm the preliminary results.

*Keywords: materialism, individual differences*

## FINANCIAL THREAT, COPING AND PSYCHOLOGICAL DISTRESS

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With the recent economic downturn people are anxious about their finances, worried about their financial security and uncertain about the future. To date, reports have documented an increase in anxiety that accompanies people's thoughts about their financial situation. For university students, their financial debt can be a significant stressor contributing to greater anxiety about their financial future. The concept of financial threat refers to feelings of uncertainty, threat and anxiety that individuals may have regarding their current financial situation. Financial threat should increase with greater student financial debt. It is further expected that psychological distress should increase significantly with more financial threat. At the same time, individuals possess psychological resources that may help them deal with threat associated with their financial situation. Proactive coping, a strategy that focuses on planning and anticipatory behavior regarding stressors, should be associated with lower levels of financial threat. It is hypothesized that financial threat should mediate the effects of proactive coping on psychological distress.

Participants consisted of university students who filled out an online survey with measures of financial threat, extent of student debt, proactive coping and psychological distress, which was operationalized as self-reported anxiety, depression, and fatigue.

Path analysis was used to analyze the data and the results showed, as predicted, the greater the student debt, the greater the reported financial threat. Proactive coping led to lower levels of financial threat and psychological distress increased with greater threat.

Taken together the results showed that financial threat was a significant mediator of proactive coping on psychological distress. When individuals employ coping strategies that focus on prevention and being prepared for adversity, they are less likely to perceive their financial situation as a threat. Empirical and theoretical implications of the results are discussed.

*Keywords: economic crisis, individual differences*

## THE DEVELOPMENT OF ADOLESCENTS' PRO-ENVIRONMENTAL ORIENTATION

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Adolescents' pro-environmental behaviors are studied in a family context. Recent research finds that adolescents are less pro-environmentally committed than their parents at all levels of abstraction (values-attitudes-behavior), but are heavily influenced by family (descriptive) norms regarding pro-environmental behavior. This is in general accordance with socialization theories assuming that parents to some extent impart certain values and behavioral patterns onto their offspring (known as intergenerational transfer). However, the persistence of parental influence is not clear. While studies in the field are most often of cross-sectional nature, this study looks into the development of adolescents' pro-environmental values, attitudes, and behavior across time. In addition, parental influence on their offspring's pro-environmental behavior at two different time periods during their adolescence is compared. This approach makes it possible to study 1) the stability of environmental values, attitudes and behaviors during adolescence (compared with their parents), 2) and the degree of persistence of parental influence on their offspring's behavior into late adolescence/early adulthood.

The study uses an internet-based survey, which was carried out by a professional market research institute with a lag of almost two years between a first and a second survey. In the first survey, 601 parent-child (mean age=17) dyads participated, while the second survey consisted of 448 parent-child (mean age=19) dyads. Altogether, 169 dyads (n=338) took part in both the first and second round. Thus the attrition rate was rather high, which reflects the challenge of recruiting two respondents from the same family at two points in time. To assess the development of adolescents' (and parents') environmental orientation at two points in time, questions included attitudes and

behavior with regard to three every-day household behaviors (buying 'green' products, waste handling and electricity use). For a more general account of the development of life values, Schwartz' Portrait Value Questionnaire was used. Preliminary methods of analysis included pairwise t-tests and regression

As expected, parents' values were much more stable than adolescents' values across time. A development towards a higher endorsement of environmental values among the youth could be noted, but this was not reflected in their attitudes or behavior. The correlation between parents' and adolescents' environmental orientation generally remained strong across time, as did parental influence on their adult child's propensity to engage in eco-friendly behavior.

As adolescents mature, family influences remain powerful in general, and as determinants for their propensity to act in 'green' ways.

*Keywords: adolescents, ethics*

## AN EXAMINATION OF CONSUMERS' INFERENCE FORMATION ABOUT PRODUCT SUSTAINABILITY

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When being confronted with incompletely described product offerings, consumers are likely to infer beyond given properties to assess the value of unobservable attributes (Kardes et al. 2004). In an era of increasing public attention towards issues such as sustainability and corporate social responsibility (CSR), it is likely that these concepts are also reflected in consumers' inference formation. Most consumers are not fully informed about sustainability aspects but may still want to consider them due to the societal desirability of such a behavior. In these situations, rather than specifically asking for more information (Ehrich & Irwin, 2005), consumers may apply cognitive schemata to infer the missing attribute. The objective of this paper is to provide a thorough analysis of consumers' inference formations about sustainability attributes based on existing product attribute information.

The present study employs a multi-method approach involving both qualitative and quantitative data collections. An exploratory approach involving 23 in-depth interviews aimed at obtaining a grounded understanding of consumers' internalized processing-structure when evaluating different product alternatives (Glaser & Strauss, 1967). These findings helped to develop a quantitative follow-up study. More specifically, we conducted a survey in which respondents go through a hypothetical purchase situation involving an incompletely described product offering. The final sample of 807 fictitious consumers was analyzed with structural equation models using SmartPLS.

We identified four important attributes that are strongly connected to inferred sustainability (IS) and therefore propose that IS is a second-order construct with four first-order dimensions (perceived quality, perceived price, perceived country image and design). Concerning the model specification, the identified direct attributes are reflectively modeled first-order constructs whereas IS is modeled formatively, as it can be thought to consist of these four attributes, each of which – in consumers' minds – represents a facet of a product's sustainability. This study suggests that even if companies purposely omit information on their products' sustainability, consumers will still form theories about the values of these attributes. These seemingly simplistic heuristics accordingly dismantle manifestations to more general relationships.

Generated inferences can have a very persistent character and despite their potential inaccuracy an influence on consumers' preferences. In many cases these inferences even replace the search for information or direct product experience (Broniarczyk & Alba, 1994b). It is important to inform consumers about the actual nature of certain relationships and educate them about the benefits associated with them. Such a retroactive interference can help to reverse previously learned relationships.

*Keywords: mental accounting, ethics, socially responsible business*

## THE CONSEQUENCES OF TRUST AND RECIPROCITY - AN EXPERIMENT

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We investigate behavior in a modified Investment Game (Berg et al, 1995) where the amount sent by both the trustor and trustee are multiplied by an efficiency factor. We experimentally manipulate a multiplier pair along two dimensions where the multipliers generate either high or low - or deterministic or probabilistic efficiency returns. In the probabilistic condition, returns can be either high or low with equal likelihood. Different multipliers can be thought of as alternative technologies that generate different outputs for a given input. Aims of this controlled variation are to check whether trust and reciprocity choices are mainly driven by revealed counterparty intentions or by consequences of own actions. In our setting, intentions of the trustor and trustee respectively are captured by costs incurred in trusting and reciprocating. These costs are kept constant across experimental conditions but consequences differ across conditions as outlined.

In our interaction setting a Player X chooses the amount  $x$  that she sends to a Player Y, among 4 possible options: 0, 3, 6, or 9 ECU. Before being assigned to Y,  $x$  is multiplied by an efficiency factor ( $m$ ). In turn, Y chooses the amount  $y$  that she sends to a X from the same support. Y's choice is conditional upon the choice of X (i.e., strategy method) and  $y$  is similarly multiplied by an efficiency factor ( $n$ ).

The efficiency factor  $m$  is experimentally manipulated in a within-subjects fashion and is set equal to either  $4/3$  (LOW), 3 (HIGH), or  $4/3$  or to 3 with equal likelihood (LOW/HIGH). The same prior ( $1/3$ ) is assigned to each of the three potential realizations. When condition LOW/HIGH is randomly picked, a lottery determines whether  $m$  equals  $4/3$  or 3. The factor  $n$  is subject to the same manipulation as  $m$ , but the controlled variation is performed in a between-subjects fashion.

We find that the consequences of trust affect reciprocity levels. In particular, when the investments generate higher-certain benefits for the trustee, a higher likelihood to reciprocate is observed than when investments generate lower-certain benefits. Moreover, trustees adjust their reaction when efficiency returns of the trustor are probabilistic, with overall levels of reciprocity higher than in the low-certain condition but lower than in the high-certain condition. Additionally, trustees do not condition their level of reciprocity on the consequences of their actions. Concerning trust, trustors do not seem to condition their choices upon consequences or efficiency levels of the trustees.

*Keywords: reciprocity, trust*

## COMPENSATORY AND COMPULSIVE BUYING BEHAVIOR IN DENMARK: WHO IS A SHOPAHOLIC?

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The first study of Danish consumers on compulsive buying has been carried out in 2010 and was repeated in 2011. It draws on a representative sample of 2,135 Danish consumers in total and extends prior research undertaken in other countries. It is the first study to shed light on the situation in a Scandinavian context.

Compulsive buying behavior tendencies are measured by the validated "German Compulsive Buying Scale (SKSK) (Raab et al. 2005). The instrument consists of 16 items and has been translated into Danish. We follow d'Astous (1990) to classify compulsive buyers in three groups: the mean plus one standard deviation is defined as compensatory buying behavior; being prone to compulsive buying is defined as the mean plus two standard deviations. Hence, the cut-off scores for being at risk for compensatory buying is 34 points, and for compulsive buying 42 points on the scale. In 2011, we additionally introduced a scale on self-control developed by Tangney et al. (2004). Next to descriptive

statistics, we carried out hypotheses testing and a hierarchical cluster analysis with characteristics that are associated with compulsive buying.

The prevalence of compulsive buying tendencies in Denmark are: 10.5% of the respondents show *compensatory* buying behavior and 5.1% show *compulsive buying* tendencies. Between 2010 and 2011, there is no significant difference in the prevalence of compulsive buying behavior (compulsive buyers in 2010: 5.8% and in 2011: 4.5%;  $\chi^2=2.01$ ,  $p=0.156$ ).

Regarding socio-demographics, age and sex play a decisive role while marital status, education and income cannot be associated with compulsive buying. The Internet offers shopping opportunities that lure both, potential shopaholics and compensatory buyers more than inconspicuous buyers. Compensatory and compulsive buyers use far more customer cards than others. Self-control is strongly associated to compulsive buying behavior ( $r=-.486$ ,  $p\leq.001$ ) – the more self-control the smaller the likelihood to be a compensatory or compulsive buyer. These factors are included into the cluster analysis resulting in five clusters. One of these clusters contains only compensatory and compulsive buyers ( $n=94$ ). This cluster is distinctive from all others: the average SKSK score is 45, 80% are female with an average age of 33 years. This compensatory/compulsive buyers' cluster possesses on average more customer cards (2.8) than any other group and indicates that they buy more due to the Internet. Their self-control scale is with 25.1 the lowest among all clusters.

The results of the present study can inform consumer policy, in particular consumer education and advice, financial competence building and debt counseling.

*Keywords: overconsumption, self-control*

## ECONOMIC EXPECTATIONS, OPTIMISTIC BIAS AND TELEVISION VIEWING: A CULTIVATION STUDY

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We examine the relationship between TV viewing and economic expectations during economic recession.

A content analysis of 84 hours of local network primetime programming (news and non-news) and a survey of the adult Israeli population ( $N=356$ ).

The content analysis identifies a moderate bias towards economic pessimism in the broadcasts. The survey points at a significant positive relationship between TV viewing (total viewing and viewing of news programming) and economic pessimism at both the national and the personal levels. A similar relationship exists between TV viewing and optimistic bias - the tendency to be more pessimistic on economic matters at the national than at the personal level. These results remain significant when controlled for demographics, trust in national institutions, evaluation of current economic situation and consumption of media other than TV.

TV viewing correlates with economic pessimism at the national and personal levels. A second order cultivation effect is detected at an economic context.

*Keywords: financial forecasting, optimism, economic crisis*

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## THE IMPACT OF COERCIVE AND LEGITIMATE POWER OF TAX AUTHORITIES ON TAXPAYERS' TRUST IN AUTHORITIES AND THEIR TAX BEHAVIOR

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The Slippery Slope Framework (SSF; Kirchler, Hölzl & Wahl, 2008) postulates that power of authorities and trust in authorities determine cooperation with the tax authorities. According to the SSF extension, the perception of coercive power through for instance severe punishments generates costly enforced tax compliance. In contrast, legitimate power based on legitimation, expertise, information and/or identification elicits voluntary tax cooperation demanding

much less administrative resources. It is assumed that the relation between power and tax cooperation is mediated by taxpayers' trust in authorities that can be either reason-based, i.e. based on rational considerations, or implicit, i.e. automatic. The relation of power and trust stipulates different cooperative climates between authorities and taxpayers: An antagonistic climate stemming from coercive power, a service climate prompted by legitimate power and reason-based trust, and a confidence climate basing on implicit trust. It is the aim of the current study to confirm the proposed SSF extension by analyzing the effect of coercive and legitimate power on tax behavior, by examining the mediating effect of trust, and by investigating the relation of power and trust with tax climates and tax behavior in general.

In a 2x2 design (coercive vs. legitimate power, high vs. low power) 121 German speaking taxpayers gave their intention to evade taxes based on fictitious scenarios in an experimental online questionnaire. Additionally, they filled in a questionnaire of 78 items on perceived coercive and legitimate power of the fictitious tax authorities, on reason-based and implicit trust in the fictitious authorities, on tax climates, on their tax behavior and on demographics.

A statistical analysis confirms that coercive and legitimate power increase intended tax contributions. There is a mediation effect of trust, but it differs over power qualities. Additionally, the proposed relations between qualities of powers, qualities of trust, tax climates and tax behaviors can only partly be confirmed.

The current study confirms that the SSF extension is an excellent model to describe determinants of tax behavior. The two qualities of power, i.e. coercive and legitimate power, and two qualities of trust, i.e. reason-based and implicit trust, the three newly defined tax climates, i.e. antagonistic, service and confidence climate, and tax behaviors, i.e. enforced compliance, voluntary cooperation and committed cooperation, are of great value to the SSF.

*Keywords: tax behavior, trust*

## CHOICE IN ECONOMIC AND NON-ECONOMIC SCENARIOS BASED ON AMBIGUOUS PROBABILITY INFORMATION

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There is experimental evidence for an disjunction effect in economic decision making, i.e. information on probabilities of future success of an already started project is not taken into account for the decision to continue or cancel it provided the probability information from two sources is ambiguous. The present research investigates first (if the grade of ambiguity plays a role and second if differences between economic and non-economic scenarios exist.

Two online experiments present an economic and a non-economic scenario each. In each scenario, two information sources provide information about the expected success of the project. Varied was (a) the grade of ambiguity of probability information and (b) the mean value of the presented probabilities for each scenario. There was either unambiguous information from both sources, or slightly ambiguous or highly ambiguous information, or no probability information in a control condition. In Experiment 1, the mean value of success probabilities was low vs. medium, in Experiment 2 with it was low vs. high.

Dependent variables were choices, and qualitative post-experimental justification texts. In the economic scenario, both factors mean expected success as well as ambiguity played a role, with higher continuation choices with higher mean expected success and lower continuation with more ambiguity. In contrast, in the non-economic scenario neither factor played a role. In the justification texts of the economic scenario, the mention of ambiguity as reason for termination of the project was contingent with presented ambiguity. In the non-economic scenario, ambiguity was hardly mentioned confirming the non-influence of this factor as displayed in the choice data.

The research shows that ambiguity in expected success probabilities of economic projects is a gradual process, challenging prior research claiming it to be categorical, i.e. ambiguous vs. non ambiguous. Second it shows that sensitivity to ambiguity is domain specific.

*Keywords: choice, risky choice, uncertainty, risk perception*

## PROFILE OF SUCCESSFUL ENTREPRENEURSHIP IN THE CONTEXT OF ECONOMIC CRISIS – ROMANIA CASE STUDY

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Identifying strategies to address situations of economic crisis, strategies generated by successful entrepreneurs, identifying the perceptions and the beliefs of the entrepreneurs who left the business market as a result of the crisis, identifying the main reasons and market penetration strategies of the entrepreneurs in the context of economic crisis. Semi structured interviews and focus groups; we organized three focus groups, in Timisoara, Romania, in September 2011: with entrepreneurs who have been in the business market before 2009 and still are (Focus Group of Success); with entrepreneurs who have been in the business market before 2009 and who entered into insolvency, declared bankruptcy or suspended business activities during the crisis (Focus Group of Failure); with entrepreneurs who started their entrepreneurship during the economic crisis (Focus Group of Beginners).

Entrepreneurs from the first two groups experienced differently the effects of the economic crisis and adopted different strategies. Successful entrepreneurs attribute to themselves the credit of staying on the market during the economic crisis, but they also appreciate their employees and collaborators willingness to cooperate. The entrepreneurs from the second group believes that the fault is due exclusively to the economic conditions and to the financial crisis and that “they had no choice”, but however they reproach not having been more drastic concerning spending cuts at the beginning of the crisis. Regarding the beginners, they have not questioned the economic crisis; they considered convenient the time of starting their business, having the necessary opportunities (location, good custom spot). Apparently, they take things as they come, without thinking about the crisis, they are content with small results and they feel no frustration for the slow progress, because they don't have comparison terms.

Although Romania is on the free business market from 20 years, most parents of young entrepreneurs have been state employed. Models of successful entrepreneurs, which are now promoted in the Romanian mass – media, are hardly encouraging as attitude, honesty or values to be worth following. In schools, there is no curriculum for informing the students of what entrepreneurship would actually mean. And yet?

The results obtained in the present studies are only preliminary for the ongoing research, trying to capture and to correlate elements of entrepreneurship in a longitudinal study extended from the period before the economic crisis to date, to highlight the influence of macroeconomic factors on the behavior of the entrepreneurs from the West of Romania.

*Keywords: risk perception, economic crisis*

## ATTITUDES TOWARDS EXTENDED FIDUCIARY DUTY AMONG BENEFICIARIES OF PENSION FUNDS IN SWEDEN

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Socially responsible investment (SRI) has increased rapidly in Sweden and in other Western countries during the recent 10 to 15 years (Eurosif, 2010). Most institutional investors such as pension funds seem however to be reluctant to change their investment policy to more socially responsible, due to their interpretation of their fiduciary duty, that is their legally responsibility, to manage assets in the interest of their beneficiaries in a prudent, loyal and careful way. Including social, environmental and ethical issues in pension fund managers' mandate may have an immense importance for promoting corporate social responsibility in Sweden. In the on-going debate there are different opinions if including concern about ethical, environmental and social issues is compatible with fund managers' fiduciary duty A reported empirical study aimed at examining what psychological determinants that influence Swedish pension savers' attitudes towards an extended fiduciary duty (EFD) that enforce pension funds to also take social,

environmental and ethical considerations in their investment decisions. A survey was distributed to a total of 3,500 randomly sampled Swedish residents in the work force between X and Y years old. About 30% completed a questionnaire with questions about general value orientation, endorsed values and priorities as pensioner, social and environmental concern, and expected time to retirement. In line with previous research showing what determines pro-social and pro-environmental behavior, our hypothesis were that altruistic values, pro-social and pro-environmental attitudes would promote pension savers to have a positive attitude towards including social, environmental and ethical concern in pension investments and that the effect of such concerns on attitudes to EFD would be mediated by specific values concerning endorsed values and life priorities as pensioners. It was also hypothesized that closer expected time to retirement would influence pension savers to be more materialistic and self-interested in their concerns and less inclined to be positive towards EFD. By structural equation modeling the relationships between the above determinants and attitudes towards EFD were tested. The results confirmed the hypothesized relationship except that the expected time to retirement was negatively rather than positively correlated with the attitude towards EFD. Thus, people with shorter expected time to retirement were more, not less, positive towards EFD. The findings should have important implications for institutional investors and pension fund management firms in that they consider expanding their investment policy to also include social, environmental and ethical concern.

*Keywords: mutual funds, investments, saving*

## HOUSEHOLDS' PORTFOLIO ALLOCATION - DO SAVINGS MOTIVES MATTER?

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We provide empirical microeconomic evidence on behavioral portfolio theory, especially mental accounting of private households is investigated.

We use a large micro dataset representative for the German population structure and apply multivariate Probit analyzes to calculate the correlation between different asset categories and find an impact of socioeconomic & psychological determinants on choice of various asset categories.

Our estimations provide evidence that some assets (e.g. life insurance and liquid assets) can be taken as substitutes whereas others need to be handled as complements. This is in line with behavioral portfolio theory. Furthermore, not only attitudes towards risk are determinants of asset choices but also savings and investment motives.

Not only the attributes of the asset (such as liquidity or risk) but also the purpose of the individual that is followed with the investment should be taken into account by intermediaries develop investment plans.

*Keywords: mental accounting, saving*

## ANGER AND ECONOMIC STRESS: THE IMPORTANCE OF SELF-ESTEEM

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The effects of the economic recession are widespread, with many individuals' world-wide experiencing higher levels of stress due to changes in their financial situation. Recently, reports of resentment and anger in response to perceived financial uncertainty and job insecurity have been particularly prevalent in the media. However, it is important to consider that not all individuals experience the same negative outcomes when faced with economic stress. Individual differences, such as levels of self-esteem, may function as a protective factor against the experience of negative outcomes such as anger, in the face of economic stress. It is hypothesized that self-esteem will moderate the effect of economic hardship on anger, such that higher levels of self-esteem will be associated with lower levels of anger when economic stress is high. It is also expected that financial literacy will be significantly related to our study variables.

As part of a larger study on the effects of the economic recession, Canadian and Portuguese samples of participants completed measures of economic stress, self-esteem, and anger. In a follow-up study, a Canadian sample completed these measures along with a measure of financial literacy.

A moderation model was tested using a hierarchical regression predicting anger, with economic stress, self esteem, and their interaction as predictors. Results showed a significant interaction between self esteem and economic hardship on anger in both samples.

These results extend the buffering hypothesis to the experience of anger within a context of economic hardship in two different countries in that they demonstrate the importance of self-esteem as a protective factor when dealing with the stressful effects of economic hardship. Theoretical and practical implications, as well as the importance of financial literacy in understanding economic stress, are discussed.

*Keywords: economic crisis, individual differences, self-esteem*

## WHEN THINGS GO WRONG: PRELIMINARY STUDIES OF LAY VIEWS OF ACCOUNTABILITY AND BLAME

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Someone in a position of power makes a decision. Things go wrong and the decision leads to misfortune. To what extent should the decision-maker be held accountable for the misfortune? How much blame should he or she receive? To some extent, these questions can be answered by considering the laws holding in a particular country and for a particular occupation or decision class. However, it is also important to know the views of lay people, as these are influential in determining the legal environment. Our main focus is on the factors that influence these lay views of accountability.

Study 1 asked student and non-student respondents to rate the importance of 11 different factors for importance in determining accountability and 16 factors in determining how much the decision-maker should be blamed. Important factors included whether people died, the number of people affected by the mistake, the level of training of the decision-maker, previous knowledge about decisions of this kind, and the level of science underlying this type of decision. Fairly similar factors were isolated when the questions dealt with the amount of blame to be assigned. However, there were considerable individual differences in the ratings assigned the different factors. For example, some people were heavily influenced by the level of pay received by the decision-maker, some not.

Study 2 presented student respondents with scenarios featuring a decision with nasty consequences. Greater blame and increased preference for firing the decision-maker were associated with more severe consequences, greater training of the decision-maker, and increased ease of predicting the consequences. An interactive effect of the training of the decision-maker and the ease of predicting the consequences was consistently found – making a mistake where the consequences are relatively easy to predict is more blameworthy for a well-trained decision-maker – but there were no consistent interactive effects involving the severity of the consequences.

The results to date suggest that our lay respondents frequently do hold decision-makers more accountable for mistakes that they could reasonably have been expected not to make. In that sense they could be said to act rationally. Further research will focus on exploring correlates of the individual differences uncovered in these studies, as well as more in-depth examination of apparently less rational aspects of accountability.

*Keywords: fairness, morality*

## RED LIGHT, GREEN LIGHT: COLOR PRIMING IN FINANCIAL DECISIONS

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This study explores the role of color exposure as a priming factor in financial decision making. Priming is a process of activating particular connections or associations in memory prior to carrying out an action or task. The associations occur when a certain stimulus or event increases the availability of specific information categories and, as a result, affect decision making.

Colors are widely present in the financial decision making arena: at firms' and data providers' websites; television reports; newspaper publications; advertisements; and security market displays, with colors such as red and green prominently employed. Our experimental analysis involves a between subject design exposing subjects to financial substance on colored backgrounds and exploring the effect on their investment decisions. We focus on financial decisions under uncertainty, examining subjects' investment valuations and the probabilities they assign to the possible outcomes.

The results indicate that red color priming emphasizes value losses of the underlying asset. To wit, subjects who were exposed to red assigned higher valuations and probabilities to events involving the loss domain, than to events involving the gain domain.

*Keywords: investments, dual process*

## INFLUENCING TAX COMPLIANCE AND PRIVATE INVESTMENTS BY A SHOCK OF TRUST AND DELAYED FEEDBACK ON AUDITS

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The main interest of the present research is to study the effect of a shock threatening trust in authorities (i) on tax compliance and (ii) on private investments independent from the state where the authorities have no possibility to intervene. In addition, the effect of immediate vs. delayed feedback if an audit occurred is investigated. According to the slippery slope framework of tax compliance (Kirchler, Hoelzl & Wahl, 2008) trust in authorities is an important determinant of tax compliance, thus a shock of trust should lead to a decrease of tax payments. Uncertainty whether one's tax return is audited should lead to higher levels of compliance (Muehlbacher, Mittone, Kastlunger & Kirchler, 2012).

In a paid laboratory experiment multiples of groups of 4 participants had to pay taxes for 12 periods with the possibility of being audited and fined. After filing taxes in each round, they had the possibility to contribute money to a private fund within the frame of a public goods game. There were four experimental conditions: shock & immediate feedback, shock & delayed feedback, no shock & immediate feedback, no shock & delayed feedback. Participants in the shock treatment received a message after round 6 that due to financial problems of the state a one-time additional tax payment is collected. Nevertheless, income in the shock groups and in the no-shock groups was held constant to be able to study the effect of a shock of trust excluding differences in economic wealth as an alternative explanation. Data was collected in Italy (participants: students of economics) and Austria (participants: separate sessions of students of economics and students of psychology).

We find a strong impact of the feedback manipulation: Participants in the delayed feedback conditions were significantly more compliant and contributed more to the private investment. Concerning the shock of trust manipulation we observe differences between Italy and Austria, the shock seems to have a higher impact in Italy.

Additionally, we find a gender effect and an effect of branch of study and a pronounced bomb-crater effect in the immediate feedback conditions.

Altogether, confirming evidence for both, the assumptions of the slippery slope model as well as the effect of delayed information if an audit has occurred is observed.

*Keywords: intertemporal choice, tax behavior, trust*

## THE CONFIDENCE MAP AND THE ELLSBERG PARADOX

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The main objective of the paper is to present a systematic approach to describing states of mind of a decision maker. This approach is further used to present straightforward solutions of the Ellsberg paradox.

The objective is achieved with the use of the decision utility model (Kontek, 2011). This model offers an alternative to Cumulative Prospect Theory (Kahneman, Tversky, 1979, 1992) in describing behaviors observed in risky decisions. The model typically assumes an S-shaped decision utility curve similar to one hypothesized by Markowitz in 1952, and uses the expected decision utility formula similar to one presented by von Neumann and Morgenstern in their Expected Utility Theory (1944). Contrary to PT/CPT, the model explains behaviors observed in risky decision without recourse to the probability weighting concept.

It appears that different states of mind of decision makers can be described by possible decision utility shapes. These states include: confidence (knowledge), under-confidence, overconfidence, unconfidence, certainty, ignorance, arrogance, and stupidity. This results in a confidence map describing the states of mind according to the shape of the decision utility curve. Interestingly, the decision utility shape reflecting unconfidence corresponds with Simon's evaluation function in his Bounded Rationality Theory.

The obtained result is further used to present a straightforward solution of the Ellsberg paradox. The preferences demonstrated result simply from presenting more or less confidence when assessing respective options. Other solutions are derived from the basic one. These include the aspiration level concept, and the general risk aversion measure.

The paper presents a systematic approach to classify terms commonly encountered in the behavioral literature, like overconfidence, ignorance etc. It appears that those states of mind can be described by different shapes of the decision utility curve. The solution incorporates the state of incomplete knowledge as presented by Simon's Bounded Rationality Theory. The methodology presented enables the Ellsberg paradox to be easily explained in several ways. This shows the superiority of the decision utility model over Prospect Theory, which has not so far presented so consistent solutions.

*Keywords: choice, risky choice, uncertainty, prospect theory, overconfidence*

## ROOM FOR RATIONALIZATION IN ENVIRONMENTALLY SIGNIFICANT BEHAVIOR CHOICES: AN AMERICAN-HUNGARIAN COMPARISON

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### Abstract

Most of the models of environmentally significant behavior are built from the elements of values, attitudes, beliefs, norms and control over the success of behavior. For understanding of coexisting positive environmental attitudes and lack of pro-environmental behavior, rationalization of non-behavior can serve as a useful concept. The objectives of our study are twofold: First, we examine the „room” for rationalization in environmentally significant behavior choices when testing different path models on the data; second, we test these models in a cross-cultural context. We

hypothesized not the attitude-behavior relationship but the relationship between rationalization and behavior as culture-dependent.

The data come from 100 American and 100 Hungarian middle class participants, where they responded the NEP-scale (New Environmental Paradigm, a measurement of attitudes, specifically environmental concern), the GEB-scale (General Ecological Behavior), and self-developed scales for measuring perceived criticality of environmentally significant behaviors and rationalization for non-behavior.

According to the results Hungarian responders score higher on rationalization, but at the same time they show more concern and more pro-environmental activities. Environmental concern and pro-environmental behavior were positively correlated irrespective of culture, but in the two samples rationalization plays different role in the pattern of connections between the measured phenomena. The path analysis for the American sample results good fit for a model where rationalization is an organic element of an array launching from attitudes and arriving at behavior. However, Hungarian participants rationalize non-behavior independently of their pro-environmental activities, influenced in their rationalization only by pro-environmental attitudes. A good-fitting path model for the American sample does not fit Hungarian data, and vice versa, the Hungarian model does not fit American data.

Consequently, rationalization-phenomenon seems to be useful to include in the study of pro-environmental behavior. In cultures where behavior and rationalization of non-behavior are closely connected, attacking the arguments of rationalization can serve as a beneficial strategy in pro-environmental communication campaigns.

*Keywords: overconsumption, morality*

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## 1 Introduction

### 1.1 Theoretical models of pro-environmental behavior: The connection between attitudes and action in relation to pro-environmental behavior

There are several theories and models in social psychology providing framework for the examination of the determinants of behavior. These frameworks are also appropriate for revealing the determinants of special form of deeds, like pro-environmental behavior.

Now we present three basic models all stating that pro-environmental behavior arises from people's notions that the environment is under a threat and they are able to protect it. Models differ in deriving this intention from values, attitudes and/or norms and resemble to each other in the concept of control, i.e. self-efficacy, which refers to one's belief about the efficiency of the intended behavior. Comparison of Theory of Planned Behavior (TPB), Norm Activation Model (NAM) and Value-Belief-Norm Model (VBN)

The TPB (Ajzen, 1991) assumes that behavioral intention (the direct determinant of the behavior) is affected by attitudes, subjective norms and perceived behavioral control. The latter component also has direct influence on the behavior itself.

The NAM (Schwartz, 1977) applies another framework in connection with assembling the determinants of pro-environmental behavior. According to its basic assumption pro-environmental actions are not satisfying directly individual interests, but public goods, thus pro-environmental action is a form of prosocial behavior. The model states that individuals have to recognize first that their deeds have consequences for the environment, and individuals also have to feel responsible for these consequences. This acknowledgement leads to the activation of moral considerations, i.e. the activation of personal norms, which are followed by pro-environmental behavior.

VBN model (Stern & Dietz, 1994; Stern, Dietz & Guagnano, 1995) is another frequently used framework for the examination of pro-environmental behavior. VBN can be defined as the extension of NAM, as – beside altruistic values – egoistic and biospheric values can also determine pro-environmental behavior. Furthermore VBN model integrates the component of New Ecological Paradigm (NEP). The concept of NEP (developed by Dunlap and Van Liere, 1978) follows the traditional research of environmental attitudes by examining environmental concern. Environmental concern refers to one's perception about the condition of the environment, whether s/he perceive it as it should be treated.

Several studies applied these theories and tried to select the most appropriate for describing the determinants of pro-environmental behavior. Kaiser, Hübner and Bogner (2005) compared TPB and VBN model in connection with environmental protection and found that TPB was more appropriate. Abrahamse, Steg, Gifford and Vlek (2009) examined TPB and NAM both in case of car use for commuting and in case of the intention to reduce it. According to their results the behavior could be predicted best by the variables of TPB, while NAM variables were stronger determinants of behavioral intention. Lindenberger and Steg (2007) built upon previous studies (e.g. Nordlund & Garvill, 2003; Steg, Dreijerink & Abrahamse, 2005) stated that NAM and VBN are appropriate for examining low-cost pro-environmental behavior. Examples also can be found for incorporating these determinants into one model. For

instance, in the research of Oreg and Katz-Gerro (2006) the variables mentioned above were expanded with cultural values (namely post-materialistic values) as a hypothesized final determinant of environmental concerns.

Here we summarize what we get in sum from these models. It is the significant influence of attitudes and behavioral control on behavior, and also the influential role of normative aspects of values behavior. In our study we possess data about environmental attitudes, pro-environmental behavior and behavioral control from the previously mentioned determinants of pro-environmental behavior. We have just implicative explanations from other studies dealing with cultural differences in connection with values. The applied variables show the highest correspondence with VBN model, except that measurement of personal value preferences were not applied, however we extended our analysis with the rationalization of non-behavior.

### ***Divergent relationship between pro-environmental attitudes and environmentally significant behavior***

Although positive attitudes, concern and knowledge are admittedly shown to be interrelated with behavior, it is true, that lack of actions can be also present even one bears positive attitudes towards the environment (Kollmus & Agyeman, 2002). Recently, a growing interest is devoted to understand the simultaneous presence of pro-environmental attitudes and non-behaving, which research focus can enhance the efficiency of promoting pro-environmental behavior. That is why exploring the effect of rationalization of non-action is highly emphasized, as it is a good candidate for the mediating role between attitudes and behavior.

As an empirical evidence, Bratt (1999) showed that participants with a more positive general environmental attitude find the claim that a more intense recycling behavior entitles car driving less justifiable. Another important result of that study is that the relationship between self-justification and attitude is three times stronger than the relationship between self-justification and behavior, which implies that the impact of self-justification should be emphasized more among those individuals, who have more unfavorable environmental attitudes. Searching for the potential connections between attitudes and recycling, Hansmann, Bernasconi, Smieszek, Loukopoulos and Scholz (2006) also emphasized self-justification tendencies. Analyzing the data of their Swiss survey sample they showed that disagreement with justifications have a considerable impact on recycling used batteries.

## **1.2 Cross cultural studies on pro-environmental behavior: Knowledge, values and welfare**

As the present work offers an American-Hungarian comparison, at this point of our theoretical background we turn to studies that are relevant in this cross-cultural respect, and carry out cultural comparisons regarding pro-environmental attitudes and behavior. The aspects of knowledge, values and welfare will be briefly exposed in this section.

### ***Knowledge***

Hines, Hungerford and Tomera (1987) conducted a meta-analytic review on 128 studies, and found a positive correlation of .299 between knowledge and environmental behavior. In the 1960's, environmental concern appeared in common talk in the United States of America, and then it became a really important and significant point in the 1970's. In the 1990's environmental concern exceeded its own earlier level of presence in common talk. For instance, a representative survey in USA in 1990 showed that 71% of Americans agreed that an insufficient amount of money from the budget was devoted to protecting the environment (Schultz, 2002).

Many studies were based on the fact, that considering environmental problems was rooted in English-speaking context (e.g., Laroche, Tomiuk, Bergeron, & Barbaro-Forleo, 2002), but in our view, in our global, information-based world frontiers and language bars cannot prevent information from spread, thus not only variety in knowledge can be responsible for differences emerged in behavior and attitudes.

### ***Values***

Among the models of environmental behavior, Schwartz's (1977) Norm-Activation Model and the Value-Belief-Norm model of Stern and colleagues (1995) take values into account in searching for appropriate antecedents of attitudes.

The value-based theory of environmental attitudes is supported by many studies. These studies draw values most frequently from Schwartz's (1994) universal structure of values (the 10 universal value types are power, achievement, hedonism, stimulation, self-direction, universalism, benevolence, tradition, conformity, and security). For instance, analyzing the data collected from student samples in 14 countries, Schultz and Zelezny (1999) found that values of universalism have a positive, while values of power and tradition have negative relationship with environmental concern (operationalized by the NEP-scale) and also with ecocentrism. Among the 14 countries, the sample from USA showed one of the lowest agreements with NEP-scale items.

The mentioned value structure was developed by Schwartz (2007) to a theory, in which 7 cultural value orientations can be distinguished. Empirical findings also support this theory (Schwartz, 2007). In our work those cultural value orientations (and their impacts) have special emphasis, which orientations fall on the *harmony* vs. *mastery* dimension of that theoretical model. This dimension captures people's relation to the social and natural world. Harmony-oriented cultures emphasize to understand and appreciate the world as it is, and honor prominent values like unity

with nature and protecting the environment, while mastery-oriented ones emphasize active self-assertion and the follow of personal and group goals which can be accomplished by changing, mastering, and exploiting both social and natural environment. The emphasis put on one end-point of this dimension is accompanied by the decrease of the relative importance of the other. Based on data collected from the end of the 1980's until the beginning of the 2000's, Schwartz deems American culture to be the most prominent representative of the mastery orientation, while Hungarian culture is placed near the harmony end-point of this dimension.

### **Affluence**

The view that people from more affluent economies care more about environment has been generally accepted. In social sciences this idea has its origin in Maslow's (1943) concept of hierarchically organized motives. Inglehart (1990; 1995) states with the post-materialistic argument that members of developed, industrialized societies are turning away from values related to economic growth and are keeping new values in the foreground, such as improving quality of life, thus they care more about the environment.

However this approach is somewhat debated. In a multinational study conducted by Dunlap and the Gallup Organization (Dunlap, Gallup, & Gallup, 1993) approximately 1000 people were surveyed in each of 24 countries, which ranged widely in economic development, and the results suggested that concern for environmental issues is high in countries around the world. Even in poorer countries, people are concerned about environmental issues and even favor protecting the environment over economic growth. Still, it should be acknowledged that Americans appeared somewhat to be more concerned than Hungarians in the majority of questions, and the GNP/Capita index in the US was 7-8 times larger than in Hungary that time, which means a certain support for the post-materialistic argument. Moreover, several subsequent studies support the relationship between economic development and environmental concern (Franzen, 2003; Oreg & Katz-Gerro, 2006).

At the same time, when the relationship between welfare and environmental concern is discussed, the phenomenon of agreement with the *Dominant Social Paradigm* makes the relationship ambiguous. Namely, people from more affluent countries agree more with the Dominant Social Paradigm, which is negatively correlated with positive environmental attitudes (Kilbourne, Beckmann, & Thelen, 2002). The idea of the Dominant Social Paradigm was expanded by Pirages and Ehrlich (1974), it refers to the belief in problem solving potential of civilization, regarding problems emerging either from the context of science and technology, or from society. According to Smith (1999) the Dominant Social Paradigm is a system-justifying ideology, manifested in the hegemony of productivity. Kilbourne, Beckmann, Lewis and Van Dam (2001) stated that American students strongly agree with this ideology, and they entertain the idea of efficient and problem-solving science especially, compared to many other nations. (Unfortunately, Hungarians were not involved in this study). In our view, agreeing with the notion of Dominant Social Paradigm is somewhat parallel with agreeing with *mastery* values in the frame of Schwartz's cultural value orientations (Schwartz, 2007).

## **2 Objectives**

One part of our questions relates to the differences in environment-relevant beliefs, attitudes and behavior between the two samples. The other part relates to the links between the above mentioned phenomena.

In the introduction we have reported the arguments supporting that Americans show environmentally more positive views and behaviors, i.e., the results of the Gallup survey study from 1993 (Dunlap et al. 1993); the post-materialistic argument (Inglehart, 1990); the English-speaking context of early environmentalism (Laroche et al., 2002). At the same time we have accumulated several counter-arguments, i.e., on the ground of the intense support of mastery-values (Schwartz, 2007) and the Dominant Social Paradigm (Kilbourne et al., 2001) from the Americans' side, one can expect Hungarians to think and behave more pro-environmentally. The fact, that Americans have unquestionably larger ecological foot-prints (Wackernagel & Rees, 1997) influences the balance of contradicting expectations towards the following assumption:

*H1: Hungarians are more ecologically concerned and behave more pro-environmentally.*

Relating control over the success of their own behavior, we formulate the expectation that Americans feel more power when they are asked about how significant their personal contribution can be in solving environmental problems. First, we rely here on the fact, that they actually have more power, because they have larger ecological footprints (Wackernagel & Rees, 1997), and second, that Americans show a considerable preference for mastery (Schwartz, 2007), which implies sense of control, power, and capacity.

*H2: Americans perceive their own criticality higher in environmental related problems than Hungarians do.*

Relating rationalization, we base our expectations on the concept of self-serving biases. Heine and Lehman (1997) stated that Americans show considerably more cognitive dissonance reduction, when they behave not in line with their attitudes compared to other cultures. Americans are individualistic (Markus & Kitayama, 1991; Triandis, 1989), and have independent self-concept (Campbell et al., 1996), consequently they strongly need the feeling of self-coherence, which is supported by self-justifications. Thus, we expected more rationalization tendencies from Americans than from Hungarians. It should be noted, that we have not found empirical studies where cognitive

dissonance reduction were compared between Hungarians and Americans. We found studies comparing American culture to Asian ones (e.g., Heine & Lehman, 1997), and Hungary is much more alike the US in respect of individualism. Nevertheless there are studies that reveal differently functioning system-justification in case of Hungarians, compared to Americans (Van der Toorn, Berkics, & Jost, 2010), where system-justification also functions as a self-defensive mechanism.

*H3: Americans are more active in justification of non-behavior.*

The second pile of our study questions relates to connections between the handled concepts: What is the relationship between environmental attitudes, sense of control over the success of behavior, rationalization of non-behavior and behavior. Positive environmental attitudes, taking the responsibility of pro-environmental behavior, and behavior are positively correlated according to many empirical studies (Guagnano, Stern, & Dietz, 1995; Hines et al. 1987; 2001; Kaiser, 2006; Thøgersen, 1999). Thus, we expect the two samples to function in the same way in this respect. Relating rationalization we refer again to the literature introducing an American as more self-justifier than a Hungarian (Heine & Lehman, 1997; Van der Toorn et al., 2010).

*H4, H5: The relationships between environmental attitudes, feeling of criticality and behavior appear to be culture independent, and the relationship between rationalization of non-behavior and behavior appear to be culture dependent.*

### 3 Method

#### 3.1 Sample and procedure

We collected survey data from 100 Hungarian and 100 American citizens. Of course, the Hungarians received a Hungarian version of the questionnaire and the Americans received an English one. The Hungarians were from the city of Nyíregyháza, which is in Eastern Hungary, and the American sample consisted of people from the city of Baton Rouge, which is the capital of Louisiana (the size the two cities are comparable). The data was collected between August and November of 2011. The participants responded voluntarily, anonymously and were not compensated for their participation. Most of them were contacted at their house, and a few were asked to participate while at their workplace. Our sample should not be regarded as completely representative, as we had a certain selection process which is discussed in more detail below.

The mean age on the total sample was 39 years (range from 28-54). In the Hungarian sample, 44% of the participants were male and, similarly, in the American sample 43% were male. Most of the participants in this study claimed to have a high educational level: 76.5% of the participants claimed to have a college or university degree and the rest claimed to have finished high school.

When conducting a study among different countries, many factors can affect the results of the data. In order to be able to make accurate conclusions, we tried to match various characteristics of the samples. Thus, both samples contain data from working adults from the high or middle class economically, living in suburban areas, and of similar age ranges. We allowed one survey per household for participants. We limited the selection of participants to middle and high class adults, because they have more options when making environmental choices as compared to students or lower class people, who might be more restricted because of financial or parental issues.

#### 3.2 Measures

For our study we used self-report questionnaires. We cannot always be sure that we can trust the results of self-report surveys, but many studies have used self-report techniques to measure ecological behavior, and they have found that the effect of social desirability is only marginal (Kaiser & Wilson, 2004).

We developed the questionnaire to measure environmental concern, environmental behavior, behavioral control over desired outcomes (perceived criticality) and rationalization. The questionnaire consisted of 105 items. It took about 20 minutes for the participants to fill in a survey. We used five items for self-report of the respondents' demographic characteristics (age, sex, education, marital status and place of living). Aside from the demographic items, our questionnaire consisted of the revised NEP Scale, the GEB Scale as well as scales designed to measure perceived criticality and the rationalization of 'not acting'.

##### ***Environmental concern (NEP)***

The NEP scale was originally developed by Dunlap and Van Liere (1978) in order to measure society's views on nature and society's own relationship to nature. In general, the statements of this scale express that, in general, nature is threatened and should be treated with special attentiveness. We used the revised NEP Scale (Dunlap, Van Liere, Mertig, & Jones, 2000), which consists of 15 items (7 reversed) such as '*We are approaching the limit of the number of people the earth can support.*' or '*Plants and animals have as much right as humans to exist.*' Responses are provided on a 5-point Likert-scale with the end-points '*1 = strongly disagree*' and '*5 = strongly agree*'. The 7 reversed items are coded in reverse. Using this coding technique, the higher the NEP-score of a person, the higher his/her ecocentric orientation (Dunlap et al. 2000).

Even though the NEP scale has 5 subscales (reality of limits to growth; anti-anthropocentrism; the fragility of nature's balance; rejection of exemptionism; possibility of an ecocrisis), most of the studies used one summary score for all of the items and didn't use a score for each subscale (Hawcroft & Milfont, 2010). This revised NEP scale has been used in several studies and within diverse cultural contexts (Boeve-de Pauw, Donche & Van Petegem, 2011; Lee & Paik, 2011; Liu, Ouyang & Miao, 2010; Schultz & Zelezny, 1999).

Some authors note that the NEP and environmental behaviors do not correlate rather strongly (Dunlap & Van Liere, 1978; Leung & Rice, 2002). We choose to use it regardless of these concerns, because we share the view that there may be further variables mediating the relationship between worldviews and behavior (e.g. Bamberg, 2003; Corral-Verdugo, Bechtel, & Fraijo-Sing, 2003), and specifically, we investigate the role of the belief about behavioral control over desired outcomes (perceived criticality) and the role of rationalization of non-behavior.

### **Environmental behavior**

The GEB Scale (General Ecological Behavior; Kaiser, 1998) is a tool, which is able to measure ecological behavior across cultures. The version we used is a composite of 50 performances, and is a reliable and valid set of behaviors (Kaiser & Wilson, 2004). These behaviors can be grouped into 6 domains, such as energy conservation, mobility and transportation, waste avoidance, consumerism, recycling, and vicarious social behaviors toward conservation. Following Kaiser and Wilson (2004), we used a 'yes/no' format for certain items and a 5-point Likert-scale with the end-points 'never' and 'always' for behaviors that cannot easily be split dichotomously. Twenty-one items were easily answered with the yes/no format, for example: 'I am a member of an environmental organization.' and the other 29 items were answered with a 5-point Likert-scale, for example: 'I keep the engine running while waiting in front of a railroad crossing or in a traffic jam'. The responses given on the 5-point Likert-scale were recoded dichotomously, so 'often' and 'always' were coded as positive responses and 'occasionally', 'seldom' and 'never' were coded as negative responses. This recoding was necessary for the data analysis (Kaiser & Wilson, 2004). Nineteen items were negatively formulated and the responses to these items were coded in reverse. We added 2 items (5-point Likert-scale) concerning air condition use in the car and in the house, because, today, this seems to be a more common activity and has a significant effect on an individual's total energy use.

Under certain circumstances, it may not always be possible for the participant to answer all of the items. An example of this can be when a participant does not have a driving license or a family does not have a car. In these cases, some of the items regarding car habits will not have an answer and are coded as missing values (Kaiser & Wilson, 2004). During the data analysis, we used the conventional principal (Kaiser, 1998; Kaiser & Biel, 2000) to deal with missing values. If an activity does not relate to a person, that person does not do that activity. Not doing a beneficial activity is a negative, while not doing a damaging activity is a positive response. In the GEB Scale, each behavior has a certain difficulty level based on how many people can perform the given behavior in the sample. To analyze the results of the scale the Rasch-model is used (Kaiser, 1998; Kaiser & Biel, 2000; Kaiser & Wilson, 2004).

### **Rationalization**

We generated altogether 33 items for the categories of environmental behavior concerned by the GEB Scale to measure the agreement with cheap rationalization for non-behavior. On all of the items, participants responded on a 5-point Likert-scale, where '1 = strongly disagree' and '5 = strongly agree'. The generated items are irrational beliefs and opinions as a collection of individuals' personal opinions and biases. Many may sound somewhat reasonable, but have no actual truth supporting them. For example, a person who does not recycle might rationalize as such: 'It takes more energy and creates more pollution to recycle things than it does to place it in a landfill.' Or people can attempt to reassure themselves when their behavior is harmful to the environment by rationalizing that the whole thing is just a marketing trick: '“Going green” is an expression which only sounds good and was coined as a marketing ploy in order to sell more products.'

In order to develop these scales we collected information from several online forums discussing environmental problems and checked how everyday people reason when they do not behave pro-environmentally. We also used the results of a study (JWT, 2009) that explored what makes Americans worried and discussed some ideas about what the average person thinks „to be green” means.

### **Perceived criticality**

Perceived criticality was measured by the simple question 'How critical do you think your contribution will be for...' (inspired by the idea of perceived criticalness in the literature of social dilemmas, see: De Cremer & van Dijk, 2002). We generated 6 items based on the above question (one item for each category of the GEB Scale). For example, the item regarding energy conservation was as follows: 'In your opinion, how critical do you think your own contribution will be for energy conservation?' Again, scoring was done using a 5-point Likert-scale, where the number 1 indicated 'completely insignificant' and the number 5 indicated 'makes a difference'.

## 4 Results

### 4.1 Descriptive characteristics of the two samples

Table 1 and Table 2 report about the descriptive characteristics of the Hungarian and American sample, respectively. The reliability of our measurement tools proved to be high in both cases. What can be eye-catching from the pattern is the opposite sign of correlation between rationalization of non-behavior and behavior in the two samples.

	M	SD	1	2	3	4
1. NEP	3.86	0.54	(.79)			
2. criticalness	3.22	0.80	.19	(.84)		
3. rationalization	2.57	0.39	-.40**	-.19	(.87)	
4. behavior			0.25*	.33**	.20*	(4,5x10 <sup>-16</sup> )*

Table 1. Scale characteristics (reliability) and descriptives characteristics (means and standard deviations), together with correlation values (r) between the answers at the scales: Hungarian sample.

Note: N=100. Cronbach's alpha reliabilities are in parentheses on the diagonal; in case of behavior (GEB) Tobs value is presented from the Rasch-model. \*p<.05, \*\*p<.01

	M	SD	1	2	3	4
1. NEP	3.21	0.66	(.83)			
2. criticalness	3.21	1.04	.40**	(.94)		
3. rationalization	2.27	0.51	-.30**	-.42**	(.88)	
4. behavior			.29**	.29**	-.39**	(1,2x10 <sup>-18</sup> )*

Table 2. Scale characteristics (reliability) and descriptives characteristics (means and standard deviations), together with correlation values (r) between the answers at the scales: American sample.

Note: N=100. Cronbach's alpha reliabilities are in parentheses on the diagonal; in case of behavior (GEB) Tobs value is presented from the Rasch-model. \*p<.05, \*\*p<.01

### 4.2 Testing Hypotheses 1, 2, & 3 (about the differences between the two samples relating the measures of environmental attitudes, perceived criticalness, rationalization and behavior)

Although gender differences were not in the main focus of our study, while women are more concerned with environmental issues (Hunter, Hatch, & Johnson, 2004; McStay & Dunlap, 1983; Mohai, 1992; Stern, 1992; Zelezny, Chua, & Aldrich, 2000), we did not want to miss this basic demography variable from the analyses, where we tested cultural effects on the measured variables.

To test for cultural and gender differences in NEP values, environmental behaviors, perceived criticality and rationalization scores, a two-way MANOVA was performed. The independent variables were culture and gender, each with two levels. The dependent variables were NEP-values, GEB-scores (Rasch-p values), together with the averages of perceived criticality items scores and rationality items scores. The results indicated that there was a significant multivariate effect of culture ( $F_{4, 193} = 50.28, p < .001$ ). Univariate analysis indicated that there was a significant cultural difference for NEP values, GEB-values and rationalization scores (for all cases  $p < 0.001$ ). Hungarians endorsed NEP values and reported more pro-environmental activities, as it was hypothesized in H1, however, at the same time Hungarians accepted rationalization items to a larger extent, which contradicts our expectation (H3). Relating H2, the Americans do not feel more responsible for solving environmental problems. Neither the multivariate gender main effect, nor the multivariate culture by gender interactive effect was significant. When Hungarians and Americans were analyzed separately, MANOVA results still indicated no significant multivariate effect of gender, moreover at the univariate level of analysis the only observable gender difference was that American females appeared endorsing NEP values somewhat more than American males ( $F_{1, 98} = 3.48, p = 0.06$ ).

### 4.3 Testing Hypotheses 4 & 5 (Relationships between the variables on the two samples)

Based on the data and the hypotheses, two models were set, one for each of the two cultures. The major difference between the two models was the role of justification. In case of the US sample it was hypothesized that the NEP will affect the perceived importance, which will affect the behavior through justification, that is, justification will significantly influence behavior. On the other hand, in case of the Hungarian sample it was hypothesized that justification does not alter the behavior significantly. The two models appear in Figure 1 and Figure 2 for the Hungarian and the US sample, respectively.

Both models were fitted using the *\*sem\** package of the R statistical software to each of the two samples to test the above hypotheses. As expected, the model for the Hungarian sample has shown a nice fit (RMSEA = 0, SRMR = 0.032), while this model seemed not be appropriate for the US sample (RMSEA = 0.31, SRMR = 0.13). Similar results were obtained in case of the model for the US sample; it did fit to the US sample (RMSEA = 0.077, SRMR = 0.048), but did not fit to the Hungarian one (RMSEA = 0.35, SRMR = 0.15). These results confirmed the hypothesis that justification plays a significant role in case of the US sample, but it does not influence the behavior significantly in case of the Hungarian sample.

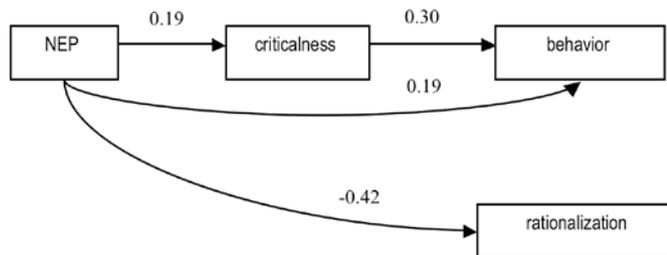


Figure 1. The path model for the Hungarian sample

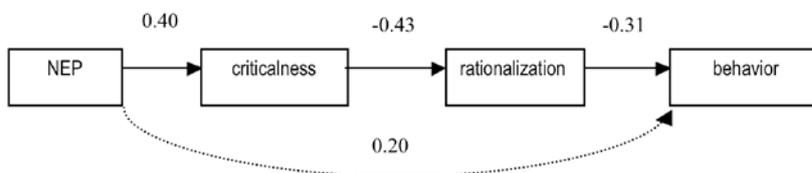


Figure 2. The path model for the American sample

## 5 Discussion

Out of accordance of post-materialistic view and the results of the Gallup survey from 1993, Hungarians appeared to be more environmentally friendly both in their views and behavior. Clearly, this result is not a disproof for the post-materialistic argument, as Hungary falls into the same group of 'High Income' countries as the US when countries are categorized based on the Gross National Income per Capita index, although Hungary was hardly above the threshold (12276 USA \$) in 2010, while the same index in the US was approx. 4 times as much that time. Differences in the importance of values between the two countries, values, related to self-transcendence (harmony) and self-enhancement (mastery) can serve as an explanation for these differences (Schwartz, 2007).

In respect of perceived criticality of environmentally significant behavior, there was no difference found. Notably, while 8% of the Americans reported the maximum perceived criticality, only 1% of the Hungarians did the same. Additionally, while perceived criticality was a strong correlate of NEP-values in the American sample, the two phenomena are in a looser relationship in the Hungarian one. The proportion of highly devoted people who are definitely motivated by environmental concern, together with the presence of less conscious others, show that Americans are rather heterogeneous in respect of environmental issues, which fact is in line with the contradicting arguments we raised when formed our H1, H2 and H3.

The data brought an unexpected result relating agreements with rationalization statements of non-behavior, when Hungarians displayed more agreements, although, notably, neither Americans, nor Hungarians embraced really these false views. Environmental issues have been present in common talk for a longer time in the US (Schultz, 2002), and perhaps this kind of justifications are socially less desirable.

Importantly, we could not report about the robust gender effect that is observed by many studies (Hunter et al., 2004; McStay & Dunlap, 1983; Mohai, 1992; Stern, 1992; Zelezny et al., 2000). Only American women were more concerned about the environment than American men, and their difference was restricted to the agreement with the statements of the NEP scale. We may attribute this observation to the larger portion of working women in Hungarian society, and especially, larger portion of women in agentic work-roles in the middle class. Namely, we refer here to the bio-social

gender role theory (Eagly, 1987; Wood & Eagly, 2002), that states gender differences in attitudes and behavior having not only biological causes, but being pronouncedly the consequences of division of work in the society as well.

The relationships between phenomena differed in the two cultures. While rationalization was not in a direct connection with behavior in the Hungarian sample, this was different in the American one, where rationalization influenced negatively and directly the behavior. In the American sample justification most probably functioned as a support for self-coherence giving explanation for non-behavior, while in the Hungarian sample rationalization of non-behavior and behavior coexist independently. Our observations can be related to Bratt's ones (1999), who showed on a Norwegian sample that the link between attitudes and rationalization is much stronger than that of between rationalization and behavior.

Concerning the link between NEP-values and environmentally friendly behavior, there is a direct and indirect link as well between them in both samples. First, this finding is in line with that approaches reporting weak connection between the two concepts (Poortinga, Steg, & Vlek, 2004; Schultz & Zelezny, 1998; Vining & Ebreo, 1992), and second, it is in line with those arguing for a mediated relationship (Bamberg, 2003; Corral-Verdugo et al., 2003; Nordlund & Garvill, 2003).

A kind of limitation of our study is the lack of a perfect match between the two samples, which are, in addition, not large enough. Thus, our results should be treated with caution in order to avoid far-fetched conclusions. And surely, other significant concepts (values, knowledge) could have been admitted into the measures, and then we have not needed to rely indirectly on the experiences of other empirical studies. Nevertheless, we think, that we could support the view that more attention should be devoted to rationalization, if we would like understand coexisting positive environmental views and non-behavior better.

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## ELICITING SOCIAL PREFERENCE: THE IMPL APPROACH

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The goal of this paper was to develop and implement a novel experimental method of eliciting distributive social preference. Previous studies generally used one of three approaches. Some made use of interactive games that make it difficult to distinguish between distributive preference and other motives such as reciprocity. Other used dictator games whose results were found to be rather sensitive to subtle changes in framing etc. A few used binary choices, typically providing only fragmented view of the shape of social preference.

Using Iterative Multiple Price List we elicit for different levels of other's payoff the level of own payment that would make the decision maker indifferent when compared to the base allocation. In this way we obtain indifference curves in the (own, other's) payoff plane. The method delivers internally consistent and plausible results.

We find that majority of participants can be described as either nearly selfish or showing some concern for the other if and only if the latter is behind (this can be interpreted as aversion to advantageous inequality or maximin preference). It is also in this domain that we observe hypothetical bias--subjects over-report the extent to which they care about the interaction partner when her payoff is relatively low. The method also makes it possible to verify the claims of economic theories of procedural fairness (Trautmann 2009, Krawczyk 2011) proposing that agents are averse to inequality in expected terms. Overall, we find little support for these claims.

The study provides a novel and reliable method to measure other-regarding preference. Our findings shed new light on the descriptive validity of leading models of other-regarding preference .

*Keywords: fairness, altruism, inequity aversion, dictator game*

## PERCEPTIONS REGARDING CENTRAL BANKS AND THEIR EFFECT ON INFLATION EXPECTATIONS

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According to The Bank of Israel Law of 2010, its main task is to maintain price stability. Central banks affect the inflation rate through monetary policy: money supply, exchange rate and interest rates. However, inflation is also determined by public expectations regarding future price fluctuations. Therefore, maintaining a stable inflation rate is fundamentally dependent on the public's trust in th

Economists argue that public trust in central banks, which affects inflation expectations, is mainly derived from rational reasons - transparency, independence from the political system, the degree of the Governor's inflation a

This paper examines laypeople's perceptions regarding the Bank of Israel and the level of trust in its predictions, arguing that trust in the Bank's ability to maintain the inflation goal is affected by the Bank's general image in the eyes of the public.

An online survey was conducted (N=481), examining both participants' perceptions and level of trust in the Bank's predictions, compared to other financial ins

Results show that (1) perceptions regarding the Bank's independence and transparency do not affect the level of trust in its predictions, (2) perceiving the Bank as a positive institution leads to higher trust in its predictions; (3) the more participants feel that the Bank's actions affect their lives, the higher they trust its predictions, and (4) demographic

Our results show that choosing perceptions as an independent variable provides new insights on the Bank's credibility. These insights can be used by governors to strengthen the credibility of the central bank and by doing this, will help the Bank meet

*Keywords: trust, inflation*

## PROPENSITY OF SMALL AND MEDIUM-SIZED ENTERPRISES TO ACCEPT NEW BANK PRODUCTS IN DIFFERENT FRAMING CONDITIONS

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### Abstract

Small business owners often complain on the difficult access to bank financing. Besides, in numerous developing countries, like Poland, private firms are reluctant to use bank loans what is caused by unsatisfactory borrowing conditions. Besides, entrepreneurs in developing countries prefer traditional approach to business financing which is called the orthodox organic growth. This approach provides for using mostly the company resources and avoiding excessive borrowing. This is mostly due to the lack of confidence to financial sector and bad experiences from the past. The change of this approach seems to be significant to accelerate the economic growth. Our research hypothesis was that better farming could extend the propensity to use more modern bank products.

Following this challenge we constructed the decision making examination of entrepreneurs based on simulation of providing the new bank instruments, presently not available in Poland. We proposed entrepreneurs to use innovative solutions: fast capital investment loans, flexible credit lines, small business cash management, bank consulting packages, loyal customer discounts, documentation filling instrument. We conducted research on the group of 1120 entrepreneurs divided into two sub groups. Each group was offered the same instruments but in two ways: typical and friendly. "Typical" variant reflected existing practice. The "friendly" variant contained additional positive framing

conditions, which increased confidence to the bank, provided additional mentoring, advice, examples and better secrecy of information.

The experimental simulation revealed that better framing increases the propensity of entrepreneurs to accept new banking products, mostly inexperienced ones. It was especially visible in relation to fast capital investment loans. Contrary to our previous research, better framing increased the propensity of both experienced and inexperienced entrepreneurs. However, the previously discovered pattern was recreated in flexible credit lines and bank consulting packages. We observed that loyalty of entrepreneurs was more valued by them when the bank checked it. Besides, instruments that too much focused on bank secrecy surprisingly were less popular than bank products with "regular" security information.

Banks offering new, innovative products for small businesses should pay attention on providing well-shaped framing conditions. In the most of examined potential bank instruments, better framing can increase the propensity to use them. Framing can significantly change the decisions of inexperienced clients. Banks should be also very careful when discussing the issues of security and loyalty because focus on security and secrecy can make small business owners suspicious and unchecked loyalty can be considered as invaluable.

*Keywords: financial forecasting, choice, framing, risk perception, loan and debt*

## 1 Introduction

Small and medium enterprises (SMEs) play a crucial role in developing economies all over the world. They are the source of growth and innovation in all sectors and create new jobs. Moreover, SMEs balance the negative economic trends and support the restructuring process of sectors. The development of SMEs is of key importance for the economy and is a necessary condition for the economic growth, for at least several reasons. First, six out of ten new jobs are created in the SME sector. Secondly, SMEs clear the way for the transformation of industry from the traditional forms of production to advanced technologies (Dibrell et al, 2008; Freel, 2003; Audretsch, 2001). Thirdly, SMEs play a major role in the development of innovation aimed at raising competitiveness (Low and Chapman, 2007; Audretsch, 2001). Finally, companies from this sector contribute significantly to the development of the global market (Salvato et al, 2007; Acedo and Florin, 2006; Karagianni and Labriandis, 2001; Lituchy and Rail, 2000).

However, SMEs are susceptible to the negative impact of the business environment and few companies manage to survive for more than five years. Therefore, authorities in numerous countries, recognising the importance and impact of SMEs on the economy, create agencies and companies that support the development and operations of this sector (see: Di Giacomo, 2004; Secieru and Vigneault, 2004; Mason and Harrison, 2004).

The available research concerning the banking sector in Poland show the traditionally low support for the SME sector (Feakins, 2004). Polish banks are strongly oriented to the cooperation with larger domestic or foreign companies (Szczepaniec, 2007). The SME sector is perceived by Polish banks as very risky, devoid of appropriate management or required securities (Feakins, 2004). Credit applications are often rejected due to the low liquidity or insufficient profits, which are characteristic for the SME sector (Szczepaniec, 2007).

So far, no behavioural research has been conducted in Poland to assess the efficiency of banking services dedicated to the SME sector. The research conducted by the authors refers to the concept of Tverski and Kahneman (1981). A similar research, although concerning the general financing of the SME sector in Poland, was carried out by P. Kulawczuk, A. Poszewiecki and W. Bizon (2011).

## 2 Objectives

Small and medium enterprises in Poland are characterised by a relatively low propensity to finance development with external sources. As indicated by the research of the International Monetary Fund from 2010, the debt ratio of private sector (including consumers and mortgage loans) to GNP in Poland amounted to 54.8%, i.e. four times less than in the US, the UK, Denmark, Spain and Ireland. The low level of financing the private sector by banks in Poland is close to a relative level in countries that are much less developed. It has to be admitted that this level is similar to the debt/GNP ratio in the Czech Republic; however, this country has a higher GNP per capita and much better fulfilled housing needs than Poland (such needs determine the volume of mortgage loans).

No	Country	%	No	Country	%
1	Cyprus	283.6	61	Brazil	57.0
2	Denmark	225.0	62	Czech R.	56.2
3	Spain	211.6	63	Dominica	56.2
4	Ireland	210.2	64	Nepal	55.6
5	United Kingdom	204.0	<b>65</b>	<b>Poland</b>	<b>54.8</b>
6	United States	202.2	66	BIH	54.7
7	Netherlands	199.3	67	Fiji	52.4
8	Portugal	190.8	68	Qatar	51.5
9	Hong Kong	189.0	69	Serbia	51.5
10	Luxembourg	185.4	70	Honduras	50.5
11	Switzerland	174.6	71	India	49.0
12	Japan	169.2	72	Oman	48.2

Table 1. Domestic credit to private sector (%GNP) ratio in 2010 in selected countries

Source: International Monetary Fund, <http://data.worldbank.org/indicator/FS.AST.PRVT.GD.ZS> of 24 February 2012

As the private sector bank debts vs. GNP ratio is so low, banks have to find new innovative ways of attracting good entrepreneurs and the private sector in general, which is often based in particular on proposing new products and developing banking innovations. Based on such premises, namely that it is necessary to increase the commitment of banks to financing the private sector, especially the sector of private entrepreneurship, the team of the Polish-American Small Business Advisory Foundation has decided to carry out a simulation decision research to test the propensity of small and medium enterprises (SMEs) to accept innovative potential banking products.

The main research objectives were the following:

- 1) To assess the willingness of Polish SMEs to accept bank innovations concerning new potential bank products for them,
- 2) To estimate how changed framing conditions can change potential decisions of SMEs towards higher exposure to bank financing,
- 3) To check whether earlier experience in using similar bank products to the new ones has got impact on decision making of SMEs,
- 4) Assess, whether gender has got impact on decision making of Polish SMEs,
- 5) Propose recommendations to Polish bank industry how to better shape bank offer to SMEs sector.

### 3 Methodology

The research was carried with the use of survey containing a choice of potential decisions in the simulated cases when the banks would offer new innovative products, described in the survey among existing bank clients who belonged to small and medium scale enterprises. All together 24 banks were included, in this 4 large commercial banks and 20 co-operative local banks.

The questionnaire included six questions asked to entrepreneurs about their propensity to accept innovative banking products, which had not been offered by Polish banks before. The questions were asked in two different ways. The first way reflected a typical banking practice when launching new banking products. The second method offered exactly the same products but presented in a different, more friendly manner, packing them in minor and friendly non-financial services that were irrelevant for costs. According to the terminology used in the behavioural economics, the same products were offered but in two different framings.

The two groups comprised 548 respondents each, who filled in the questionnaires. The respondents were selected at random. As a result, both groups were characterised by a similar statistical distribution, which entitles the authors to conclude that the research fulfilled the requirements of experimental and quasi-experimental research (depending on how orthodox the approach is). The authors do not claim that the research was representative on random samples (which generally entitles to call a research a 'pure experiment'), but they consider that it is sufficient to say that the research gave the actual answer within the two quota groups. Moreover, their selection was random and they come from the same population statistically. However, due to the volume of both groups, the results may (although do not have to) reflect the directions and trends that operate within the general population of small and medium enterprises in Poland. It is worth mentioning that the proposed solutions were of simulative nature. The respondents were asked how they would have behaved if they had received specific proposals. It does not mean that if they did receive such

proposals, they would act as declared. Nevertheless, it can be assumed with a high level of probability that the behavioural patterns of reacting to the changed framing would be maintained also in the actual conditions.

## 4 Results

The research results presented below include 4 out of 6 potential situations of offering new innovative products, not present in the product range of Polish banks, offered in two farming conditions within the survey.

### 4.1 Small and medium enterprises and the propensity to use innovative investment loans

The first decision situation presented for assessment by entrepreneurs was the proposal to score the attractiveness of a new banking product for small and medium enterprises that would enable to raise an investment loan at any time after a client becomes entitled to it. The product would enable a client, at any time it feels necessary, to purchase e.g. investment assets with a loan, which awaits it in a very similar form as a limit (facility), which generally is used to finance current assets. Therefore, the loan would be a stand-by limit that could be used by an entrepreneur to finance investment-related outlays. This solution was offered to two groups of respondents polled according to two different procedures (framing). A typical option involved a usual procedure in case of difficulties in loan repayment, while the 'friendly' option included provisions that enable the automatic restructuring of a loan and assistance of an experienced financial consultant for an enterprise in difficulties. The friendly option was to increase the sense of safety of a borrower. The detailed solution has been presented in Table 2.

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Instrument name: STAND-BY INVESTMENT LOAN	
Common elements of a decision situation:	
The bank is analysing the launch of an investment loan for loyal, long-term clients, which would involve: 1) offering a client the best interest rate available in the bank; 2) establishing any securities, and if their value is lower than the loan amount including interest + 30%, a cheap insurance of the remaining amount (according to the lowest market rates), 3) a crediting period equal to the period of investment asset life (maximum 10 years); 4) the option to use the funds or not (stand-by funds), with the availability fee at the lowest rates.	
Would you use this offer?	
Differentiating elements:	
A. Typical option:	B. Friendly option:
-	Moreover, the Bank offers the automatic restructuring of the loan if there are any market difficulties and provides the assistance of a financial consultant in case of financial problems caused by recession.
Alternative decisions: <u>You can select the following options:</u>	
a) conclude an agreement on terms and conditions proposed by the bank	
b) reject the offer	
c) postpone a decision for 3 months	
d) postpone a decision for ½ year	
e) postpone a decision for 1 year	

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*Table 2. Description of a decision situation — obtaining a stand-by investment loan*

*Source: own study*

The decision options included in the question provided for: accepting an offer and concluding an agreement, rejecting an offer and not concluding the agreement, three options of postponing a decision in time, for 3 months, for 6 months or for one year. The delay of the decision is a typical behaviour of entrepreneurs when they find it difficult to understand a situation but do not reject a business proposal immediately as unfavourable. The longer time of delaying decision, the higher probability of a negative decision is. As a rule, the more additional information is needed to take a decision (and the more time is necessary), the more difficult it is to obtain and a final decision can be negative. On the other hand, a short period of postponing a decision can mean that a respondent needs only little additional information. If this is the case, the expected value of the postponed decision is inversely proportional to the period of delay. However, it is to be assumed that the expected values of even a short postponement do not have to give 100% YES answers. The obtained results of responses to the decision question are presented in Table 3.

Propensity to use a stand-by investment loan	Number of responses		Percentage of responses	
	TO	FO	TO	FO
TO – Typical option; FO – Friendly option				
YES	259	306	47.26	55.84
NO	149	116	27.19	21.17
Postponing a decision for 3 months	68	59	12.41	10.77
Postponing a decision for 6 months	35	34	6.39	6.20
Postponing a decision for one year	37	33	6.75	6.02

Table 3. Propensity to use an innovative stand-by investment loan in the whole population of respondents

Source: own study

The responses given in Table 3 to the question about the propensity to accept an innovative investment loan indicate that more than 47% respondents would be ready to accept this solution in a typical option and more than 54% in a friendly option, which provides greater security to entrepreneurs. In the friendly option, the number of respondents prone to take a negative decision was much lower (by more than 4%) and the share of entrepreneurs who wanted to postpone their decision decreased as well. The proposed innovative solution could enjoy a relative high interest, as in the friendly option more than half of the respondents were prone to use that instrument. Based on earlier research (*Behavioural economics of entrepreneurship financing*, ed. P Kulawczuk and A. Poszowiecki, 2010) it was concluded that an important factor that determines the propensity to use financial instruments is the former experience in using similar financial products. Therefore, the division was made into entrepreneurs who had used an investment loan before and the ones who had no experience of such credits. The results obtained for the entrepreneurs who had used investment loans have been presented in Table 4.

Propensity to use a stand-by investment loan	Number of responses		Percentage of responses	
	TO	FO	TO	FO
TO – Typical option; FO – Friendly option				
YES	261	281	100,00	100,00
NO	144	178	55,17	63,35
Postponing a decision for 3 months	54	41	20,69	14,59
Postponing a decision for 6 months	34	32	13,03	11,39
Postponing a decision for one year	18	11	6,90	3,91

Table 4. Propensity to use an innovative stand-by investment loan among entrepreneurs who had used similar products

Source: own study

The first observation indicates that respondents who had had previous experience of investment loans are more prone to use a credit that provides them with innovative behavioural options than the general population of entrepreneurs. Moreover, a change of framing towards the greater security increased the propensity to use an innovative product above average for all entrepreneurs (by more than 8%). Secondly, which is quite puzzling and contradictory to research so far, the framing increases the propensity to use an instrument more in a group of experienced clients than in the group of less experienced ones. Previous research (Kulawczuk, Poszowiecki, 2010) revealed that framing did not affect experienced clients or had little impact on them. Perhaps in this situation a specific deviation from the rule can be observed, which resulted from a special approach to risk among experienced clients.

An explanation of this situation is the observation that experienced entrepreneurs are more prone to take a credit risk (therefore, they had taken out an investment loan before). On the other hand, raising a loan must have been a very stressful situation for them, if their propensity is much higher to use this type of instrument if the approach of the bank is safer. On the other hand, the much lower propensity, as observed in Table 5, of less experienced clients to accept this type of an innovative instrument can result from the fact that they do not or have not needed an investment loan. Therefore, the framing has less impact on this group of respondents. The results of the research for the clients without former experience of arranging investment loans are shown in Table 5.

Propensity to use a stand-by investment loan	Number of responses		Percentage of responses	
	TO	FO	TO	FO
TO – Typical option; FO – Friendly option				
YES	115	128	40,07	47,95
NO	95	75	33,10	28,09
Postponing a decision for 3 months	34	27	11,85	10,11
Postponing a decision for 6 months	17	23	5,92	8,61
Postponing a decision for one year	26	14	9,06	5,24

*Table 5. Propensity to use an innovative stand-by investment loan among entrepreneurs who had not used similar products*

*Source: own study*

The analysis of the data given in Table 5 shows a relatively lower share of entrepreneurs who intend to use the offer of the innovative loan than the average for the whole polled population. Also the change of framing into the more favourable one results in a relatively lower percentage (more than 5%) increase of respondents who intend to use the instrument. The friendly framing results not only in the drop in negative decisions but also in the lower share of clients who will postpone their decision for a short or long time in favour of clients who would like to postpone their decision for 6 months.

Conclusions:

- 1) The introduction of an innovative instrument that increases the freedom of entrepreneurs in using loan funds on an investment enjoys considerable interest among bank clients;
- 2) The introduction of friendly framing that enhances the security of an investment loan raises the interest in an innovative instrument significantly;
- 3) The friendly framing increases the interest in a loan instrument among entrepreneurs who have used the instrument before more than among clients without previous experience of using an investment loan. This phenomenon can be explained with the fact that raising an investment loan in Polish conditions can cause considerable psychological stress and entrepreneurs who have already experienced it appreciate a higher security level very much; and
- 4) Better framing of offering the same instrument raises also the interest in an innovative product among less experienced clients. However, the relative increase resulting from safer framing is slightly lower than in case of more experienced clients.

#### **4.2 Propensity of SMEs to use innovative flexible loan facilities. How to improve the flexibility of a loan even more and is it profitable?**

A credit limit is an instrument that can be used by an entrepreneur to raise funds necessary for financing the current activity. As a rule, the bank and the client set the maximum value of the limit that can be used by a firm. As an innovation, it was proposed that the value of a limit could be flexible and dependent on the increase of creditworthiness. Moreover, it would increase automatically, unless the company does not give its consent to this solution. The proposed instrument adapts flexibly to the business development, in particular the growth of sales, and increases the value of available working funds automatically together with the higher demands of a company. The condition would be the regular provision of tax and statistical returns. Within a friendly option, a special guarantee for clients would be provided that special securities would be applied aimed at preventing any disclosure of data given in tax or statistical returns. The complete description of a decision situation is given in Table 6.

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 Instrument name: FLEXIBLE CREDIT LIMIT
 

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Common elements of a decision situation:

A bank considers the launch of a credit limit of a variable value. At first, a client would have a calculated minimum guaranteed value of a credit limit (e.g. PLN 400 thousand), and next the bank could increase it flexibly (for the first year, without the availability fee, and in the consecutive years at 50% of the basic rate), if the creditworthiness of a business increases, upon consent of the company. The condition is to provide automatically (preferably by e-mail) tax and statistical returns or to give the bank access to the electronic accounting system of the company. The bank provides a relevant software free-of-charge. Would you use this offer?

Differentiating elements:

A. Typical option:

-

B. Friendly option:

Moreover, the bank guarantees that nobody, even a bank officer, can get access to your tax or statistical returns or any accounting data and the system will calculate the higher limit automatically. Moreover, if necessary, the bank will provide you with services of a financial advisor from outside the bank to develop a strategy of approving limit raises or not.

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Table 6. Description of a decision situation — using a flexible credit limit

Source: own study

Similarly to other decision questions, respondents were asked to take a decision whether they accept this solution and how much time, if any, they need to take a decision. The obtained results have been presented in Table 7.

Propensity to use a stand-by investment loan	Number of responses		Percentage of responses	
	TO	FO	TO	FO
TO – Typical option; FO – Friendly option				
YES	226	235	41,24	42,88
NO	175	168	31,93	30,66
Postponing a decision for 3 months	69	73	12,59	13,32
Postponing a decision for 6 months	40	42	7,30	7,66
Postponing a decision for one year	38	30	6,93	5,47

Table 7. Propensity to use a flexible credit limit in the whole population of respondents

Source: own study

More than 40% respondents were ready to accept the innovative instrument of a flexible credit limit. This result is quite similar for both options. In the friendly alternative, the number of positive responses increased by only 1 percentage points, which can be recognised as statistically insignificant. Hence, perhaps the framing that involves the detailed focus on the safety of data does not work or has a minimum impact on behaviour.

Propensity to use a stand-by investment loan	Number of responses		Percentage of responses	
	TO	FO	TO	FO
TO – Typical option; FO – Friendly option				
YES	152	120	49,51	44,94
NO	73	76	23,78	28,46
Postponing a decision for 3 months	40	37	13,03	13,86
Postponing a decision for 6 months	26	17	8,47	6,37
Postponing a decision for one year	16	17	5,21	6,37

Table 8. Propensity to use a flexible credit limit among entrepreneurs who had used similar products

Source: own study

While the research on the whole tested population indicated a high level of interest in the innovative product and no impact of framing related to data safety on taking decisions, the consecutive two tables indicate that this impact does exist but is different, however, depending on previous experiences of using a credit limit. Table 8 shows the results for respondents who had used a similar product.

According to data presented in Table 8, having previous experience of using a credit limit raises the interest in an innovating banking product above an average value. This interest is almost 8 percentage points higher than in the typical option and two percentage points greater than in the friendly option. Interestingly, the data given in Table 8 show that the friendly framing related to providing data security has a negative impact on experienced clients. The number of clients who would decide to accept that product fell due to information on data security by more than 3 percentage points, while the number of negative responses increased by almost 5 percentage points. It means that more information on data security given to experienced entrepreneurs had the effect contrary to intended. Experienced clients become more suspicious, what makes them lose interest in the innovative product. Table 9 shows the results for respondents who had not used any similar products.

Propensity to use a stand-by investment loan	Number of responses		Percentage of responses	
	TO	FO	TO	FO
TO – Typical option; FO – Friendly option				
YES	74	115	30,71	40,92
NO	102	92	42,32	32,74
Postponing a decision for 3 months	29	36	12,03	12,81
Postponing a decision for 6 months	14	25	5,81	8,90
Postponing a decision for one year	22	13	9,13	4,63

Table 9. Propensity to use a flexible credit limit among entrepreneurs who had not used any similar products

Source: own study

The analysis of data on the propensity to accept an innovative flexible credit limit enables to draw a conclusion that inexperienced clients are characterised by a lower propensity to accept innovative flexible credit limits than the general population. Moreover, the security framing of data affects the group of inexperienced clients more. The ratio of clients ready to accept an innovative product grew due to such framing by as much as 10 percentage points. This result is symptomatic. Although data security framing has a slight negative impact on experienced clients, its effect became definitely positive for inexperienced clients. This result can be interpreted by concluding that experienced clients presume that data safety should be included in the standard, and if this element is stressed especially, it raises doubts about this aspect, which discourages them from purchasing the service. On the other hand, in the first information to inexperienced clients the presented framing type can be used, because it builds up greater trust in the bank.

Conclusions:

- 1) By applying framing of data security, very different results are achieved with regard to experienced and inexperienced clients:
- 2) Framing has strong and positive impact on inexperienced clients, increasing their propensity to purchase the service,
- 3) Data security framing is ineffective or even negative with regard to experienced clients, who may become suspicious when hearing information on special security measures applied to data, and
- 4) A flexible credit limit is an innovative instrument that enjoys strong interest among bank clients, stronger among the more experienced ones than among those who have not used a credit limit before.

### 4.3 Modern forms of liquidity management vs. the propensity of SMEs to apply them. To what extent are SMEs prone to entrust banks with liquidity management?

SMEs hardly ever use liquidity management services that involve the accelerated receipt of due amounts (e.g. factoring) or depositing surplus. In general, the service of cash management is offered to large enterprises or well-off clients and it is seldom used by small and medium enterprises. Therefore, the authors of the decision research concluded that it would be appropriate to test the interest of small and medium enterprises in using the cash or liquidity management service. We designed this instrument as highly automated and optimising results, which was to give major benefits to an enterprise. We envisaged the fee for this service as the share in benefits amounting to 30% savings or incomes generated. Table 10 gives the description of this instrument, which is presented in two options: a typical one and a friendly one that includes additional consultation with a bank officer on the strategy of depositing surplus or raising funds.

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Instrument name: CASH MANAGEMENT FOR SMEs

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Common elements of a decision situation:

A bank is considering a product dedicated to SMEs and involving liquidity management, encompassing on the one hand providing funds for the operation and, on the other hand, managing any surplus. The system would operate automatically and optimise the cash management result (reduce costs of gaining cash and increase profit on surplus management). The fee for using the system would amount to 30% of benefits compared to the situation before the agreement. Will you use this offer?

Differentiating elements:

A. Typical option:

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B. Friendly option:

To provide greater security, you would agree with a bank consultant on a strategy of raising funds or managing any surplus every quarter or half a year. Moreover, a consultant would be obliged to inform you of any changes in the market conditions.

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*Table 10. Description of a decision situation — using cash management for SMEs*

Source: own study

Table 11 presents the results obtained for the propensity to use this innovative product among the whole population of respondents from SMEs. Only slightly more than 30% respondents were interested in the proposed instrument. Interestingly, framing had no impact on the whole population of respondents and their propensity to use the instrument was similar in the typical and friendly options. In the friendly version, the propensity of entrepreneurs to take a negative decision increased by more than 2 percentage points, which may have resulted from the fact that a participation of a personal consultant was provided for in an automated instrument, which paradoxically discouraged some of the respondents.

Propensity to use a stand-by investment loan	Number of responses		Percentage of responses	
	TO	FO	TO	FO
TO – Typical option; FO – Friendly option				
YES	170	173	31,02	31,58
NO	211	224	38,50	40,88
Postponing a decision for 3 months	71	69	12,96	12,59
Postponing a decision for 6 months	51	43	9,31	7,85
Postponing a decision for one year	45	39	8,21	7,12

*Table 11. Propensity to use cash management for SMEs in the whole population of respondents*

Source: own study

Table 12 shows changes of the propensity to use the proposed innovative product under the influence of framing among the companies that had used similar products. Paradoxically, framing that involved the supplementation of the automatic system with the participation of a personal consultant decreased the interest in the product significantly (by as many as 8 percentage points). Simultaneously, this type of framing increased the share of negative answers significantly (also by about 7 percentage points). Table 13 shows changes in the declared propensity to use cash management among entrepreneurs who had not used any similar instruments, due to the impact of the presented framing.

Propensity to use a stand-by investment loan	Number of responses		Percentage of responses	
	TO	FO	TO	FO
TO – Typical option; FO – Friendly option				
YES	33	36	46,47	38,72
NO	16	27	22,54	29,03
Postponing a decision for 3 months	8	16	11,27	17,20
Postponing a decision for 6 months	8	8	11,27	8,60
Postponing a decision for one year	6	6	8,45	6,45

*Table 12. Propensity to use cash management for SMEs among entrepreneurs who had used similar products*

Source: own study

Propensity to use a stand-by investment loan	Number of responses		Percentage of responses	
	TO	FO	TO	FO
TO – Typical option; FO – Friendly option				
YES	137	137	28,72	30,11
NO	195	197	40,88	43,30
Postponing a decision for 3 months	63	53	13,21	11,65
Postponing a decision for 6 months	43	35	9,01	7,69
Postponing a decision for one year	39	33	8,18	7,25

Table 13. Propensity to use cash management for SMEs among entrepreneurs who had not used any similar products

Source: own study

Conclusions:

- 1) Automated cash management for SMEs is among the least attractive instruments for the polled entrepreneurs.
- 2) Framing in the form of additional personal consulting discourages experienced clients and encourages additionally those clients who have not used this instrument before, and
- 3) A logical error in the construction of the instrument, i.e. adding a personal consultant service to automated cash management, was spotted easily by experienced clients, while new clients would be ready to accept such supplementation.

#### 4.4 4.4. Bank financial consulting as package services. Can financial consulting actually attract new clients?

Instrument name: PACKAGE OF BANK FINANCIAL CONSULTING FOR SMEs

Common elements of a decision situation:

A bank is considering a VIP package offered to SMEs who are loyal clients of the Bank that would include free-of-charge consulting with regard to financial management of the business every half a year. SMEs would be obliged to present their financial standing and development plans and would receive written advice on financial strategy. Will you use this offer?

Differentiating elements:

A. Typical option:

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B. Friendly option:

A consultant would be obliged to maintain confidentiality of any and all received information, including towards the bank that has hired him/her. A consultant would sign a non-disclosure agreement in this regard.

Table 14. Description of a decision situation — using a financial consulting bank package for SMEs

Source: own study

In the above-mentioned situation the bank offers a package comprising free consultation on the finance of the company. In a friendly option, there is information on the obligation of the consultant to keep the secrecy of any information concerning the business. The results are presented in tables 15,16,17.

Propensity to use a stand-by investment loan	Number of responses		Percentage of responses	
	TO	FO	TO	FO
TO – Typical option; FO – Friendly option				
YES	234	244	42,70	44,53
NO	160	158	29,20	28,83
Postponing a decision for 3 months	75	65	13,69	11,86
Postponing a decision for 6 months	33	49	6,02	8,94
Postponing a decision for one year	46	32	8,39	5,84

Table 15. Propensity to use a bank financial consulting package for SMEs in the whole population of respondents

Source: own study

Propensity to use a stand-by investment loan	Number of responses		Percentage of responses	
	TO	FO	TO	FO
TO – Typical option; FO – Friendly option				
YES	144	120	56,25	51,94
NO	46	52	17,97	22,51
Postponing a decision for 3 months	38	26	14,84	11,26
Postponing a decision for 6 months	15	23	5,86	9,96
Postponing a decision for one year	13	10	5,08	4,33

Table 16. Propensity to use a bank financial consulting package for SMEs among entrepreneurs who had used similar products

Source: own study

Propensity to use a stand-by investment loan	Number of responses		Percentage of responses	
	TO	FO	TO	FO
TO – Typical option; FO – Friendly option				
YES	90	124	30,83	39,12
NO	114	106	39,04	33,44
Postponing a decision for 3 months	37	39	12,67	12,30
Postponing a decision for 6 months	18	26	6,16	8,20
Postponing a decision for one year	33	22	11,30	6,94

Table 17. Propensity to use a bank financial consulting package for SMEs among entrepreneurs who had not used any similar products

Source: own study

Analysing the above results we draw the following conclusions:

- 1) Entrepreneurs declare their considerable interest in financial consulting offered by banks. The interest in the bank offer is much greater among clients who have experience of using such offers.
- 2) The group of experienced clients reacts negatively to the message on keeping confidentiality by a consultant, including towards the bank that has hired him/her. The cause can be prior negative experience or a concern about such declarations.
- 3) As regards clients without experience of using consulting, the introduction of the non-disclosure clause signed by a consultant increases the interest in the bank's offer strongly.

#### 4.5 Role of gender in taking decisions to use innovative banking instruments by SME clients

The research involved the analysis of responses in terms of respondent gender. The questions asked in the poll were formulated in such a manner that the responses could be presented in a slightly modified 5-level Likert scale. Thus, YES responses were attributed the value of 5 (which means an immediate approval of the proposal), while NO responses corresponded to 1 (meaning the absolute rejection of an offer). The options that involved the postponement of a decision were arranged accordingly and received the following values: postponement for 3 months – 4, postponement for 6 months – 3, postponement for one year – 2.

The aim of this part of the research was to find out if the type of decisions taken (the selection of an option) can be related to the gender of a decision maker and if the change of boundary conditions from typical to friendly could impact the declared propensity to use specific instruments depending on the gender of a decision maker. Therefore, while analysing how responses to typical and friendly options changed with gender and the modification of a decision situation, a specific auxiliary question was asked: do women react to changes of boundary conditions differently than men?

Due to the distribution of responses that was far from standard and a large sample, the Kolmogorow-Smirnov nonparametric statistical test was used.

Table 22 presents collective results for a typical option, by indicating the values resulting from transposing all available options on the Likert scale and additionally in a simplified system, by referring to extreme responses only (YES or NO). Likewise, the data for the friendly option have been given in Table 23.

Polled issue	Maximum negative difference	Maximum positive difference	p	WOMEN				MEN			
				mean	deviation	Percentage of YES responses	Percentage of NO responses	mean	deviation	Percentage of YES responses	Percentage of NO responses
1	-0,099	0	p > .10	3,201	1,754	39.68%	32.80%	3,542	1,688	49.60%	23.45%
2	-0,034	0,035	p > .10	3,222	1,739	38.10%	32.80%	3,213	1,746	41.51%	30.46%
3	-0,006	0,037	p > .10	2,915	1,745	32.80%	38.10%	2,860	1,701	29.11%	37.47%
4	-0,016	0,032	p > .10	3,333	1,744	43.92%	29.63%	3,275	1,715	40.70%	28.03%
5	-0,073	0	p > .10	3,429	1,772	49.21%	29.63%	3,609	1,667	51.48%	22.37%
6	-0,02	0,03	p > .10	3,556	1,664	48.15%	23.28%	3,542	1,694	50.13%	23.45%

Table 22. Selection of one option in the typical option depending on a gender of a decision maker

Source: own study.

Polled issue	Maximum negative difference	Maximum positive difference	p	WOMEN				MEN			
				mean	deviation	Percentage of YES responses	Percentage of NO responses	mean	deviation	Percentage of YES responses	Percentage of NO responses
1	-0,060	0,000	p > .10	3,572	1,689	50.31%	23.90%	3,756	1,628	56.36%	19.45%
2	-0,048	0,000	p > .10	3,220	1,738	40.25%	31.45%	3,324	1,732	42.64%	29.43%
3	-0,004	0,060	p > .10	2,937	1,785	35.22%	40.25%	2,815	1,725	29.18%	39.90%
4	0,000	0,090	p > .10	3,560	1,690	49.69%	24.53%	3,259	1,724	41.15%	29.68%
5	0,000	0,073	p > .10	3,704	1,644	52.20%	22.01%	3,546	1,685	49.63%	23.94%
6	-0,016	0,014	p > .10	3,478	1,706	47.80%	25.79%	3,481	1,679	46.38%	24.19%

Table 23. Selection of one option in the friendly option depending on a gender of a decision maker

Source: own study.

The above tables show that there are no statistically relevant differences, either in the impact of a gender on a type of decisions taken or the propensity to change a decision due to the modification of a decision option from a typical to a friendly one. In other words, it can mean that:

- 1) There is no clear evidence to confirm that decisions concerning the use of innovative banking products taken by women differ from decisions taken by men, either in boundary conditions set for the so-called typical option or the friendly option.
- 2) There is no clear evidence to conclude that a change of a decision situation from a typical to ideal one causes different reactions depending on the gender of a decision maker.

In spite of no material differences in the context of the whole population, some particular conclusions can be ventured, by referring to the polled sample only. The following most important conclusions are grouped according to changes in the perception of specific innovative banking instruments.

**1st product: a stand-by investment loan for trusted clients**

As regards the first decision situation concerning an investment loan for trusted clients, men on average declared greater willingness to use the tool than women. This concerned both the typical option (on average 3.54 M compared to 3.20 F) and the friendly option (3.76 M vs. 3.57 F). As regards the increase of the average interest in the tool due to the changed offer presentation, it can be noted that the growth is apparently stronger among women (from 3.20 to 3.57) than among men (from 3.54 to 3.75), which corresponds to the increase of the immediate approval of the offer among women (YES responses) by more than 10 percentage points (by 6.76 percentage points among male respondents).

**2nd product: a flexible credit limit**

Women and men presented very similar propensities to use this product in its typical option, although the slightly higher percentage of men declared the immediate use of the tool and the slightly lower percentage of male respondents rejected it completely. On the other hand, in the ideal option the average propensity to use the flexible loan limit option was higher among men (3.32 M vs. 3.22 F), which corresponded to the slightly higher percentage of YES answers among men and less NO answers. Looking from the perspective of the impact of changes of a decision situation, the greater impact on men can be noted, with the apparent no influence on female respondents.

**3rd product: cash management for SMEs**

In this case, the declared propensity to use the tool was higher among women. It refers to both options of an offer formulation. Women reacted to the change of boundary conditions slightly (positively), while the fall of interest was recorded among male respondents, which was expressed by the reduced medium level of propensity to use the instrument and the higher percentage of respondents who resigned from using it.

#### 4th product: package bank financial consulting for SMEs

As regards the proposed consulting package, there are minor differences between decisions taken by men and women for the typical option. A change of a decision situation to a friendly one made women react positively stronger, as they declared both the higher average level (F: from 3.33 to 3.56, M: from 3.27 to 3.26), and the percentage of those declaring the immediate YES for the offer (F: increase by 5.77 percentage points, M: growth by 0.45 percentage points).

## 5 Conclusions and further research

Main conclusions:

- Framing has strong and positive impact on inexperienced clients, increasing their propensity to purchase the bank service,
- An important factor that determines the propensity to use financial instruments is the former experience in using similar financial products,
- Data security framing is ineffective or even negative with regard to experienced clients, who may become suspicious when hearing information on special security measures applied to data,
- The group of experienced clients reacts negatively to the message on keeping confidentiality by a consultant, including towards the bank that has hired him/her. The cause can be prior negative experience or a concern about such declarations,
- A flexible credit limit is an innovative instrument that enjoys strong interest among bank clients, stronger among the more experienced ones than among those who have not used a credit limit before,
- There are no statistically relevant differences, either in the impact of a gender on a type of decisions taken or the propensity to change a decision due to the modification of a decision option from a typical to a friendly one.

Summing up, we see the significant inspirational potential of behavioral finance in presenting the opportunities of improving bank offer for SME. The results of behavioral simulations can lead to better shaping of bank's offer and achieving better results in small business financing. Such an approach is much cheaper than pilot projects which can also be used for testing new products.

It may be also concluded that only an analysis of specific incentives will enable to describe the effects of a changed decision situation more completely. Therefore, it may be recommended to focus on a single research issue in further studies, while examining at the same time how a decision changes due to the introduction of specific incentives. Only by repeating a test of the impact of all the above-mentioned incentives consecutively for all the research problems, a complete description of reasons and effects of a reaction to a changed decision situation may be obtained. The results of 2011' bank clients behavioural decision examinations based on simulations constitute an useful tool for improvement of business operations in banking and this method is worth future development.

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## THE EXPERIMENTAL STUDIES OF THE IMPACT OF NON-TRANSPARENCY OF AUCTION RULES ON THE STRATEGIC BEHAVIOR OF BIDDERS

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In the practice of procurement auctions it is often observed that the auctioneers introduce some non-transparencies in the auction design, which lead to an increased uncertainty of the participating bidders. The auctioneers do it in order to improve the auctions' results (decrease the price in case of the procurement auctions) but it is not clear how such innovations affect the auctions' efficiency in the long run. The goal of this study is to analyze experimentally the consequences of such modifications on the strategic behavior of bidders, and therefore on auctions' optimality and efficiency.

The study was carried out using laboratory experiments. The strategic behavior of bidders under the standard auctions rules were compared with the behavior in case of the less transparent rules. The experiments were run under three scenarios: symmetrical auctions without the entry costs, symmetrical auctions with the entry costs, and asymmetrical auctions.

The studies have shown that non-transparencies might have a positive consequence on the auction results, even though their long-term effect can be of lower significance, once the bidders learn to adapt their strategic behavior to the new auction rules.

Introduction of non-transparencies, which transform the standard auctions to their quasi-auction counterparts, can in some cases improve the auctions results in the long-term. Such modifications demand though more studies: both theoretical and experimental.

*Keywords: risky choice, uncertainty*

## IMPULSIVE CONSUMPTION AND REFLEXIVE THOUGHT: NUDGING ETHICAL CONSUMER BEHAVIOR

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### Abstract

The paper deals with impulsive consumption and works out the roles that cognitive and motivational aspects of reflexive thought (self-control and self-image motives, respectively) play in intertemporal decisions. While self-control inhibits individuals from consuming impulsively, self-image motives can induce impulsive consumption. Acknowledging both aspects of reflexive thought, the paper presents implications for libertarian paternalistic interventions that aim at encouraging an ethical way of impulsive consumption.

This theoretical paper views impulsive consumption as being characterized by a struggle between the impulsive decision making System 1 and the reflective decision making System 2. The role of the latter is to control the former, and cognitive aspects of reflexive thought, such as mental time traveling, are inevitable in this endeavor. Recent behavioral economic research on impulsive consumption tends to focus on these mitigating effects of willpower and self-control (Burger et al., 2011; Vohs and Faber, 2007). This paper additionally expands on the role that motivational aspects of reflexive thought plays in the impulsive System 1. Therefore, the paper utilizes neuroscientific findings suggesting that the cue-triggered 'wanting' mechanism is a potential explanation for how urges to consume occur (Berridge, 2002). This mechanism suggests that although impulsively bought items are strongly 'wanted', they are not

necessarily 'liked'. The paper argues that this mechanism can explain recent findings by Dittmar and Bond (2010) who show that self-image discrepancies can induce impulsive consumption of identity-related goods.

Utilizing the knowledge of the cue-triggered 'wanting' mechanism and acknowledging both cognitive and motivational aspects of reflexive thought, the paper presents implications for libertarian paternalistic interventions (Thaler and Sunstein, 2008). The paper argues that self-nudges should be preferred to nudges by third parties, because the subjective character of self-images makes it difficult for third parties to judge what makes individuals better off. Moreover, through highlighting the motivational aspects of impulsive consumption and reflexive thought, three new nudging strategies emerge. These are presented in the context of ethical consumption. First, individual willpower to guard against unethical impulsive consumption can be strengthened. Second, the desires for unethical impulsive consumption can be reduced. Third, impulsive consumption can be guided to ethical directions by making salient certain self-images that favor ethical consumption.

The motivational perspective broad forward in this paper suggests that (a) impulsive consumption can be characterized by 'wanting'-'liking' dissociations, (b) reflexive thought has cognitive but also motivational components, and (c) self-image discrepancies can motivate impulsive consumption characterized by 'wanting'-'liking' dissociations.

*Keywords: intertemporal choice, dual process, overconsumption, neurobiology, self-control*

## 1 Introduction

In their well-known cafeteria example, Thaler and Sunstein (2008) argue that individuals can be nudged to choose products that make them better off, as judged by themselves. The authors draw on findings suggesting that the way products are displayed and arranged matters. Products that are noticed first tend to be purchased more often than products in less favorable locations, given that individuals tend to grab the first products they see. The authors suggest putting healthy fruits in the best locations and unhealthy junk food in less favorable places in order to nudge individuals towards healthy eating. Such slight changes in the choice architecture are argued to not be paternalistic as commonly defined, since nudges do not reduce the individual's freedom of choice. What Thaler and Sunstein (2008) do not explain in their cafeteria example is why individuals tend to grab the first products they see. One possibility, actually the one which is presumed in this paper, is that individuals choose the first products they see in an impulsive fashion.

Impulsive consumption is defined as the result of sudden and powerful urges that induce consumers to buy immediately without a lot of reflection about the long-term consequences of the purchases (Rook, 1987). While the urges that induce impulsive consumption are motivational aspects, the reflection about long-term consequences that tends to reduce impulsive consumption is cognitive in nature. In this dichotomy of motivation and cognition, recent behavioral economic research on impulsive consumption focuses on the mitigating effects of the latter. Accordingly, practical implications following from this research mostly aim at strengthening the cognitive factors that can reduce impulsive consumption by suggesting, for example, external commitment devices (Bryan et al., 2010). This paper, on the contrary, expands on the motivational aspects of impulsive consumption. In particular, the paper presents a mechanism, called cue-triggered 'wanting', as one potential explanation for how and why urges to consume occur. Utilizing the knowledge of this mechanism, the paper suggests additional ways to influence impulsive consumption.

To highlight the differences between cognitive aspects and motivational aspects of impulsive consumption the paper investigates the roles played by the uniquely human capacity for reflexive thought. Reflexive thought, or self-awareness, describes the ability to think reflexively about oneself. Cognitive aspects of reflexive thought include the abilities for self-control (Baumeister, 2002) and mental time-traveling (Hershfield, 2011). These cognitive aspects help the individuals to resist urges that would otherwise lead to impulsive behavior. Motivational aspects of reflexive thought, on the contrary, can induce urges to consume impulsively. These motivational aspects are identity-related needs commonly called self-image motives (Dunning, 2007). When, for example, individuals perceive discrepancies between their actual self-images and their ideal self-images, they sometimes impulsively purchase goods that promise to reduce these self-image discrepancies (Dittmar and Bond, 2010). The paper argues that such impulsive purchases of identity-relevant goods can be explained by the cue-triggered 'wanting' mechanism.

Utilizing the knowledge about both the cue-triggered 'wanting' mechanism and the different aspects of reflexive thought, the paper presents implications for libertarian paternalistic interventions. On the one hand, the paper argues that self-nudges should be preferred to nudges by third parties, because the subjective character of self-images makes it difficult for third parties to judge what makes individuals better off. If anybody knows which self-image is predominantly salient in an individual, it is the individual herself. On the other hand, by highlighting the motivational aspects of impulsive consumption and reflexive thought, some new nudging strategies emerge. These are presented in the context of ethical consumption. The paper illustrates how nudges can be used to both reduce unnecessary impulsive consumption, and increase the frequency with which ethical products are impulsively consumed. Essentially, three strategies through which choice architects (third parties, but preferably the individuals themselves) can nudge individuals toward an ethical way of impulsive consumption will be distinguished. First, individual willpower to guard against unethical impulsive consumption can be strengthened. Second, the desires for unethical impulsive

consumption can be reduced. Third, impulsive consumption can be guided to ethical directions by making salient certain self-images that favor ethical consumption.

The rest of the paper is organized as follows. In section 2, I briefly present some basic facts about impulsive consumption. Section 3 summarizes behavioral economic models of impulsivity, underscoring the roles that two human decision making systems, called System 1 and System 2, play in intertemporal decisions. Special emphasis is devoted to how self-control occurring in the cognitive System 2 affects impulsive decisions. Based on an evolutionary perspective on economic behavior, section 4 presents motivational aspects of impulsive consumption. This section shows how self-image motives can induce impulsive consumption in the automatic System 1 using the cue-triggered 'wanting' mechanism. Section 5 offers a note of caution for those libertarian paternalistic policies that are applied by third parties to populations composed of diverse self-images. Section 6 presents three strategies by which choice architects (either third parties or the individuals themselves) can nudge the automatic System 1 to make impulsive consumption more ethical. The last section concludes.

## 2 Impulsive Consumption

There are various types of impulsive consumption, including reminder impulsive consumption, suggestion impulsive consumption, planned impulsive consumption, and pure impulsive consumption (Stern, 1962). This paper deals solely with the final type. Pure impulsive consumption results from sudden and powerful urges that induce consumers to buy immediately. These urges tend to occur spontaneously and without a lot of reflection about the long-term consequences of the purchase (Beatty and Ferrell, 1998; Rook, 1987). Rather than an active act, impulsive consumption is an immediate and automatic reaction to perceived stimuli (Kroeber-Riel et al., 1992). The urge-like character of impulsive buying is also what distinguishes impulsivity from impatience. The latter, in contrast to impulsivity, does not need to be spontaneous, can involve reflection, and is not necessarily induced by urges. Recent technological innovations such as the cash machine, home-shopping television programs, and the Internet facilitate quick and effortless consumption, so that today the opportunities to buy impulsively occur more often than ever before (Strack et al., 2006; Vohs and Faber, 2007). Additionally, dramatic increases in individual disposable incomes and credit facilities have supported the rise of impulsive consumption (Dittmar and Drury, 2000). Some consumption products are bought impulsively more often than others (Dittmar and Drury, 2000; Estle et al., 2007). While it is rather common that individuals buy, for example, food and clothes on impulse, other consumption objects such as basic body care items are almost never bought impulsively (Dittmar and Bond, 2010). Although impulsive consumption is not seen as solely negative (Hausman, 2000), it is often associated with negative consequences such as financial problems, lower self-esteem, post-purchase dissatisfaction (Rook, 1987), as well as the high levels of consumer debt (Vohs and Faber, 2007). The detrimental consequences of impulsive consumption have prompted many calls for policy intervention. One type of intervention that does not rely on coercion is to change the choice architecture of tempting situations and to nudge individuals to change their impulsive behavior. Interventions not relying on coercion preserve the individuals' freedom of choice, though are also more difficult to implement. Therefore, in order to realize such an intervention, knowledge about the processes underlying impulsive choices is needed.

## 3 The Behavioral Economic Perspective: Two Systems

Recently, several behavioral economic theories explaining why individuals consume impulsively have been offered. In these explanations, impulsive behavior is seen as the outcome of a struggle between two opposing forces, namely desire and willpower (Hoch and Loewenstein, 1991). This conception corresponds to recent behavioral economic research that envisions human behavior as driven by two different decision making systems (e.g. Kahneman, 2011). The first system, sometimes called System 1, roughly corresponds to intuitive decision making. It is quick, efficient, present-oriented, related to desire and emotion, and often relies on unconscious processes. The second system, called System 2, reflects what is usually meant by the word thinking. System 2 is slow, rule-based, controlled, and comprises the abilities of willpower and cognition. Other notations for the two systems include, respectively, desire and willpower (Hoch and Loewenstein, 1991), the hot system and the cold system (Metcalfe and Mischel, 1999), and impulsive and reflective mechanisms (Honkanen et al., 2012; Strack et al., 2006). Whereas System 1 is assumed to exist in both animals and humans, System 2 is unique to humans (at least in its disproportionately large size). Behavioral economics in general acknowledges that many economic decisions are guided by intuitions occurring in System 1. Kahneman (2011), for example, refers to System 1 as the hero of his book summarizing his work in behavioral economics. The intuitions in System 1 are sometimes biased and thus can explain why behavior diverges from rational benchmarks. Also urges to consume for example junk food occur in System 1 and lead to impulsive behavior when System 2 is not able to control System 1 in line with the plan of eating healthy.

In behavioral economic studies of intertemporal choice, one common formalization of the intrapersonal conflict between the two systems is Laibson's (1997)  $\beta$ - $\delta$  model. This model suggests that an individual's intertemporal decisions can be described by a quasi-hyperbolic discount function with discount factors varying discretely over time ( $D(k)=1, \beta\delta, \beta\delta^2, \beta\delta^3, \dots$ ). This function implies that individuals have two separate discount factors corresponding to System 1 and System 2, respectively. Whereas  $\delta$  corresponds to System 2 and discounts all future rewards with a

constant rate per period, System 1, reflected by the  $\beta$  parameter, makes a sharp distinction between immediate rewards and future rewards: when an immediate reward is contained within the choice set, the reward in the next period is discounted by  $\beta\delta$ , but when both rewards occur in two successive periods in the future, the later reward is discounted only by  $\delta$  (Laibson, 1997). The resulting quasi-hyperbolic discount function is supported by neuroeconomic studies (McClure et al., 2007, 2004).<sup>1</sup> These neuroeconomic studies suggest that an active dopaminergic midbrain system is associated with the  $\beta$  parameter (System 1), while the activation of the prefrontal cortex is associated with the  $\delta$  parameter (System 2). The quasi-hyperbolic discounting model was successfully applied to various domains. Its success, as well as the neuroscientific support, suggests that intertemporal choices are indeed driven by the interaction of two distinct decision making systems, and that the respective brain areas indeed correspond to the two systems. However, acknowledging that the two systems correspond to distinctive brain areas does not yet explain how the two systems function. By using the quasi-hyperbolic discounting model, one can describe but not explain impulsive consumption. In order to provide such an explanation, more insights are needed to understand what mechanisms correspond to  $\beta$  and  $\delta$ , or System 1 and System 2, respectively. That is to say, to understand impulsivity more thoroughly the factors that strengthen or weaken each of the two systems need to be elaborated upon (Camerer et al., 2005; Hoch and Loewenstein, 1991).

In intertemporal decisions, the major role of System 2 is to set long-term goals and make sure that these goals are achieved. Of great importance in this endeavor is the control of the myopic System 1. To control System 1, individuals need willpower. Willpower is seen as similar to a resource that can get depleted (Baumeister and Tierney, 2011; Baumeister, 2002; Vohs and Faber, 2007). When willpower is depleted by prior exercise, individuals tend to engage in impulsive buying behavior more frequently. This depletion of willpower is not restricted to the domain in which the individuals have previously exerted self-control. Rather, when individuals exert self-control in one domain, the ability to delay gratification in other domains is also reduced. Self-regulatory fatigue or ego-depletion is one of the most frequently investigated subjects in social science (Baumeister and Tierney, 2011, p.2). With increasing frequency, explanations based on willpower and its depletion are also used by behavioral economists to understand self-control problems (Bucciol et al., 2011; Burger et al., 2011; Houser et al., 2008). Bucciol et al. (2011), for example, find that exposure to temptation depletes willpower and reduces economic productivity of young children. For the motivation to exert willpower, the individual capacity for reflexive thought is crucial. Due to this capacity, individuals can engage in mental time traveling (Hershfield, 2011), and, therefore, appreciate the positive and negative effects that current consumption has for themselves in the future. When individuals expect their future selves to be similar to present selves, using willpower and delaying gratification is much easier for them (Bartels and Urminsky, 2011; Hershfield, 2011). Hence, it can be argued that reflexive thought and mental time traveling is essential for the exertion of self-control. Supporting this point, Baumeister and Tierney (2011) argue that “willpower without self-awareness is as useless as a cannon commanded by a blind man” (p.114).

Besides the depletion of willpower, the degree of cognitive load also influences the exertion of self-control (Shiv and Fedorikhin, 1999). Individuals with high cognitive load tend to control themselves less strongly than individuals with low cognitive load. Hence, cognitive load increases the likelihood of impulsive choices. Shiv and Fedorikhin (1999) show that individuals who have to memorize a seven-digit number are more likely to impulsively choose an unhealthy cake, instead of a fruit salad, than individuals who are made to memorize only a two-digit number. Other factors that influence the exertion of self-control include alcohol, stress, and sleep deprivation (Camerer et al., 2005). Moreover, consumer behavior tends to be more controlled when the to-be-consumed goods are personally important, and when consumers can be held accountable for their choices (Strack et al., 2006).

Research that focuses on the role that System 2 plays in intertemporal choices is helpful in understanding why individuals are, in general, more impulsive when they lack willpower. This has been greatly beneficial by suggesting ways individuals can increase their willpower and thereby reduce the influence of impulsive urges on their behavior (see section 6). However, presumably due to this focus on willpower, behavioral economics has so far failed to offer explanations for other aspects of intertemporal choice. For example, an explanation for the domain effect has not been given so far. That is, it is difficult to explain why only certain goods, such as junk food, sweets, tobacco, alcohol, fashionable clothing, watches, and some cars, tend to be bought impulsively when individuals lack willpower. (Dittmar and Bond, 2010; Dittmar and Drury, 2000; Estle et al., 2007; Frederick et al., 2002; Loewenstein, 1996). More generally, the focus on factors that influence the top down control from System 2 over System 1 lacks a motivational perspective that could address motivational questions regarding what goods are consumed impulsively (Heatherston and Wagner, 2011). Such a perspective switches the focus to the role played by System 1 in impulsive decisions.

System 1's role in intertemporal choices has gained less attention than that of System 2. Commonly, it is assumed that System 1 is myopic and strives for immediate gratification. However, reasons are rarely given as to why this is the case. Sometimes, the striving for immediate gratification is related to the desire to behave in a hedonically pleasing manner (Rook, 1987; Shiv and Fedorikhin, 1999). Along these lines, it is assumed that only products that are hedonically pleasing can induce urges to consume impulsively. For example, impulsive choices of hedonically

<sup>1</sup> Though there are also neuroimaging studies that support a unitary system (e.g. Kable and Glimcher, 2007).

appealing (but unhealthy) cakes over healthy salads as in Shiv and Fedorikhin (1999) are explained by the hedonic character of the cakes. That a product is hedonically appealing, however, is not sufficient to explain why strong visceral urges to consume occur and make System 1 myopic. Many products are hedonically appealing, but do not induce such urges to consume impulsively. Moreover, it is not obvious what makes a product hedonically appealing. What is needed is a mechanism that explains why System 1 becomes myopic from time to time.

One potential mechanism underlying impulsive consumption has been suggested by Hoch and Loewenstein (1991). They argue that, a few moments before the actual consumption act, individuals regard the soon-to-be-purchased products as belonging to them. Hence, the individual reference points shift from not mine to mine. When the individuals nevertheless refrain from the purchase, they feel as though they have lost the product. Together with the tendency to put more weight on losses than on gains (Kahneman and Tversky, 1979), reference point shifts offer a potential explanation for urges that sometimes lead to impulsive consumption. However, reference point shifts cannot explain why impulsive consumption occurs only selectively in some consumption domains, given that there is no reason to assume that the degree of loss aversion differs across product domains. Nevertheless, the framework has been beneficial, for example, in making sense of the fact that sudden increases in physical or sensory proximity induce impulsivity (Metcalf and Mischel, 1999).

In later papers, Loewenstein elaborates on the tendency of System 1 to become myopic, suggesting that visceral influences can induce impulsive behavior (Loewenstein, 1996, 2000). He argues that the sensory proximity of rewards, together with the activation of visceral influences, cause individuals to act more impulsively. Visceral influences include affective states such as sexual arousal (Ariely and Loewenstein, 2006) and drug addiction (Giordano et al., 2002). For example, currently craving drug addicts show a greater degree of impulsivity than non-addicted participants. Moreover, the activation of drive states such as hunger and thirst, i.e. homeostatic dysregulations (Strack et al., 2006), as well as some negative emotions such as exhaustion, pain, and fear for physical safety belong to the visceral influences. Visceral influences put the individuals in hot states and thus produce short-sighted impulsive behavior. Due to hot-cold empathy gaps, such short-sighted behavior is not anticipated (Loewenstein, 1996). Visceral influences mainly influence the intuitive decision making in System 1 and sometimes overwhelm the rational forward-looking goals set in System 2 during cold states. The theory of visceral influences has led to significant progress in understanding how impulsive behavior occurs and what its determinants are. Also it has been adopted in dual process models in economics (e.g. Bernheim and Rangel, 2004). Although the theory of visceral influences has so far been unable to provide an answer to every question related to impulsive consumption (for example, it has not yet offered a general explanation for why some products tend to be bought impulsively quite often whereas other products are almost never bought on impulse), strengthening the focus on System 1 seems to be a good strategy to obtain more insights about what drives impulsive consumption.

#### **4 Motivational Foundations of Impulsive Behavior**

Recent approaches within behavioral economics have begun to ask for the motivations underlying economic behavior. Kahneman et al. (1997) understands economic behavior as being driven by hedonistic, utilitarian motives, i.e. by the enjoyment of pleasure and the avoidance of pain. However, by taking an evolutionary perspective on economic behavior, one can go beyond this conception of sensory utilitarianism (Witt, 2001, 2010). Witt suggests that pleasure and pain can be understood in terms of changing need deprivation states, where pleasure is attributable to reductions of need-deprivation states, and pain relates to increases in these states. As most needs are motivational dispositions inherited through evolution, a finite set of universal human needs can be defined. As a result, insights from biology and motivational psychology can be utilized to inquire more deeply into individual preferences to understand what it is that induces pleasure or reduces pain and thus motivates behavior. In addition to these motivational dispositions, also cognitive and social dispositions were acquired by early humans during natural evolution and have strong effects on human behavior until today. These motivational, cognitive, and social dispositions interact with each other in various ways. For example, through innate learning mechanisms over time individuals associate reductions of need-deprivation states with certain consumption activities. These associations are stored in memory and are called consumer knowledge. As a consequence, need-deprivation states motivate those types of consumer behavior that were learned to reduce the current need-deprivation states (Witt, 2001).

Needs can be cognitive or intuitive in nature. Accordingly, consumer behavior can be motivated cognitively (i.e. within System 2) or automatically (i.e. within System 1). Witt (2001) further subdivides those needs that occur automatically into basic needs and acquired wants. These two motivational instances correspond to finite subsets of primary reinforcers and to secondary reinforcers in behavioral approaches, respectively. Using this classification, the effects of innate motivational dispositions are most obvious when basic needs are considered. In our life course we acquire new wants and develop cognitive motives that show a great deal of variation making it difficult to analyze preferences of whole populations. Although the means by which we learn new wants and cognitive motives are also the result of biological evolution, so that some similarities are likely to emerge across individuals, it is still difficult to predict their content. Therefore, the strength of an evolutionary perspective on economic behavior lies in the analysis of those motives or preferences that are related to primary reinforcers closely corresponding to the automatic System 1. As

System 1 is where urges to consume arise, an evolutionary perspective should be particularly valuable for an analysis of the motivational foundations of impulsive consumption.

In the following, recent biopsychological findings that stress the importance of basic need deprivation states are presented. These findings suggest that need deprivation states can induce impulsive behavior by a motivational mechanism called cue-triggered ‘wanting’. Essentially, the cue-triggered “wanting” mechanism can be seen as a specific means by which visceral influences induce impulsive behavior (Berridge, 2002). The cue-triggered ‘wanting’ mechanism is based on the dissociation between ‘wanting’ (the core process of motivation) and ‘liking’ (the core process of hedonic reward). Although most of the time individuals consciously want what they like and like what they want, in some specific situations the unconscious core processes of ‘wanting’ and ‘liking’ diverge (Berridge, 1999). Cue-triggered ‘wanting’ may have evolved early in our evolutionary past for reasons related to adaptive fitness (Berridge, 2009). However, as modern environments vary dramatically from ancestral conditions, these reasons may have vanished. The high degree of impulsive consumption we face today may be a result of this “mismatch” between human ancestral conditions and modern conditions (Burnham and Hare, 2007).<sup>1</sup>

The cue-triggered ‘wanting’ mechanism suggests that certain cues can lead to motivational ‘wanting’ peaks without changing ‘liking’ (Berridge, 2002; Berridge and Aldridge, 2008). Hence, these increased degrees of motivation induce impulsive decisions that are characterized by gaps in ‘wanting’ and ‘liking’. Cue-triggered ‘wanting’ can occur when individuals perceive stimuli or cues that were previously associated with immediately available consumption goods. However, these cues can increase ‘wanting’ to consume only when individuals are currently deprived in a strong physiological or psychological need that corresponds to an activation in the brain’s mesolimbic dopamine system. Moreover, the cues trigger ‘wanting’ to consume only when individuals explicitly or implicitly know that the cued consumption goods are able to satiate the currently deprived need. Accordingly, when individuals (a) are in a state of mesolimbic activation, (b) perceive cues that are associated with immediately available consumption goods,<sup>2</sup> and (c) know that these consumption goods can satiate the currently deprived needs, the cues can trigger impulsive ‘wanting’ to consume. When these three factors coincide, the mesolimbic dopamine system attributes incentive salience to the cued rewards (Berridge, 2002; Berridge and Aldridge, 2008). The motivational strength of these cues, therefore, crucially depends on the degree of dopamine activation, so that stronger deprivation corresponds to a higher possibility of impulsive consumption. When not effectively self-regulated by willpower, cue-triggered ‘wanting’ translates into impulsive consumption.

In Lades (2012), the cue-triggered ‘wanting’ mechanism is integrated into an otherwise standard discounted utility model. The paper suggests that the motivation  $V(c_t, \dots, c_T)$  to consume a given a temporal prospect  $(c_t, \dots, c_T)$  can be formalized as

$$V(c_t, \dots, c_T) = E_t[r(c_t) \{1 + s_t \cdot k_t \cdot \eta_t \cdot (1 - SC_t)\} + \sum_{i=1}^T \delta^i \{r(c_{t+i})\}]. \quad (1)$$

where  $r(c_t)$  depicts the reward obtainable from  $c_t$ , the binary variable  $s_t$  is the cue,  $k_t; 0 \leq k_t \leq 1$  the consumer knowledge,  $\eta_t > 0$  the need deprivation state,  $SC_t; 0 \leq SC_t \leq 1$  the self-control resource, and  $\delta \in [0, 1]$  a constant discount factor. Cue-triggered ‘wanting’, reflected by  $(s_t \cdot k_t \cdot \eta_t) > 0$ , increases the weight put to immediate rewards relative to future rewards. When, for example, an individual is very hungry ( $\eta_t > 0$ ), the sight of a pizza-delivery car ( $s_t = 1$ ) can trigger a strong and immediate urge to ‘want’ pizza which is known to be immediately available ( $k_t > 0$ ), although the sight of the car does not change how much the pizza is ‘liked’ or expected to be liked. As a result, individuals sometimes impulsively ‘want’ smaller sooner rewards, for example pizza, instead of larger later rewards, such as keeping up a healthy lifestyle, although the individuals do not even expect to like the smaller sooner rewards. This is a behavior Berridge calls irrational ‘wanting’ (Berridge, 2002).<sup>3</sup>

As Berridge (2002) notes, cue-triggered ‘wanting’ is mostly consistent with, and supportive of, Loewenstein’s (1996) theory of visceral influences (see Section 3). The mechanism provides one possible explanation for how and under which circumstances visceral influences can lead to impulsive desires. Compared to the theory of visceral influences, however, the explanation based on cue-triggered ‘wanting’ has at least one major strength. With the cue-triggered ‘wanting’ mechanism, it can be explained why only some goods, and not others, tend to be bought impulsively. That

<sup>1</sup> The dissociation between ‘wanting’ and ‘liking’ has already been recognized in behavioral economics. Applications of the ‘wanting’–‘liking’ dissociation include the explanations of addiction (Bernheim and Rangel, 2004), impulsive preferences for faces (Dai et al., 2010), the effects of failures (Litt et al., 2010), and implications for paternalistic interventions in addiction and credit card spending (Camerer, 2006). Also the utility terminology by Kahneman et al. (1997) is closely related, because experienced utility and decision utility refer to ‘liking’ and ‘wanting’, respectively (e.g. Berridge, 2002; Berridge and Aldridge, 2008; Kahneman et al., 1997). In Gilbert and Wilson’s (2000) miswanting, ‘wanting’–‘liking’ dissociations emerge from prediction errors, while the mechanism presented here describes ‘wanting’–‘liking’ dissociations at the same point in time.

<sup>2</sup> Pictures of these consumption goods are not sufficient when they do not indicate immediate availability of the real rewards (see Shiv and Fedorikhin 1999).

<sup>3</sup> Besides changing incentive salience motivation, need deprivation states can also alter the hedonic aspects of reward. Individuals evaluate, for example, a pizza as tasting better when they are hungry than when they are satiated. However, such changes in enjoyment do not lead to impulsive consumption that is characterized by sudden and powerful urges.

is, cue-triggered ‘wanting’ offers an explanation for the domain effect in intertemporal choice.<sup>1</sup> Only those consumption goods closely related to strong and salient need deprivation states that activate the brain’s mesolimbic dopamine system are appropriate objects for cue-triggered ‘wanting’. Deprivation states previously shown to induce cue-triggered ‘wanting’ include the sexual drive (Dai et al., 2010), the need to eat (Berridge et al., 2010), and the craving for drugs (Robinson and Berridge, 1993, 2008). All of these need deprivation states correspond to activation in the mesolimbic dopamine system. However, in addition to these physiological drive states, psychological need deprivation states can also activate the mesolimbic dopamine system and possibly induce impulsive behavior (Berridge and Aldridge, 2008).

Recently, ‘wanting’–‘liking’ dissociations were related to willpower mentioned in section 3. Vohs and Faber (2007) suggest that when individuals are low on willpower and have depleted their self-regulatory resources, ‘wanting’–‘liking’ dissociations and impulsive buying might occur more often. Ego-depleted consumers might be more prone to the unconscious influences of motivation and hedonic reward and, hence, be more strongly driven by urges characterized by ‘wanting’ without expected liking (Vohs and Faber, 2007). Lack of willpower may even undermine the consumers’ free will to ‘want’ what they ‘like’ (Baumeister et al., 2008). However, additional to the cognitive aspects of reflexive thought, i.e. willpower and self-control, motivational aspects of reflexive thought also play a role in intertemporal choice.

The motivational aspects of reflexive thought are prominent in identity-related needs, commonly called self-image motives (Dunning, 2007; Sedikides and Strube, 1997).<sup>2</sup> Due to their capacity for reflexive thought, individuals think about themselves and these thoughts can evoke emotions, as well as motivational power. Individuals perceive and evaluate themselves, create images of themselves, and favor certain self-images over others. Individuals can perceive themselves at different levels (personal, relational, and social), and these different self-image levels coexist in a given individual, able to be activated at different times and in different contexts (Markus and Wurf, 1987). Salient self-images influence behavior by filtering the information individuals receive, process, and memorize. To evaluate themselves, individuals use their ideal self-images as reference standards. Differences between how the individuals ideally want to be (normative, ideal, or ought self-images) and how they actually view themselves (descriptive or actual self-images) lead to psychological discomfort (Higgins, 1987). This discomfort induces the desire to reduce these self-image discrepancies. One way to reduce self-image discrepancies is to search for information that increases the positivity of one’s actual self-image. The self-image motive to favor positive self-images over less positive ones, i.e. the tendency to reduce self-image discrepancies, is called self-enhancement (e.g. Leary, 2007; Sedikides and Strube, 1997). Self-image motives operate in both the cognitive System 1 and the automatic System 2. Explicit self-reflections can consciously alter behavior when one is not happy with one’s self-perception. However, individuals are usually not aware of the fact that their decisions are partly driven by self-image discrepancies. Self-images can affect behavior implicitly in a way that is automatic, beyond the individual’s control, and below the individual’s conscious awareness (Devos and Banaji, 2003; Dunning, 2007; Rameson et al., 2010).

One particular way to obtain information about oneself, and to satiate the self-image motive of self-enhancement, is to consume products with symbolic, identity-relevant meanings that are congruent with individual ideal self-images (Sirgy, 1982). Individuals consciously, or unconsciously, expand their personal core selves to include certain possessions and, after this expansion, regard their possessions as being parts of themselves. By consuming identity-relevant goods, individuals can signal to themselves and to others who they are as they incorporate the symbolic meanings of these goods (Belk, 1988). Hence, when an individual consumes a good with an identity-relevant symbolic meaning that is congruent with the individual’s ideal self-image, the individual can move closer to her ideal self-image and thereby temporarily satisfy her need for self-enhancement. Wicklund and Gollwitzer (1982) call this behavior symbolic self-completion. Symbolic self-completion compensates for perceived inadequacies, such as self-image discrepancies between actual and ideal self-images. Wicklund and Gollwitzer show, for example, that business students who lack good qualifications display more material symbols than students with better career prospects. More recently, Gao et al. (2009) show that threats to important self-images can momentarily shake one’s confidence in the respective self-image and thus alter consumer behavior. Shaken self-images induce individuals to choose goods that help them to restore their confidence in the threatened self-image. When, for example, individuals write an essay

<sup>1</sup> However, this is true only to the extent that each deprivation state increases the motivation to obtain its corresponding reward and does not increase the motivation to obtain other rewards. However, it is still an open question if this assumption is warranted. See (Berger and Shiv, 2011; Van den Bergh et al., 2008; Wadhwa et al., 2008; Zhang et al., 2009), and (Berridge, 2012) for a neuroscientific discussion of this issue.

<sup>2</sup> In economics, there is a small but growing literature that integrates the importance of self-images in the economic analysis (Akerlof and Kranton, 2000; Benabou and Tirole, 2002; Brekke et al., 2003; Davis, 2007; Fine, 2009; Johansson-Stenman and Martinsson, 2006; Koeszegi, 2006; Loewenstein, 1999). For example, Brekke et al. (2003) explain why individuals voluntarily contribute to public goods through the individual desire to maintain positive moral self-images. Loewenstein (1999) shows that rather than others, individuals (in this case, mountaineers) are motivated by the desire to impress themselves.

about their intelligence with their non-dominant hand, their self-image of being intelligent is threatened and they tend to prefer pens over candy (Gao et al., 2009).

Self-image motives or identity-related needs are likely to play a role in almost all consumption decisions for those goods that have a symbolic meaning. Previous research, however, suggests that self-images are involved in impulsive consumption to a larger extent than in “ordinary” buying (Dittmar and Bond, 2010; Dittmar and Drury, 2000; Verplanken and Sato, 2011; Zhang and Shrum, 2009). Dittmar and colleagues argue that self-images play a role in the occurrence of impulses and desires to consume. Dittmar and Bond (2010), for example, show that consumer goods with high identity-expressive potential (clothes, jewelry, sports gear) elicit a stronger tendency for impulsive buying behavior than consumer goods lacking this feature. This effect, however, is present only for individuals with materialistic world-views and salient self-image discrepancies at the moment of the consumption decision. Individuals with materialistic world-views believe that the accumulation of consumer goods is a central life goal and a key to happiness. These individuals believe that consuming identity-relevant products is a proper way to satiate currently deprived identity-related needs (Dittmar and Bond, 2010).

These findings are compatible with the explanation of impulsive consumption based on the cue-triggered ‘wanting’ mechanism. An essential requirement for cue-triggered ‘wanting’ to occur is mesolimbic activation in the brain. As mesolimbic activation does not only occur during physiological need deprivation states, but also in many emotional situations that can be either rewarding or stressful (Berridge and Aldridge, 2008), self-image discrepancies are also likely to induce cue-triggered ‘wanting’. As a second requirement, individuals have to implicitly or explicitly know that the identity-related goods can reduce their self-image discrepancies. This holds true only for individuals with materialistic world-views. Hence, when materialistic individuals have self-image discrepancies, i.e. are deprived of an identity-related need, the perception of cues associated with identity-relevant consumption goods induces a ‘want’ to consume these identity-relevant goods. Adapting the incentive salience model (Eq. 1) to the case of identity-related consumption leads to the following formulation of the individual’s motivation  $V(c_t, \dots, c_T)$  to consume a temporal prospect  $(c_t, \dots, c_T)$  where at least  $c_t$  is an identity-relevant consumption good:

$$V(c_t, \dots, c_T) = E_t[r(c_t)](1 + s_t \cdot M_t \cdot f(|ISI_t - ASI_t|) \cdot (1 - SC_t)) + \sum_{i=1}^T \delta^i (r(c_{t+i})) \quad (2)$$

where  $s_t$  is the cue,  $M_t$  the materialistic world-view,  $ISI_t$  the ideal self-image,  $ASI_t$  the actual self-image,  $SC_t$  the self-control resource, and  $\delta \in [0, 1]$  a constant discount factor. When cue triggered ‘wanting’ occurs ( $s_t \cdot M_t \cdot f(|ISI_t - ASI_t|) > 0$ ) and is not controlled perfectly ( $SC_t < 1$ ), the motivation to buy an immediately available identity-relevant good may exceed the degree to which the individual expects to like, or actually ‘likes’, the good. Consequently, cues can cause individuals to impulsively ‘want’ identity-relevant goods that they turn out not to ‘like’ after, or during, the purchase.<sup>18</sup> For example, when an individual’s actual self-image falls short in a social comparison with an ideal self-image adopted from the mass media, the individual explicitly or implicitly perceives a discrepancy between who s/he ideally wants to be and who s/he actually is. When such a self-image discrepancy is salient and the individual has a materialistic word-view, in the case where s/he perceives some fashionable clothes that correspond to his or her ideal self-image, this perception induces the ‘want’ to immediately buy the clothes. In this case, one can speak of pure impulsive consumption of identity-related goods. Such short-term elevated ‘wanting’ levels may explain why individuals oftentimes do not ‘like’ their clothes afterwards when they no longer have salient self-image discrepancies. By stressing the motivational aspects of reflexive thought, manifested in self-image motives, additional parts of the domain effect in intertemporal choice can be explained. In addition to physiological need deprivation states like hunger, thirst, and drug-addiction, psychological need deprivation states related to one’s identity can also induce cue-triggered ‘wanting’. Those goods that have high identity-expressive potential (clothes) tend to be consumed impulsively more often than goods lacking identity-expressive potential (basic body care or garden tools) (Dittmar and Bond, 2010). By investigating the aspects of reflexive thought that correspond to the automatic System 1, rather than the cognitive System 2, further insights on the sources of motivation can be revealed. This is not possible by referring to the cognitive aspects of reflexive thought alone.

## 5 Libertarian Paternalism: As Judged by Whom?

Behavioral economists have begun to apply their findings to policy issues, endowing these suggestions with the name of libertarian paternalism (Thaler and Sunstein, 2008). In the US and the UK, these implications have already gained considerable political attention. In the UK, for example, the government has created a behavioral insights team, commonly called the nudge unit. Libertarian paternalism refers to policy interventions that change the context (in libertarian paternalistic terms, the choice architecture) in which individuals make decisions. By changing the choice architecture, Thaler and Sunstein (2008) argue, individuals can be nudged to behave in their own best self-interests.

<sup>1</sup> The feeling of not being the person an individual ideally likes to be might also change the degree to which identity-related goods are liked and therefore wanted. However, these changes in enjoyment, and subsequent changes of motivation to consume, do not create the urges inducing impulsive behavior.

Thaler and Sunstein (2008) call a change of the choice architecture libertarian when it maintains individual freedom of choice at the least possible cost. The authors call a policy paternalistic “if it tries to influence choices in a way that makes choosers better off, *as judged by themselves*” (emphasis in the original, page 5). Hence, only nudges should be offered that are most likely to help and least likely to inflict harm. In the case of impulsive consumption, behavior in the best interests of the individual can be defined by the absence of ‘wanting’–‘liking’ dissociations. That is, when individuals strongly ‘want’ a good, but do not ‘like’ the good sufficiently to consume it under normal circumstances, a resulting impulsive consumption act is against the consumer best interests. Accordingly, a policy intervention impacting impulsive behavior can be called libertarian when individuals are still free to choose every good they ‘want’, even if they do not ‘like’ it, and it can be called paternalistic when it tries to reduce ‘wanting’–‘liking’ dissociations. In the context of this paper, Thaler and Sunstein’s (2008) definition of paternalism, and in particular the emphasis on “*as judged by themselves*”, deserves a closer look, since it is not obvious who “themselves” refers to in the definition. “Themselves” can be defined on at least two levels, namely either on the level of the decision making system or on the level of the self-image. Regarding the former, Thaler and Sunstein’s (2008) position is quite clear. Nudges can only be used to change intuitive behavior in System 1, while the rational, non-biased System 2 is not affected by them. It is System 2 that judges what is good for the individual in the long run and, accordingly, maintains individual autonomy. Regarding the latter, i.e. the self-image, such a clear-cut position is harder to take on. Currently salient self-images play a role when judging which choices make individuals better off, because they filter the information individuals receive, process, and memorize. However, self-images exist at different levels, dynamically change over time and contexts, and can conflict with each other (Markus and Wurf, 1987). Consider, for example, two agents who are similar to each other with one exception: The first agent, say A, has a predominant self-image of being a scholar and the self-image of the other agent, say B, is predominantly that of a wine lover. Whereas A does not like his urges to consume wine, B enjoys following them. As a result, the ‘wanting’–‘liking’ dissociation that characterizes impulsive wine consumption by agent A is much larger than the ‘wanting’–‘liking’ dissociation that characterizes impulsive wine consumption by agent B. Accordingly, while at the end of the day agent A judges a nudge that reduces impulsive wine consumption (for example a mental budget for wine (Thaler, 1999)) as being beneficial, agent B does not. It may even be the case that the nudge reduces agent B’s well-being as it increases the psychological costs related to wine consumption, thus creating a psychic tax that reduces well-being without providing revenues (Glaeser, 2006; Loewenstein and O’Donoghue, 2006). From the perspective of a third party, however, agent A and agent B do not differ from each other. Self-images are highly subjective issues difficult to evaluate for third parties. Hence, it can be claimed that it is very difficult for third parties to calculate the costs and benefits of nudges for populations with a variety of self-images. This calculation of costs and benefits, however, is an important component in the logic of libertarian paternalism. Accordingly, when self-images differ across individuals, nudges by third parties should be viewed with caution. It is difficult for third parties to identify who is meant by “themselves” in Thaler and Sunstein’s (2008) definition of paternalism.

This difficulty does not undermine the usefulness of libertarian paternalism. As a consequence of this difficulty, however, it may be preferable if the choice architect who determines the nudges is the individual herself (or rather her System 2) instead of a third party. If anybody knows which self-image is predominantly salient in an individual, it is the individual herself. Hence, it is easier for individuals to integrate the different frequencies with which self-images are salient into the cost benefit analysis of nudges than it is for third parties. Individuals are therefore less likely to make well-being reducing errors than third parties when engaging in nudging activities. If both options are available, self-imposed nudges should be preferred over nudges by third parties. These third parties, however, may provide mechanisms that individuals can utilize to nudge themselves, if so desired. Additionally, third parties are sometimes in good positions to inform the individuals of potential sources of errors. Such information provision can make use of framing effects or other biases discovered by behavioral economics, as long as individuals are not affected when making choices solely by System 2 (Cordes and Schubert, 2011). Hence, the value of third parties may be in communicating information in specific ways and providing mechanisms that allow individuals to nudge themselves. In what follows, three possibilities are presented of how choice architects (third parties, but also System 2) can nudge System 1 on individuals to make impulsive consumption more ethical.

## 6 Nudging Ethical Consumer Behavior

It is not always obvious how ethical consumer behavior can be defined. However, it is rather clear what unethical consumer behavior is. When, for example, consumption is redundant, offers no increases in well-being, but nonetheless harms the environment, it can be considered as unethical. The first strategy to encourage an ethical way of impulsive consumption is well-known in behavioral economics: Individuals can try to strengthen their willpower’s position in the struggle against impulsively occurring desires. In Eq. 1 and Eq. 2, strengthening willpower refers to an increase of  $SC_t$ . To increase of  $SC_t$ , individuals can use external control devices such as soft and hard commitments. While hard commitments have real economic penalties for failure, soft commitments rely on the psychological consequences of not sticking to one’s commitments (Bryan et al., 2010). Examples of external devices include saving accounts that restrict withdrawals (Ashraf et al., 2006), Christmas saving clubs, informal bets, and voluntarily putting

one's name on a list of people who are banned from gambling in casinos (Thaler and Sunstein, 2008). As a commitment device to reduce one's impulsive wine consumption, one can take only a limited amount of money and no credit card to the restaurant. However, the motivational perspective presented in section 4 has more to say about internal control mechanisms than about such external devices.

When such internal control mechanisms are used, individuals have to rely more strongly on their inner willpower than when they use external control devices. To strengthen System 2 in its struggle against System 1, it is helpful to equip System 2 with good arguments to fight the impulsive urges. The knowledge that impulses can be characterized by 'wanting'–'liking' dissociations is such an argument that may strengthen System 2's position to not eat the tempting junk food in the cafeteria. This knowledge may prevent individuals from engaging in rationalization processes in which they explain current urges to themselves by arguing that they really like the currently desired junk food. On the contrary, knowing that the sight of the junk food in front of you cued you to 'want' it, but did not increase its taste, may help you to find a good rationale for not eating it. The same logic can be applied to the impulsive consumption of unnecessary goods. Knowing about the cue-triggered 'wanting' mechanism and the role of self-image discrepancies, may induce individuals to re-think their intention to buy, for example, some new clothes. This may lead to a lower share of clothes that are bought, but never donned, and hence reduce unnecessary expenses for the consumers, as well as harm for the environment. Hence, to reduce redundant impulsive consumption, information programs could communicate the (non-intuitive) existence of 'wanting'–'liking' dissociations and provide realistic examples where cue-triggered 'wanting' drives behavior. The evolutionary perspective presented in section 4 helps to identify these examples, by suggesting which products are most likely to be purchased impulsively. Individuals can find ways to nudge themselves to make salient this knowledge of 'wanting'–'liking' dissociations in situations where the individuals are likely to impulsively act against their self-interests. Providing the information about 'wanting'–'liking' dissociations may have a discernible influence on the behavior of individuals with sufficient reflexive capacity, even in moments where impulses occur.

The second strategy to encourage ethical consumption is to reduce the frequency with which impulsive urges to consume unnecessary goods occur. When such urges do not occur, willpower is not needed in the first place. Hoch and Loewenstein (1991) suggest three self-control tactics to reduce these impulsive urges, namely avoidance, postponement and distraction, and substitution. The motivational account of impulsivity helps to elaborate on these tactics. It suggests that by reducing the exposure to cues (reducing the situations where  $s_t = 1$ ), by changing the consumer knowledge ( $k_t$ ), or by avoiding need deprivation states ( $\eta_t$ ), the occurrence of urges can be prevented. By arranging the architecture for future choices, System 2 can play offense, rather than defense (Baumeister and Tierney, 2011, p. 254), and thus avoid critical situations altogether.

One refinement the motivational account of impulsivity suggests is that avoiding proximity to a tempting product is only useful when the individual is currently deprived of a need that could be satisfied by the product in question. The proximity to junk food, for example, will not induce urges in satiated individuals. This is especially important in situations where one cannot prevent getting close to potentially tempting products, the checkout aisles in supermarkets being an example (Houser et al., 2008). System 2 can reduce the impulses that would occur in such situations by nudging the individual to eat a little snack before going grocery shopping. Putting a reminder in one's car saying that one should not go grocery shopping when hungry may be a sufficient nudge so that System 2 can avoid impulses occurring later at the supermarket checkout. In the same vein, System 2 can also reduce the amount of impulsively bought clothes that are almost never worn and stay in one's wardrobe most of the time. To do so, System 2 has to make sure that, when purchasing decisions are taken, System 1 is not currently influenced by self-image discrepancies so that  $ISI_t = ASI_t$ . Consumers can, for example, bolster their self-image before buying clothes by thinking about positive evaluations they received in the past. Generally, consumers trying to reduce impulsive urges can use nudges to remind themselves not to make decisions while being in a need deprivation state.

Detecting, and hence reducing, self-image discrepancies, however, is more difficult than realizing that one is hungry and eating a snack before going grocery shopping. When hungry, individuals most of the time explicitly perceive this deprivation state. Self-image discrepancies, however, are less salient and might operate more often under the radar of consciousness (Devos and Banaji, 2003). Accordingly, reducing self-image discrepancies is likely to be more difficult than reducing hunger. An alternative way to reduce impulsive desires evoked by self-image discrepancies may thus be needed. Individuals can, for example, try to avoid situations in which they are exposed to cues that would interact with self-image discrepancies and thus trigger impulsive urges. To reduce the likelihood of being exposed to such cues, individuals can favor shopping environments in which certain role-models, for example artificially adjusted "perfect" bodies, are less salient than in other shopping environments (Dittmar and Halliwell, 2008). Policies could also attempt to reduce such cues in shopping environments.

Another, more long-lasting, way to reduce impulsive desires evoked by self-image discrepancies is to influence the individuals' acquisition of new ideal self-images. Ideal self-images that are realistic and stable over time ( $ISI_t \approx ASI_t$ ) are not very likely to induce self-image discrepancies. However, when ideal self-images change rapidly and become unrealistically high, self-image discrepancies will occur. Many individuals adopt their ideal self-images from role models presented in the media (Dittmar and Halliwell, 2008). These role-models, and ideal self-images, tend to change

rapidly, thus destabilizing individual ideal self-images. Accordingly, there is an increasing possibility that self-image discrepancies will occur no matter how hard one tries to reduce previous self-image discrepancies. Repeatedly adopting new ideal self-images can lead to undesirable preference learning paths, characterized by an increasing demand for consumption without an increase in well-being (Cordes and Schubert, 2011). The undesirable effects of unstable ideal self-images are even stronger when the newly adopted ideal self-images are unrealistically high. For example, having the “body perfect” and living the “good life” are ideal self-images that are often desired, but impossible to achieve (Dittmar and Halliwell, 2008).

To stabilize ideal self-images at realistic levels, interference in the development of ideal self-images may be desirable. Individuals can, for example, try to slow down the process with which they adopt new ideal self-images by reducing their exposure and attention to advertisement. Also, individuals can consciously choose their role models. Policies that aim at preventing individuals from adopting unrealistically high ideal self-images can require advertisers to declare whenever the (role) models that appear in the ads are photoshopped. Photoshopped (role) models tend to have unrealistically perfect bodies that some individuals accept as benchmarks for themselves. As an effect of such a declaration, it is likely that individuals stop considering the photoshopped models as role models for themselves. Attempts to stabilize ideal self-images at realistic levels are not restricted to specific situations in the sense that interfering in the development of ideal self-images does not only change contextual factors of current decision situations. Additionally, it triggers a slower and more lasting process that changes the preferences (related to self-image discrepancies) underlying impulsive choices. As preferences are not exogenously given, but are subject to change over time, individuals can influence these preference learning processes, for example by influencing which ideal self-images they adopt.

The third strategy to nudge ethical impulsive consumption differs from the first two strategies in that it does not try to reduce unnecessary impulsive behavior. On the contrary, it uses the human tendency to behave impulsively and tries to guide impulsive behavior in ethical directions. Instead of reducing impulsive consumption by, for example, putting psychic taxes on impulsive purchases (Loewenstein and O’Donoghue, 2006), ethical impulsive consumption can be reinforced by creating psychological benefits. Just as psychological taxes can reduce individual well-being without yielding government revenues (Glaeser, 2006), psychological benefits may increase individual well-being without requiring much governmental expenditures. In order to encourage ethical impulsive consumption, the exposure to cues  $s_t = 1$  can be influenced, consumer knowledge  $k_t$  can be changed, and need deprivation states  $\eta_t$  can be artificially evoked. Eq. 2 shows how cue-triggered ‘wanting’ can lead to impulsive consumption of identity-relevant products, for example of clothes as described by Dittmar and Bond (2010). Clothes, however, are not the only type of identity-relevant products. For individuals who consider themselves to be ethical consumers, ethical products are identity expressive as well. Hence, it is likely that individuals sometimes impulsively consume ethical products, when their self-image of being an ethical consumer is threatened. Accordingly, ethical or sustainable consumption is not solely the result of cognitive deliberation in System 2 as it is often argued. Rather, ethical consumption can also be the result of impulsive urges in System 1, as long as self-image discrepancies between ideal and actual self-images exist.

In order to nudge themselves to impulsively consume ethical products, individuals can decide to create artificial discrepancies between their ideal self-images of being environmentally friendly consumers and their actual self-images so that  $ISI_{e,t} > ASI_{e,t}$ , where  $e$  depicts the salient ethical self-image domain. To do so, it might be enough to think about some past vices before going shopping. Such thoughts may increase the likelihood of impulsively buying a slightly more expensive, but ethical product. Just like some individuals voluntarily starve themselves for a while to increase the pleasure derived from subsequent eating, other individuals might create self-image discrepancies to influence their subsequent impulsive consumption choices. This, of course, presupposes an existing ideal self-image of being an environmentally-friendly consumer. Governmental programs could foster such self-definitions by, for example, supporting famous role-models that appear in the media behaving in an environmentally-friendly way.

However, even when urges to behave in an ethical way occur, it is not yet obvious that these urges manifest themselves in impulsive consumption activities. There have to be products around that the ethical consumers can regard as being expressive of their environmentally friendly identity. In other words, consumer knowledge relating the products’ symbolic meanings and the individuals’ self-images has to exist. Firms, and also the government, can (and actually do) provide information to create this consumer knowledge relating ethical products to ethical self-images. Many advertising strategies aim at creating consumer knowledge of this kind. For example, it is in the best interest of organic firms to announce and declare their products as being organic. The moral benefits of organic production should be communicated in credible and realistic ways in order to create the consumer knowledge that such products are indeed expressive of ethical self-images. The government should support the creation of such consumer knowledge. Moreover, the declaration of these products via organic labels is especially important, since, in addition to generating consumption knowledge, these labels can act as cues that trigger impulsive choices of ethical products.

To conclude the discussion about practical implications, some final remarks regarding the potential to nudge impulsive choices to ethical directions follow. Ethical behavior induced by self-image motives should be especially visible in relatively affluent societies where other, more striving needs (e.g. hunger) are already satiated, and where more individuals tend to have self-images of being ethical consumers. Moreover, the influence of self-image discrepancies is

not restricted to “small” choices. Bigger choices, such as which car to buy, are also influenced by intuitions and urges. Salient and deprived self-images of being environmentally friendly may induce an urge to buy a small, energy-saving car instead of a SUV. In such big decisions, urges are likely to be relatively less important than in small choices. Nevertheless, at the margin, such impulses might tip the balance toward purchasing an environmentally friendly car. While the first two approaches aim at reducing the tendency to consume impulsively, the third approach utilizes the tendency to behave impulsively in order to guide impulsive consumption to ethical directions.

## 7 Concluding Remarks

The aim of libertarian paternalism is to help individuals make better choices, as judged by themselves. To do so, it is important to know about the reasons why individuals sometimes deviate from behavior that is in their best interest. Commonly, behavioral economics elaborates on these reasons, among other things, by identifying biases in the decisions made by the automatic System 1. In the context of impulsive consumption, behavioral economics acknowledges that the automatic System 1 is myopic and strives for immediate gratification. However, with few exceptions, it is not explained why this is the case, and the behavioral economics focus is mostly on the exertion of self-control in System 2. As a result, libertarian paternalistic implications following from this research most often aim at reducing the consequences of given urges, for example, by suggesting commitment strategies that inhibit urges from translating into actual behavior. Taking an evolutionary perspective, this paper elaborated on the motivational foundations of impulsive behavior. It presented the cue-triggered ‘wanting’ mechanism as one potential motivational source of impulsive urges occurring in System 1. The paper applied this mechanism to explain why and how self-image discrepancies can lead to impulsive consumption of identity-related goods. Based on the knowledge of this mechanism, especially in context of identity-related consumption, the paper suggested libertarian paternalistic implications to encourage ethical consumption by either reducing unnecessary impulsive consumption, or guiding impulsive consumption in ethical directions.

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## FACTORS AFFECTING SOLDIERS' TIME PREFERENCE: A FIELD STUDY IN ISRAEL

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The current field study examines how the day of the week, optimism level and other personal characteristics influences the time preference of soldiers.

To do this, we compare the time discount of compulsory service soldiers in the Israel Defense Forces at the beginning of the work week (Sunday in Israel) and just prior to the weekend (on Thursday afternoon in Israel). The soldiers were asked to answer questionnaires regarding their time preferences, and dispositional optimism. The questionnaires were distributed on trains, on Sunday mornings: just after the weekend was over, but before the soldiers start the routine schedule inside the base, and on Thursday afternoon: just after they have left the harsh environment of the army, and can concentrate on the upcoming weekend. This method enabled studying a group with many similar characteristics (age, earnings, education, work place act.) and examine the effect of natural manipulation on that group.

We found that the soldiers have a higher subjective discount rate on Thursday when they need money for weekend activities. Regarding Personal characteristics, we found that optimism, being an older brother, having parents with higher earnings, and time remaining until discharge are negatively related to subjective discount rate. Conversely, having a balanced bank account is positively related to subjective discount rate.

Compulsory service soldiers in Israel could serve as a good example for the correlation between time preference and the need for money, since their need for money changes dramatically during the week: On Sunday mornings, they face a full week during which the army will take care of their schedule and most of their personal needs. During the weekend they are responsible for their schedule, and need money to finance their activities. Therefore, their subjective discount rate increases.

We find it interesting that subjective discount rate were higher on Thursday, not only for delays of one week in which the need for money actually changes, rather also for long delays of 2 months and a year. Taking the example of a year delay, this finding implies that a soldiers discount rate for one year have a dramatic decrease at the beginning of the week, and a dramatic increase at the end of the same week, and so on. Apparently the need for money in the short run biases the time preferences of the soldiers even for the long run.

*Keywords: intertemporal choice, money attitudes, individual differences, self-regulation, self-control*

## THE IMPACTS OF CONSUMER EVALUATION ON PARTNER SELECTION IN A CO-BRANDING ALLIANCE

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Co-branding success heavily counts on the decision of partner selection. However, ultimately the co-brand is “owned” in the minds and hearts of consumers. Therefore, the objective of the current research is to try to investigate the impacts of consumer evaluation on partner selection in the co-branding context. In doing so, we can offer a normative guidelines in seeking an ally for the firms. In particular, the present study aims to answer two important questions:

- (1) Which type of brand pair would make sense to consumers?
- (2) Even in a logical case, will the value of co-brand and the partnering brands garner satisfying results (i.e., a synergy effect/positive spillover effect occurs)?

To answer question (1), we applied the theory of stereotype change for connecting consumers' belief updating of attributes to the rules of partner selection. We utilized the two competing models (i.e., book-keeping and sub-typing models) to argue two propositions (i.e., identical and extremely incongruent pairs). We mathematically proved the two propositions by adapting the Lee and Decker (2009)'s multi-attribute utility model.

For solving question (2), we adapted the Lee and Decker (2009)'s model to build a behavioral-based measure for evaluating the value (i.e., consumer-based brand equities, CBBE) of the co-brand and the partnering brands, respectively. Then the proposed measure of brand value was used to be empirically tested two hypotheses (i.e., synergy and spillover effects) in a laboratory experiment.

For question (1), we argue that consumers would consider an identical brand pair as a "redundant" brand pair and thus have no interests in it, and would feel frustrated to resolve the high discrepancy under an extremely different brand pair.

For question (2), according to the result of the experiment, the two hypotheses are partly supported, and therefore the results show that the synergy effect and the positive spillover effect may not occur in such a co-branding alliance.

The current research argues that consumer evaluations (e.g., consumers' belief updating) produce huge impacts on partner selection in co-branding. We found that (1) the brand pair with a moderately difference seems to be the most logical to the consumers, and that (2) the value of co-brand is not necessarily larger than the sum of the value of two constituent brands ( $1+1 < 2$ ); each of the partnering brands (e.g., Sony) does not necessarily get increased value through the alliance.

*Keywords: choice, intertemporal choice*

## DID THE OCCUPY MOVEMENT CHANGE LAY UNDERSTANDING OF ECONOMICS PROFOUNDLY?

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In 2008, following the collapse of the financial system in the U.S, an economic crisis struck global markets. This crisis is considered the worst since the Great Depression and has, just as before, made many people examine and renew their views regarding the present economic system.

During the summer of 2011, several protests and demonstrations took place in Israel, demanding change in the economic and social system. The protests, initially directed against high housing prices, expanded quickly and became a raging if non-violent public debate on the role of the state in the economy, demanding a deep social and economic change, one that would lead to "social justice".

After the peak of the crisis of 2008, we ran a study to examine the public's perception of the crisis in several countries, Israel included. The study, using an online survey, brought to light two main conceptions regarding the crisis. The first sees the economy as a collection of individuals and identify the causes of the crisis in terms of moral foibles and cognitive failures. For people holding this view, the factors, which created the crisis, are at the level of individuals at various loci in the economy. The second conception sees the economy as a complex system, which sometimes moves in waves and is unstable and hard to manage. That is, those holding this view believe that the factors, which caused the crisis, were essentially structural. A key research finding was that in Israel and abroad, respondents tended to the individual explanations of the crisis more than to the structural explanation (Leiser, Gironde & Benita, 2010, Gangl, Kastlunger & Kirchner, submitted).

In this paper we examine the perceptions regarding the causes of both the 2008 crisis and the Israeli protests, using a questionnaire based on that of the previous study. Our purpose was to examine whether the new economic and social discourse of the Israeli protests of 2011 influenced perceptions regarding the 2008 crisis.

Perceptions regarding the causes of the protests were more structural compared to those seen as causes of the economic crisis.

These structural concepts of the protests did not influence concepts regarding the crisis, the latter remaining unchanged since the previous research of Leiser, Gironde & Benita.

The framing of major economic events at the time they occur have a lasting effect on their construal

*Keywords: ethics, market bubbles, economic crisis*

# DO WE HAVE TO CHANGE THE FRENCH TAX SYSTEM FOR INCOME TAXES? A PSYCHOLOGICAL ANALYSIS

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## Abstract

Each citizen possesses rights as well as duties. Obligation to pay taxes is one of these duties. This study is in line with Kirchler's research on tax evasion (2007), as well as with Kirchler, Hoelzl and Wahl's model (2008) based on the "slippery slope framework". The connections between the power of the authorities, the trust in authorities, and tax compliance are approached here. Our main goal is to test the "slippery slope framework's" assumptions on tax compliance of French citizens, by manipulating trust in authorities and power of authorities with four different scenarios (high trust / high power; high trust / low power; low trust / high power; low trust / low power). Participants are randomly allotted in one of these four conditions; they read one of four scenarios and have to answer a questionnaire composed of 28 items. 320 economics students fully completed the questionnaire, 80 by conditions. Results confirm that French people fit in the "slippery slope framework": both high trust and high power increase tax compliance, a rise of trust increase voluntary tax compliance and a rise of power increase enforced tax compliance. The interest of this study is threefold: it allows identifying tax compliance of French people according to trust in authorities and power of authorities, as well as measuring if this conformity is voluntary or forced. Finally, it enables us to propose, for those who do not comply, an adapted answer. Taking into account Ayres and Braithwaite's (1992) and Braithwaite's (2007) researches, it is fundamental to adapt the answer of authorities to functions of beliefs and attitudes of taxpayers. This work is applicable to numerous contexts in which two conditions must be satisfied: individuals face an authority and the compliance "can be justified, not only in terms of a legal framework, but also in terms of a moral framework" (Braithwaite & Job, 2003). We can find these conditions in numerous other structures in the business world.

*Keywords: tax behavior, trust*

## 1 Introduction

In France the taxation architecture is built around three different types of taxes: social contribution, indirect taxes, the value added tax (VAT), and income tax (Bozio et al. 2012). Whereas the first two components of the French tax system are automatically paid, the social contribution is directly withheld from salary, and VAT is included in the price of consumption goods, but in order to pay the income tax, French people have to fill in their tax declaration based on the salary/income from the previous year. French authorities demand them to pay a certain percentage of money depending on the income. France is one of the few industrialized countries in which taxes are not directly removed from income (cf. Organization for Economic Co-operation and Development, 2012). In fact, in order to get more compliance, most industrialized countries have switched to a withholding from salary for income taxes. In France, the question of continuing to ask French people to declare their income versus changing the tax system in order to withhold income tax from salary is an ongoing debate.

Results from the Annual Report of Performance of the mission (*Gestion des finances publiques et des ressources humaines*), the rate of collection of taxes in France represents 98.79 % for private households, and 98.42 % for businesses. These two rates are very high. If we look at this problem from an economic perspective, there is no difference between tax compliance in the French system and in the withholding from salary system. Therefore, there seems to be no need to change the French system. But, if we take a look at this problem with a psychological prism, would a change in the French tax system imply less tax evasion and more tax compliance?

The main goal of this paper is to provide indications towards this question based on a psychological perspective. This study is in line with Kirchler's research on tax evasion (2007), as well as with Kirchler, Hoelzl and Wahl's work (2008) on the "slippery slope framework", and analyses the results along with Ayres and Braithwaite's responsive regulation (1992).

## 2 Tax fraud framework: What drives citizen to pay taxes?

### 2.1 Exogenous variables

In a review of the literature, Kirchler, Muehlbacher, Kastlunger and Wahl (2007) examine the results of studies that arise from the standard model of income tax evasion (Allingham & Sandmo, 1972; Srinivasan, 1973). This model, that frames tax compliance as a decision under uncertainty, describes the factors that influence the judgment of people in

the choice of paying or not paying taxes. There are, according to Allingham and Sandmo (1972), and Srinivasan (1973), at least four factors that may influence tax evasion: the level of income, the tax rate, the audit probability and the amount of possible fines. Kirchler et al. (2007) explore the results of these four variables on the compliance of people in paying taxes. They conclude that “most of [these] parameters have unstable and unclear effects and it is hard to draw definite conclusions from [previous] studies.” (2007, p. 20).

## 2.2 The “slippery slope” framework

Kirchler and his colleagues (Kirchler, 2007; Kirchler, Hoelzl & Wahl, 2008) introduce the “slippery slope” framework. This framework suggests that tax compliance comes from individual and social variables rather than from exogenous variables. In the slippery slope framework, tax compliance is mainly influenced by two dimensions: trust in authorities and the power of authorities, as well as their interaction (Kirchler, 2007; Kirchler et al., 2008; Kirchler & Wahl, 2010; Wahl, Kastlunger & Kirchler, 2010).

### ***Trust in authorities***

Kirchler et al. define trust in authorities as “... a general opinion of individuals and social groups that the tax authorities are benevolent and work beneficially for the common good” (2008, p.212). For Torgler and Schneider “attitudes towards paying taxes can be seen as a proxy for tax moral” (2005, p. 232). Torgler (2003) and Torgler and Schneider (2005), based on findings from previous surveys (the World Values Survey, the Taxpayer Opinion Survey, and the European Values Survey), indicate the presence of a link between trust in the government and tax moral. In this context, Wahl et al. (2010) created two experiments: the first took place in a laboratory with students, and the second was based on an online questionnaire with self-employed taxpayers. Results show that, in both cases, trust in authorities has an influence on tax compliance. These authors also found that trust in authorities has a positive effect on tax compliance.

### ***Voluntary compliance***

According to the slippery slope framework, trust in authorities encourages taxpayers’ compliance. In a situation of high trust, taxpayers tend to consider that authorities are acting in a fair way. If taxpayers tend to view “their tax share as a fair contribution to the public good” (Kirchler et al., 2008), they tend to comply voluntarily. On the contrary, in a situation of low trust, taxpayers tend to be suspicious toward authorities and do not act voluntarily in a cooperatively way. An increase of trust should therefore lead to an increase of voluntary tax compliance.

### ***Power of authorities***

Kirchler et al. define the power of authorities as “...taxpayers’ perception of the potential of tax officers to detect illegal tax evasion, for example by conducting frequent and thorough tax audits, and to punish evasion, for example by fining evaders to a noticeable extent” (2008, p. 212). In their definition of power, Kirchler et al. (2008) emphasize that it is not the real power of authorities that matters, but the perception that taxpayers have of this power. This definition is in line with Fischer, Wartick and Mark’s (1992) suggestion, which states that authorities’ power do not have an objective deterrent effect in order to have a high level of compliance, but it is moderated by taxpayers’ perceptions and subjective evaluations of authorities’ abilities to detect tax frauds and to deter evasion. With their two empirical studies, Wahl et al. (2010) found that power of authorities affect tax compliance; perception of power of authorities has a positive effect on tax compliance.

### ***Enforced compliance***

Moreover, according to the slippery slope framework, power of authorities encourages taxpayers’ compliance. In a situation of high power, the detection probability increases along with the raise of the number of audits and with fines which are costly. Thus “taxpayers have less and less incentives to evade, because the expected outcome of non-compliance falls below the expected outcome of compliance” (Kirchler et al., 2008), and they are enforced to comply. In a situation of low power, authorities do not have means to constraint taxpayers’ compliance. An increase of power should lead to an increase of enforced tax compliance.

### ***Moderation effect of trust and power***

The two variables, trust and power, can be related to two forms of tax compliance: voluntary compliance and enforced compliance. According to the slippery slope framework:

“The power and trust dimensions moderate each other. Variations in trust matter most when power is low; however, when power is at its maximum, variations in trust are irrelevant because authorities can enforce maximum compliance. Conversely, variations in power matter most when trust is low; however, when trust is at its maximum, variations in power do not matter because citizens contribute their share regardless.” (Kirchler et al., 2008, p. 213).

### ***Dynamics effect of power on trust***

Trust and power are two factors that are not independent one of the other, a change of one also has an influence on the other (Kirchler, 2007; Kirchler et al., 2008; Kirchler & Wahl, 2010; Walh et al., 2010). Change in power of the authorities may result in an increase, or a decrease, of trust; it depends on the way it is perceived. A raise of power may be perceived by some as a mistrustful toward taxpayers, and by others as a voluntary act of equity of taxpayers towards the law, while a decrease of power may be perceived by some as a sign of trust toward taxpayer, and by others as a sign of not serving well the collective goal, and as a sign of cooperation toward evading taxpayers (Wahl et al., 2010).

## **3 Method**

### **3.1 Overview**

The aim of this study is to examine if French people fit the slippery slope framework, and to test the role of Ayres and Braithwaite's (1992) and Braithwaite's (2007) findings, in terms of believes and attitudes of taxpayers, as they appear to be fundamental to adapt the answers of authorities.

The slippery slope framework indicates that (i) an increase of trust in the authorities or an increase of power in the authorities lead to an increase of tax compliance; (ii) an increase of trust involves an increase of voluntary tax compliance; (iii) an increase of power involves an increase of enforced tax compliance; (iv) changes in trust should have an influence on the perception of power and changes in power and should have an influence on the perception of trust.

The first four hypotheses of this paper are based on the four postulates of the slippery slope framework on our French sample. (1) Participants in high trust conditions will comply more than participants in low trust conditions and participants in high power conditions will comply more than participants in low power conditions. (2) Participants in high trust conditions will comply more in a voluntary way than participants in low trust conditions. (3) Participants in high power conditions will be more force to comply than participants in low power conditions. (4) Participants would not have the same perception of power in high trust conditions and in low trust conditions and participants would not have the same perception of trust in high power conditions and in low power conditions. The last hypothesis is that (5) we expect an effect of trust and of power on tax evasion.

Our study, carried out on a French sample, is part of a cross-cultural research in which cross-country comparisons are carried out in order (a) to test if there are different levels of tax compliance according to different cultural backgrounds; and (b) to study the effect of interactions between country-condition to assess differences concerning the manipulations of trust and power. In this paper, we only present the French data.

### **3.2 Participants**

In our study, 328 French students in economy completed our questionnaire. Eight participants did not answer all the questions and were excluded from our analysis. Thus, results are based on a sample of 320 participants (151 females/169 males; all of them were aged between 18 and 25;  $M = 21.46$  years,  $SD = 1.96$ ). Most participants declared having a personal net income equal or below 400 € per month (62.19%); 21,25% of the participants reported a personal net income between 401 € and 600 € per month. Participants who reported more than 600 € were only 16.56%. 10.31% reported a personal net income between 601 € and 1,000 €, 3.44% between 1,000 € and 1,500 € and 2.81% above 1,500 €. This sample is therefore composed of participants who are not used to paying taxes on their income. Concerning their family income, the distribution of results was more satisfying: 13.75% of the participants report a family income below 1,000€; 17.81% between 1,000 € and 2,000 €; 27.5% between 2,000 € and 3,000 €; 22.19% between 3,000 € and 4,000 €, and 18.75% above 4,000€.

Since trust in authorities and power of authorities was manipulated with four different conditions (trust high/power high; trust high/power low; trust low/power high; trust low/power low); participants were allocated to one of the four conditions, thus we obtained 80 participants in each of the four conditions.

### **3.3 Materials and procedure**

Participants answered individually the paper and pencil questionnaire during a class period. The survey was composed of three parts: a text describing a country named Varosia, questions about tax compliance, completed by demographic questions.

In order to test our hypotheses, four different scenarios were presented on the basis of an adaptation of the scenarios used in study of Wahl et al. (2010), in which participants had to read a description of a fictitious country, Varosia, this country having the same demographic description as France (same number of inhabitants and same type of size). Each scenario varies in terms of the description of Varosia on two factors: the trust that citizens have in their country and the power that they attribute to their government. The four scenarios correspond to the four conditions (trust high/power high; trust high/power low; trust low/power high; trust low/power low).

After reading the scenario, participants were instructed to imagine themselves as citizens of Varosia: living, working and paying taxes in Varosia. They were instructed to imagine themselves as a self-employee whose business is running good. Their tax declaration is due and they have to pay taxes.

Then, they answered the questionnaire composed of 24 items, most of them having already been used in previous studies. Nine items come from Wahl et al.'s work (2010): three items to measure intended tax compliance, six items as manipulation checks; three items for trust, and three others for power. Fifteen items stem from Kirchler and Wahl's study (2010): five items to measure enforced compliance, five items to measure voluntary tax compliance, and five items to assess tax evasion.

Finally, participants had to fill in the last part concerning demographic information. Participants gave information concerning their sex, age, subject of study, level of study, personal monthly income and family monthly income<sup>1</sup>.

## 4 Results

### 4.1 Perception of trust and power

In order to verify if the four conditions emphasize different levels of trust in the authorities and of power of the authorities, three items measure the perception of the level of trust in the authorities, while three items measure the perception of the level of power of the authorities. The Cronbach's alpha of the three items on trust, as well as the three items on power are both equal to .82, which is satisfactory. The multivariate analysis reveals an interaction effect ( $F(2,315) = 9.86, p < .001, \eta^2 = .06$ ), a main effect of trust ( $F(2,315) = 207.06, p < .001, \eta^2 = .57$ ), and of power ( $F(2,315) = 155.63, p < .001, \eta^2 = .50$ ).

The univariate results of trust show that participants who read a trustworthy description of Varosia's authorities, trust authorities more than participants who read an untrustworthy description of Varosia's authorities ( $F(1,316) = 413.24, p < .001, \eta^2 = .57$ ; low trust:  $M = 2.81, SD = 1.50$ ; high trust:  $M = 6.32, SD = 1.73$ ). There is an effect of the manipulation of power on the perception of trust: people who were confronted to a powerful description of Varosia's authorities, trust Varosia's authorities more than participants who were confronted to a description of Varosia's in which the power of the authorities is weak ( $F(1,316) = 17.09, p < .001, \eta^2 = 0.05$ ; low power:  $M = 4.21, SD = 2.08$ ; high power:  $M = 4.92, SD = 2.62$ ). There is also an interaction of trust and power on the perception of trust ( $F(1,316) = 18.51, p < .001, \eta^2 = 0.06$ ). This interaction between trust and power reveals that the perception of trust in the authorities is the highest when the authorities are presented as trustworthy and as having a strong power ( $M = 7.05, SD = 1.57$ ), compared to when authorities are presented as trustworthy and as having a weak power ( $M = 5.59, SD = 1.58$ ), then when authorities are presented as untrustworthy and as having a weak power ( $M = 2.83, SD = 1.54$ ); and, eventually, when authorities are presented as untrustworthy and as having a strong power ( $M = 2.8, SD = 1.47$ ). Analyses were also conducted for the variables sex, age, level of study, personal income and family income, but none of these variables has a significant effect on the perception of trust ( $F(1,312) = 0.68, p = .41$ ;  $F(6,292) = 1.29, p = .26$ ;  $F(1,312) = 1.72, p = .19$ ;  $F(4,300) = 1.13, p = .34$  and  $F(4,300) = 0.36, p = .84$  respectively).

The univariate results of power show that participants who read a powerful description of Varosia's authorities perceive Varosia's authorities as more powerful than those who read a description of Varosia's in which authorities are weak ( $F(1,316) = 312.15, p < .001, \eta^2 = .50$ ; low power:  $M = 3.41, SD = 1.60$ ; high power:  $M = 6.75, SD = 1.84$ ). There is also an effect of the manipulation of trust on the perception of power: participants confronted to a trustworthy description of Varosia's authorities, perceived Varosia's authorities as more powerful than participants confronted to an untrustworthy description of Varosia's authorities ( $F(1,316) = 13.40, p < .001, \eta^2 = .04$ ; low trust:  $M = 4.73, SD = 2.46$ ; high trust:  $M = 5.43, SD = 2.30$ ). There is no interaction of trust and power on the perception of power ( $F(1,316) = 0.00, p = .99$ ).

Analyses were also conducted on the variables sex, age, level of study, personal income and family income, but none of these variables has a significant effect on the perception of power ( $F(1,312) = 2.94, p = .09$ ;  $F(6,292) = 1.54, p = .16$ ;  $F(1,312) = 0.56, p = .46$ ;  $F(4,300) = 1.42, p = .23$  and  $F(4,300) = 0.35, p = .85$  respectively).

These results indicate that the description of Varosia's authorities appears to be good. The description of trust in Varosia's authorities is perceived as more trustworthy than the description of untrustworthy Varosia's authorities; and the description of Varosia's authorities with strong power, is perceived as more powerful than the description of Varosia's authorities with weak power.

### 4.2 Tax compliance

Three items measure tax compliance, the Cronbach's alpha of these items is .80, which is acceptable. In order to analyze tax compliance, a factorial ANOVA was calculated with trust, power and sex as independent variables. Analyses indicate a main effect of trust, power and sex. Participants in the high trust condition appear to have more tax compliance than people in the low trust condition ( $F(1,312) = 39.99, p < .001, \eta^2 = .11$ ; low trust:  $M = 5.31, SD = 2.29$ ; high trust:  $M = 6.74, SD = 1.87$ ). Participants in the high power condition appear to have more tax compliance

<sup>1</sup> Corresponds to the sum of personal monthly income plus parents or spouse's monthly income.

than participants in the low power condition ( $F(1,312) = 37.39$ ,  $p < .001$ ,  $\eta^2 = .11$ ; low power:  $M = 5.35$ ,  $SD = 2.13$ ; high power:  $M = 6.70$ ,  $SD = 2.07$ ). The Scheffe post hoc test confirms that participants in the high trust and high power condition ( $M = 7.43$ ,  $SD = 1.49$ ) were significantly those who comply the most, compared to those in the high trust and low power condition ( $M = 6.04$ ,  $SD = 1.95$ ), low trust and high power condition ( $M = 5.97$ ,  $SD = 1.95$ ) and low trust and low power condition ( $M = 4.67$ ,  $SD = 2.10$ ). The Scheffe post hoc test also indicates that participants in the low trust and low power condition were those who significantly comply the least.

Women produce more tax compliance than men ( $F(1,312) = 5.92$ ,  $p < .05$ ,  $\eta^2 = .02$ ; women:  $M = 6.32$ ,  $SD = 2.13$ ; men:  $M = 5.76$ ,  $SD = 2.24$ ). Analyses were also conducted for the variables age, level of study, personal income and family income, but none of these variables appears to have a significant effect on tax compliance ( $F(6,292) = 1.45$ ,  $p = .20$ ;  $F(1,312) = 1.76$ ,  $p = .19$ ;  $F(4,300) = 0.76$ ,  $p = .55$  and  $F(4,300) = 52.88$ ,  $p = .20$  respectively).

### 4.3 Voluntary tax compliance and enforced tax compliance

Five items measure the level of voluntary tax compliance and five items measure the level of enforced tax compliance. The Cronbach's alpha of the five items of voluntary tax compliance and of the five items of enforced tax compliance are respectively of .81 and of .89, both Cronbach's alpha being acceptable. The multivariate analysis of trust and power does not reveal an interaction effect ( $F(2,315) = 0.30$ ,  $p = .74$ ), but a main effect of trust ( $F(2,315) = 35.23$ ,  $p < .001$ ,  $\eta^2 = .18$ ) and a main effect of power ( $F(2,315) = 57.56$ ,  $p < .001$ ,  $\eta^2 = .27$ ) are found.

The univariate results of voluntary compliance indicates that participants confronted to a trustworthy description of Varosia's authorities have more voluntary tax compliance than participants confronted to an untrustworthy description of Varosia's authorities ( $F(1,316) = 69.56$ ,  $p < .001$ ,  $\eta^2 = .18$ ; low trust:  $M = 4.83$ ,  $SD = 1.64$ ; high trust:  $M = 6.28$ ,  $SD = 1.49$ ). There is no effect of the manipulation of power on voluntary tax compliance ( $F(1,316) = 1.41$ ,  $p = .24$ ; low power:  $M = 5.66$ ,  $SD = 1.79$ ; high power:  $M = 5.45$ ,  $SD = 1.65$ ). There is no interaction of trust and power on voluntary tax compliance ( $F(1,316) = 0.45$ ,  $p = .50$ ). Analyses were also conducted for the variables sex, age, level of study, personal income and family income. One of these variables, personal income, has a significant effect on voluntary tax compliance ( $F(4,300) = 4.19$ ,  $p < .01$ ,  $\eta^2 = .04$ ). We have to take this result very carefully for two reasons: (1) the repartition of the participants on the income scale was very poor (199 participants in our sample have very low personal income, whereas only 11 have an average personal income, and 9 have a high personal income); and (2) the Scheffe post hoc test indicates that there is no significant difference in voluntary tax compliance according to the different levels of personal income.

None of the other variables (sex, age, level of study and family income) has an effect on voluntary tax compliance ( $F(1,312) = 1.12$ ,  $p = .29$ ;  $F(6,292) = 1.70$ ,  $p = .12$ ;  $F(1,312) = 0.04$ ,  $p = .83$  and  $F(4,300) = 0.60$ ,  $p = .67$  respectively).

The univariate results of enforced compliance indicates that participants, confronted to a description of Varosia's authorities with strong power, have more enforced tax compliance than participants confronted to a description of Varosia's authorities with weak power ( $F(1,316) = 115.49$ ,  $p < .001$ ,  $\eta^2 = .27$ ; low power:  $M = 4.09$ ,  $SD = 2.00$ ; high power:  $M = 6.52$ ,  $SD = 2.03$ ). There is no effect of the manipulation of trust on enforced tax compliance ( $F(1,316) = 0.03$ ,  $p = .86$ ; low trust:  $M = 5.28$ ,  $SD = 2.38$ ; high trust:  $M = 5.32$ ,  $SD = 2.33$ ). There is no interaction of trust and power on voluntary tax compliance ( $F(1,316) = 0.09$ ,  $p = .76$ ).

Analyses were also conducted for the variables sex, age, level of study, personal income and family income, but none of these variables has a significant effect on enforced tax compliance ( $F(1,312) = 3.13$ ,  $p = .08$ ;  $F(6,292) = 1.67$ ,  $p = .13$ ;  $F(1,312) = 2.96$ ,  $p = .09$ ;  $F(4,300) = 0.38$ ,  $p = .82$  and  $F(4,300) = 0.22$ ,  $p = .07$  respectively).

### 4.4 Tax evasion

Five items measure tax evasion; the Cronbach's alpha of these items is .81. In order to analyze tax evasion, a factorial ANOVA was calculated with trust and power as independent variables. Analyses indicate a main effect of trust ( $F(1,316) = 20.95$ ,  $p < .001$ ,  $\eta^2 = .06$ , low trust:  $M = 5.90$ ,  $SD = 1.80$ ; high trust:  $M = 4.98$ ,  $SD = 1.78$ ); participants in the low trust condition report more tax evasion than participants in the high trust condition. There is no effect of the manipulation of power on tax evasion ( $F(1,316) = 1.15$ ,  $p = .70$ ). There is also no interaction of trust and power on tax evasion ( $F(1,316) = 1.52$ ,  $p = .22$ ). Analyses were also carried out for the variables sex, age, level of study, personal income and family income, but none of these variables have a significant effect on tax evasion ( $F(1,312) = 2.20$ ,  $p = .14$ ;  $F(6,292) = 1.41$ ,  $p = .21$ ;  $F(1,312) = 0.04$ ,  $p = .85$ ;  $F(4,300) = 0.27$ ,  $p = .84$  and  $F(4,300) = 0.29$ ,  $p = .28$  respectively).

## 5 Discussion

The main aim of this study was to examine if French people fit the slippery slope framework. In order to do this, we tested the four postulates of the slippery slope framework on a French sample of 320 students.

(1) Our results indicate that participants in high trust conditions will comply more than participants in low trust conditions, and that participants in high power conditions will comply more than participants in low power conditions. Our results demonstrate that both an increase of trust in the authorities and an increase of power of the authorities involve an increase of tax compliance. Participants in the high trust and high power condition are those who significantly comply the most compared to the three other conditions; and participants in the low trust and low power

condition are those who significantly comply the least. Women report more tax compliance than men. These results are in line with the results found by Wahl et al.'s (2010) in their first experiment. Our first hypothesis is confirmed.

Another assumption of the slippery slope framework is that the two variables, trust and power, have an influence on tax compliance, via two different forms of tax compliance: respectively voluntary tax compliance and enforced tax compliance. Our results show that (2) participants in high trust conditions will comply more in a voluntary way than participants in low trust conditions, and that (3) participants in high power conditions will be more 'forced' to comply than participants in low power conditions. Our study confirms these two assumptions, as results indicate that voluntary tax compliance is influenced by only one factor: trust in authorities; and, that enforced tax compliance is influenced by another factor: the power of authorities.

The slippery slope framework is a dynamic model in which change in trust influences the perception of power, and change in power influences the perception of trust. (4) Participants do not have the same perception of power in high trust conditions and in low trust conditions, and participants do not have the same perception of trust in high power conditions and in low power conditions. Our results on the perception of trust and the perception of power confirm this hypothesis.

The last hypothesis concerns tax evasion. We expected (5) an effect of trust and of power on tax evasion on tax evasion. The five items concerning the measures of tax evasion come from an adaptation of Kirchler and Wahl's items (2010). They define tax evasion items as "fictitious case scenario to state a concrete way of evading taxes"; they allow "measuring the intention to reduce taxes illegally". These items are used to detect the "cops-and-robbers" attitude. Wahl et al. (2010) found an interaction effect of trust and power on tax evasion. Tax evasion appeared to be lower when authorities are trustworthy and powerful, and higher when authorities are untrustworthy and powerful. These results point out the "important role of trust in the decision to pay taxes" (Wahl et al., 2010). Our results are not exactly the same; on the one hand, we found no interaction of trust and power on the measure of tax evasion, but, on the other hand, we found a main effect of trust. We found no effect of power on tax evasion. Participants in high trust conditions report less tax evasion than participants in low trust conditions, and this independently of power. It suggests that only trust in the authorities has a real influence on tax evasion. Our results confirm this hypothesis only for trust. This can be explained by the fact that tax evasion's items are items in which participants are able to omit to declare all their income, without taking the risk of being caught. Therefore it is understandable that power does not have an effect on this measure of tax evasion.

The main limitation of our study is that it was conducted with students who globally have a low personal income, and who are not used to paying taxes. Nevertheless, Wahl et al.'s (2010) experiment on students and self-employed people found similar results on tax compliance, voluntary tax compliance, enforced tax compliance and tax evasion with both populations, students and self-employed. Their studies suggest that experimenting on students about tax compliance is possible and allows obtaining results which are similar to results found on self-employed people.

This work allowed identifying a first image of the level of tax compliance of French people according to the perception they have of authorities, as well as in connection to the type of tax compliance: voluntary versus enforced. Nevertheless, as previously mentioned, this has to be taken carefully because results come from a sample composed of students. As stated by Wahl et al. (2010), "the difference between voluntary and enforced tax compliance is mirrored in the underlying motivation to comply".

In the responsive regulation model, Braithwaite defines a motivational posture connected to an "interconnected sets of beliefs and attitudes" (Braithwaite, 2003), and describes five different motivational postures: commitment, capitulation, resistance, disengagement and game playing. Whereas the first two correspond to a "positive orientation" towards the authorities, the three others represent "postures of defiance". Taxpayers with a commitment posture are more willing to pay tax, and feel that paying tax is a moral obligation, which is in the interest of the collectivity. The capitulation posture reflects acceptance of authorities and feelings that tax authorities is a "benign power as long as one acts properly". The posture of resistance reveals mistrust toward authorities; taxpayers with a disengagement posture are people who are giving up with the tax authorities, their goal is to keep tax authorities "socially distant and blocked from view". And, the game playing posture corresponds to a view of law "as something to be molded to suit one's purposes rather than as something to be respected as defining the limits of acceptable activity" (Braithwaite, 2003; Kirchler & Wahl, 2010). Voluntary compliance is related to commitment and enforced compliance to resistance.

Non-compliant people are not always "voluntary non-compliant taxpayers", they are not all "villains", and sometimes they can be non-compliant by mistake or by misunderstanding. The difficulty for authorities is to distinguish "voluntary non-compliant taxpayers" from "involuntary non-compliant taxpayers". Taking into account Ayres and Braithwaite's (1992) and Braithwaite's (2007) researches in the responsive regulation approach, it is fundamental to adapt the answer of authorities to beliefs and attitudes of taxpayers.

In the regulatory pyramids, Braithwaite describes different ways for tax authorities to reply to taxpayers' motivational posture in order to increase their compliance. The regulatory pyramid is based on two postulates: most people are at the bottom of the pyramid and authorities have to pursue non-compliance taxpayers by intensifying the cost. When taxpayers are in a motivational posture of commitment, authorities should promote education, service delivery, and

help people to understand how taxes work and why they should comply. In this case, according to Braithwaite (2003), authorities should use “cooperative and educative compliance options”. For those who fail to comply, according to Job and Honaker (2003), authorities should “escalate their response, come to the next stage and sanction in a proportional fashion”. For those who are in a resistant or disengagement posture, authorities should respond in a severe way by increasing the number of audits and the amount of the fines. Thus, responsive regulation proposes to promote self-regulation for compliant taxpayers to increase the number and degree of sanctions of wrongdoing for non-compliant taxpayers in order to reach the main goal of authorities: to have the highest possible level of compliance for now and for the future (Braithwaite & Job, 2003; Kirchler et al., 2008).

## 6 Conclusions

Our results are totally in line with the slippery slope framework (Kirchler, 2007; Kirchler et al., 2008; Kirchler & Wahl, 2010; Wahl et al., 2010) and confirm all these assumptions. Trust and power of authorities influence tax compliance in two different forms: voluntary and enforced tax compliance. This study supports the Slippery Slope Framework, and contributes to show that this model may be applicable to other countries and other cultures, such as France. Our study is the first replication of the Slippery Slope Framework in France. As mentioned, the major limitation is that it was done on a students’ sample, and that, the majority of them, do not pay taxes. In order to assume that the Slippery Slope Framework is relevant for the French population, this study needs to be replicated with a representative sample of French people.

To our initial question concerning the psychological perspective towards tax compliance versus tax evasion, do we have to change the French tax system in order to adopt a withholding from salary system as other industrialized country?

The withholding from salary system has the advantage of being more acceptable for taxpayers than the declaration system for three reasons: it is (i) automatic, (ii) dematerialized and (iii) contemporary. Taxpayers won’t have (i) to fill a declaration, (ii) to give money back to the government, and (iii) taxpayers will pay taxes according to the amount of money they are currently earning and not according to the amount of money they had earned the year before.

Our study enables us to have an image of how French people react when they are confronted to their tax declaration. On the first hand, as long as French people trust the authorities and their government, they will be in a motivation posture of commitment, will voluntarily comply to their tax obligations, will feel a moral obligation to pay their share and to act in the interest of the collective (Braithwaite, 2003); in this case, there is no need to change the French tax system. On the second hand, when French people do not trust their government, they are in a motivational posture of resistance, they are enforced to comply to their tax obligations, therefore changing the tax system will make income taxes more acceptable for French taxpayers. So, if we take our psychological prism to answer the question, the answer will be depend on the level of trust of French people have towards their government and authorities, which implies that it will depend on individual variables, which does not simplify the problem.

Nevertheless, the Corruption Perceptions Index (CPI) which publishes each year an index about how corruption is perceived by the citizens of each country, enables us to have a look at the overall trust people have towards their government. The CPI 2011 indicates that France is the 25th on the annual ranking of the countries, behind all the other countries that participated in the G8, except Italy and Russia. Results of the Eurobarometer on corruption support the result of CPI 2011. In 2011, an analysis of corruption was conducted; results on the French people indicate that 71% of them think that there is corruption in their country and that corruption increased during the past three years (45% think that corruption has increased in the past three years, against 3% who think that the corruption has decreased).

These results help us to answer our questions. We can say that most French people do not trust their government and do not comply voluntarily, but are enforced to comply to their tax obligations, they are in a motivational posture of resistance and they feel defiance towards authorities. If we look at the French tax system, with the help of a psychological prism, the French tax system is not adapted to the motivational posture of French people. Therefore two recommendations can be made: governments should emphasize citizen-friendly procedures to ensure citizens’ trust (Wahl et al., 2010) or government should change their tax system in order to adopt a withholding from salary system.

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## TESTING STRATEGIES TO INCREASE SAVING IN LOW-INCOME FAMILIES

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In a series of field experiments we test whether saving and retention rates in a federally funded, matched savings program for low-income families – the Individual Development Account (IDA) program – can be improved through the introduction of program features inspired by behavioral economics.

The experiments, some completed and some in-process (with interim results), test the impact of: a) an increase in the frequency with which deposits are made, b) an increase in the accountability associated with deposits, and c) the introduction of lottery-based savings matches at the time of each deposit. We report evidence from currently 845 study participants at eight IDA agencies across the U.S. who agreed to randomly assign participants to different experimental conditions.

Our key findings are:

1. Savers conform only slowly to the deposit schedule of the savings program. As a result, differences in the savings outcomes of treatment and control group participants emerge slowly and are most salient when comparing data from program entry to exit.
2. Savers who were asked to make two deposits per month have total savings of about one-third higher than those who continued with the regular monthly deposit schedule. They tend to save an additional \$42 per month, while the monthly savers only save an additional \$24.
3. Savers who receive any combination of reminder and accountability calls are more likely to make a deposit and tend to deposit more on each deposit deadline than those who do not receive calls. They save an additional \$54 per month, while no-call group participants only save at a rate of an additional \$32 per month.
4. Savers in the lottery condition are more likely to deposit regularly, even accounting for their bi-monthly deposit deadline. It sums up to an average of 14 deposits, compared to 11 deposits of the control group. This finding supports the motivating nature of the lottery intervention.
5. After only 12 months of data collection, we see a slight effect of the match-increase intervention. The increasing-match group saved an average of \$595, compared to \$569 for the control group. Regression analysis confirms that participants in the increasing-match condition tend to deposit more in any given month.

The results suggest that behavioral economics can effectively encourage regular saving in asset-building programs but that interventions require careful testing to achieve best possible outcomes.

*Keywords: loss aversion, saving, self-control*

## SUSTAINABILITY, RESPONSIBILITY, AND CONSUMPTION: A SCALE OF CONSUMERS' FELT RESPONSIBILITY FOR SUSTAINABILITY

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### Abstract

Research focused on understanding the role of firms in proactively addressing a variety of social and environmental issues, typically referred to as Corporate Social Responsibility (CSR), has not been matched by similar efforts to understand the concurrent role and responsibility of consumers. The current research explores the concept of sustainability from the consumer's perspective, including consumers' ascription of responsibility for sustainability, and demonstrates the use of a scale of Consumers' Felt Responsibility for Sustainability (CFRS) in predicting choice.

Three studies were conducted including one qualitative study and two surveys.

The results from three studies suggest that a) overall consumers construe sustainability very broadly as relating to a set of behaviors (production, purchase & usage, and disposal) and a set of outcomes (environmental, social, and economic), b) consumers' ascription of responsibility – to themselves, companies and governments – depends on whether sustainability is framed as a set of behaviors or as a set of outcomes, c) Consumers Felt Responsibility for Sustainability (CFRS) varies widely, and d) CFRS predicts product choice better than a measure of sustainability issue importance.

Overall, this research provides insights into what consumers think about the concept of *sustainability* and suggests that beyond emphasizing the importance of sustainability, companies and public policy makers should also directly address consumers' sense of personal responsibility for proactively promoting sustainability through their consumption choices.

*Keywords: choice, overconsumption, materialism, ethics, socially responsible business*

## 1 Introduction

While many consumers, companies and governments are increasingly concerned about the issue of sustainability, tangible progress towards a more sustainable macroeconomic future – one that balances a wide variety of environmental, social and economic issues – has been relatively limited. This challenge is being addressed by academics on a variety of fronts, including a significant amount of research on the effect of corporate social

responsibility (CSR) on firm performance (Lacey, Close and Finney 2010; Luo and Bhattacharya 2009; Murray and Vogel 1997; Sen and Bhattacharya 2001) as well as consumer responses to corporate ethics and CSR activities (Becker-Olsen, Cudmore and Hill 2006; Brown and Dacin 1997; Folkes and Kamins 1999; Gurhan-Canli and Batra 2004; Jackson 2005; Newholm and Shaw 2007). The current research focuses on an aspect of the consumption side of the sustainability challenge with the broad objective of contributing to our understanding of the ever-present gap between consumers' typically high ratings of the importance of sustainability, and the relatively low levels of sustainable consumption behaviors.

The popular press and academic literature are replete with evidence suggesting that while many consumers believe that sustainability is important (BBMG 2009), a much smaller percentage of consumers actually make a concerted effort to change their behaviors, by consuming less or consuming differently (United Nations Environment Programme 2005, p. 15). Prior research identifies a wide variety of factors that explain this gap, including company attributes that moderate consumer response, such as brand fit and positioning (Lafferty 2007; Obermiller, Burke, Talbott and Green 2009), and a variety of individual difference factors such as consumers' beliefs and biases (Eckhardt, Belk and Devinney 2010; Kilbourne and Pickett 2008; Luchs, Naylor, Irwin and Raghunathan 2010; Mostafa 2007; Snipes, LaTour and Bliss 1999). Several researchers, however, have noted that a relatively under-researched topic is the concept of consumer responsibility (Devinney, Auger, Eckhardt and Birtchnell 2006; Wells, Ponting and Peattie 2011). This dearth of research is somewhat surprising given the significant attention that has been devoted to defining and understanding the parallel concept of corporate social responsibility, which some have described as being its own "sub-discipline within commerce education" (Freeman and Hasnaoui 2011, p. 419). While more research on CSR is needed, the overall objective of the current research is to contribute to our understanding of responsibility for sustainability from the consumer's point of view – both consumers' ascription of responsibility for sustainability as well as the measurement and relevance of consumers' felt responsibility for sustainability.

Part of the challenge in addressing sustainable consumption from a consumer point of view is the lack of consensus about what sustainability means in the context of consumption. Some definitions focus on a variety of issues, to varying degrees (e.g., environmental issues, such as resource depletion, and social issues, such as fair labor practices). Others instead focus on specific behaviors that contribute to these issues (e.g., product acquisition and product disposal). Further, many of these definitions focus on the perspectives of policy makers, consulting firms and corporations rather than the perspective of the consumer. While the primary objective of the current research is to demonstrate the importance of the concept of consumer's felt responsibility for sustainability, the first task is to understand how consumers define sustainability. Thus, the specific objectives of the current research are to address the following three interdependent questions: First, how do consumers construe the concept of sustainability? Second, to whom do consumers ascribe the most responsibility for decisions and outcomes related to sustainable consumption: themselves, companies, or the government? Third, do consumers vary in the degree to which they believe that they are personally responsible for making consumption decisions that promote sustainability, and is this individual difference a useful predictor of consumers' product choices?

## **2 Background and Conceptual Development**

### **2.1 Sustainability in the context of consumption**

A variety of related terms, such as socially responsible consumption, green consumption, and ethical consumption, have been used to describe consumption that is motivated or influenced by a myriad of environmental issues, such as minimizing pollution and waste, and/or social issues, such as fair trade. While research and popular sentiment have traditionally been more focused on environmental issues (Jackson 2005; Kilbourne and Pickett 2008), business academia and industry have increasingly adopted the more inclusive term of sustainability which refers to the environmental, social and economic dimensions of business and consumption (Peattie and Collins 2009). Sheth, Sethia and Srinivas (2011) argue that the use of this three dimensional definition of sustainability, which is consistent with the concept of the Triple Bottom Line (Elkington 1997), is "...gaining worldwide currency (p. 21)".

While some would argue that this evolved conception of sustainability is broad, others would argue that it is still incomplete. As noted by Peattie and Collins (2009), "...to understand the economic, social and environmental sustainability of any form of consumption requires an understanding of ... the entire production and consumption cycle of a product...(p. 107)." In other words, the aforementioned conception of sustainability focuses on issues and outcomes, but does not explicitly address the various choices and other behaviors that lead to these outcomes. Unfortunately, most consumer research also focuses on the initial purchase decision (Peattie and Collins 2009) to the exclusion of other important consumer behaviors across the product lifecycle such as product usage and disposal (Prothero, Dobscha, Freund, Kilbourne, Luchs, Ozanne and Thøgersen 2011; Wells 1993). Therefore, a more complete conception of sustainability might benefit from consideration of the concept of Life-Cycle Analysis (LCA), which considers the full set of decisions made from production through purchase, usage and disposal. As depicted in Figure 1, a comprehensive conceptualization of sustainability could include two integrated dimensions; one focused on

behaviors (production, purchase & usage, disposal), the other focused on outcomes (environmental, social and economic). The question remains, however, as to whether consumers conceive of sustainability this broadly.

	 <b>Production</b>	 <b>Purchase &amp; usage</b>	 <b>Disposal</b>
 <b>Environmental</b>	Minimizing harm to the environment by reducing the use of energy and raw materials, and reducing pollution during the development and production of products and services.	Minimizing harm to the environment by consuming fewer goods, purchasing "green" products, using less energy, buying organic products, and reducing pollution from personal use of vehicles and consumer goods.	Minimizing harm to the environment by re-using and repairing existing products, recycling materials used in the production of goods, recycling packaging and used products, and disposing of waste in the appropriate way.
 <b>Social</b>	Engaging in socially responsible business practices during the development and production of products and services by treating workers fairly, e.g. fair wages and safe working conditions, and avoiding testing of products on animals.	Improving the welfare of society by encouraging business involvement in the community, buying products to promote social causes and buying safe and healthy products.	Disposing of waste in a fair and equitable way (e.g., not shipping it to other countries) and finding socially beneficial uses for used items, e.g., donating used items to charities.
 <b>Economic</b>	Increasing value in the production of goods by developing and maintaining efficient manufacturing and office processes and efficiently using financial and human resources to ensure long term financial viability.	Gaining the most value from investments by engaging in balanced consumption, balanced saving of personal funds, and enabling businesses to gain a competitive edge so that both consumers and businesses are financially sound.	Gaining the most value from money already spent by reusing products, reusing production materials and other resources to improve long-term financial viability.

Figure 1. Conceptual model of sustainability within the context of consumption

## 2.2 Consumers' Felt Responsibility for Sustainability

A recent national survey of consumers found that underlying the concept of sustainability, responsibility emerged as a dominant theme and a useful way for consumers to think about the link between their own behaviors and the economic, social and environmental issues that are important to them (Hartman 2009). While popular interest in sustainability has grown in recent years, interest by consumer behavior researchers in this topic is not new. Early attempts to identify and segment the "socially conscious consumer" (Anderson and Cunningham 1972), were soon followed by research intended to demonstrate a link between measures of Social Responsibility (SR) (Berkowitz and Daniels 1964) and the Socially Conscious Consumer Index (SCCI), an early measure of socially responsible consumption (Webster 1975). Unfortunately, Webster found no relationship between SR and SCCI, in part because "... the Social Responsibility scale defines social responsibility in a rather specific (and perhaps outdated) way: acceptance of the norms of the community, involvement in community affairs, and identification with the Protestant work ethic (p. 189)."

Although academics continue to characterize research on consumer responsibility as rare and scarce (Peattie 2010; Wells, Ponting and Peattie 2011), there has been a significant amount of research on the related concept of personal norms (e.g., Harland, Staats and Wilke 2007; Thøgersen 2006) building on Schwartz's Norm Activation theory (Schwartz 1977) and Stern's Value-Belief-Norm theory (Stern 2000). According to Stern, a personal norm, in the context of environmental issues, refers to the individual's "sense of obligation to take pro-environmental actions". However, others have argued that the concept of personal norms "is ambiguous with respect to its motivational content" (Thøgersen 2006). Further, most research on personal norms treats Schwartz's (1977) concept of felt obligation with respect to very specific behaviors (e.g., purchasing energy saving light bulbs, Thøgersen 2006), rather than towards a general set of behaviors. While specific measures are likely to be more predictive of behavior in specific situations, a more generalized measure may be more useful for researchers and academics interested in predicting sustainable consumption behaviors across a wide variety of domains and situations. Further, the authors wanted to use a measure that was consistent with Schwartz's original conception of "felt obligation" in order to focus on consumers' felt responsibility rather than its various antecedents, and consistent with recent calls for research focused on understanding consumers "sense of personal responsibility" (Peattie 2010).

Related research in the field of management has focused on felt responsibility in the context of the work environment. While Hackman and Oldham (1976) initially proposed the concept of felt responsibility in the workplace, Morrison and Phelps (1999) developed the first published scale as a five-item measure of employees felt responsibility for promoting change in the workplace. Of the factors addressed in their research, felt responsibility had the strongest relationship with employees' willingness "to challenge the present state of operations to bring about constructive change (p. 403)". Fuller, Marler and Hester (2006) describe felt responsibility for constructive change (FRCC) as a "future oriented construct ... that reflects an assumed obligation or willingness to be held accountable for future

behavior...(p. 1092).” Given the orientation of this measure, and its successful use in related research, the authors adapted the Morrison and Phelps (1999) scale for the current research by modifying the object of interest in each question – from promoting change in the workplace to promoting sustainability in the context of consumption. For example, the item “I feel a personal sense of responsibility to bring about change at work” was modified to “I feel a personal sense of responsibility to be more sustainable in my product choices” (see Appendix A for the five items used in the current research).

## 2.3 Overview of studies

Following are the results from three studies intended to address the aforementioned research questions. Study 1 used an open-ended survey, with participants of various ages, in order to understand how broadly consumers conceive of sustainability. Study 2 further validates the conceptual model by asking participants to identify which dimensions of the model they believed reflected their definition of sustainability, and which they thought were most important. In addition, participants rated the degree to which various stakeholders were responsible for each of these dimensions. Study 3, which used a nationally representative sample, sought to demonstrate the utility of the proposed measure of consumer felt responsibility for sustainability (CFRS) in predicting product choice.

## 3 Studies

### 3.1 Study 1

The objective of Study 1 was to confirm that the proposed conceptual model of sustainability is relevant from a consumer’s point of view.

#### *Participants, Procedure, and Measures*

In order to include a relatively broad set of perspectives, this study used two different sampling frames for recruiting participants. Fifty-five undergraduate students from an East Coast university participated in this study in exchange for course extra credit. The authors recruited an additional twenty-nine participants, over the age of 30, from their professional (non-academic) and personal networks. Collectively, therefore, the sample included eighty-four participants (34 men and 50 women).

Participants completed the survey online. They were simply asked to respond to the following open-ended question: “How would you define sustainability? In other words, when you think about sustainability, what attributes come to mind (list as many as you can think of)?” Participants also provided some basic demographic information including age and gender.

#### *Data Coding*

One of the authors and a graduate student coded the open-ended responses independently. These responses were coded based on the proposed conceptual model of sustainability with the initial objective of identifying the frequency of responses that could be uniquely identified within each of the nine cells of the model (see Figure 1). After the initial round of coding, however, it became clear that some of the attributes did not fit into a single cell but instead overlapped with multiple cells. For example, while the response, “effort to make production processes as efficient as possible”, could be coded as *production-economic*, a response such as “preserving our environment for the long term” could be coded as *environmental*, but does not provide any indication that the respondent is considering specific behaviors or stages of the product lifecycle. Similarly, “conscious consumers” could be coded as *purchase & usage*, but does not explicitly identify specific issues (i.e., environmental, social, or economic). Therefore, although many responses could be uniquely coded within each of the nine cells of the conceptual model, the coding proceeded by reporting results for each major dimension, outcomes and behaviors, separately. In other words, each item was coded by behaviors (production, purchase & usage, disposal) and then by outcomes (environmental, social, or economic). This approach still accomplishes the objective of confirming the relevance of each of these dimensions, while being conservative by not forcing and, thus, over-stating the frequency of occurrence of responses by dimension. After using this protocol, the differences between coders were subsequently discussed, followed by additional iterations until the coding converged.

#### *Analysis and Discussion*

Overall, the analysis suggests that when thinking about the concept of sustainability, consumers consider both the behavioral dimension and the outcome dimension depicted in the conceptual model, albeit to different degrees. Specifically, many participants identified attributes that could be categorized as relating to each of the behavioral elements (production: 30%, consumption: 38%, disposal: 27%) and many also identified attributes that could be categorized as relating to each of the outcome elements (environmental: 69%, social: 31%, economic: 69%).

Prior surveys have suggested that for many consumers, although the rate of familiarity has been increasing, sustainability is still a relatively vague concept, with over 40% of consumers indicating that they are not familiar with the term (Hartman 2009). Thus, the aforementioned results need to be considered in light of consumers' ongoing adoption of this term. Further, note that some elements were mentioned more than others. For example, participants were especially likely to mention environmental attributes. Although consumers mentioned attributes relating to outcomes more often than attributes relating to behaviors, the results nonetheless suggest that many consumers do consider the behavioral elements and that, therefore, a definition that did not include this perspective would be incomplete. Thus, these results do seem to confirm that consumers overall identify attributes of sustainability that relate to both behaviors and to outcomes.

### 3.2 Study 2

The primary objective of Study 2 was to understand the degree to which consumers believe that they are responsible for sustainability related behaviors and outcomes. A secondary objective of Study 2 was to further validate the proposed conceptual model of sustainability and to understand which elements within the model consumers believe are most important.

#### *Participants, Procedure, and Measures*

Study 2 employed an online survey. In order to avoid the bias inherent in an exclusively student based sample, participants were recruited from the authors' professional (non-academic) and personal networks using snowball sampling, whereby the initial wave of participants was encouraged to forward the survey link to others within their own networks. The final sample included one hundred and seventy-one participants, drawn from 23 states. The average age was thirty-one (range of 18-70) and included seventy-two men and ninety-nine women.

After a brief introduction, participants were randomly presented with each of the nine descriptions of the elements of sustainability depicted within the conceptual model (i.e., the specific text within each cell of the conceptual model depicted in Figure 1). They rated the degree to which they agreed that each statement reflected their own definition of sustainability on a Likert scale from 1 (strongly disagree) to 7 (strongly agree). Next, they reviewed the same nine statements, again in random order, and rated the degree to which they believed that each of these elements were important, where importance was defined by the degree to which they "would support (item) directly through changes in your own behavior, or indirectly by supporting relevant reform of taxation, regulation and other policy changes". These ratings were also provided on a 1-7 Likert scale.

Next, participants reviewed each of the six statements in Appendix B and indicated how responsible various groups were for each of these elements of sustainability. This was accomplished by allocating a percentage, from 0-100%, to each of three groups: consumers, governments, and companies. Note that this question used six statements, each aligned with one of the three behavioral elements (production, purchase & usage, disposal) or one of the three outcomes (environmental, social, economic). This approach intentionally allowed participants to ascribe responsibility for each dimension independently, making it possible for us to understand whether consumers' evaluations of overall responsibility depend, in part, on the perspective, or frame, through which they view the issue. In other words, it is plausible that consumers view responsibility differently when considering behaviors as opposed to outcomes. Finally, participants responded to a series of demographic questions.

#### *Results*

With respect to the description of sustainability, the analysis suggests that participants overall believed that all nine elements of the conceptual model were relevant to their own definition of sustainability, albeit to different degrees. While mean ratings of all of the elements were higher than the midpoint of 4,  $F(1, 170) = 5.4$  or higher,  $p < .05$  or better, a subset of the elements were identified as being especially relevant by virtue of mean ratings that were higher than 5. Specifically, all of the elements related to environmental and disposal issues were all significantly higher than 5,  $F(1, 170) = 33.4$  or higher,  $p < .0001$ . A similar pattern emerged with the ratings of importance: all mean ratings were significantly greater than the midpoint of 4,  $F(1, 170) = 81.2$  or higher,  $p < .0001$ . Indeed, all mean ratings were 5 or greater. Once again, mean ratings were highest for elements related to environmental issues ( $M_{env} = 6.2$ ) and disposal ( $M_{dis} = 6.0$ ).

After confirming the validity of the proposed conceptual model of sustainability, the analysis proceeded with a focus on consumers' ascription of responsibility. As seen in Figure 2, the distribution of responsibility was relatively consistent across the three outcome elements. On average, participants believed that consumers are 31% responsible, governments are 33% responsible and companies are 36% responsible. On the other hand, substantial variance emerged across the three behavioral elements. Participants on average indicated that consumers are 19% responsible when considering production, 52% responsible when considering purchase & usage, and 42% responsible when considering disposal. This variance suggests that a behavioral framing of sustainability forces a focus on discrete choices and behaviors which can be more clearly attributed to different groups as opposed to a perspective focused on outcomes where perceived responsibility is more diffuse. Further, when considering the behavioral dimension in

aggregate, participants rated consumers as 38% responsible, which is substantially higher than an average of 31% when considering the outcome dimension.

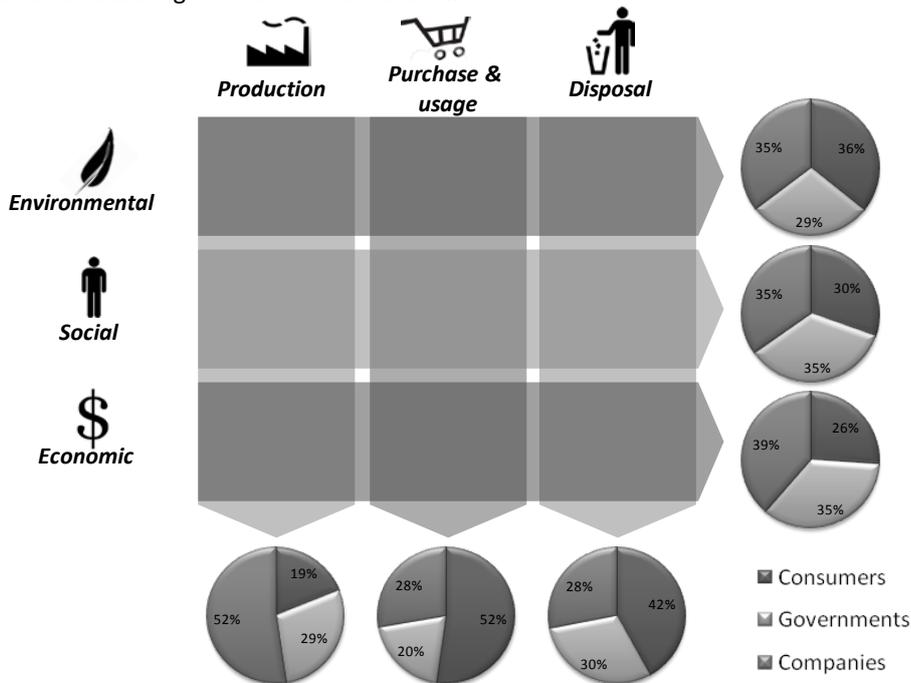


Figure 2. Average distribution of responsibility for sustainability (Study 2)

**Discussion**

Study 2 accomplished several objectives. First, the results further validate the two dimensional conceptual model of sustainability, building on the results from Study 1, and suggest that all of the elements of the model are relevant to consumers’ conception of sustainability. Similarly, the results suggest that consumers believe that all of the elements of sustainability within the model are important. The focus of Study 2, however, was to understand how consumers think about their responsibility for sustainability relative to the responsibility of governments and companies. While participants appeared to hold all groups responsible for sustainability, their responses depended on how the issue was framed. Specifically, while participants distributed responsibility relatively equally when considering outcomes, they acknowledge greater responsibility when considering sustainability from a behavioral perspective, which promotes a focus on discrete choices and behaviors.

**3.3 Study 3**

The primary objectives of Study 3 were to illustrate the degree to which perceived responsibility for sustainability varies by individuals and to demonstrate that this individual level measure can be a useful predictor of sustainability related consumption choices.

**Participants, Procedure, and Measures**

Given the objectives of this study, the authors recruited participants for an online survey using Amazon’s Mechanical Turk online marketplace. This service enables researchers to post surveys and pay registrants a small fee for participation; in this case \$.50 upon completion of the survey. This sampling frame made it possible to include a relatively large number of participants from all age groups and from a wide variety of geographic locations in the United States. Two hundred and fifty-two participants completed the survey.

The primary task presented in the survey was for participants to choose between two consumer products. Participants were simultaneously provided with information about two kitchen blenders (see Figure 3). While one blender had relatively superior “product performance”, the other was superior with respect to “sustainability.” This specific trade-off was used given the results of recent research suggesting that consumers often expect a trade-off between a product’s functional performance and its sustainability (Luchs et al. 2010). Therefore, this task presents a realistic choice that consumers may expect to face within the context of sustainable consumption. Further, this choice represents a growing trend within the consumer products industry where companies are providing consumers with explicit information about product sustainability (e.g., Timberland’s Green Index).

Imagine that you are in the process of choosing between the two blenders below. Please pay careful attention to the information given about each blender.

Please select the blender you would be most likely to purchase.

PRODUCT A			PRODUCT B		
Predicted <b>SUSTAINABILITY</b> of this product based on outcomes and impact:			Predicted <b>SUSTAINABILITY</b> of this product based on outcomes and impact:		
<b>Environmental</b> outcomes and impact:		5/10	<b>Environmental</b> outcomes and impact:		7/10
<b>Social</b> outcomes and impact :		5/10	<b>Social</b> outcomes and impact :		7/10
<b>Economic</b> outcomes and impact :		5/10	<b>Economic</b> outcomes and impact :		7/10
<b>Product Performance Rating :</b> 7/10			<b>Product Performance Rating :</b> 5/10		
Product A			Product B		

Figure 3. Illustrative product choice stimuli (Study 3)

Several different trade-off scenarios were used in this study. While some participants were provided with a sustainability rating that employed a behavioral perspective (production, purchase & usage, disposal), other participants were provided instead with a rating that employed an outcome perspective (environmental, social and economic). Likewise, the trade-off levels were manipulated between subjects (either 3/10 vs. 5/10, or 5/10 vs. 7/10). These two manipulations, hence *sustainability frame* and *rating range*, were intended to provide a variety of manifestations of the performance-sustainability trade-off. Order of presentation of the options was also counterbalanced (i.e., superior sustainability on the left vs. right of the screen).

After a brief introduction, participants reviewed the scorecard format without any ratings and were provided with additional details to inform them about what each was intended to convey (e.g., the environmental rating referred to “minimizing pollution, minimizing resource consumption and enabling recycling of resources”). They were also told to assume that the two products were otherwise the same (i.e., “cost the same and have equally attractive aesthetic designs”). Next, participants were presented with the scorecards and specific ratings, and were instructed to indicate which blender they would be most likely to purchase.

Following their choice, participants completed three sets of questions. First, they rated their level of agreement (from 1 = Strongly Disagree to 7 = Strongly Agree) with a set of five questions (see Appendix A) intended to measure Consumers’ Felt Responsibility for Sustainability (CFRS). These questions were adapted from an established scale of felt responsibility used within the context of organizational behavior change (Fuller et al. 2006; Morrison and Phelps 1999). Next, as a manipulation check, they rated which product was more sustainable and which had better performance on a seven point scale from 1 (Definitely A) to 7 (Definitely B). Then, they indicated the degree to which they agreed that a series of sustainability related items (see Appendix A) have been important factors when they purchased products previously (from 1 = Strongly Disagree to 7 = Strongly Agree). Each of these nine items, intended to collectively measure Sustainability Importance, aligned with one of the cells from the conceptual model of sustainability (Figure 1). Finally, the survey concluded with several demographic questions.

## Results

The two hundred and fifty-two participants in this survey included one hundred and ten men and one hundred and forty-two women, aged 18-84, representing twenty-six states. Prior to the analysis, the authors converted all relative product scores from a scale of 1 to 7, to a scale of -3 to 3 such that 0 represented a neutral mid-point (i.e., neutral between products A and B); the higher performing product was anchored at the lower end of the scale (-3) and the more sustainable product was anchored at the higher end of the scale (+3). A manipulation check confirmed that overall participants rated the more sustainable product as such ( $M_{\text{sust}}$  of 1.7 was significantly higher than the midpoint of zero,  $F(1, 251) = 240.3, p < .0001$ ) and rated the product with superior performance as such ( $M_{\text{perf}}$  of -2.0 was significantly lower than the midpoint of zero,  $F(1, 251) = 569.8, p < .0001$ ).

As a first step, the analysis focused on the ratings of Consumers' Felt Responsibility for Sustainability (CFRS) and Sustainability Importance (SI). Both scales demonstrated strong reliability, with alpha scores of .88 and .92 respectively; therefore, single measures were created by averaging the ratings within each scale. Further, the data for both CFRS and SI was widely distributed, with interdecile ranges of 3.2 and 2.7 respectively on a 7-point scale. While the means for both CFRS and SI were significantly above the neutral midpoint of 4,  $M_{CFRS} = 4.4$ ,  $F(1, 251) = 3037.7$ ,  $p < .0001$  and  $M_{SI} = 5.1$ ,  $F(1, 251) = 4536.5$ ,  $p < .0001$ , the mean of CFRS was significantly lower than the mean of SI,  $F(1, 250) = 99.48$ ,  $p < .0001$ . Thus, while participants overall agree that sustainability issues are important, they do not feel a commensurate sense of responsibility for promoting sustainability in their consumption choices.

Next, the analysis focused on the effects of CFRS and SI on choice. Overall, participants chose the product with superior performance more often than they chose the product with superior sustainability (169:83,  $\chi^2(251) = 28.0$ ,  $p < .0001$ ). Neither the manipulations of sustainability frame nor rating range, nor their interaction, predicted choice ( $p > .25$ ); therefore, ratings by participants across these two manipulations were combined in subsequent analyses. Both CFRS and SI independently predicted choice on their own. Specifically, an increase in CFRS positively influenced choice of the more sustainable product,  $\chi^2(251) = 30.51$ ,  $p < .0001$ , as did an increase in SI,  $\chi^2(251) = 12.9$ ,  $p < .001$ . When both CFRS and SI were entered into the same model predicting choice, however, while SI had no effect,  $\chi^2(250) = .1$ ,  $p > .25$ , the effect of CFRS remained significant,  $\chi^2(250) = 20.9$ ,  $p < .0001$ . Indeed, further analysis employing a bootstrap mediation using the approach and syntax provided by Preacher and Hayes (2008) suggested that the effect of SI on choice was mediated by CFRS (mean of indirect effect  $A \times B = .60$ , bias corrected and accelerated lower CI = .20, upper CI = 1.06,  $p < .01$ ). As a final step, the analysis addressed the simultaneous effects of CFRS and SI and their interaction on choice. With this model, choice depended on the interaction of CFRS and SI,  $\chi^2(249) = 8.1$ ,  $p < .01$ , while neither CFRS nor SI predicted choice on their own,  $\chi^2(249) = 1.3$ ,  $p > .25$  and  $\chi^2(249) = 2.1$ ,  $p > .10$ , respectively. Specifically, choice likelihood of the sustainable product was greatest (lowest) when both CFRS and SI were high (low).

### Discussion

Overall, our results suggests that while many consumers believe that sustainability related issues are important, a) they don't necessarily feel personally responsible for making different consumption choices and b) a sense of responsibility (or lack thereof) is a superior predictor of choice than beliefs about issue importance.

However, the positive interaction between CFRS and SI suggests that both of these measures - when considered together - can be useful predictors. While CFRS was more dominant than SI in Study 3, the likelihood of choosing the sustainable product was highest when both CFRS and SI were high. In other words, consumers appear most likely to choose sustainable products when they believe that sustainability related issues are important and when they also feel a personal sense of responsibility for making sustainable consumption choices.

## 4 General Discussion

The overall objective of the current research was to contribute to our understanding of the reasons underlying the ever-present gap between consumers' positive attitudes towards sustainability and the relative dearth of sustainability driven consumption behavior. Related to the concept of Corporate Social Responsibility (CSR), the current research focused on Consumers' Felt Responsibility for Sustainability (CFRS), which others have identified as an important yet under-researched topic (Peattie 2010; Wells, Ponting and Peattie 2011).

The current research contributes to our understanding of sustainable consumption in several ways. The results from studies 1 and 2 suggest that consumers, overall, construe sustainability quite broadly – as a set of both behaviors (production, purchase & usage and disposal) and outcomes (environmental, social and economic). Understanding how consumers construe sustainability is important because, as demonstrated in Study 2, consumers' ascription of responsibility for sustainability may depend, in part, on whether sustainability is viewed primarily as a set of behaviors or as a set of outcomes. Further, the utility of the proposed scale of consumers' felt responsibility for sustainability depends on an understanding of what sustainability means to consumers. The focal contribution of the current research, however, is the illustration of the importance of consumers' felt responsibility in the context of sustainable consumption and the demonstration of a brief scale that can easily be employed by other researchers and practitioners.

In addition, several implications follow from the current research related to how consumers construe sustainability and on the relationship between beliefs, felt responsibility and behavior in the context of sustainable consumption. Specifically, the current research is related to a growing body of consumer research applying construal theory (Liberman and Trope 1998) which shows that a consumer's "mindset," focused either on how (a low level of construal) versus why (a high level construal), has a significant effect on their attitudes and behaviors (Lee, Keller and Sternthal 2010; Tsai and McGill 2011; Ülkümen and Cheema 2011; White, MacDonnell and Dahl 2011). Similarly, the current research suggests that how sustainability is construed – as a set of behaviors or outcomes – influences consumers' ascription of responsibility. While these results are a small step forward, they highlight the value of the proposed conceptual model of sustainability and the potential for future research on construal theory and sustainability. From a practical point of view, it also follows that current efforts by companies and public policy makers (e.g., to develop

standardized sustainability labels for products) should consider how framing sustainability as a set of behaviors (e.g., choices) may have a different effect on consumer behavior than focusing solely on sustainability related outcomes. The current research also lends additional support to the utility of the value-belief-norm (VBN) model of environmentalism (Stern 2000) within the current context of consumer behavior and sustainability. Specifically, VBN predicts a chain of causality whereby values predict beliefs, beliefs predict personal norms (conceptually related to CFRS) and norms, in turn, predict behavior. As demonstrated in Study 3, beliefs about the importance of sustainability predict CFRS, and CFRS, in turn, predicts choice – consistent with VBN. However, the significant interaction between sustainability importance (SI) and CFRS in Study 3 suggests that beyond the causal relationship between beliefs and personal norms proposed by VBN, norms may moderate the effect of beliefs on behavior. In addition to the theoretical implication of this finding, an important practical implication is that efforts by companies and public policy makers to emphasize the importance of sustainability related issues should be complemented by concurrent efforts to emphasize consumers' sense of responsibility for more sustainable consumption behavior. This is especially true if, as suggested by the results of Study 3, consumers' average rating for felt responsibility is significantly lower than their average rating for sustainability importance. A greater emphasis on felt responsibility for sustainability could apply to a wide variety of media including product labeling, public policy appeals and promotional messages. Though the gap between attitudes towards sustainability and consumption behaviors remains wide, the current research suggests that a greater focus on consumers' felt responsibility for sustainability offers another lever towards a more sustainable consumer marketplace.

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## 6 Appendices

### Appendix A: Scale questions for Consumers' Felt Responsibility for Sustainability (CFRS) and Sustainability Importance used in Study 3

#### *Consumers' Felt Responsibility for Sustainability (CFRS)*

"Please indicate how much you agree (or disagree) with the following statements:"

- I feel obligated to try to implement sustainable practices where appropriate.
- It's up to me to bring about improvements in sustainability.
- I feel little obligation to challenge or change the way sustainability related practices have been conducted. (R)
- I feel a personal sense of responsibility to be more sustainable in my product choices.
- Correcting sustainability related problems is not really my responsibility. (R)

#### *Sustainability Importance*

"Please rate how much you agree that each of the following sustainability related issues is important to you. In other words, would information about each of the following affect whether or not you purchase a product? Please be candid in your response, considering your past purchase behavior."

- Minimizing pollution
- Using fair labor practices
- Using efficient production processes
- Minimizing resource consumption
- Supporting local communities
- Enabling product longevity
- Enabling recycling of resources
- Enabling fair and responsible product disposal
- Enabling re-use of resources after disposal.
- 

### Appendix B: Consumer Attribution of Responsibility for Sustainable Issues used in Study 2

"Please allocate a percentage to each of the following categories, indicating whose beliefs, values and behaviors have contributed the most to current sustainability related problems as they relate to..."

- **the environment**, where environmental sustainability is engaging in environmentally friendly practices and behaviors, and taking part in activities that do not harm the environment and avoiding activities that hurt the environment.
- **social justice**, where social sustainability involves showing concern for the social aspects of production, consumption, and disposal of goods.
- **the economy**, where economic sustainability means preserving economic success on a personal, corporate, and national level.
- **the production of goods and services**, where sustainability during production refers to the behaviors and activities during the extraction of raw materials, the production of goods, and rendering of services that ensure sustainability.
- **the consumption and use of goods and services**, where sustainability during consumption refers to the choices made during the purchase and use of products and services by both individual consumers and companies.
- **disposal and recycling**, where sustainability during disposal refers to the chosen methods of disposal of goods and materials, i.e. any behavior or action that occurs post-use.

## TESTING ALTERNATIVE MODELS OF EVALUATION DISPARITIES

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Recent research on evaluation disparities has demonstrated that, when subjects value a consumer item, they are sensitive to information regarding how other agents value the item. Ratios of willingness to pay (WTP) and willingness to accept (WTA) to the choice equivalent (CE) vary systematically according to the subjects' location within the distribution of valuations across subjects, while WTA and WTP are influenced by how valuations relate to reference

prices. Our objective is to construct competing models of this economic behavior and compare them with existing data on the WTA-WTP disparity.

We construct three models based on three different rationales for subjects being influenced by the valuations of others: (1) Direct loss of "transaction utility" due to buying or selling at a less attractive price than others (2) Aversion to the risk of a strongly asymmetric split of the transaction surplus (3) Optimal price setting over a potential series of encounters. These models all explain WTA-WTP gaps without assuming that agents possess reference-dependent preferences. The three models predict different patterns of relativities between WTA, WTP and CE across the valuation distribution. We test these predictions using raw individual-level data from published studies, some of which employ within-subjects designs.

The relativities between WTA, WTP and CE vary across the distribution of valuations, but the pattern of variation is not consistent. Preliminary analysis suggests that while no one model is consistent with all of the data, there is evidence that aversion to uneven surplus splits is a factor in evaluation disparities. We anticipate obtaining more data over coming months.

The variation in evaluation disparities that we record is difficult to explain with a model based on reference-dependent preferences. WTA and WTP appear to be systematically affected by perceptions of possible prices and may be constrained by what is considered to be a fair trade.

*Keywords: choice, loss aversion, prices, fairness*

## NOT ALWAYS GOOD MEANS BETTER – ABOUT PSYCHOLOGICAL FACTORS INFLUENCING EFFECTIVENESS OF CAUSE RELATED MARKETING CAMPAIGN

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*Cause-related marketing* (CRM) refers to a type of marketing involving the cooperative efforts of a "for profit" business and a non-profit organization for mutual benefit. CRM is a relatively new phenomenon in Poland and is still evoking many doubts and controversies among consumers. At the same time many of CRM campaigns are not effective, don't have positive influence on business and as a consequence don't give enough benefits for non-profit organization. Our research project was focused on understating psychological factors, which might influence the effectiveness of CRM campaign.

In the first experiment (n=207) we were investigating significance of distance to helped object (organization which is going to receive the help: orphanage in Poland vs. in Roma) and size of the company, which is giving help (small, local, Polish company vs. international, global company). The result showed that in case of CRM campaign done by global company better evaluated was action directed to Polish children than Romanian. However when CRM campaign was organized by local Polish company campaign directed to Romanian children was better evaluated. In the second experiment (n=189) we analyzed effectiveness of CRM campaign depending on social proof (information about number of people involved in action) and individual level of pro-social disposition (low vs. high tendency to help others). People having high level of internal tendency to help others, paradoxically, when have heard that big part of the society is engaged in the action, were less willing to engage in the action than in the situation without this information (social proof was demotivating them). In the third experiment (n=202) we were manipulating type of receiver of help from the perspective of attribution of guilt (drug addict vs. cerebral palsy) and type of pro-social motivation of consumer (endo- vs. exocentric). The results showed that type of receiver of help (level of attribution of guilt) has influenced effectiveness of campaign among people with endocentric pro-social motivation (less willing to help drug addicts) than people with exocentric motivation.

The results of three studies are showing that there are many factors which might influence effectiveness of cause related campaigns, such as type of organizer of campaign (local vs. global), perception of object of help (level of guilt attribution) and internal, psychological traits of consumer who decide about choosing brand of product (type of pro-social motivation).

*Keywords: donation/charity, prices, advertising*

## THE IMPACT OF ENTREPRENEURIAL AND CUSTOMER ORIENTATION ON THE GROWTH OF SME-S AND FAMILY FIRMS

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### Abstract

The objectives of the study is investigation of the impact of entrepreneurial and customer orientation on the growth of Family firms and other SME-s.

By Eggers at all a measurement scale was developed to capture the dimensions of entrepreneurial orientation (proactiveness, innovativeness, risk - taking). We adapted this questionnaire in Hungary and investigated a sample with 400 people of SME-s. We distinguished family and other firms.

The study showed that entrepreneurial orientation requires the existence of financial resources. In the case of insufficient financial resources firms tend to behave customer orientation. We did not find significant differences between family and other SME-s.

Our conclusions that sustainable firm growth based on entrepreneurial orientation. In dimensions of entrepreneurial orientation familiness do not cause differences between SME-s.

*Keywords: choice, risk taking*

## 1 Introduction

Today's firms work in turbulent markets with rapidly changing and uncertain environmental variables. So effective management and strategic orientation has become very important. This study investigates the impact of entrepreneurial orientation (EO) and customer orientation (CO) on the growth of small and medium-sized enterprises (SMEs). Small-and medium-sized enterprises are the dominant enterprise form; and according to estimates, 65-80 percent of this companies are run by families. So, the growth of these firms is very important for their economies. The topic of family firms has a growing special literature, in which there are a lot of evidence that this type of firm has important typical characteristics. So we assumed that in our investigation, we will find significant differences in the above mentioned topics between these two type of firms, although the investigated organization are all SMEs.

## 2 Objectives

As part of an international research team, we have investigated the connections among the factors of Kraus at al's (2011) model in the topic of the impact of entrepreneurial and customer orientation on the growth of SME-s, in a Hungarian sample. The core question of our research is how management orientations affect the growth of SMEs and within this group, that of family firms. We assumed that there are differences in these orientations between family and non-family firms. The research model based on the assumption and findings of the special literature and includes the constructs described in the following subsections.

### 2.1 Construct of entrepreneurial orientation

Entrepreneurship and EO are seen in the literature as drivers of company growth. The entrepreneurial orientation (EO) construct was developed by several authors (e.g. Lumpkin and Dess, 1996). Entrepreneurial orientation is defined as „individual opportunistic activity that creates value and bears risk, and is strongly associated with innovation: it is a process of opportunity recognition and pursuit that leads to growth (Sexton and Kasarda, in: Hinson 2011).

Entrepreneurship is an element of a firm's strategy that can be analysed in the processes and behaviours of the organization (Covin and Slevin 1988).

Entrepreneurship and an orientation to it are seen as drivers of company growth. Several authors have investigated the impact of EO on firm performance and have found that EO is a construct that is associated with firm success, particularly in the long run (Eggers et al 2012).

Miller (1983) depicted entrepreneurship as a multidimensional phenomenon with three dimensions. Each dimension represents different behavior, they are the following: innovativeness, risk taking and proactiveness.

## 2.2 Construct of customer orientation

"The customer orientation focuses on the more immediate fulfillment of customer needs. (...) CO is associated with responsiveness which represents the selection of target markets including the design and offering of products or services that fit customer needs" (Eggers et al 2012, p. 207). Therefore, CO is associated with a short-term focus. According to Eggers et al (2012), a firm with a high level of EO has a higher growth potential than those which mainly rely to a higher CO. By some findings, entrepreneurs who have a high level of CO have lower growth intentions, and a higher level of EO is in connection with higher growth intentions (Delmar and Wicklund 2008).

Figure 1 shows the investigated dimensions in our research, on the basis of the above mentioned models and empirical findings.

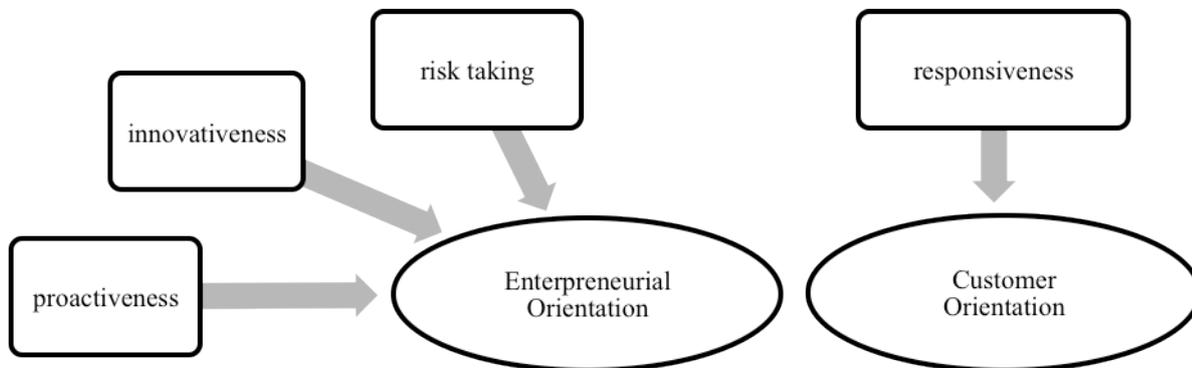


Figure 1. EO and CO Dimensions

## 2.3 Family and non-family businesses in area of SMEs

In our paper, we make a differentiation between family and non-family businesses. Reviewing the family business-related beliefs, we can find very controversial findings. Studying from the perspective of business studies, it is assumed that family businesses usually are not professional, not modern, but unreal, moreover, contradict common sense. The spread of these beliefs is only questioned by one fact: namely, that the family business is the most important form of businesses in almost every nations in the world economy (Klett 2005).

As a working definition for our research, we have chosen that of the European Union, according to which:

1. The majority of decision-making rights is in the possession of the natural person(s) who established the firm, or in the possession of the natural person(s) who has/have acquired the share capital of the firm, or in the possession of their spouses, parents, child or children's direct heirs.
2. The majority of decision-making rights are indirect or direct.
3. At least one representative of the family or kin is formally involved in the governance of the firm.
4. Listed companies meet the definition of family enterprise if the person who established or acquired the firm (share capital) or their families or descendants possess 25 per cent of the decision-making rights mandated by their share capital. (European Commission 2009).

In this form of business, there are at least two social systems which have different logics are interlinked. Due to those facts which we described above, family businesses in the literature are sometimes also called paradoxical organizations (Wimmer et al, 2004). Paradoxical means being controversial, stressful, even impossible, and these markers have already been mentioned several times in connection with those two different systems which exist in close interaction and which are based on ownership.

Family businesses can often be characterized by a slower growth as well as slower decision-making processes (Meyer and Zucker 1989), they are reluctant to invest in risky projects (Gersick et al 1997), they resist change and they are often less innovative than non-family firms (Gomez-Meija et al, 2003). Schulze et al (2003) considers family firms as inefficient, because the owner managers have a tendency to show altruistic behavior towards family members. Lester et al (2006) attributed better performance to family firms compared to non family firms as in their opinion, families are better stewards of firm resources. Both theoretical and empirical findings in this topic are still open for discussion. All in all, according to the literature on family businesses they have distinguishable characteristics, on the basis of which we assume that these characteristics exist in connection with the entrepreneurial and market orientation as well.

In our empirical study, we examine SMEs in order to find an answer to whether the differences between family and nonfamily businesses described in literature appear in connection with business and market orientation. According to the Central Statistical Office of Hungary (2011), Hungarian small and medium-sized businesses have a very high number. There are 1.789 million registered firms and out of this number, there are 697 thousands which are active. The ratio of SMEs is 99.9%. The vast proportion of SMEs are micro enterprises, their proportion is 96%. SMEs (small and medium-sized enterprises) are very heterogonous and they have several subtypes with different characteristics. They have a quantitative definition on the basis of two aspects (that of Hungary's is shown in Table 1.):

1. **number of employees**, and
2. either **turnover** or **balance sheet total**.

Company category	Employees	Turnover or Balance sheet total	
Medium-sized	< 250	≤ € 50 M	≤ € 43 M
Small	< 50	≤ € 10 m	≤ € 10 m
Micro	< 10	≤ € 2 m	≤ € 2 m

Table 1. The quantitative definition of SMEs. EU recommendation 2003/361.

As mentioned before, the Central Statistical Office have not yet examined the proportion of family businesses in the business sector, but according to the research of SEED Small Enterprise Development Foundation (Horváth 2008), the estimated proportion of family businesses within corporations is at least 50%, and within individual companies it is at least 20%. So in Hungary, the number of family businesses are at least four hundred thousand, and at least one million people are provided with jobs by them. Therefore, family businesses have a very big role in employment: they often provide workplace for members of the family who could not be employed in the labor market (Scharle 2000). These ratios are presented in Figure 2.

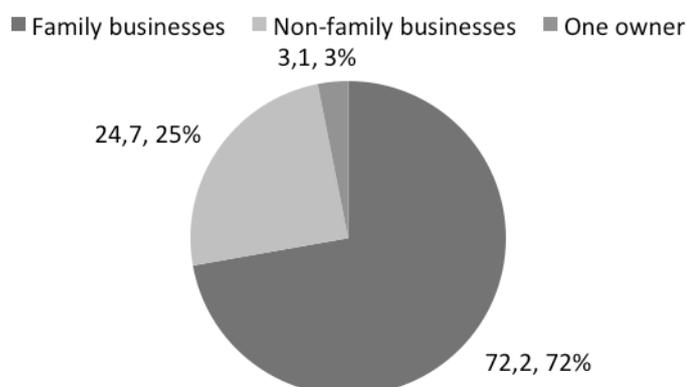


Figure 2.: Ratio of family and non-family businesses in Hungary (Filep and Petheő 2008, p.3.)

Family businesses have a much greater than the average proportion in labor intensive sectors, like in agriculture, retail and wholesale trade, or tourism (Scharle 2000).

With regards to the ownership, SEED Foundation for Small Enterprise Development data collections of the Hungarian small and medium-sized businesses indicate that in more than 58% of SMEs, there are at least two owners from the same family. Generally, spouses and children are to become partners, the brothers or other relatives' cooperation is less typical. Hungarian family businesses often fear that outsiders are unreliable, and therefore prefer to employ family members or relatives. A 1998 study found that 52.39% of starting businesses did it with family members, 21.58% of them did not, and at 26.02% of them, family members later joined the company (Filep and Petheő 2008, Scharle 2000).

According to the research of Laky (1998), these companies are not growth-oriented, but consumption-oriented, which means that their development is accustomed to the needs of the household instead of their possibilities. Most businesses seek help and advice from family members or sometimes external partners. During their entrepreneurial activities, they rather build on their particular experiences, their studies, books and other family members' experiences (Filep-Petheő 2008).

### 3 Method

In our research, we used a questionnaire (called COEO), developed by Eggers et al (2012) on the basis of the special literature. The aim of our cooperation may be a future international comparison in this topic. The description of the methods will be based on the dimensions and model created by Eggers et al (2012).

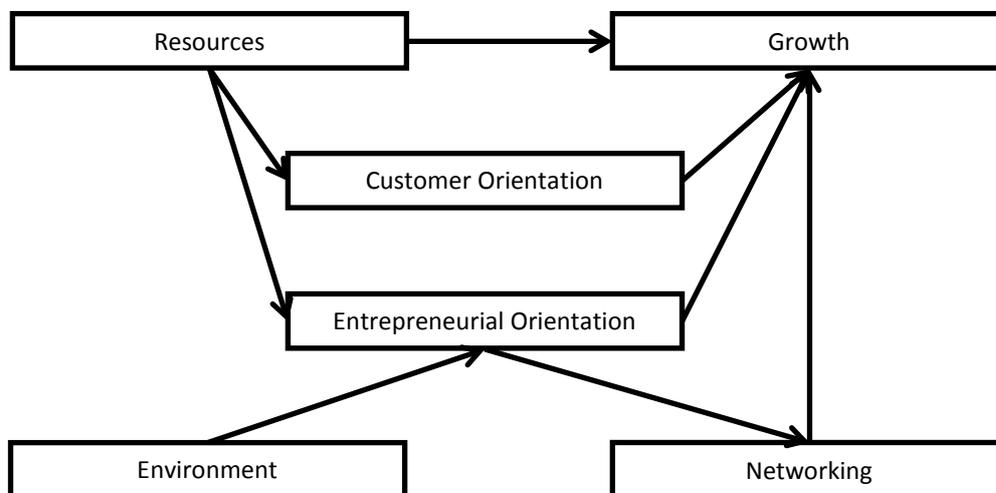


Figure 3. Research model. Own construction based on Eggers et al (2012)

One of the assumptions of our research model (Figure 3) is that the firms' EO and CO behaviour is affected by the availability of financial resources. The level of risk-taking and proactivity is higher when access to capital is greater. The less financial resources are available, the more a firm needs to focus on short term returns and survival. According to the model, there is a direct link between financial resources and success and the growth of firms.

The questionnaire includes three dimensions of EO: risk-taking, proactiveness and innovativeness. The measurement of the items of these dimensions were developed by Covin and Slevin (in: Green et al 2008). Performance is measured with the increase in sales growth, employment growth, and market share. "All three items were measured on a five point Likert type scale, and respondents were asked to compare the performance of their business with their direct and indirect competitors" (Kraus, 2011. p. 10.).

The validity of the questionnaire is provided by a double-blind translation. On the basis of the above mentioned arguments, our hypothesis are the following.

H1: higher entrepreneurial orientation (EO) leads to higher growth.

H2: higher customer orientation (CO) leads to higher growth.

H3: in family firms, the level of risk-taking is lower.

H4: in family firms, the level of innovativeness is lower.

### 4 Results

After accidental sampling of Hungarian SMEs, 456 answer arrived, and 445 of them were evaluable. From the sample, 48,3% are micro firms, that is less than their rate of 95.5% among the SMEs (about 700 000 have been operated in the country), measured by Central Statistical Office. The rest of the sample is composed as thus: 39,8% are small, 11,9% are medium sized enterprises. In our opinion, this difference in the distribution from the base population is not a problem, because this way not only micro but also small and medium enterprises are represented by several firms in the sample. The survey is not relevant for one-man firms, and Central Statistical Office doesn't make any statements about SMEs with zero or one employee, meaning thato quota sampling wasn't a real option. Random sampling was blocked because of legal circumstances.

One half of the companies in the sample have their headquarters in one region (Southern Great-plain). Less than 5% of them were established before 198,8 because of historical circumstances, but one half of them are older than 10 years. By legal form, 48% of them are sole proprietorships, 31% is Ltd., 11% is unlimited partnership, and 10% is something other. Three quarters of the entrepreneurs in the sample are male, the age of the respondents varies between 20 and 80 year (Mean=43,18 S.D.= 10,04). 35% of them have established more than one firms already. 87% of enterprises are first generation, 21% of the sample plans a change of generation in the next five years.

In our sample, the proportion of family businesses per definition is 62%, which is similar to other studies in Hungary. We found difference between family and non-family businesses in two areas. According to the Kolmogorov-Smirnov test with a 5% significance level, there are more sole proprietorships among family businesses, and non-family businesses are more frequently operate in a form of Ltd. The second difference is that non-family businesses have a significantly higher number of average employees.

We have not found any differences of COEO survey scales with a Kolmogorov-Smirnov test between family and non-family businesses, so we reject our Hypothesis 3 and Hypothesis 4. We continue the analysis without distinction before we review the consequences of these results in the discussion.

According to Horváth (1997), the reliability of COEO survey scales is high enough (Table 2.) Cronbach's alpha of all EO items is 0,852. The CO and the joint EO scale have a normal distribution, but all other scales differ significantly from normal distribution.

COEO scales	Cronbach's Alfa
responsiveness (CO)	0,758
risk (EO)	0,738
proactiveness (EO)	0,652
innovativeness (EO)	0,737
resources	0,528
environment	0,879
networking	0,658
growth	0,897

Table 2.: Reliability of COEO Questionnaire Scales

To investigate the relationship between the CO, EO and items of growths scale, we followed a method of Green et al (2008). We created 4 groups with a median split of CO and EO. Growth items consider the growth of several aspects (sales, profit, market share, employees) in companies compared to competitors on a five point scale. We ordered the means of groups and the results can be seen on Table 3.

COEO groups	Sales Growth	Profit Growth	N. of Employees Growth	Market Share Growth
High EO – High CO	1	1	2	2
High EO Low CO	2	2	1	1
Low EO High CO	3	3	3	3
Low EO Low CO	4	4	4	4

Table 3.: Growth Ranks according to EO and CO

A high EO is the most important factor in high growth. Thus, our Hypothesis 1 can be considered as proven. On its own, a high CO besides a low EO resulted in a lower number rank on all growth items. With the variables of sales and profit indicating short-term growth, the most successful strategy is the co-existence of CO and EO. Increasing the number of employees and the level of market share that provide a long-term growth can be ensured most efficiently by a high level of EO and a low level of CO. This proves our Hypothesis 2 on a short-term growth, which is parallel with the findings in the literature stating that CO can help short-term growth through higher sales and therefore a higher profit.

In Table 4, the correlation connection numbers between COEO survey scales, the cumulated EO scale, the age of entrepreneurs and the number of employees can be seen. Because of the background mode, there is multicollinearity in the data so the measure of Spearman correlation is more appropriate than a factor analytical method.

correlated on a fairly low level ( $r=0,155$ ,  $p<0,01$ ) which is only half as strong as the correlation between EO and growth ( $r=0,317$ ,  $p<0,01$ ). This supports our Hypothesis 1 and 2 according to which both entrepreneurial and customer orientation can improve growth, but EO has a higher correlation with it. An additional result is that the age of entrepreneurs and EO are correlating in a negative way ( $r=-0,107$ ,  $p<0,05$ ), which can be backtracked to risk-taking and innovativeness scales. It is presumable that this connection contributes to the result that growth is also negatively correlated with age of entrepreneurs ( $r=-0,189$ ,  $p<0,01$ ). The number of employees is not correlated with CO, EO or the age of entrepreneurs, but it is connected with resources, environment and networking. It is well known that bigger companies usually have more resources, can adapt new technologies faster of its industry and have a bigger business network.

	1	2	3	4	5	6	7	8	9	10	11
1. responsiveness (CO)	1,000										
2. risk (EO)	,405**	1,000									
3. proactiveness (EO)	,545**	,464**	1,000								
4. innovativeness (EO)	,431**	,556**	,562**	1,000							
5. resources	,240**	,364**	,257**	,389**	1,000						
6. environment	,337**	,426**	,422**	,538**	,346**	1,000					
7. networking	,406**	,365**	,479**	,466**	,307**	,433**	1,000				
8. growth	,155**	,364**	,269**	,481**	,460**	,456**	,301**	1,000			
9. EO	,591**	,702**	,942**	,634**	,312**	,470**	,501**	,317**	1,000		
10. Age of entrepreneur	-,008	-,185**	-,062	-,131**	-,059	-,098	,012	-,189**	-,107*	1,000	
11. Number of employees	,033	,070	,057	,203**	,322**	,217**	,104*	,316**	,085	,052	1,000

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

Table 4.: Spearman correlation of COEO scales, EO, age of entrepreneur and number of employees

In the correlation matrix we can see that there are stable connections between the scales of EO. CO and growth Discussion

In our paper we investigated the relationship between managerial orientations and growth. In case of the investigated SMEs, several factors of managerial orientation affect growth in different way. We found a connection between EO and long-term growth and between CO and short-term growth. We did not found any differences in the area of management orientations between family and non-family businesses. Most challenges of family firms coincide exactly with those of the firms that are not family-owned. Family firms are affected to the same extent by the troubled economic situation, the constant changes of tax regulations and laws, and the increasing administrative burden (Filep – Petheő 2008). In our opinion, the support of our Hypothesis 1 and partly 2 is consistent with some important findings of the literature.

We should consider the limitations of our study. Accidental sampling can distort the data; there may be cultural differences between different economic regions; and COEO survey is a fairly new measurement tool, but we are working together with Kraus and Eggers on the improvement of these constructs.

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## SO WHEN ARE YOU LOSS AVERSE? - TESTING THE S-SHAPED FUNCTION IN PRICING AND ALLOCATION TASKS.

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In many experimental studies, subjects are asked to declare the certainty equivalent of either positive or negative bets, or choose between certain and uncertain assets. In these cases, we see only the final decision, not the range of possibilities that are often hidden by the requirement to make a binomial choice. In addition, many experimental studies report their results as averages, not individually. In this paper, we use individual results and allocation tasks that are not commonly used for risk aversion analysis to test the validity of the S-shaped value function as a predictor of loss aversion behavior. Allocating money between assets is a very common financial task and we suggest that individual analysis as well as allocation tasks may help us better understand the value function and loss aversion behavior.

We look at the case of uncertainty about gains and losses in auctions and asset allocation tasks, and ask, does the S-shaped value function explain the decision makers' behavior? We test our question in two experiments, one involving auctions and the second requiring the allocation of money between assets. In both experiments, we use the Pre-Payment Mechanism in which money is distributed to participants two weeks prior to the experiment and participants are asked to use this money in the experiment. In the PPM, the participants are likely to see the initial allocation as their own money, and will make decisions as though they are using their own money.

On average, 69% of the bids in the domain of gains reflect risk aversion, and 48% of the bids in the domain of losses reflect risk seeking. In the allocation tasks and in the auction only 37% of the participants show risk aversion in the domain of gains and risk seeking in the domain of losses, consistent with the S-shaped function.

The S-shaped function implies that when subjects move from the domain of gains to that of losses, they will increase their allocation to the risky asset. We show nine different types of participants and argue that the S-shaped function is relevant only for less than 40% of the population.

*Keywords: investments, choice, risky choice, prospect theory, loss aversion*  
Abstract number 0139

## RIGHT-BRAIN STIMULATION AND RECEPTIVITY TO PRO-SOCIAL VISUAL MESSAGES

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### Abstract

When it is about pro-social or charitable behavior, there are two important components to discuss: the decision to „give”- a whole process including a mix of calculations and emotions – and the actual perception of the solicitor's message.

In regard with the theory of brain lateralization, we aimed to demonstrate that manipulating the stimulation of right-brain area by visual stimuli influence subjects' emotional response to the pro-social message presented.

Thus an experimental study has been conducted on 60 subjects, with the Independent Variable IV being a popular optical illusion (known as the „*spinning dancer*”) - supposed to induce different hemispheric stimulation, depending on the spinning direction. Two Dependent Variable DV have been recorded:

- Emotional component of response (ECR) – based on subjects' choice among different emotional significant words (previously selected from Affective Norms for English Words)
- Attitudinal component of response (ACR) - based on subjects' choice among different calls to action.

For both Dependent Variables, significant differences between groups have been recorded, which suggests that it would be possible – for the video ads' creators – to increase the receptivity of consumers to the pro-social message, in different charitable campaigns, by using tested visual cues or other different methods of stimulating the right brain preferentially.

The obtained results open a whole perspective for future research in consumer behavior and neuromarketing, like - for example - measuring different biometric indicators and putting them in relations with the dependent variables of the study. This interdisciplinary research is thus a starting point in understanding the charitable behavior from a different perspective.

*Keywords: donation/charity, advertising, neuromarketing, brain*

### 1 Introduction

When it is about pro-social or charitable behavior, there are two important components to discuss: the decision to „give”- a whole process including a mix of calculations and emotions – and the actual perception of the solicitor's message.

According to the theory of brain lateralization there are specified specific functions of the two hemispheres. The left hemisphere specializes in analytical thought. The left hemisphere deals with hard facts: abstractions, structure, discipline and rules, time sequences, mathematics, categorizing, logic and rationality and deductive reasoning, knowledge, details, definitions, planning and goals, words (written and spoken and heard), productivity and efficiency, science and technology, stability, extraversion, physical activity, and the right side of the body. The right hemisphere specializes in the "softer" aspects of life. This includes intuition, feelings and sensitivity, emotions, daydreaming and visualizing, creativity (including art and music), color, spatial awareness, first impressions, rhythm, spontaneity and impulsiveness, the physical senses, risk-taking, flexibility and variety, learning by experience, relationships, mysticism, play and sports, introversion, humor, motor skills, the left side of the body, and a holistic way of perception that recognizes patterns and similarities and then synthesizes those elements into new forms.

The research question raised in the study was if there are any influences made by right-brain stimulation (visual stimuli) on different types of response to a charitable demand. By types of response we referred to emotional response and intentional response. We expected a right brain stimulation to enhance the charitable behavior.

As stated by Jeanne Sørensen (2008) in her paper for Aalborg University, emotions and feelings have long been recognized as important factors in consumer decision making. The recognition of the importance of emotion in

decision-making is an actual line of research in psychology, marketing and economy, in part due to the findings in cognitive neuroscience.

The emotional response is not an easy to identify variable in the case of decision making. Trying to get the most of any primary emotional reaction, we used the PAD Emotional State Model that has been detailed by Mehrabian (1980, 1995, 1997). The Model consists of three nearly independent dimensions that are used to describe and measure emotional states (or feelings, affective conditions): pleasure- displeasure, arousal-nonarousal, and dominance-submissiveness. "Pleasure-displeasure" distinguishes the positive-negative affective quality of emotional states, "arousal-nonarousal" refers to a combination of physical activity and mental alertness, and "dominance-submissiveness" is defined in terms of control versus lack of control.

According to Mehrabian, the importance of using all three of the pleasure, arousal, and dominance dimensions has been amply demonstrated in research dealing with consumer retail environments. In particular, the review of Yani-de-Soriano and Foxall (2006) has highlighted the "critical role of dominance-submissiveness for understanding consumer behaviors."

In order to measure the PAD emotional states, we used the Self-Assessment Manikin (SAM), which is a non-verbal pictorial assessment technique that directly measures the pleasure, arousal, and dominance associated with a person's affective reaction to a wide variety of stimuli.

In this experiment, we compare reports of affective experience obtained using SAM, which requires only three simple judgments, to the choice of words with different affective valence and to the intention formulated in 4 different ratings. Subjective reports were measured to a series of pictures that varied in affective valence (positive, neutral, negative and charity-appealing).

## 2 Objectives

In regard with the theory of brain lateralization, we aimed to demonstrate that manipulating the stimulation of right-brain area by visual stimuli influence subjects' emotional response and intention to the pro-social message presented.

## 3 Method

An experimental study has been conducted on 60 subjects, with the Independent Variable being a popular optical illusion (known as the „spinning dancer“) - supposed to induce different hemispheric stimulation, depending on the spinning direction.

Although unproven and not the original intention of the author (for the spinning dancer to be a brain test) the meaning of the spinning dancer has often been associated as follows: If clockwise- the left side of the brain is working if counter-clockwise - the right side of the brain is working.

For measuring the emotion generated in the presences of different affective stimuli, three pictures that varied in affective valence were selected from the Geneva affective picture database (GAPED). The GAPED is a collection of color photographs, normatively rated using SAM, and designed for distribution and research use around the world as standardized affective materials, such as IAPS.

Two separate types of presentation of these slides were constructed (one with the spinning dancer appearing before each picture and one without). Each subject was randomly assigned to view pictures in one of these scenarios.

Each subject was run individually in a laboratory room. After filling out a consent form, the subject was seated at a table with a laptop that showed the randomly assigned scenario. The subject was instructed that a series of pictures would be presented, and that several ratings of his reaction to each picture would be made using the booklet in front of him.

All pictures were displayed for 6 seconds, while the spinning dancer was watched as long as the subject could count 6 seconds on clockwise rotation. Subjects were instructed to look at the slides the entire period they were displayed, until the message "please complete the forms with your ratings" appeared. The procedure continued until all 4 slides (positive, neutral, negative and charitable-appealing) were viewed and rated.

Two Dependent Variables were recorded:

- Emotional component of response (ECR) – based on SAM ratings and on subjects' choice among different emotional significant words (previously selected from Affective Norms for English Words).
- Attitudinal component of response (ACR) - based on subjects' choice among different calls to action, measure by the subject's rating given on different intentional statements.

For the ECR, Paper-and-pencil SAM ratings for the 4 pictures were used. In this study, each picture was viewed for 6 seconds, and immediately rated for pleasure, arousal, and dominance. In all administrations involving SAM, the subject was instructed to rate his personal reaction to the picture. No other verbal or semantic significant words have been used.

In order to confirm the recorded emotional response a second measure has been made, by having the subject selecting one of three different emotional significant words (previously selected from Affective Norms for English Words). The words were selected by the criteria of having similar valence, activation and dominance score. Thus, for

the three positive words, the valence was: 8.37, 8.19, and 8.35, for negatives: 1.8, 1.85, and 1.83 and for the neutral: 4.88, 4.80, and 4.85.

The attitudinal component of response (ACR) - based on subjects' choice among different calls to action was measured by the subject's rating given on different intentional statements, referring to four dimensions: implication, avoiding, cooperation and rejection.

Finally, a direct charitable appeal called for an amount of money the subjects were willing to donate, after seeing the last picture.

#### 4 Results

In order to measure the right brain stimulation on charitable behavior we conducted a T Test that revealed a significant difference between the two groups.

**Independent Samples Test**

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Suma	Equal variances assumed Equal variances not assumed	19,448	,000	-2,270	27	,031	-278,846	122,842	-530,898	-26,794
				-2,042	12,198	,063	-278,846	136,567	-575,866	18,174

Table 1. T test for the charitable intention.

**Ranks**

grup	N	Mean Rank	Sum of Ranks
Activare_emotie_pozitiv	Grup control	14	15,04
	Grup experimental	14	13,96
	Total	28	210,50
Dominanta_emotie_pozitiv	Grup control	14	15,93
	Grup experimental	14	13,07
	Total	28	223,00
Valenta_emotie_neutru	Grup control	15	15,13
	Grup experimental	14	14,86
	Total	29	227,00
Activare_emotie_neutru	Grup control	14	11,50
	Grup experimental	12	15,83
	Total	26	161,00
Dominanta_emotie_neutru	Grup control	15	14,03
	Grup experimental	12	13,96
	Total	27	210,50
Valenta_emotie_negativ	Grup control	15	12,90
	Grup experimental	14	17,25
	Total	29	193,50
Activare_emotie_negativ	Grup control	15	12,60
	Grup experimental	14	17,57
	Total	29	246,00
Dominanta_emotie_negativ	Grup control	14	17,93
	Grup experimental	16	13,38
	Total	30	251,00
Valenta_emotie_caritabil	Grup control	16	14,59
	Grup experimental	15	17,50
	Total	31	233,50
Valenta_emotie_caritabil	Grup control	14	13,96
	Grup experimental	15	15,97
	Total	29	239,50
Activare_emotie_caritabil	Grup control	14	17,18
	Grup experimental	14	11,82
	Total	28	165,50

Table 2. Mann-Whitney test for SAM

**Test Statistics<sup>b</sup>**

	Activare_emotie_pozitiv	Dominanta_emotie_pozitiv	Valenta_emotie_neutru	Activare_emotie_neutru	Dominanta_emotie_neutru	Valenta_emotie_negativ	Activare_emotie_negativ	Dominanta_emotie_negativ	Valenta_emotie_caritabil	Valenta_emotie_caritabil	Activare_emotie_caritabil
Mann-Whitney U	90,500	78,000	103,000	56,000	89,500	73,500	69,000	78,000	97,500	90,500	60,500
Wilcoxon W	195,500	183,000	208,000	161,000	167,500	193,500	189,000	214,000	233,500	195,500	165,500
Z	-,358	-,956	-,096	-,1535	-,026	-,1418	-,1595	-,1439	-,926	-,645	-,1762
Asymp. Sig. (2-tailed)	,720	,339	,924	,125	,979	,156	,111	,150	,355	,519	,078
Exact Sig. [2*(1-tailed Sig.)]	,734 <sup>a</sup>	,376 <sup>a</sup>	,949 <sup>a</sup>	,160 <sup>a</sup>	,981 <sup>a</sup>	,172 <sup>a</sup>	,123 <sup>a</sup>	,166 <sup>a</sup>	,379 <sup>a</sup>	,533 <sup>a</sup>	,085 <sup>a</sup>

a. Not corrected for ties.  
b. Grouping Variable: grup

Table 3. Mann-Whitney test for SAM - statistics

Ranks			
grup	N	Mean Rank	Sum of Ranks
Valenta_cuivant_pozitiv	Grup control	16	16,03
	Grup experimental	16	16,97
	Total	32	271,50
Valenta_cuivant_neutru	Grup control	16	17,53
	Grup experimental	15	14,37
	Total	31	215,50
Valenta_cuivant_negativ	Grup control	16	15,97
	Grup experimental	16	17,03
	Total	32	272,50
Valenta_cuivant_caritabil	Grup control	16	17,75
	Grup experimental	16	15,25
	Total	32	244,00

Test Statistics <sup>a</sup>				
	Valenta_cuivant_pozitiv	Valenta_cuivant_neutru	Valenta_cuivant_negativ	Valenta_cuivant_caritabil
Mann-Whitney U	120,500	95,500	119,500	108,000
Wilcoxon W	256,500	215,500	255,500	244,000
Z	-,347	-1,519	-,507	-,904
Asymp. Sig. (2-tailed)	,729	,129	,612	,366
Exact Sig. [2*(1-tailed Sig.)]	,780 <sup>a</sup>	,338 <sup>a</sup>	,752 <sup>a</sup>	,468 <sup>a</sup>

a. Not corrected for ties.  
b. Grouping Variable: grup

Table 4. Mann-Whitney test for ANEW

Test Statistics <sup>a</sup>																
	Intentie_implicare_pozitiv	Intentie_evitare_pozitiv	Intentie_colaborare_pozitiv	Intentie_refuz_pozitiv	Intentie_implicare_neutru	Intentie_evitare_neutru	Intentie_colaborare_neutru	Intentie_refuz_neutru	Intentie_implicare_negativ	Intentie_evitare_negativ	Intentie_colaborare_negativ	Intentie_refuz_negativ	Intentie_implicare_caritabil	Intentie_evitare_caritabil	Intentie_colaborare_caritabil	Intentie_refuz_caritabil
Mann-Whitney U	86,000	92,000	71,000	91,500	102,000	78,500	65,500	102,000	57,500	94,500	69,000	64,000	103,000	95,000	109,000	95,500
Wilcoxon W	222,000	228,000	207,000	227,500	193,000	214,500	201,500	238,000	193,500	199,500	205,000	169,000	239,000	200,000	245,000	200,500
Z	-1,094	-,944	-1,969	-1,142	-,089	-1,149	-2,052	-,424	-2,506	-,739	-2,043	-2,044	-,993	-,722	-,127	-,726
Asymp. Sig. (2-tailed)	,274	,345	,049	,253	,929	,251	,040	,872	,012	,460	,041	,041	,321	,470	,899	,468
Exact Sig. [2*(1-tailed Sig.)]	,294 <sup>a</sup>	,423 <sup>a</sup>	,054 <sup>a</sup>	,264 <sup>a</sup>	,948 <sup>a</sup>	,268 <sup>a</sup>	,052 <sup>a</sup>	,897 <sup>a</sup>	,012 <sup>a</sup>	,473 <sup>a</sup>	,045 <sup>a</sup>	,047 <sup>a</sup>	,361 <sup>a</sup>	,498 <sup>a</sup>	,918 <sup>a</sup>	,498 <sup>a</sup>

a. Not corrected for ties.  
b. Grouping Variable: grup

Table 5. Mann-Whitney test for Intention

For two Dependent Variables, significant differences between groups have been recorded. Actually, for the intentional formulation of future behaviour, significant influence of the right-brain stimulation has been found on the intention of getting involved while negative stimuli are presented, the intention of collaboration when both neutral and negative stimuli are presented and the intention to reject any action in the presence of negative stimuli.

These findings suggests that it would be possible – for the video ads' creators – to increase the receptivity of consumers to the pro-social message, in different charitable campaigns, by using tested visual cues or other different methods of stimulating the right brain preferentially

## 5 Conclusions

The obtained results open a whole perspective for future research in consumer behavior and neuromarketing, like - for example - measuring different biometric indicators and putting them in relations with the dependent variables of the study. This interdisciplinary research is thus a starting point in understanding the charitable behavior from a different perspective.

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## RANDOM WALK PERCEPTION AND INFORMATION ACQUISITION IN AN INTERACTIVE PREDICTION TASK EXPERIMENT

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The objective of this research is to investigate experimentally (1) The existence of and the extent of decision clustering and (2) Timing of decisions and individual randomness perception biases in a simple binary interactive discrete prediction task.

Our experimental design presents a series of sequential choice problems in which the subjects are asked to forecast the subsequent outcome of a discrete binary random process. The data is generated in such a way that observation of other participants' cumulated choices makes it possible to obtain a more precise estimate of the probability distribution governing the outcomes. This setup mimics a stock market in which observing the order book provides information about possible existence and direction of a trend in prices.

Our data point to some compelling insights into rationality of Bayesian updating. Majority of our subjects display a type of irrational impatience: in tasks where they should optimally learn as much information as possible and wait until the last period to decide, they “pull the trigger too fast”, incurring excessive decision costs, even when allowed to freely observe others' choices. This finding contrasts with a setting where more explicit delay costs are incorporated. Additionally, we find no apparent evidence of decision clustering or endogenous “herding” when others' actions are observable.

While the subjects in our experiments would go to great lengths in order to avoid any explicit costs – due to delaying their decisions or to paying for extra information – they apparently do not recognize or choose to ignore implicit costs associated with foregoing free additional information that would allow them to refine the accuracy of their decisions.

*Keywords: financial forecasting, uncertainty, risk perception*

## DIRECT AND MEDIATED IMPACTS OF PRODUCT AND PROCESS CHARACTERISTICS ON CONSUMERS' CHOICE OF ORGANIC VS. CONVENTIONAL CHICKEN

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### Abstract

There is a lack of research into why consumers value process characteristics. In this study, we test the hypothesis that the impact of process characteristics such as organic and free-range on consumers' choices of food products is at least partly mediated through expected eating quality or taste expectations. In other words, the process characteristics partly function as cues to (eating) quality. Using a traditional metric conjoint approach based on an additive model, four product characteristics (production method, price, size and information about farmer and rearing conditions) were varied in a fractional factorial conjoint design, creating nine profiles of whole chickens. 384 respondents rated the nine different chickens in terms of taste expectations and willingness to buy. Since the nine records for each respondent are not independent, we used linear mixed modelling for the mediation analysis. We find that, as

expected, taste expectations are a strong predictor of willingness to buy. As hypothesized, the impact of both product and process characteristics on willingness to buy is at least partly mediated through taste expectations. Hence, the study shows that process characteristics are important for consumers, not only in and of themselves, but partly because consumers make inferences about eating quality from knowledge about such process characteristics.

*Keywords: consumer choice, quality cues, expected taste, conjoint analysis, mediation analysis, organic chicken*

## 1 Introduction

At a general level, consumer food choices are determined by three major factors: the food, the environment and the individual (Conner & Armitage, 2002). As regards the food itself, its physical composition determines the properties that are perceived as sensory characteristics, including its taste. In the purchase situation, the consumer rarely knows the exact quality of offered food products, but forms expectations about quality based on available cues and the decision to buy is made based on these expectations. Different cues to quality may be available to different consumers in different situations and they may differ in their predictive validity and power (Becker, 2000; Brunsø, Fjord, & Grunert, 2002). Consumers may even be aware that some of the cues they use to form expectations about attributes such as taste or tenderness are not particularly predictive in all cases (Grunert, 2005). Only after the purchase of a food product, the consumer has the chance to experience its quality, which may or may not correspond to the expected quality. The quality of a food product is evaluated based on many dimensions, but sensorial experiences play a key role, especially taste (Acebron & Dopico, 2000; Brunsø, et al., 2002).

A large number of studies of the importance of taste in food choice have been published. Qualitative studies of the values underlying people's attitudes find that taste is an important experience characteristic, quality criterion and purchase motivator (Bredahl & Poulsen, 2002; Van Loo et al., 2010). Studies of organic food find that taste expectations are higher than for conventional food (Kennedy, Stewart-Knox, Mitchell, & Thurnham, 2004; Naspetti & Zanolli, 2009; Stolz, Jahrl, Baumgart, & Schneider, 2010; Zanolli & Naspetti, 2002). Similar results are found in survey studies. For example, one study found that 87% of a sample of Greek consumers considers taste to be the most important reason for their meat preferences (Krystallis & Arvanitoyannis, 2006) and another study report that for 56% of Greek buyers better taste is the main reason for their organic food preferences (Krystallis, Arvanitoyannis, & Chrysohoidis, 2006).

These studies and studies of the cues consumers use to infer the quality of a food product (Becker, 2000; Brunsø, et al., 2002) raise the question whether consumers value specific product and process characteristics in their own right or because they use them as cues to eating quality and to form expectations about the pleasure derived from eating the product? However, no previous study has investigated if and how consumers' quality inferences mediate the influence of product and process characteristics on product choice.

In this study we test the hypothesis that the impact of important product and process characteristics on consumers' choice of food products is at least partly mediated through expected eating quality or taste expectations. We use whole chicken as the product of study. It is well documented that consumers often select meat products based on the expected sensorial experience and taste, and that these expectations are based on the available visual cues (Krystallis & Arvanitoyannis, 2006; Van Loo, et al., 2010). Moreover, meat products cannot be evaluated completely until it is finally prepared, in a post-purchase phase (Acebron & Dopico, 2000), which means that consumers need to rely on the information they get in the pre-purchase phase as cues to quality. We analyse both the direct effects of specific product and process characteristics on the choice of whole chicken and the indirect effect mediated through expected taste.

## 2 Prior research

Food choices are seemingly simple choices, which consumers deal with frequently and effectively, also when the chosen products contain highly involving attributes (Thøgersen, Jørgensen, & Sandager, 2012). However, food choices are more complex than it may seem from a superficial observation. Consumer responses to a given food can be divided into four classes: sensory, affective, cognitive and behavioural (Costell, Tárrega, & Bayarri, 2010). Food choice is to a high extent a learned behaviour and an individual's liking of a specific food product depends on the frequency of the person's previous exposure to that product (Köster & Mojet, 2007).

Based on Bandura's (1991, 1998) social-cognitive theory, Conner and Armitage (2002) suggest that food choices are determined by three major factors: the food, the environment and the individual. The food itself affects food choice through different routes, including sensorial effects, such as taste, appearance and smell. However, it is not the sensory characteristics in themselves that influence food choice; it is the preference for certain combinations of characteristics in diverse eating situations (Conner & Armitage, 2002). Consumers seek food with certain sensory characteristics, which is why sensory quality is a key determinant of food acceptance and choice (Costell, et al., 2010). Research unanimously points at expected taste as an important quality dimension in food choice (Bredahl & Poulsen, 2002; Kennedy, et al., 2004; Krystallis & Arvanitoyannis, 2006; Stanton, Hughner, McDonagh, Prothero, & Shultz, 2007; Stolz, et al., 2010; Van Loo, et al., 2010).

Consumers evaluate quality both at the point of purchase and at the point of consumption. Quality expectations are formed on the basis of intrinsic as well as extrinsic quality cues. Intrinsic cues are attributes that are built-in to the product itself (e.g., size, colour), whereas extrinsic cues are those characteristics that can be modified without influencing the product directly (e.g., price, packaging, the type of retail outlet) (Veale & Quester, 2009). The importance of intrinsic attributes at the point of purchase depends on whether they can be evaluated at that time and used as quality indicators (Zeithaml, 1988).

Previous research shows that, overall, intrinsic cues are typically given more credence than extrinsic cues. Extrinsic cues are used mostly when intrinsic cues are not predictive enough or when consumers have little confidence in their ability to evaluate and assess them (Veale & Quester, 2009). The less the predictive value of the intrinsic cues, the higher the importance of extrinsic cues (Acebron & Dopico, 2000; Becker, 2000).

Product attributes that can be ascertained prior to consumption – be they intrinsic or extrinsic – can be used as quality cues by consumers. The taste of a product cannot usually be evaluated before consumption. Hence, consumers use available cues to predict the taste of food products in the choice situation (Northen, 2000). Consumers' quality perceptions depend to a large extent on the predictability and availability of quality cues (Brunsø, et al., 2002). The less the predictive value of the cues, the less consumers are able to select the quality they want (Becker, 2000). Consumers prefer cues that they believe to be predictive of the desired quality, but also cues that they feel confident in using, even though they actually are not highly predictive. Inference-making in the quality perception process is an enigmatic area of consumer behaviour, which is tightly connected to the knowledge and expertise of the consumer (Grunert, 2005).

According to the Total Food Quality Model, the intention to buy a certain product is co-determined by perceived costs and expected quality (Brunsø, et al., 2002). Expected, as well as experienced, food quality has four major dimensions, which appear to be universal: taste and appearance, health, convenience and process. Expected taste plays a major role in determining food choices, while experienced taste is an important quality evaluator in the post-purchase phase, even though the concrete taste experience is quite subjective (Aertsens, Verbeke, Mondelaers, & Van Huylenbroeck, 2009). Several studies have shown that taste is important when it comes to organic food as well; some concluding that in this case consumers have even higher taste expectations (Aertsens, et al., 2009; Krystallis, et al., 2006; Magnusson et al., 2001; McEachern & Willock, 2004; Naspetti & Zanolli, 2009; Scholderer, Nielsen, Bredahl, Caludi-Magnussen, & Lindahl, 2004; Stanton, et al., 2007; Thøgersen, 2009; Van Loo, et al., 2010; Zanolli & Naspetti, 2002). Taste can usually only be established after consumption and thus represents an experience characteristic of a food product.

In recent years, consumers have attached increasing importance to attributes that have no necessary relationship to the experienced product quality. Especially the way food is produced has become an important quality dimension, even in cases when it has no immediate bearing on the taste of the product (Brunsø, et al., 2002).

### **3 Methods**

#### **3.1 Focus groups**

In order to determine what Danish consumers perceive to be the most important quality cues and quality dimensions for chicken products, in general and for organic chicken in particular, two focus group interviews (n=7; n=8) were carried out. The attributes that were identified as most important in the focus groups were used to create the conjoint profiles in the second phase of the study.

According to the focus groups, taste is the most important quality dimension for chicken products, which suggests that sensorial characteristics are an important determinant of consumers' overall evaluation of chicken products. When comparing conventional and organic chicken, participants in the focus group did not assess the taste of organic chicken as necessarily better than the taste of conventional chicken. In addition, the focus groups revealed that the most important extrinsic quality cues are price, date stamp, origin, information about the farmer and the rearing conditions, and organic and free-range labels. Major intrinsic quality cues include size, freshness (whether the product is fresh or frozen), appearance and colour. Participants perceive low price and low weight as cues indicating low quality, whereas organic, fresh, whole chicken and a high price are all cues indicating high quality.

#### **3.2 Conjoint design**

The second part of the study comprises a questionnaire-based survey with a convenience sample of ordinary chicken consumers. Participants were first recruited in two supermarkets in Aarhus having a high share of organic groceries. Customers who agreed to participate received the questionnaire by e-mail. In addition, questionnaires were distributed on-line on social network platforms, using the snowball technique, including the webpage [okologi.org](http://okologi.org) and the Facebook pages of Organic Denmark, I Love ØKO and Aarhus Økologiske Fødevarefællesskab. Additionally, the questionnaire was distributed to personal contacts. A total of 405 individuals agreed to participate in the survey. After screening away those that did not eat chicken or did not have any influence on the household's grocery shopping as

well as a few due to odd response patterns (e.g., giving the same score to all conjoint profiles), the final sample consisted of 384 respondents.

The conjoint analysis design, which is used for the present purpose, was embedded in a larger questionnaire containing, among others, questions about demographic characteristics and various behavioural and attitudinal questions. The conjoint analysis task was based on illustrations of whole fresh chickens. An orthogonal conjoint design containing nine profiles was developed based on four of the most important attributes identified in the focus groups: size, price, production method and information about the farmer and the rearing conditions, see Table 1.

Attribute	Levels	Cue Type
<b>Size</b>	1,2 kg	Intrinsic
	1,6 kg	
	2,0 kg	
<b>Price</b>	40 kr/kg	Extrinsic
	67,5 kr/kg	
	95 kr/kg	
<b>Production method</b>	Conventional	Extrinsic
	Free-range	
	Organic	
<b>Information about the farmer and the rearing conditions</b>	Information	Extrinsic
	No information	

Table 4: Whole chicken attributes and attribute levels

*Size* had three levels: 1,2 kg, 1,6 kg and 2 kg. The results from the focus groups showed that these levels correspond to consumers' perceptions of small, medium and large-sized chickens. An in-store investigation confirmed that these figures reflect the range of commonly found weights of whole chicken in Danish stores.

*Price per kg* had three levels: 40 kr., 67,5 kr. and 95 kr. The minimum and the maximum levels were determined based on in-store observations and reflect the actual market prices of whole chicken. 40 kr. represents the standard price for a whole fresh conventional chicken, whereas 95 kr. is the average price consumers have to pay for a whole organic chicken. The middle level of 67,5 kr. was chosen based on the recommendation to have an equal range between numeral levels in a conjoint design.

*Production method* also had three levels: organic, free-range and conventional.

The presence or absence of *information about the farmer and the rearing conditions* on the label resulted in two levels for this attribute.

A full factorial design generates 54 ( $3 \times 3 \times 3 \times 2$ ) different profiles. Given the fact that it would be too taxing for the respondents to evaluate all the 54 possibilities, an orthogonal fractional factorial design was generated using SPSS and resulting in 9 different whole chicken profiles. The respondents were presented with illustrations of the 9 chicken profiles and were asked to rate their taste expectation and their willingness to buy each of the 9 different chicken (in that order). The ratings were given on eleven-point bi-polar scales, with 0 representing "very bad taste" and "not at all willing to buy" and 10 representing "very good taste" and "very willing to buy". Due to the fact that each respondent was presented with all the 9 different profiles and rated them successively, the individual chicken ratings are not independent, which has implications for the statistical analysis of the data.

The fact that participants rated both expected taste and their willingness to buy made it possible to conduct two different conjoint analyses with the attribute levels (i.e., quality cues) as initial variables and expected taste resp. willingness to buy as outcome variables. We integrated the analysis of these two evaluations when testing the hypothesis that the impact of quality dimensions on consumers' willingness to buy a specific chicken (e.g., organic vs. conventional or free-range) is partly mediated through their taste expectations. In the mediational model, quality cues are initial variables, willingness to buy is the outcome variable and expected taste is the mediator.

### 3.3 Mediation analysis

In order to better understand the mechanisms through which product characteristics affect buying intentions, in this case for whole chicken products, we test the possible mediation of the effects of product characteristics (the initial variables) on consumer buying intention (the outcome) through expected taste (the mediator). A mediational model is a causal model, meaning that product characteristics are presumed to cause expected taste, which is presumed to cause buying intention, alone or together with product characteristics. Because we manipulated product characteristics in our experimental design, we can be sure that the causality assumption is correct with regard to the initial variable. We asked participants to assess the expected taste of each chicken before they were asked to report their buying intention for the same chicken, which makes it more likely that the former influenced the latter than vice versa. However, our study design does not guarantee that this causal assumption is correct. This reservation should be kept in mind when interpreting the results.

In the mediation analysis, we follow the four steps proposed by Baron and Kenny (1986):

Step 1: Establish that there is an effect that may be mediated by showing that the initial variable is significantly related to the outcome.

Step 2: Show that the initial variable is significantly related to the mediator

Step 3: Show that the mediator affects the outcome variable while controlling for the initial variable.

Step 4: To establish that the mediator *completely* mediates the relationship between the initial variable and the outcome, the effect of the initial variable on the outcome while controlling for the mediator should be zero. If the path from the initial variable to the outcome is reduced in absolute size but is still different from zero when the mediator is introduced, this is a case of *partial* mediation.

Hence, if the first three steps are met, the data are consistent with the hypothesis that the mediator at least partially mediates the relationship between the initial variable and the outcome. However, only if it is possible to rule out other models that are consistent with the data can one conclusively establish that mediation has occurred.

At his mediation website,<sup>1</sup> Kenny cautions that the steps should be stated in terms of zero and nonzero coefficients rather than statistical significance, because trivially small coefficients can be statistically significant with large sample sizes and very large coefficients can be non-significant with small sample sizes. In the case of partial mediation, the *total effect* of the initial variable on the outcome is divided into a *direct effect* and a mediated or *indirect effect*. The indirect effect is the product of the effect of the initial variable on the mediator and the effect of the mediator on the outcome. Contemporary mediational analyses focus mostly on the indirect effect.

### 3.4 Linear Mixed Modelling

Since our data contain observations that are not independent, we perform the mediation analysis by means of linear mixed modelling (LMM) using SPSS19. For this analysis, we organized our data in the *multiple record (MR) format*. The MR format means that each participant is represented by as many rows as there are rated product descriptions (i.e. 9). Hence, measures at the individual product description level are at level 1 and they are nested within participants at level 2. In other words, participants are the grouping variable each delivering nine assessments of expected taste and nine buying intentions. Because each participant evaluated nine product variants, there is a clustering of effects in their responses, which leads to correlated errors. This lack of independence is handled by including the participant ID as a random factor in the model. Specifically, we modelled the studied relationships as a *two-level random intercept model*, meaning that the intercept of the level 1 dependent is modelled as an effect of the level 2 grouping variable (and of the level 1 covariates). The initial variables (i.e. product attributes, coded as dummy variables) are treated as fixed effects in the model as is expected taste when included as a moderator.

In the following, we sometimes compare the model of interest to a reference model called “the null model,” which is a random intercept model *without* level 1 covariates. Hence, it only includes the participant ID as independent variable: the level 1 intercept is predicted as a random effect of the level 2 grouping variable (i.e. participants). Treating the effects of independent variables (other than the participant ID) as fixed in a LMM implies that they are assumed to be constant across participants.

## 4 Results

### 4.1 Mediation analysis

We use the likelihood ratio test in to test the steps in the mediation analysis. When fitting a LMM in SPSS, the -2 Log Likelihood (-2LL) is among the fit measures reported in the output. This makes it possible to measure the contribution of a predictor term by the difference between the -2LL coefficients of a model with and one without the term in question; commonly referred to as a chi-square difference. The degrees of freedom (df) are the difference in df between the two models, which is equal to the difference in the number of terms in the two models. If the term in question is a fixed effect, as in our case, ML estimation is used for the likelihood ratio test.

The deviance (-2 LL) of the random intercept model with product attributes (the initial variables) as level 1 covariates and buying intention as the dependent variable is 16.450 compared to 17.711 for the null model (Table 2). Hence, the former model has a better fit being 1.261 lower than the null model. With 7 df, this chi-square difference is highly significant. Hence, the product attributes model is different from and better than the null model at a significance level better than .001. This likelihood ratio test shows that the initial variables are significantly related to the outcome and thereby establishes that there is an effect that may be mediated (Step 1).

<sup>1</sup> <http://davidakenny.net/cm/mediate.htm#E> (accessed 13 April. 2012).

	-2LL	Parameters	$\Delta (-2LL)^1$	df.	Sign.
Buying intention					
1 Null model	17 711	3			
2 Product attributes (PA)	16 450	10	1 261	7	<.001
3 Expected taste (ET)	16 182	4	1 529	1	<.001
4 PA and ET	15 469	11	981	1	<.001
Expected taste					
5 Null model	15 153	3			
6 PA	13 194	10	1 960	7	<.001

Table 2: Likelihood ratio tests for model differences

In the same way, we see that the difference in fit between the null model and the random intercept model with product attributes as level 1 covariates and expected taste as the dependent variable is highly significant (chi-square difference = 1.960, 7 df,  $p < .001$ ). This shows that the initial variables are significantly related to the mediator (Step 2). Finally, we see that the difference in fit between the products attributes model and the model with both product attributes and expected taste as level 1 covariates and buying intention as the dependent variable is highly significant (chi-square difference = 981, 1 df,  $p < .001$ ). This shows that the mediator affects the outcome variable while controlling for the initial variables (Step 3). In order to establish whether the mediator completely or only partially mediates the relationship between the initial variables and the outcome (Step 4), we will now inspect the regression coefficients in these two models.

The fixed effects parameters in a LMM can be interpreted as unstandardized regression coefficients in the same way as in ordinary regression. The intercept is interpreted as the overall mean of the dependent variable when all independent variables are zero. For example, the parameter estimate for expected taste is 0.8 (Table 3, Model 2), which means that for a unit increase in expected taste buying intention (the dependent variable) will increase 0.8 units. If the fixed effect is a 0, 1 dichotomy, such as non-organic = 0, organic = 1, then a coefficient of 3.33 (Table 3, Model 1) means that the average buying intention is 3.33 units higher for an organic than for a non-organic chicken, everything else being equal.

In Model 1, we see that all included product attributes (initial variables) have a significant effect on buying intentions. Both organic and free range are apparently strongly favoured over conventional chicken and both product characteristics lead to a significant and substantial increase in buying intentions, and substantially bigger for organic than for free range. Price has the expected (approximately linear) negative effect on buying intentions. Information about the farmer has a positive, but relatively weak effect on buying intentions. Low weight and high weight both have a negative impact on buying intentions, compared to medium weight. Apparently these consumers' ideal chicken has a medium weight.

	Model 1			Model 2		
	B	t	Sig.	B	t	Sig.
Intercept	4.47	31.408	<.001	5.98	43.861	<.001
Low price	0.95	9.384	<.001	1.11	12.945	<.001
High price	-1.11	-11<.001	<.001	-1.14	-13.277	<.001
Low weight	-0.26	-2.580	.010	-0.12	-1.432	.152
High weight	-0.23	-2.262	.024	-0.34	-3.948	<.001
Organic	3.33	32.976	<.001	0.88	7.877	<.001
Free range	2.01	19.954	<.001	0.31	3.078	.002
Information	0.49	5.562	<.001	0.22	2.885	.004
Expected taste				0.80	34.023	<.001

Table 3: Estimates of fixed effects using buying intentions as dependent variable

When the presumed mediator is included in the analysis, in Model 2, we first note that it has a highly significant effect on the dependent variable, as already established in the likelihood ratio test. Next, notice that several fixed effects

<sup>1</sup> Note: All  $\Delta(-2LL)$  are calculated with reference to the respective Null model except for Model 4 where the reference model is Model 2.

parameters (B) are substantially attenuated compared to Model 1 and the negative impact of low weight is no longer significant. This suggests that the effect of low weight on buying intentions is completely mediated through expected taste whereas the effects of organic, free range, and information about the farmer are partially mediated. However, the effects of price and high weight are apparently not mediated through expected taste. However, before drawing that conclusion, we need to inspect the effects of product attributes on expected taste (Table 4).

	B	t	Sig.
Intercept	6.18	62.930	<.001
Low price	-0.21	-3.446	<.001
High price	0.04	0.643	.520
Low weight	-0.17	-2.817	.005
High weight	0.14	2.288	.022
Organic	3.05	50.230	<.001
Free range	2.13	35.074	<.001
Information	0.34	6.406	<.001

Table 4: Estimates of fixed effects using expected taste as dependent variable

It appears from Table 4 that in all the cases where effects of product attributes (the initial variables) were substantially attenuated after controlling for expected taste (the moderator) in Table 3, these product attributes have the expected significant impact on expected taste. Consumers indeed seem to infer expectations about a chicken's taste from its weight (a low-weight chicken is expected to have inferior taste qualities) as well as from information that the chicken is either organic or free range or just information about the farmer (all of which are apparently used as cues indicating superior taste qualities). This is consistent with the hypothesis that the impact of these product attributes on consumer buying intentions is completely (low weight) or partly (all other included attributes) mediated through expected taste. Hence, we may infer that an important reason why consumers prefer chicken that are not too small, that are organic or free range, and that come with information about the farmer is that they use all of these attributes as cues to the taste quality of the chicken.

The effects of organic, free range, and information about the farmer on buying intentions are only partially mediated through expected taste. Hence, consumers not only prefer a chicken with these attributes because they are perceived as indicators of superior taste. Arguably, each of these attributes represents something that many consumers favour in their own right. However, we note that in each of these three cases the direct effect (Table 3, Model 2) is less than half of the total effect (Table 3, Model 1) of the attribute on buying intentions. For organic, the direct effect is 26% and for free range a mere 15% of the total effect.

Notice also that the mediation analysis also adds some nuances to the understanding of the impact of high weight and price on buying intentions. According to Table 4, a larger than average chicken is expected to taste better and a low-price chicken to taste worse than average. The positive effect of high weight and the negative effect of a low price are opposite the effects on buying intention that appears in Table 3. Hence, these are examples of what mediation analysis calls *inconsistent mediation* (MacKinnon, Fairchild, & Fritz, 2007). When there is inconsistent mediation, the mediator acts like a suppressor variable, which is why the direct effects of high weight and low price (Table 3, Model 2) are larger than their total effect (Table 3, Model 1).

## 4.2 Explained variance

The SPSS LMM output contains estimates of two variance components: Between "groups" (i.e., participants in our case) and residual variation. The residual component is the variance in buying intentions (Table 3) or expected taste (Table 4) not explained by the between-participants effect and, hence, represents variation within participants, across the nine products evaluated by each participant. Hence, we refer to this as the "within-participants" variance. The between-participants variance is the estimated variance of the intercepts between participants. Among other things, these two variance components reveal whether the variation in buying intentions is primarily within or between participants. The total variance is the sum of the between- and within-participants variance.

In the null model for buying intention, where only the participant ID is included in the equation (as a random factor), the between-participants variance component = 1.59 (Wald Z = 8.495,  $p < .001$ ). The within-participant variance component estimate = 8.84 (Wald Z = 39.192,  $p < .001$ ). Hence, the between-participants variance is 15% of the total

variance meaning that, in the null model, the between-participants effect accounts for 15% of the total variance in buying intentions.<sup>1</sup>

In the final model (Table 3, Model 2), which includes product attributes and expected taste as fixed effects, the two variance components are 4.26 (within-participants variance, Wald  $Z = 39.103$ ,  $p < .001$ ) and 2.13 (between-participants variance, Wald  $Z = 11.105$ ,  $p < .001$ .) The drop in the within-participants variance when controlling for product attributes and expected taste is a measure of how large a share of this variance is accounted for by the included variables. When controlling for product attributes and expected taste, the within-participants variance drops 4.58 (i.e., 8.84 minus 4.26) or 52%.<sup>2</sup> This value (.52) is an estimate of  $R^2$  (or explained variance) for our two-level random intercept model predicting buying intentions when controlling for expected taste and product attributes as fixed effects.

The fact that the within-participants variance component is large and significant in the final model means that there remains significant unexplained variance in buying intentions even after expected taste and product attributes are controlled. In this case, although within-participant variation is more important, since the between-participants variance component is statistically significant, we may conclude that buying intentions regarding chicken in general vary by individual. This means that observations are biased up or down depending on the individual participant and that a fixed-effects analysis of buying intentions ignoring the between-participants effect would hence have violated the assumption of independence of observations.

## 5 Discussion

### 5.1 Summary of findings

Our findings show that when the effects of product attributes are substantially attenuated after controlling for expected taste, the selected product attributes have the expected significant impact on expected taste. Consumers indeed seem to infer expectations about a chicken's taste from its weight, price, production method or information about the farmer and the rearing conditions. A low-weight chicken is expected to have inferior taste qualities. In contrast, the organic and free range claims, as well as the information about the farmer, are used as cues indicating superior taste qualities. It is interesting to notice that a high price level has no effect on expected taste, compared to a medium price, whereas low price has a negative impact. This means that a chicken that has a high price is not expected to taste better than a medium priced one, but that a low-priced chicken is expected to have inferior taste qualities.

In the case of the direct effect, where the mediator is not included in the analysis, we see that all the product attributes have a significant effect on buying intentions. Both organic and free range are strongly favoured over conventional chicken and both product characteristics lead to a significant and substantial increase in buying intentions, which is considerably bigger for organic than for free range. Higher price has the expected negative effect on buying intentions. Information about the farmer has a positive, but relatively weak effect on buying intentions. Both low weight and high weight have a negative impact on buying intentions, meaning that consumers' ideal chicken has a medium weight.

When expected taste is included in the analysis as a mediator, we first note that it has a highly significant effect on willingness to buy. The effect of low weight on buying intentions is completely mediated through expected taste. The effects of organic, free range, and information about the farmer are partially mediated. We note that the direct effect is less than half of the total effect of the attributes on buying intentions. Thus we may infer that an important reason why consumers prefer chicken that are not too small, that are organic or free range, and that come with information about the farmer is that they use these attributes as cues to the taste quality of the chicken.

### 5.2 Limitations

The findings of our research are not representative for an entire population, due to the convenience sampling, which resulted, as desired, in an overrepresentation of heavy organic consumers compared to a representative sample of the adult Danish population. This means that findings based on the overall sample lead to conclusions that are mainly group or segment specific. However, this is not considered to be a major issue, due to the fact that organic chicken products have a low market share and thus appeal only to certain consumer segments.

<sup>1</sup> That this effect is significant reflects that buying intention scores for different chicken products tend to cluster by participants: buying intentions regarding two chicken products randomly selected from the same participant's nine evaluated products are more likely to be similar than buying intentions regarding two chicken products randomly selected from different participants.

<sup>2</sup> In the same way, we can calculate that controlling for product attributes alone accounts for 34% and controlling for expected taste alone for 40% of the within-participants variability in buying intentions.

### 5.3 Implications

In recent years, consumers have attached increasing importance to attributes that have no necessary relationship to the experienced product quality. Especially the way food is produced has become an important quality dimension, even in cases when it has no immediate bearing on the taste of the product (Brunsø, et al., 2002). Moreover, several previous studies have shown that taste is an important food quality dimension, some concluding that consumers have even higher taste expectations in the case of organic food. Our study confirms these assumptions. First, the outcome of the focus group studies was that taste is one of the most important quality dimensions in consumers' overall evaluation of chicken. Secondly, the results of the conjoint analysis have shown that taste expectations are higher for free range and organic chicken products compared to conventional chicken. Hence, our research confirms the fact that taste expectations play a major role in consumers' choice of chicken.

Previous research has shown that many consumers value process characteristics (such as organic production) in food products. There is, however, a lack of research into whether they are valued in their own right or because consumers use them as cues to eating quality. Our study tests the hypothesis that the impact of quality cues on consumers' willingness to buy organic vs. conventional or free-range chicken is partly mediated through taste expectations. The results of our analysis have shown that certain product attributes are used as quality cues and that they are associated with good taste. According to our findings, low weight and low price have a negative effect on expected taste, while above-average price does not influence taste expectations. The impact of all attributes on buying intentions is at least partly mediated through taste expectations - the impact of low weight is completely mediated. Our research confirms the fact that taste expectations play a major role in consumers' choice of chicken and that part of the reason why credence characteristics (such as the organic claim) are important to consumers is that they are perceived as cues to superior taste quality.

The findings of our study have obvious implications for the marketing strategy of organic chicken products. Organic chicken needs a better differentiation strategy, and in order to accomplish this, producers should strive to provide quality where consumers need it. In new product development, we suggest that producers take into consideration what attributes have a direct impact on the taste of the final product, given the fact that consumers make taste inferences based on the cues that are available. Regarding the communication strategy, the information that reaches consumers influence their buying decisions; therefore the message needs to emphasize quality dimensions that are important for the target consumers. This is important in the case of meat products, because they cannot be evaluated completely until they are prepared or cooked. This means that consumers have to rely on the information they receive as cues to quality before actually purchasing the product.

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## THE FINANCIAL THREAT SCALE: FURTHER PSYCHOMETRIC EVALUATION IN THREE EUROPEAN SAMPLES

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In the wake of the most severe economic downturn since the Great Depression, people are understandably fearful and anxiously uncertain about the security and stability of their personal finances. In short, they are experiencing heightened levels of psychological threat about their ability to maintain and improve their lifestyles. Previous research on psychological threat has focused on themes related to ideological extremism and out-group prejudices, not finances, in spite of a large empirical literature which shows a robust association between situational factors such as recessions and layoffs with maladaptive psychological health outcomes like depression and suicide ideation. Marjanovic, Greenglass, Fiksenbaum, and Bell (2011) created the 6-item *Financial Threat Scale* (FTS) as a means for researchers to measure perceived financial threat and hypothesized it as a mediating variable between situational factors and psychological health outcomes. This preliminary analysis conducted in two samples of Canadian university students showed the FTS is a unidimensional and reliable measure. The purpose of the present investigation was to further evaluate the validity of the FTS by examining its psychometric properties in older, non-student samples in other countries.

In the present research we administered the FTS to online community samples in Portugal, Germany, and Ireland as part of a larger international investigation on the economic downturn and psychological health. In order to test our mediation hypothesis, we also administered scales that measured situational factors related to the recession (economic hardship) and indices of psychological health, such as depression, anxiety, and self-esteem.

As we found earlier with the Canadian data, these results showed the FTS is unidimensional and highly reliable across all three European samples. These data supported our mediation analysis as well. Heightened levels of economic hardship over the last few years were associated with greater levels of perceived financial threat, which in turn were associated with lower levels of self-esteem and greater depression.

The FTS is a useful instrument for assessing negative psychological reactions to financial uncertainty. These data show it to be generalizable across cultures, age groups, and the sexes, and it is robustly negatively related to indices of psychological health. Theoretical and practical implications of these results are discussed.

*Keywords: uncertainty, risk perception, economic crisis, self-esteem*

## SETTING THE GROUND FOR A THEORY OF EMBODIED RATIONALITY

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In the psychological discipline the debate on *embodied cognition* has been going on for at least twenty years. A core of issues under this heading – summarized in a stylized formulation by the hypothesis that cognitive processes cannot be abstracted by human body and its morphological traits – have become inescapable across the discipline. These arguments, from a broader perspective, have constituted a serious challenge for disembodied perspectives on cognition, among which the prominent Cognitivist paradigm.

Given this state of affairs, from the awareness that Cognitivism has exerted an heavy influence on the conceptualization of rationality in economics (in particular on the conceptualization of *bounded rationality*) a natural question arises: how can rationality in economics benefit from internalizing psychological debate about embodied cognition? The hypothesis of an *embodied rationality* is, on this line of argument, explored.

Not constituting yet embodied cognition an homogeneous *corpus* of theories, a cross-domain projection of the debate on embodied cognition into a speculation about economic rationality deserves an active investigation. We will exploit the well-known article of Wilson (2002) debating “six views of embodied cognition”, and we will replicate its structure proposing as many arguments for the notion of embodied rationality. In this regard, these different claims will be extensively discussed: 1) “rationality is situated”; 2) “rationality is time-pressured”; 3) “we off-load work of reason onto the environment”; 4) “the environment is part of reasoning”; 5) “rationality is for action”; 6) “off-line reasoning is body based”.

We find that some of these arguments are extremely suitable to be implemented into a speculation on the nature of rationality (e.g. points 1), 2) and 5)). For others, some degree of conceptual articulation is required. The discussion of each point has revealed itself helpful to get a step nearer to the plausibility of the notion of *embodied rationality*.

This paper is meant to constitute a conceptual map to set the stage for further, future studies under the heading of *embodied rationality*.

*Keywords: dual process, intelligence*

## THE ROLE OF SOCIAL VALUE ORIENTATION AND IMPLICIT ASSOCIATIONS IN RECYCLING BEHAVIOR

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### Abstract

The role of social value orientation in pro-environmental behavior is an established assertion (e.g. Van Vugt, Meertens & Van Lange, 1995). Our previous research (Medvés, 2011) confirmed these findings, but we also found differences in how prosel and prosocial people react to the presence of external motives like temptation (Medvés, 2011), perceived criticality and anthropocentric aspects of environmental protection either in the laboratory (Kovács & Medvés, 2009) or in case of evaluating the effectiveness of messages promoting pro-environmental behavior (Medvés & Kovács, 2012). In all cases prosel selfs were more likely to adjust their behavior to these external motives than prosocial people.

These behavioral differences of prosocial and proself people suggested that it is worth examining other constructs in connection with pro-environmental behavior, like implicit associations toward recycling. On the one hand we chose the concept of implicit attitudes (IA), as its relation to behavior is controversial, and on the other hand the investigation of implicit attitudes in connection with pro-environmental behavior is quite rare. The importance of pro-environmental behavior is explicitly not questioned in general; nevertheless Hungarian people recycled just 60% of packaging in 2011 (in some Western-European countries this proportion almost reach 100%). Thus we hypothesized that implicit attitudes will predict the dissimilarity of self-reported behavior. And we also expect that prosocial people's recycling behavior will be more affected by their implicit attitude.

We recruited 89 undergraduate students, and they all participated in the following procedure. They filled in an online questionnaire revealing their social value orientation, their general recycling behavior and the extent they consider the future consequences of their deeds. They also filled in a version of Implicit Association Test based on the material of Greenwald, McGhee and Schwartz (1998) measuring implicit attitudes toward recycling behavior, and bipolar scales for the same attitude objects.

The results confirmed our expectations. Prosocials' pro-environmental behavior was affected by their attitudes, while proselfs were influenced just by Consideration of Future Consequences (CFC). It was affirmed again that subjective utility was more important for people with proself value orientation.

*Keywords: morality, individual differences*

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## 1 Introduction

Environmental problems are one of the most important global issues nowadays. During the last decades, not only natural scientists but also social and behavioral scientists shed lights on them. In connection with the resolution of environmental problems people have to cooperate with lots of unknown others in a huge social dilemma (e.g., Van Vugt, 2001). As individual differences play significant role in social dilemma behavior, revealing their effects can contribute to the promotion of different kinds of pro-environmental behaviors.

The aim of the present study was to investigate the influence of implicit attitudes, a not frequently examined concept, on pro-environmental behavior in respect of different social value orientation categories.

### 1.1 The social dilemma approach

#### *Effects of social value orientation*

Social value orientation, defined by Messick and McClintock (1968), plays significant role in social interactions, especially in interdependence situations. People's social value orientation influences their motives, strategies and choice behavior in mixed-motive experimental games.

According to the theory of Messick and McClintock (1968), individuals can be categorized by their outcome preferences in interdependence situations. Individual differences in social value orientation are stable preferences for clear outcome patterns for oneself and others. Three main social value orientations are differentiated by this theory: cooperative, individualistic and competitive. These categories can be characterized as follows (Messick and McClintock 1968, see Van Lange, Otten, De Bruin & Joireman, 1997):

- Cooperators are motivated to maximize outcomes for both themselves and others. Community means a great deal for them, they usually do not make a distinction between their own interests and collective interests.
- Individualists tend to maximize their own outcome, regardless of others'. They are not inclined to cause disadvantage to other, as people are emotionally indifferent for them.
- Competitors tend to maximize the relative difference between their own outcomes and others', they seek advantage over their partners. Others' disadvantage is an emotional value for them (Van Lange et al., 1997).

A broader categorization classifies individualists and competitors as proselfs, and refers to cooperators as prosocials (Roch & Samuelson, 1997).

Influences of different social value orientation categories are often investigated, for instance, in a social dilemma situation, examining the willingness to sacrifice for the clarity of waters, or for the reduction our energy consumption: prosocials displayed higher level of cooperative behavior than proselfs (Van Lange & De Dreu, 2007).

According to Van Vugt and colleagues (1995) proself people not just showed weaker preference for commuting by public transportation than prosocials, but they were more inclined to use public transportation only when they believed that the majority would commute by car.

### ***Effects of time perspective perception***

In social dilemma situations, individuals' decisions can be influenced by time perspective perception (Strathman, Gleicher, Boninger, & Edwards, 1994). Social value orientation and time perspective represent social and temporal dimensions of social dilemmas, therefore a weak but significant correlation can be detected between the two (Joireman, Lasane, Bennett, Richards & Solaimani, 2001).

Research of time perspective was established by Frank (1939) and Lewin (1942; both cited by Rappange, Brouwer, & Van Exel, 2009), summarizing the various different definitions of future time perspective, basically it denotes a general concern with the future, or worry about future events (Kastanbaum, 1962; as cited by Strathman, et al., 1994). Several studies aimed to explore the relation between time perspective, attitudes and behaviors (for an overview, see Toepoel, 2010).

Immediate behaviors effect long-term consequences in connection with environmental problems, e.g. if we prefer commuting by car to public transportation for our own comfort, we are contributing to future air pollution in the present (Strathman et al., 1994). In addition, environmental problems often contain temporal traps: environmentally harmful behavior has many short term individual benefits, while collective problems are usually visible only in long term (see Steg, 2003).

According to Strathman and his colleagues (1994), there are clear, reliable and relatively stable individual differences in the extent to which people are likely to consider distant outcomes of their present behavior; and the consideration of future consequences can be understood as a dimension. At one end of the continuum there are individuals considering future outcomes clearly. They believe that present behaviors are worthwhile and they count on future benefits, despite of undesirable immediate outcomes and immediate costs. These individuals are inclined to sacrifice present immediate benefits, e.g. comfort or enjoyment, to achieve more desirable future advantages. At the other end of the continuum there are people not interested in possible future consequences, who tend to maximize their immediate benefits despite of delayed cost. They do not consider future consequences; and find future-relevant information less convincing.

Strathman and his colleagues (1994) examined the role of consideration of future consequences on pro-environmental decision-making. According to their results, when the advantages were presented in an immediate frame, low CFC people's judgments were more favorable about oil drilling than the advantages had a distant frame. In contrast, high CFC people favored oil drilling more than its advantages were framed in the future and its disadvantages as immediate one. That is time frame, in which the consequences are presented, has more important effect on decisions than the value of the outcome.

## **1.2 Role of attitude**

One of the most prominent theories examining the determinants of behavior is Theory of Planned Behavior (TPB; Ajzen, 1991), a widely used model explaining attitude-behavior relation. According to TPB attitudes, together with subjective norms and perceived behavioral control, are significant determinants of behavior (effects of these variables are mediated by behavioral intention). The TPB is often used for the investigation of pro-environmental behavior. For instance, Kaiser (2006), who extended the model with moral considerations, found that conservation behavior determined by intention can be best predicted by people's attitude under the influence of moral norms.

### ***Relation of explicit and implicit attitudes***

In the field of social psychology, with Thurstone's statement (1928) that attitudes can be measured, a prominent research area was established; attitude formation and change became actively studied (see e.g., Gawronski & LeBel, 2008). Later, the possibility of implementing indirect attitude measurements (for an overview, see Fazio & Olson, 2003) opened a new direction, and as a consequence, made necessary the distinction between explicit and implicit attitudes.

Explicit attitudes (EA) are studied by direct measurements, such as questionnaires; and are believed to be conscious, logical, verbal, and abstract representation of attitudes (Payne, Burkley, & Stokes, 2008). Explicit attitudes are known as fast changing, influenced for example by new information about the attitude object; asymmetry of the information; cognitive processing of own goals, behavioral intentions; cultural knowledge and social context (Rydell & McConnell, 2006). Explicit attitudes affect deliberate behavior primarily (Rydell & McConnell, 2006).

Implicit attitudes are revealed by indirect measures, such as the Implicit Association Test (Greenwald et al., 1998); and hold evaluative information which are mostly not available for higher cognition, and distinct from intentional experience. Implicit attitudes are slower changing (Rydell & McConnell, 2006), affected by similarity and associative information about the attitude object (Olson & Fazio, 2001; Wilson, Lindsey, & Schooler, 2000), and controls primarily people's associative structures and subtle, spontaneous behavior (McConnell & Leibold, 2001).

Great deal of research has been focused on the discrepancy between implicit and explicit attitudes toward the same attitude object (see e.g., Fazio & Olson, 2003; Nosek, 2007; Payne et al., 2008). Payne and colleagues (2008) claim partly the different approaches for the weak correlations of the two, and argue that correlation can be increased by deliberate and careful tuning of the measurement instruments, but also admit the relevance of the differentiation,

especially, because they change differently. Nosek (2005) demonstrated that the attitude object is also crucial in the strength of the association; the correlation can be even as high as .75. Nosek (2007) names several moderating – mainly interpersonal and extrapersonal factors – in the implicit attitude relation, such as awareness, social influence, distinctiveness of evaluation, experience, polarity of the attitude, sampling, design etc.

General models integrating the implicit and explicit attitudes either consider them as separate systems (e.g., system of reasoning, Slowman, 1996), or as interacting systems (e.g., Motivation and opportunity to deliberate, MODE; Fazio, 1995). One of the most prominent models is the Model of dual attitudes (Wilson, Hodges, & LaFleur, 1995; Wilson et al., 2000), which emphasizes the possibility that new attitudes can override old ones, resulting in dual attitudes toward the same object with recently changed explicit attitudes and old implicit attitudes. In such situations, the behavior can split on the conscious and automatic level (Wilson et al., 2000).

***Influence of explicit and implicit attitudes on pro-environmental behavior***

Several appropriate methods are known for examining people’s attitudes regarding the environment in an explicit way. New Environmental Paradigm Scale (Dunlap & Van Liere, 1978) and Environmental Attitude Inventory (Milfont & Duckitt, 2006) are just few well known examples from the list. The relation between environmental attitudes and pro-environmental behavior are also confirmed by empirical studies (e.g. Kaiser, 2006; Milfont & Duckitt, 2010).

In spite of the fact that the relation between environmental attitude and pro-environmental behavior is a widely examined field of psychology, revealing the role of implicit attitudes is still developing. One of the most cited experiments was conducted by Schultz, Shriver, Tabanico and Kazian (2004), in which people’s connectedness to nature was measured by Implicit Association Test (adopted from Greenwald et al., 1998). The results of this study revealed a weak, but significant correlation between IAT and explicit measures of environmental attitudes.

**2 Objectives**

The aim of the present research was to examine the role of implicit and explicit attitudes, consideration of future consequences and social value orientation in a specific form of pro-environmental behavior, namely waste avoidance and recycling. Regarding the aforementioned concepts we formed the following hypotheses.

Based on the results of Van Vugt and his colleagues (1995) it can be expected that people with different kinds of social value orientation differ in the extent of waste avoidance and disposal. More precisely, prosocials are predicted to report more pro-environmental behavior than proself people (Hypothesis 1).

Previous researches (e.g. Van Vugt et al., 1995; Kovács & Medvés, 2009; Medvés, 2011) affirmed that proself people react more to extrinsic motives of pro-environmental behavior, like perceived criticality of one’s deeds, or temptation inhibiting behavior. Proceeding from these findings, it is likely that implicit attitudes determine prosocials’ pro-environmental behavior more than proselfs’ (Hypothesis 2).

Finally, consideration of future consequences is hypothesized to function as an instrumental determinant of behavior, thus as other extrinsic motives consideration of future consequences will influence more proselfs’ pro-environmental behavior, while prosocials’ pro-environmental behavior will be affected more by their attitudes (Hypothesis 3).

**3 Method**

**3.1 Sample and procedure**

Eighty-nine participants took part in the research, mostly female (N = 63). All of them were undergraduate and postgraduate students; the mean age was 25.37 years (SD = 5.14). The computerized experiment was conducted in a laboratory at the Institute of Psychology; everybody got a small present (the official exercise-book of the University of Debrecen) for participating.

**3.2 Measurements**

***Social value orientation***

In the present study, social value orientation categories were distinguished by using a nine-item decomposed game (triple-dominance measure of social values, TDMSV; Van Lange et al., 1997). In TDMSV, participants have to allocate points between themselves and an unknown other, whom they will not meet in the future. Each of the nine allocation task corresponds to the three major social value orientation categories, it contains cooperative, individualistic and competitive choices (see an example below).

	A	B	C
You get	480	540	480
Other gets	80	280	480

Option 'A' represents the competitive choice, because it results the largest difference between the two outcomes. Option 'B' represents individualistic choice, it maximizes the outcome of the allocator, finally Option 'C' represents the prosocial choice, because it results the largest collective outcome.

Individuals can be classified as cooperators, individualists or competitors if they choose consistently at least six times the same social value category, the person cannot be classified otherwise. In the present study, the three social value orientation groups were merged into broader categories of proselves and prosocials (see Roch & Samuelson, 1997).

### ***Explicit attitude***

Explicit attitudes were measured in connection with 6 fields of waste avoidance and recycling, namely reusing, refilling, litter-collecting, recycling, refunding and reutilizing. Participants had to evaluate each activity on 7-point bipolar scales of the following objective pairs: bad – good; not critical – critical; unimportant – important; unrequired – required; useless – useful; inefficient – efficient.

### ***Implicit Association Test***

For assessing implicit attitudes we adopted a version of Implicit Association Test (IAT; Greenwald et al., 1998) in which two computerized classification tasks need to be performed. It is designed to measure the differences in response latencies based on the relative strength of the automatic associative relations. In a standard IAT procedure attitude objects (presented as words or pictures) and attributes (adjectives) needs to be classified into categories as fast and accurately as possible by pressing the corresponding response buttons. The target categories refer to attitude object and the attribute categories corresponding to the extremes of evaluative dimensions (good vs. bad) refer to various adjectives (pleasant, rude etc.). In one critical condition (combined block) the two classification tasks need to be performed alternately so that a pair of target and attribute categories corresponds to the same manual response. In another critical condition (reversed combined block) the response mappings among the tasks change; the target category-response associations become reversed while the attribute category-response association remain the same. The means of response latencies measured in the combined and reversed blocks is usually found to show a characteristic difference; in one mapping condition the response time (RT) is slower than in another mapping condition. For estimating the strength and orientation of the implicit attitude, the so called IAT scores can be computed by the differences in RTs measured in the two combined blocks. By default, the shorter RT mean in one of the combined blocks as compared to that in the other one indicates a preference for one of the target categories.

In the attribute classification task positive and negative nouns coloured in white, in the target classification task nouns coloured in green were presented on the screen. The subjects were asked to classify the stimuli by pressing particular response buttons. The attribute categories corresponding to the extremes of evaluative dimensions (good for me vs. bad for me) referred to white coloured adjectives and nouns selected from a set of 12 stimuli (good: miracle, rainbow, gift, luck, peace, pleasure, love; bad: evil, bomb, war, mourning, hatred, fear, murder). Target categories (e.g. leisure vs. pro-environmental) referred to nouns as attitude object that could specify either leisure activities (surfing the net, reading, watching TV, listening music, walking, going to the cinema) or pro-environmental activities (reusing, refilling, litter-collecting, recycling, refunding, reutilizing).

Stimuli were presented in the middle line of the screen with Arial font type of 36 size. In the left and right upper corner of the monitor the attribute and target categories were displayed with the same font type but of 28 size. The attribute categories and attribute stimuli were of white colour and the target categories and target stimuli appeared in green. The stimuli were visible until the participant pressed the appropriate response key. Wrong responses were feed back by a red "X" appearing above the stimulus. Subjects had to correct their answers by pressing the appropriate button as quickly as possible. Following the right response the stimuli disappeared, and after 400 ms long delay a new stimulus was displayed. The items for both tasks were selected randomly from the stimulus sets with one limitation; an item could only be redisplayed when the stimulus set was used up. The 'E' (left hand) and the 'I' (right hand) keys served as response buttons for both tasks.

At the beginning of the experiment a written and verbally explained instruction was presented clarifying the aim of the experiment, the tasks to be performed and the category-response rules. The instruction also emphasized the importance of the quick and accurate responses. As in the standard IAT procedures, the experiment comprised of 7 blocks. In the 1st and 2nd block, consisting of 20 trials, the subjects practised the attribute and the target classification tasks (single task blocks). In the 3rd and 4th block (combined task blocks) the subjects performed the two tasks alternately. The combined task block consisted of 20 training trials and 40 test trials. The category-response rules for the classification tasks remained unchanged during the three blocks. The "good" category was associated with the right-handed response, the left-handed response referred to the "bad" category. For half of the participants the "leisure activity" category associated with right handed, the "pro-environmental activity" category associated with the left-handed response. Such an overlap between the category-response mappings across the tasks was the compatible arrangement. For another half of the participant the category-response rules in the target classification task was reversed while the rules for attribute task were the same (incompatible arrangement). In the 5th, practice block, the response rules for target classification reversed for each participant. In the 6th and the 7th block (reversed combined

task blocks), consisting 20 and 40 trials respectively, the subjects performed the two tasks alternately using the new, reversed target classification, but the unchanged attribute classification rules. The order of the compatible and incompatible blocks was counterbalanced among the participants, i.e. half of the subjects completed the blocks in a compatible-incompatible order and another half in a reversed order.

Following the new scoring algorithm introduced by Grenwald, Nosek and Banaji (2003) mean RTs and standard deviations were computed for each combined (practice and test) blocks (block 3, 4 and 6, 7) and were entered into the suggested transformation procedure. The IAT effect was estimated by D score as a standardized index of the performance difference in RTs in the combined and the reversed combined task blocks.

**Ecological behavior (EB)**

The measure of waste avoidance and recycling was based on General Ecological Behavior Scale (GEB; Kaiser, 1998). The items of the GEB Scale relate to six fields of pro-environmental behavior; namely energy conservation, mobility and transportation, waste avoidance, consumerism, recycling and vicarious, social behaviors toward conservation (Kaiser & Wilson, 2004).

In the present study, ten items of GEB Scale were used related to waste avoidance and recycling: 5 items from waste avoidance, 4 items from recycling and 1 item from the vicarious, social behaviors toward conservation. Participants had to indicate the frequency of the behavior on a 7-point Likert-scale (1 = never to 7 = always). An example from the questionnaire is: ‘I buy mineral water in returnable bottles’. Higher mean values indicate a higher degree of environmental behavior, whereas people with lower mean values can be considered as less pro-environmentalists.

**Consideration of Future Consequences**

Measuring time perspective, the Consideration of Future Consequences Scale was used (Strathman et al., 1994). The 12-item scale includes statements referring to considering future consequences of one’s behavior, none of which concerning explicitly environmental behavior. Participants indicated their opinion about each statement. An example statement is: ‘I consider how things might be in the future, and try influence those things with my day to day behavior’.

People who achieved higher mean values on Consideration of Future Consequences Scale, consider future implications of their behavior to use their faraway goals for guiding their present acts; whereas people with lower mean values focus more on their immediate outcomes and they are motivated to achieve well-being in the present.

**4 Results**

**4.1 Descriptive statistics**

As Table 1. shows, all the applied measurements proved to be reliable. According to the result of Implicit Association Test people show a slight preference for leisure activities (M = -.20; SD = .52), which might be natural in the investigated population. While means of the semantic differential explicit attitude measurement shows that participants’ explicit attitudes are quite strong (M = 6.07; SD = 1.01) toward pro-environmental topics. For further statistical analysis mean values of the scales were applied.

	M	SD	2.	3.	4.	5.
1. Age	25.37	5.14				
2. Implicit attitude	-0.20	0.52	-			
3. Explicit attitude	6.07	1.01	.01	(.97)		
4. Consider future consequences	3.61	0.56	.22*	.39**	(.78)	
5. Ecological behavior	4.53	1.04	.19	.13	.39**	(.70)

Table 1. Descriptive statistics, reliabilities and correlations of variables.

Note. Chronbach’s alpha reliabilities are in parentheses on the diagonals. Positive implicit attitude scores indicate preference for pro-environmental behavior. \* p<.05; \*\*p<.01

According to the results of Social Value Orientation measurement (Van Lange et al., 1997) 38 participants (42.7%) were categorized as prosocials, 29 people (32.6%) as proselfs and 22 people (24.7%) could not be categorized. These distributions are about those reported by Au and Kwong (2004) in their meta-analysis.

**4.2 Correspondences of the variables**

In Hypothesis1 it was predicted that prosocials behave more pro-environmentally than proself. To test this assumption we applied Interdependent-samples T test. The results of the statistical analysis confirmed our hypothesis, significant difference was found between proselfs’ and prosocials’ results in connection with the means ecological behavior questionnaire (t (64) = -2.30; p < .05).

Prosocials not just reported significantly higher points on ecological behavior (EB) items, but also in the measurement of consideration for future consequences (CFC) ( $t(65) = -3.59; p < .01$ ) and explicit attitude (EA) measurement ( $U = 395.50; p < .05$ ) than proselves. Furthermore prosocials show marginally greater preference for pro-environmental behavior in Implicit Association Test (IA) ( $t(65) = -1.75; p < .1$ ) than proselves. *Table 2.* contains the means of the scales in case of prosocial and prosself people.

	EB	CFC	IA	EA
proselfs	4.24	3.40	-.25	5.85
prosocials	4.85	3.85	-.03	6.21

*Table 2. Means of variables in the sample of prosself and prosocial people.*

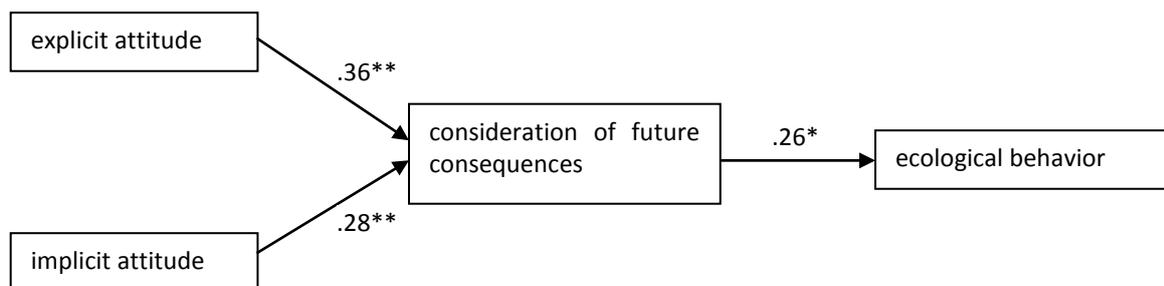
*Note. Positive implicit attitude scores indicate preference for pro-environmental behavior.*

### 4.3 Interactive effect of social value orientation and implicit attitude

To test Hypothesis 2, in which we assumed that implicit attitudes will affect prosocials' pro-environmental behavior more than proselves', Univariate analysis was conducted with implicit association scores as covariate and social value orientation categories as fix factors. According to the results, only prosocial value orientation has positive main effect on ecological behavior ( $F(1; 63) = 4.57; p < .05$ ).

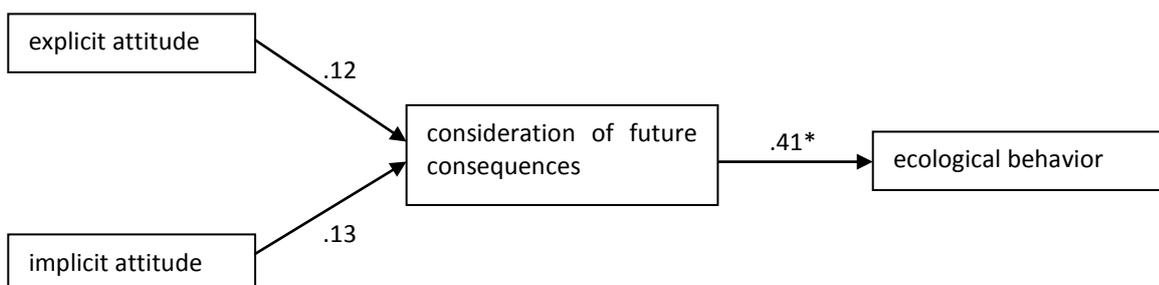
### 4.4 The influence of Consideration of Future Consequences

Finally, in order to test the role of consideration of future consequences in pro-environmental behavior (Hypothesis 3) structural equation modeling was applied for the studied variables, and the sample was split by social value orientation categories. Based on the results of Hypotheses 1 and 2 it was predicted that consideration of future consequences will affect proselves' pro-environmental behavior more than prosocials'. The model was fitted for the split sample (RMSEA = .00; SRMR = .06) and as expected the extent of consideration of future consequences affected pro-environmental behavior more in case of proselves ( $\beta = .41; p < .05$ ) than prosocials ( $\beta = .26; p < .1$ ). Furthermore, in case of prosocials not just the influence of consideration of future consequences on ecological behavior was considerable, but also implicit ( $\beta = .28; p = .05$ ) and explicit attitudes ( $\beta = .36; p < .05$ ) had significant impact on consideration of future consequences (*Figure 1. and 2.*).



*Figure 1. The path model of attitudes, consideration of future consequences and ecological behavior in case of prosocial people.*

\*  $p < .1$ ; \*\*  $p \leq .05$



*Figure 2. The path model of attitudes, consideration of future consequences and ecological behavior in case of prosself people.*

\*  $p < .05$

## 5 Discussions

The aim of the present study was to examine the role of social value orientation, consideration of future consequences, explicit and implicit attitudes in a specific form of pro-environmental behavior, namely waste avoidance and recycling. Although Schultz and colleagues (2004) – based on the small consistent correlation between implicit and explicit measures of environmental attitudes –, stated that examining implicit associations regarding the environment is usefulness; the findings of the present laboratory experiment revealed the impact of implicit attitudes. Effects of social value orientation were revealed. Besides of the predicted influence on pro-environmental behavior, prosocials also hold more pro-environmental attitudes and higher level of consideration of future consequences. These are in line with previous findings (e.g. Roch & Samuelson, 1997; Van Vugt et al., 1995), in which prosocials are not just handle the resources in a more cooperative way in the laboratory, but they also do it if the situation regarded to their commuting behavior.

In spite of the observation that social value orientation resulted significant influences on all of the studied variables, together with IAT values it did not have interactive effect on pro-environmental behavior. It is not correspond to our expectation. Results suggest that in order to examine the determinants of proselfs' pro-environmental behavior, not just intrinsic motives are needed to be handled. Their pro-environmental behavior is seemed to be affected mainly by extrinsic motives, like advantageous aspects of commuting (Van Vugt et al. 1995) or anthropocentric aspects of environmental protection (Kovács & Medvés, 2009).

Results of Hypothesis 3 supported the aforementioned explanation, as consideration of future consequences predicted proselfs' pro-environmental behavior more than prosocials'. Furthermore, explicit and implicit attitudes played significant role only in case of prosocials. Thus it can be concluded that prosocials' notion about the importance of pro-environmental behavior is strengthened by their attitudes, and this can be an explanation for their higher mean values of pro-environmental behavior.

The present study also has some limitation. The correspondence of implicit and explicit attitude objects could be increased by applying other measurement of explicit attitude. Besides the limitations, some empirical and practical recommendation can be made. In connection with the examination of implicit attitudes in environmental related issues seemed to be relevant for further investigation. In addition differences of motivational basis of proself and prosocial people can be useful for planning tailored campaigns promoting pro-environmental behavior.

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## OVERCONFIDENCE, RISK AVERSION AND (ECONOMIC) BEHAVIOR OF INDIVIDUAL TRADERS IN EXPERIMENTAL ASSET MARKETS

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### Abstract

By allowing psychological bias and emotion to affect their investment decisions, investors can do serious harm to their wealth (Baker and Nofsinger, 2002). One of such biases, inducing deviation from rational economic behavior, is overconfidence. Another personality trait, which determines individual investment choices and strategy, is the degree of risk aversion. In this paper influence of behavioral factors, namely overconfidence and risk aversion, on financial decision making of economic subjects is analyzed.

For this purpose two kinds of experiments were conducted: experimental asset market whose design followed Smith, Suchanek and Williams (1988) and risk aversion measurement that followed Holt and Laury (2002). Sixty participants traded in ten experimental asset markets of the two types: "rational" and "overconfident". Markets are constructed on the basis of subjects' degree of overconfidence, measured in the administered pre-experimental psychological test sessions. The most overconfident subjects form "overconfident" markets, and the least overconfident "rational" markets. In the second part of experiment, post hoc assessment of risk aversion was implemented in a sample of former participants of the asset market experiment (32 persons). The presented evidence implies that risk aversion was not among the factors, which had significant influence on individual engagement in trading activity or performance.

The results suggest that individuals with higher degree of overconfidence engaged in trading activity more actively. Yet, holding all other factors constant, with increase in overconfidence men have completed fewer stock market transactions than women. As expected, active engagement in trade had negative consequences on individual gains and high turnover players were significantly outperformed by low turnover players. However, holding all other factors constant, with increase in the number of market transactions males incurred smaller losses, or even some yield, compared to females. At the completion of risk aversion measurements, data revealed that it was not among the factors, which had significant influence on individual engagement in trading activity or performance.

It can be concluded, that in the suggested experimental setting, where the two "types" of subjects were separated from each other, individual performance and trading activity were overconfidence dependent. Even small variations in miscalibration among players belonging to the same "type" were sufficient to cause this effect. Moreover, in the sample, for which risk aversion measurements were obtained, experimental market outcomes were overconfidence and not risk aversion driven.

*Keywords: investments, risk taking, overconfidence*

## 1 Introduction

By allowing psychological bias and emotion to affect their investment decisions, investors can do serious harm to their wealth (Baker and Nofsinger, 2002). One of such biases is overconfidence, which reflects the prevalent tendency of individuals to overestimate their knowledge, abilities and precision of their information. Kahneman and Riepe (1998) emphasized the importance of overconfidence in financial decision-making and suggested that, combined with optimism, it would make individuals underestimate risks and exaggerate their ability to control events. Overconfidence in investors can result in aggressive trade, portfolio undiversification, pursuit of the active portfolio management strategy and suboptimal performance. Another personality trait, which determines individual investment choices and strategy, is the degree of risk aversion. Some authors suggest existence of a direct link between overconfidence and risk aversion, in that greater overconfidence leads to risk underestimation and excessive risk-taking by investors.

Interest in the topic of economic consequences of investors' overconfidence (irrationality) generated a large body of literature. Most of the foregoing research was focused on the analysis of the "mixed" asset market setting, where both overconfident and rational traders interacted. According to a widespread opinion, in such markets rational investors will take advantage of the overconfident ones (noise traders) and the former will eventually incur losses and die out (cf. Hirshleifer and Luo, 2001). This proposition is supported by findings from experimental markets of this type, which present evidence that overconfident subjects, compared to rational ones, engage in more trading and face reductions to their welfare (cf. Biais et al., 2005; Deaves et al., 2009; Kirchler and Maciejovsky (2002).

The aim of this article was to investigate the influence of behavioral factors, namely the degree of overconfidence and risk aversion, on financial decision making of economic subjects (individual trading behavior and performance). My experiment was created with the following assumptions in mind. First, previous studies have created at least two sources of exogenous heterogeneity in their experiments by construction of “mixed” markets, consisting of both overconfident and rational traders, and by asymmetries in the information which different types of players received from the experimenter. Second, following the examination of the instruments, which were used to assess subjects’ overconfidence, there were good reasons to suspect that overconfidence was measured inadequately. And last but not least, to my best knowledge, there were no other experiments that explored the link between individual risk aversion, overconfidence and market outcomes<sup>1</sup>. The created experiment differs from the foregoing research in some important fashion. In this experiment subjects, based on their pre-experimental overconfidence scores, were assigned to the two types of markets: individuals with the low bias score formed “rational” markets and individuals with the high bias score “overconfident” markets. Thus participants interacted only with subjects of their own “type”. The only source of subjects’ heterogeneity, were (slight) differences in individual overconfidence within each of the markets. Subjects’ overconfidence was assessed through a specially created test, weighted for the inclusion of easy, hard and medium difficulty questions, which has also accounted for the possible gender and country biases.

The main experimental findings can be summarized as follows. The data analysis detected positive impact of overconfidence on individual engagement in trading activity; this effect was stronger for females. Contrary to the formulated hypothesis, overconfidence had positive effect on gains from trade. As expected, individual gains were negatively affected by active involvement in trade. Thus low turnover players significantly outperformed high turnover players; the effect was stronger for females. It can be concluded that in the experimental setting, where the two “types” of players were separated from each other, performance and trading activity were overconfidence dependent. At the completion of risk aversion measurements, 32 former participants of the asset market experiment were found to be on average risk averse. Statistical tests detected no difference between the two types of participants in terms of the average number of safe choices. Also no linear relationship between the bias score and risk aversion was detected. Risk aversion was not among the factors that had significant influence on engagement in trading activity or performance. It can be concluded, that in the reduced sample, experimental market outcomes were overconfidence and not risk aversion driven.

Article proceeds as follows. Section 2 gives an overview of the findings of financial overconfidence and risk aversion literature; along analysis of the similar experimental papers and discussion of the article’s contributions is presented. Section 3 lists the research hypotheses. Section 4 provides the description of experimental procedures. Section 5 presents data analysis. Finally Section 6 concludes.

## 2 Psychological determinants of trading activity and performance

Interest in the topic of economic consequences of investors’ overconfidence generated a large body of literature. According to Fischhoff et al., (1977) most people hold unrealistic positive beliefs about their personal skills and their knowledge. Giardini et al. (2008) suggest that constant overestimation of personal talents and abilities, and chances of positive outcomes “can have important consequences, and sometimes results in suboptimal decisions”. Kahneman and Riepe (1998) point out at the importance of overconfidence for financial decision taking, in that, overconfidence combined with optimism, produces overestimation of individual knowledge, exaggeration of the ability to control events, and risk underestimation. Barber and Odean (2000) indicate that overconfident investors “hold unrealistic beliefs about how high their returns will be”. Thus cognitive bias of overconfidence creates various distortions in the way traders perceive objective market reality, and this can result in excessive trading volume (e.g. Odean, 1999; Deaves et al., 2009) and trade aggressiveness (e.g. Glaser et al., 2003), portfolio undiversification (e.g. Odean, 1999), pursuit of the active portfolio management strategy (e.g. Lakonishok et al., 1992; De Bondt and Thaler, 1994), and suboptimal performance (e.g. decrease in wealth, sales of the wrong assets, etc.) (cf. Fenton-O’Creevy et al., 2003; Barber and Odean, 2000, 2001).

Risk aversion is connected to the desire of individuals to avoid uncertainty. Yet, almost every economic decision involves some sort of risk and uncertainty. A commonly used approximation for modeling individuals in economic theory is that of the risk neutral economic human. However, empirical and experimental studies suggest that most people exhibit risk aversion, and risk aversion increases with the increase in payoffs (e.g. Binswanger, 1980; Holt and Laury, 2002). There is empirical evidence that risk attitude affects trading behavior. Higher risk propensity is accompanied by increase in trade frequency (Durand et al., 2006) and higher risk aversion manifests itself through lower market activity (Fellner and Maciejovsky, 2007). As well, attitude to financial risk is a significant positive predictor of willingness to invest in stocks (Keller and Siegrist, 2006). Camacho-Cuena et al. (2009) pointed out that the probability of subjects’ engagement in speculative activity increased with increment in risk tolerance.

<sup>1</sup> The only experiment that measured both subjects’ overconfidence and risk aversion was by Kirchler and Maciejovsky (2002); however they focused on the market-level distinctions.

Some authors suggest that there is a direct link between overconfidence and risk aversion. Fellner and Maciejovsky (2007), argue that “second order characteristics”, one of which is overconfidence, might influence risk attitude. Russo and Shoemaker (1992) note that overconfidence causes risk underestimation and encourage traders to take excessive risk. Thus overconfident investors hold riskier portfolios (e.g. Odean, 1998; Barber and Odean, 2001). Also Croson and Gneezy (2008) suggested, that differences in risk attitudes may be explained by differences in risk perception, where overconfidence can manifest itself via “reduced estimate of the riskiness of a given investment”.

## 2.1 Similar research and value added

This article builds on several previous articles, which investigate the effect of overconfidence on subjects’ trading activity and performance.

The approach of Biais et al. (2005) relies on the asymmetric information trading game, and focuses on determining the link between subjects’ psychological characteristics and their earnings. In their sample the connection between overconfidence and performance was negative; yet it had more significant effect on males’ performance. The reported results also indicate that overconfidence did not lead to an increase in trading activity.

Experiment of Deaves et al. (2009) was aimed at finding support for the premise that overconfidence leads to enhanced trading activity. This hypothesis was tested both at individual and market levels. The reported results indicate that greater overconfidence led to increased trading activity and had negative effect on trading performance. No connection between overconfidence, trading activity and gender was discovered in their sample.

Kirchler and Maciejovsky (2002) run an experimental asset market to investigate the development of overconfidence in the course of experiment. Prior to opening of the market sessions, subjects’ risk aversion was measured. In their sample overconfidence was negatively correlated with individual earnings. Between the experimental groups there was no significant difference in terms of risk aversion, thus authors concluded that any distinctions that were observed between the experimental conditions were not risk-attitude dependent.

Based on the analysis of previous research, my experiment was designed with the following assumptions in mind:

Foregoing researchers have created at least two sources of exogenous heterogeneity in their experiments. First, they constructed the “mixed” markets, consisting of both overconfident and rational traders and drawn their conclusions based on the assumption that one group would take advantage of the other. Although Deaves et al. (2009) run four sessions to which subjects were assigned, based on their degree of overconfidence, in the analysis these data were combined with the data obtained from another treatment<sup>1</sup>. In my experiment subjects were assigned to “overconfident” and “rational” markets, based on their overconfidence (bias) score measured before the start of experimental sessions: subjects with high score comprised “overconfident” markets and subjects with low score “rational” markets. Thus in the course of experiment individuals interacted only with subjects of their own type.

Second, following the examination of the instruments that were used in prior research to assess subjects’ overconfidence, there were good reasons to suspect that overconfidence was measured inadequately and that these instruments did not offer comprehensive measurement of individual miscalibration. Most of the previous researchers followed the work by Russo and Schoemaker (1992) and used confidence interval elicitation tasks to measure overconfidence. Yet Klayman et al. (1999) argue that interval estimation tasks are prone to produce extreme overconfidence. Findings from psychological research also indicate that overconfidence is the most pronounced for hard questions (a few persons know the right answer) and the least pronounced for the easy questions (the right answer is known to many persons). However, questions’ difficulty was not assessed in the foregoing research, and the constructed scales were not pre-tested prior to their application for experimental measurements. In my experiment a specially created test, weighted for the inclusion of easy, hard and medium difficulty questions, was used to estimate subjects’ overconfidence. I also chose another test format, which was not inherently prone to production of extreme overconfidence levels and was clearer to subjects: multiple choice discrete propositions’ task format. Prior to experimental use, this scale was pre-tested with students enrolled in different disciplines of social sciences. Overconfidence assessment was administered and financially rewarded.

And last but not least, to my best knowledge there were no previous experiments that explored the link between subjects’ risk aversion, overconfidence and experimental outcomes. Although Kirchler and Maciejovsky (2002) measured both individual overconfidence and risk aversion, analysis of individual differences was not the aim of their research; in contrast, they focused on the market-level differences.

## 3 Hypotheses

Hypotheses, to be tested in this article, are built on the analysis of findings from overconfidence research in financial markets, and some of them were previously tested in the “mixed” market setting, where both types of subjects (overconfident and rational) interacted.

<sup>1</sup> They also employed different overconfidence measurement methodology and market structure.

There is plenty of evidence that greater overconfidence induces more active participation in trade (e.g. Odean, 1998), or pursuit of the active portfolio management (Lakonishok et al., 1992). It suggests testing of the following hypothesis in my experimental setting:

*Hypothesis 1:* Individual trading activity increases with the increase in overconfidence.

Experimental findings from “mixed” market setting suggest that overconfident traders, who engage in trade more actively, incur losses, i.e. they are outperformed by low turnover traders (e.g. Barber and Odean, 2000). These results generate the following hypothesis:

*Hypothesis 2:* Relationship between individual gains and trading activity is negative.

Upon analysis of the foregoing research, it can be suspected that there is positive relationship between the final portfolio size and the degree of overconfidence, e.g. Scheinkman and Xiong (2003) suggest that investors who perceive prospects for the future dividends from the assets as more optimistic will “eventually hold the total supply” of inventories. Likewise, some authors noted that overconfident investors choose undiversified portfolios (cf. Lakonishok et al., 1992). In this regard, I posit the following hypothesis:

*Hypothesis 3:* Increase in the final portfolio size is accompanied by increase in the bias score.

In experimental markets where overconfident and rational traders interact, higher degree of traders’ overconfidence reduces their welfare (e.g. Biais et al., 2005; Kirchler and Maciejovsky 2002). In line with these results, it is important to explore such hypothesis:

*Hypothesis 4:* Individual gains decrease with the greater degree of overconfidence.

Foregoing research presented results, implying existence of the link between overconfidence and risk aversion, in the form of risk underestimation (e.g. Kahneman and Riepe, 1998) and increased risk taking by overconfident investors (e.g. Lakonishok et al., 1992). Risk loving individuals also engage in trading more actively (Durand et al., 2006) and are more willing to invest in stocks (Keller and Siergist, 2006). If, on average, participants of the experiment had the same degree of risk aversion then their final holdings of assets would be approximately the same (e.g. Lei et al., 2001). However, as dividend value changes in a probabilistic manner from period to period, each stock is perceived as some sort of the lottery by players. More risk-averse participants, who like uncertainty less, would try to sell their assets at the early stages of the experiment. On the contrary, more risk-loving subjects would try to acquire as many asset items as possible.

The above discussion gives justification to test three hypotheses:

*Hypothesis 5:* Overconfident subjects are (more) risk loving.

*Hypothesis 6:* Trading activity is negatively dependent on the degree of risk aversion.

*Hypothesis 7:* The size of final portfolio negatively depends on individual risk aversion.

## 4 Experimental procedure and the rules of the game

### 4.1 Overconfidence measurement instrument

The overconfidence measurement instrument was obtained in a two-stage procedure. First, a pilot study was performed to assess the difficulty of the 50 initial items. The general knowledge questions were selected from the German quiz web-page <http://wissen.de>. Each question had three alternative answers, only one of which was right. Participants had 30 minutes to answer the questions and to state their confidence in the correctness of the answer. For this purpose any number from 33% (complete uncertainty) to 100% (complete certainty) could be used.

The under- or overconfidence of each participant was measured as her bias score, which is the difference between the mean confidence level across all questions and the proportion of correct answers. A positive bias score indicates overconfidence, and a negative underconfidence; a zero bias score indicated perfect calibration.

Based on the analysis of the pilot-test outcomes, a final test was constructed from 18 questions of the three difficulty levels: six hard, six medium and six easy items. Division of questions was accomplished based on the group accuracy in the pilot study: 0-33% accuracy –hard, 34-66% – medium, and 67-100% – easy questions. Instrument’s reliability was assessed via Cronbach’s alpha:  $\alpha_{confidence} = 0.79$ ,  $\alpha_{accuracy} = 0.54$  and  $\alpha_{bias\ score} = 0.68$ .

### 4.2 Asset market experiment<sup>1</sup>

Data analyzed in this article were obtained from 60 students, enrolled in social sciences at the Christian-Albrechts University of Kiel. Ten experimental market sessions were conducted from November 2008 to May 2009, with six subjects in each of them. Thirty five males and 25 females, aged 19 to 28 participated in the experiment. One session lasted approximately 1 hour and 40 minutes, and subjects earned on average 390.36 units of experimental currency (ECU)<sup>2</sup> (SD = 197.89) (excluding forecasting reward). Descriptive statistics of the group are presented in the Table 1.

<sup>1</sup> For a detailed description of the experimental procedure refer to Michailova and Schmidt (2011).

<sup>2</sup> 10.54 EUR.

	Whole Sample					Overconfident Traders					Rational Traders				
	N	M	SD	Min	Max	N	M	SD	Min	Max	N	M	SD	Min	Max
Bias score	60	11.20	12.08	-5.89	43.50	30	21.33	8.26	10.17	43.50	30	1.06	4.02	-5.89	6.78
Age	60	22.77	2.13	19.00	28.00	30	22.83	1.88	19.00	27.00	30	22.70	2.38	19.00	28.00
Semester	60	3.39	2.10	1.00	12.00	30	2.96	1.37	1.00	5.00	30	3.81	2.60	1.00	12.00

Table 1. Bias score, age and semester data of experimental samples.

Prior to conducting the asset market experiment, subjects' overconfidence was measured in the pre-experimental psychological test sessions. For that, students filled in an 18-questions' general knowledge quiz and stated confidence in their answers. Based on the difference between subject's average accuracy and her confidence individual overconfidence (bias score) was assessed. For the participation in the experimental asset markets two types of subjects were invited: those who had the low bias score (rational subjects) and those who had the high bias score (overconfident subjects). Of them two types of asset markets were constructed: rational and overconfident (see Table 1 for the average bias score of experimental groups). Thus during the experiment subjects interacted with traders of their own "type". Within each of the constructed markets subjects differed from each other (slightly) in terms of overconfidence.

Experiment was programmed and conducted in the computer lab with the software z-Tree (Fischbacher, 2007). Experimental design followed Smith, Suchanek, and Williams (1988). Every experimental market consisted of the sequence of 15 trading periods, lasting at maximum 180 seconds, during which each trader could post her bid and ask price of the asset unit. Prior to the start of the experiment subjects were endowed with an equal amount of experimental assets and cash: 300 ECU and 3 experimental asset units. At the end of the trading period, each asset in participants' inventory paid a dividend with four possible values: 0.0, 0.8, 2.8, or 6.0 ECU. Probability of a dividend value was 0.25. An average dividend, which subjects could expect through many draws, was 2.4 ECU. Fundamental value (FV) of the stock can be obtained according to the formula  $n \times 2.4$  ECU, where  $n$  stands for the number of periods remaining to the end of the session; in the first period  $FV = 36$  ECU.

At the end of each trading period subjects were asked to predict the average market price in the next period and state confidence in their prediction. Any value between 0% (disbelief that the forecast was true) and 100% (certainty that the forecast was correct) could be used to express subject's confidence. Participants were awarded for their predictions based on their accuracy. Gains from the forecasting task were not added to working capital.

At the termination of the experiment each participant was paid in cash the amount of money, which was based on her final working capital and total gains from forecasting.

### 4.3 Risk aversion experiment

Assessment of the individual degree of risk aversion was conducted in January, 2010. For each session former participants of the asset market experiment were recruited. Of the 32 subjects 16 of were overconfident (OVE = 20.17, SD = 6.48) and 16 rational (OVE = 2.01, SD = 3.10). Duration of an experimental session was approximately 20 minutes. Participants earned on average 5.73 EUR (SD = 1.83), including the show-up fee of 2 EUR.

Experimental design followed the work of Holt and Laury (2002), where subjects made a choice between ten paired lotteries Option A and B. Option A was a "safe" choice and paid either 3 EUR or 2.40 EUR; Option B was a "risky" choice and paid either 5.78 EUR or 0.15 EUR. Subjects were asked to pick one Option for each of the ten lottery pairs. The ten decisions had equal payoffs, however the probability of the high-payoff outcome gradually increased in steps of 10%, until it reached 100% for the tenth decision; correspondingly, probability of the low-payoff outcome has gradually decreased in steps of 10%. As in Holt and Laury (2002) a total number of "safe" choices was used to assess individual risk aversion.

## 5 Experimental results

### 5.1 Univariate and bivariate analysis

#### Trading activity

The empirical data suggest that average trading activity (MTA), defined as the mean of transactions (purchases and sales) conducted by an individual summed over the session divided by the number of shares outstanding in that market, was quite high. On average per session traders have transacted 0.89 times the outstanding stock of shares (SD = 0.47). Individuals with the higher bias score were found to engage in trading activity more actively (Pearson correlation(58) = 0.350,  $p < 0.01$ , one-sided; medium correlation). To analyze gender dimension in the relationship between trading activity and bias score, correlation coefficients were calculated separately for females and males. For females the coefficient is high and significant (Pearson correlation(23) = 0.635,  $p = 0.000$ , one-sided), implying that female-participants engage more in trading activity with increase in their bias score.

To test the proposition that high turnover traders are outperformed by low turnover traders normalized profits of the participants were calculated as individual gains scaled by the initial portfolio value (36 ECU × 3 = 106 ECU)<sup>1</sup>. These profits and corresponding to them average trading activity is presented on Figure 1. Correlation coefficient between trading activity and individual earnings is small but significant, implying that increase in trading activity is paired with poorer performance (Pearson Correlation(58) = -0.292, p < 0.05, one-sided). Exclusion of the two outlier values increased the linear relationship to medium (Pearson Correlation(56) = -0.456, p = 0.00, one-sided).

Further the sample is broken in five equal sub-samples ranked in terms of trading activity and comparison between individual earnings in the subgroup, whose trading activity was lower than the median value (0.847), and the subgroup whose trading activity was higher than the median, was conducted. Mann-Whitney test revealed that traders in the lowest quartile significantly outperformed traders in the highest one (Z = -1.555, p < 0.10, one-sided) and gained on average 38% more ECUs at the end of the experiment. Without outliers this difference increase to 55.7% (Mann-Whitney Z = -2.095, p < 0.05, one-sided).

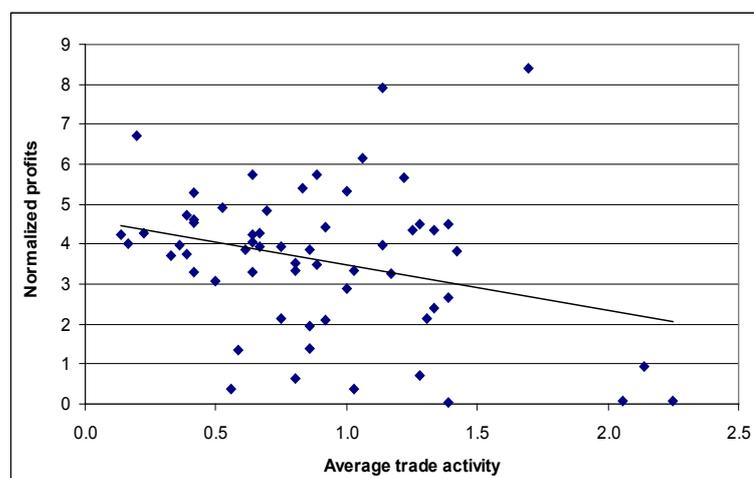


Figure 1: Normalized profits per participant

### Gains from Trade

Individual performance was assessed as relative profit, calculated based on Hirota and Sunder (2007), as gains from trade divided by the fundamental value of the initial portfolio of 3 stocks (36 ECU × 3 = 106 ECU) minus the cross-sectional average of this ratio. Figure 2 depicts the cross-sectional distribution of subjects' relative profits in the two types of markets. Empirical evidence suggests that overconfident sessions were characterized by significantly larger dispersion of gains (SD = 2.32), compared to rational sessions (SD = 1.19) (Siegel-Tukey = 2.329, p < 0.05, two-sided).

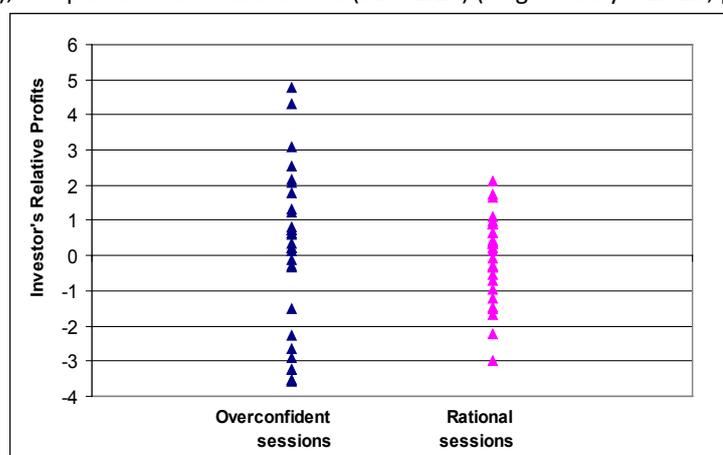


Figure 2: The cross-sectional distribution of relative profits by treatment

<sup>1</sup> Normalized profits: M = 3.61, SD = 1.83; two values, namely 7.92 and 8.39 are possible outliers.

To determine the relationship between accuracy of average price prediction and individual earnings several statistical tests are performed. Forecasting precision is expressed as the Total Absolute Error (TAE) of prediction (Equation 1) and the Average Absolute Error (MAE) of prediction (Equation 2):

$$\text{Total Absolute Error (TAE)}_i = |\text{Sum}(P_t - F_{it})| = |\text{Sum}(P_t) - \text{Sum}(F_{it})| \quad (1)$$

$$\text{Average Absolute Error (MAE)}_i = \text{Sum} |(P_t - F_{it})|/15 \quad (2)$$

Here,  $F_{it}$  is the forecast of subject  $i$  for the period  $t$ , and  $P_t$  is the average price in period  $t$ .

Correlation between forecasting precision and relative profits is negative and significant (MAE: Pearson Correlation (58)= -0.360,  $p < 0.01$ , one-sided; TAE: Pearson Correlation(58)= -0.365,  $p < 0.01$ , one-sided). Also significant linear relationship between overconfidence and forecasting precision was detected (MAE: Pearson Correlation(58) = 0.350,  $p < 0.01$ , one-sided; TAE: Pearson Correlation(58) = 0.225,  $p < 0.05$ , one-sided). It can be concluded that increase in overconfidence is accompanied by (moderate) reduction in accuracy of prediction.

Another factor found to have negative impact on earnings was the number of assets in participants' final inventory (Pearson Correlation(58) = -0.225,  $p < 0.05$ , one-sided). No evidence was found for the proposition that more overconfident investors would hold most of the assets at the end of experiment (Pearson Correlation (58) = -0.031,  $p = 0.407$ , two-sided).

## 5.2 Multivariate Analysis

### Trading activity

This subsection presents results of cross-sectional regressions estimating the relationship between average trading activity of an individual (MTA) per experiment and several explanatory variables that might affect efficiency of financial decision making: the normalized bias score<sup>1</sup> (NBS), gender dummy (this variable takes value 1 if subject is male), an interaction term between the bias score and gender (NBS\*Gender), subject's experience expressed as age (Age) or duration of studies (Semester), and price forecasting precision measured as average absolute error (MAE) or total absolute error (TAE). In parenthesis error terms are shown. Equations 8 and 9, instead of average trading activity use the measure of total trading activity. I start with the simplest model specification; subsequently a range of alternative specifications are estimated by adding other regressors to the model. All specifications of equations (see Table 2) confirm the proposition that overconfidence has explanatory power for trading activity<sup>2</sup>.

	1	2	3	4	5	6	6a	7	8	9	10	11
C	0.660**** (0.085)	0.693**** (0.086)	0.499**** (0.102)	1.340** (0.623)	0.734**** (0.117)	1.220* (0.618)	1.301 (0.618)	1.302 (0.637)	1.318**** (0.171)	2.431* (1.239)	1.815** (0.869)	2.111** (0.836)
NBS	0.669** (0.266)	0.680** (0.268)	1.286*** (0.370)	1.237*** (0.377)	1.149*** (0.371)	0.994* (0.384)	1.052*** (0.385)	1.167** (0.364)	1.339** (0.530)	1.985** (0.768)	0.859* (0.774)	0.854* (0.757)
Gender		-0.063 (0.119)	0.301* (0.158)	0.253*,a (0.160)	0.253*,a (0.157)	0.317**,a (0.163)	0.268**,a (0.154)	0.279* (0.160)		0.635**,a (0.326)	0.470 (0.269)	0.446 (0.243)
NBS*Gender			-1.074** (0.460)	-0.996** (0.481)	-0.998** (0.475)	-0.939** (0.476)	-0.956** (0.475)	-1.008** (0.480)		-1.871** (0.950)	-1.307*,a (0.878)	-1.329*,a (0.857)
Age				-0.036*,a (0.026)		-0.040*,a (0.025)	-0.041* (0.026)	-0.038*,a (0.027)		-0.081*,a (0.050)	-0.060** (0.033)	-0.067** (0.029)
Semester					-0.046** (0.019)							
MAE						0.036** (0.015)	0.027**,a (0.012)			0.072** (0.031)	0.040** (0.017)	
TAE								0.002*,a (0.001)				0.004** (0.002)
Safe choices											-0.023 (0.026)	-0.033 (0.026)
N	60	60	60	60	54	60	59	60	60	60	32	32
adj. R2	0.11	0.10	0.16	0.17	0.17	0.23	0.25	0.19	0.11	0.23	0.15	0.23
SERegr	0.44	0.44	0.43	0.42	0.43	0.41	0.38	0.42	0.88	0.82	0.40	0.38

Table 2. Trading activity (all errors are heteroskedasticity corrected).

\*\*\*\* 0.001; \*\*\* 0.01; \*\* 0.05; \* 0.1. <sup>a</sup> one-sided test.

<sup>1</sup> A sample of bias scores of the participants is normalized on an interval [0,1].

<sup>2</sup> Equations 10 and 11 are discussed in the subsection "Risk aversion analysis: Experimental results".

Results, presented in Table 2, lead to the following conclusions 1) subject's experience has a significant negative effect on her engagement in trading activity, 2) impact of overconfidence on trade is positive, however, holding all other factors constant, with increase in overconfidence men engage in stock market transactions less than women, 3) forecasting errors, that induce false future price expectations, force subjects to involve in trading activity more actively. Modest success in explaining variation in trading activity in the sample by means of selected models suggests that other unobserved factors that were not included in the regression, also have impact on the average number of market transactions by an individual participant. I will come back to this issue in the section on risk aversion analysis, where the regression model is re-estimated for a sample of participants whose risk aversion measures was obtained.

**Gains from Trade**

In this subsection I describe the results of the cross-sectional regressions, estimating the relationship between subjects' performance, assessed as relative profit, and several explanatory variables: the normalized bias score (NBS), gender dummy (takes value 1 if subject is male), average trading activity (Trading activity), an interaction term between gender and trading activity (Gender\*Trading activity), price forecasting precision measured as average absolute forecasting error (MAE) or total absolute forecasting error (TAE), subject's experience expressed as age (Age) or duration of studies (Semester), and the number of assets in the final inventory (End assets). In parenthesis the error terms are shown. I start again with the simplest model specification and, by adding other regressors, test which variables affect individual profit from trade. For the specifications of the estimated models see Table 3.

Results presented in Table 3 suggest that 1) overconfidence has a significant positive effect on individual earnings, 2) impact of active trade engagement on relative profit is negative, however, holding all other factors constant, with increase in the number of market transactions males incur smaller losses, or even some yield, in comparison to females, 3) forecasting errors, that induce false future price expectations and "cause mistakes in financial decision making" (Biais et al., 2005), produce losses, 4) the number of assets in the final inventory of the subject is a significant determinant of reduction in gains. In general, the described specifications succeeded quite well in explaining variation in relative profits in the sample. Yet, the amount of unexplained variation suggests that other unobserved factors that were not included in the regression also were at play.

	1	2	3	4	5	6	7	8	9	10	11
C	-0.776*	0.108	1.159***	1.626***	1.525***	-1.030	-0.029	-0.035	1.790**	1.465****	1.624****
	(0.423)	(0.539)	(0.377)	(0.498)	(0.442)	(2.881)	(2.702)	(2.700)	(0.788)	(0.417)	(0.399)
NBS	0.065	0.932	1.577*,a	1.995*	1.896*	1.805*	1.440*,a	1.436*,a	1.549*,a	1.474*,a	1.628*
	(1.085)	(1.037)	(1.045)	(1.069)	(0.987)	(0.957)	(0.919)	(0.919)	(1.013)	(0.936)	(0.899)
Gender	1.293***	1.212***	-1.012	-1.064*	-0.950	-0.692	-0.431	-0.429	-0.695	-0.564	-0.577
	(0.442)	(0.395)	(0.812)	(0.813)	(0.770)	(0.760)	(0.740)	(0.740)	(0.820)	(0.738)	(0.746)
Trading activity (average)		-1.276**	-2.655****	-2.314****	-2.360****	-2.124***	-2.122****		-2.366****	-2.255****	-2.402****
		(0.520)	(0.488)	(0.568)	(0.564)	(0.661)	(0.559)		(0.567)	(0.469)	(0.446)
Trading activity*Gender			2.449**	2.240**	2.229**	2.013**	2.237**	1.120**	2.362**	2.370**	2.555***
			(0.996)	(0.986)	(0.977)	(0.977)	(0.978)	(0.489)	(1.023)	(0.969)	(0.947)
MAE				-0.108*,a							
				(0.069)							
TAE					-0.012**,a	-0.013**,a	-0.008*,a	-0.008*,a	-0.007	-0.008*,a	-0.011***
					(0.006)	(0.007)	(0.006)	(0.006)	(0.006)	(0.005)	(0.004)
Age						0.104	0.061	0.061			
						(0.118)	(0.109)	(0.109)			
End assets							-0.136**,a	-0.136**,a	-0.118*,a	-0.143**	-0.153**
							(0.073)	(0.073)	(0.085)	(0.071)	(0.069)
Semester									-0.067		
									(0.105)		
Trading activity (total)								-1.061****			
								(0.280)			
N	60	60	60	60	60	60	60	60	54	60	59
adj. R2	0.09	0.17	0.26	0.28	0.32	0.32	0.38	0.38	0.32	0.39	0.47
SERegr	1.75	1.67	1.58	1.55	1.51	1.51	1.45	1.45	1.49	1.44	1.34

Table 3. Gains from trade (all errors are heteroskedasticity corrected)

\*\*\*\* 0.001; \*\*\* 0.01; \*\* 0.05; \* 0.1. <sup>a</sup> one-sided test.

### 5.3 Risk aversion analysis: Experimental results

On average subjects were found to be risk averse with 5.66 safe choices (SD = 1.82). In general, 71.88% of choices have fallen in the interval of [5, 7] safe options. Rational subjects made on average 5.81 safe choices (SD = 1.42), and overconfident subjects 5.50 safe choices (SD = 2.19).

It was hypothesized that overconfident subjects would be more risk loving. Statistical tests detected no significant difference between two groups of players in terms of the average number of safe choices (Mann-Whitney  $Z = 0.320$ ,  $p = 0.749$ , two-sided). Correlation coefficient between risk aversion and individual bias score implies no linear relationship between them (Spearman's  $Rho(30) = -0.095$ ,  $p = 0.303$ , one-sided). The presented evidence suggests that risk aversion had no explanatory power for subject's overconfidence.

It has been predicted that greater risk aversion will have stronger negative effect on individual trading activity and the size of her final portfolio. No linear relationship was detected between these variables (portfolio size: Spearman's  $Rho(30) = -0.001$ ,  $p = 0.498$ , one-sided; gains: Spearman's  $Rho(30) = 0.031$ ,  $p = 0.433$ ), one-sided. The correlation coefficient between the number of safe choices and active trade engagement was negative, yet insignificant (Spearman's  $Rho(30) = -0.100$ ,  $p = 0.294$ , one-sided). Also from inspection of Equation 10 and 11 (see Table 3) it can be seen that risk aversion has no significant effect on the intensity of individual engagement in trading activity.

It can be concluded that, in this sample, differences in experimental market outcomes between the traders were overconfidence and not risk aversion driven.

## 6 Conclusions

The aim of this article was to investigate the influence of the degree of individual overconfidence and risk aversion of economic subjects on their financial decision making. For this purpose two kinds of experiments were conducted. The first one was the asset market experiment; the second experiment was aimed at individual risk aversion measurement. In contrast to previous research, in current experiment subjects, based on their pre-experimental overconfidence scores, were assigned to the two types of markets – rational and overconfident – and could interact only with participants of their own “type”.

The data analysis supported the hypothesis that more overconfident individuals engaged in trading activity more actively; yet with increase in overconfidence men completed fewer transactions than women. Moreover data revealed that forecasting errors, inducing false future price expectations, forced subjects to engage in trading more actively, whereas experience had significant negative effect on their trading activity. Contrary to the formulated hypothesis, overconfidence had positive effect on gains. Other factors that significantly affected individual profits were: trading activity, gender, forecasting errors and final portfolio size. Active engagement in trade had negative impact on individual gains; yet with increase in the number of transactions males incurred smaller losses. In line with previous research, forecasting errors were associated with losses. The number of assets in trader's final inventory, found to be not overconfidence dependent, proved to be a significant determinant of reduction in gains. It can be concluded that in the setting, where two “types” of subjects were separated, performance and trading activity were overconfidence dependent and even small variations in miscalibration among players of the same “type” were sufficient to evoke this effect. At the completion of subsequent risk aversion measurements in the reduced sample, consisting of 16 rational and 16 overconfident former asset market experiment participants, it was found that subjects on average were risk averse. Inconsistent with the proposition that overconfident subjects would be more risk loving, statistical tests detected no difference between the two types of traders in terms of the number of safe choices. No linear relationship between individual risk aversion and overconfidence, trading activity or final portfolio size was detected. It can be concluded that in the reduced sample differences in experimental market outcomes between the traders were overconfidence and not risk aversion driven.

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## WHY AM I SO UNHAPPILY NEUROTIC ABOUT MATERIALISM? THE ROLES OF ECONOMIC AND EMOTIONAL INSECURITY IN THE FORMATIVE YEARS

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Two materialism assessments that have enjoyed considerable application in consumer research and personality psychology are the materialism-as-values assessment (MVA) by Richins and Dawson and the materialism-as-traits assessment (MTA) by Ger and Belk. The latter, however, has been criticized as producing spurious links with measures of life satisfaction, as the scale has been found to be linked to negative emotions and neuroticism. Although both

assessments differ significantly, they do share the thought that the pursuit of a materialistic lifestyle precludes at the expense of life satisfaction one's investment in social relationships. In the current study, I turn the argument around by theorizing that neuroticism, materialism and subsequent life satisfaction result from both subjective experienced economic insecurity during one's formative years (Inglehart & Abramson, 1994) and subjective experienced emotional insecurity.

Given the previous consideration, I explored the relationships among economic and emotional family resources, the MVA, the MTA, neuroticism, self-esteem, and life satisfaction. These study variables were measured by validated instruments. An online survey was filled in by 232 undergraduate and graduate students (67 percent female; age range 19-37) at the researcher's university. Data were analyzed using SPSS and AMOS. A structural equation model was built to test the hypothesized relationships among the study variables.

The results showed in line with expectations and significantly ( $p < .001$ ) that economic and emotional insecurity had a negative impact on MVA and a positive effect on neuroticism ( $p < .10$ ) and MTA. Neuroticism was also found to significantly and negatively affect MVA ( $p < .01$ ) and significantly and positively affect MTA ( $p < .001$ ). The effect of MTA on MVA was significantly positive ( $p < .001$ ). MVA, in turn, affected significantly and positively self-esteem and life satisfactions ( $p < .001$ ), whereas the relationship between the latter two variables and MTA was significantly negative ( $p < .001$ ). Measurement error variances that were allowed on the basis of Modification Indices to covariate with other error variances in the equation model showed that the individual MVA and MTA components were significantly related to the other study variables in an unpredicted but explainable way.

The results suggest in line with Inglehart's Developmental Psychology Theory that experienced economical and emotional insecurity in one's former years fosters MTA and hampers MVA, either directly or via neuroticism. Effects found at the level of the MVA subdimensions on the study variables suggest specificity bias of the MVA towards prosperity materialism. Further theoretical and methodological implications for happiness research and the materialism construct will be discussed.

*Keywords: materialism, development, individual differences, self-esteem*

## 1 Introduction

Over the last few decades, the literature seems to have reached a broad consensus on the negative effects of a materialistic value orientation on self-esteem and life satisfaction; the pursuit of a materialistic lifestyle precludes at the expense of SWB on one's investment in family, friends, self-actualization, and participation in social community (Arndt, Solomon, Kasser, & Sheldon, 2004; Kasser & Ryan, 1993; Kasser & Ryan, 1996). For example, people strongly oriented towards materialism have been found to view compared to those who cared less about materialism, interpersonal relationships as less important (Richins & Dawson, 1992) and as less intimate and reliable (Kasser & Grow Kasser, 2001). Furthermore, individuals who foster materialistic goals reported lower self-esteem and life satisfaction (Kasser & Ahuvia, 2002). As Ed Diener and Diener (2009) have shown the concepts of self-esteem and life satisfaction to be conceptually distinct with regard to measuring SWB, and given that self-esteem has by now been accepted as one of the psychological well-being variables (Meerkerk, van den Eijnden, Franken, & Garretsen, 2010), I will refer from here on to self-esteem and life satisfaction as the individual's subjective well-being (SWB).

From a historical perspective, two research approaches on materialism and SWB have received the greatest attention from the scientific community (A. C. Ahuvia & Wong, 2002; Richins & Dawson, 1992): one, the study of materialism as a set of personal values guiding behaviour labelled Personal Values Materialism (PVM), and, two, the analysis of materialism as a personality trait, referred to as Personality Trait Materialism (PTM). An assessment from the PVM-perspective that has enjoyed considerable application in consumer research is that by Richins and Dawson (1992). Richins and Dawson explained materialistic values as encompassing three domains: the belief that possessions and their acquisition lead to life satisfaction (happiness), the use of possessions to judge the success of others and oneself (success), and the centrality of possessions in a person's life (centrality). From the PVM-approach the use of material goods is often regarded a means to attain nonmaterial values incompatible with a virtuous life in which affiliation, community involvement, and self-development are necessary conditions for achieving life satisfaction (see, e.g., Kasser & Ryan, 1993).

The PTM-approach takes a trait perspective assuming materialism to be an inherent and relatively stable part of an individual's personality. Personality can be defined as enduring dispositions that cause characteristic patterns of interaction with one's environment (Goldberg, 1993). Having examined the theoretical linkages between materialism and specific personality traits, Belk (1985) distinguished in his initial Belk Materialism Scale the consumer traits of possessiveness, nongenerosity, and envy. However, as Belk (1985) inferred materialism from measures of related affect-based constructs, its measurement has been criticized to produce spurious links with measures of life satisfaction (A. C. Ahuvia & Wong, 2002; Richins & Dawson, 1992; Richins & Rudmin, 1994). That is, the Belk Materialism Scale has been found to be strongly linked to negative affect and the personality trait neuroticism (Solberg, Diener, & Robinson, 2004). Personality, and in particular the trait of neuroticism, appears to be one of the strongest and most consistent predictors of SWB (Costa & McCrae, 1980; Lucas & Diener, 2009), and further research

evidence suggests that PTM is in fact a correlate (e.g., Troisi, Christopher, & Marek, 2006). Neuroticism concerns the extent to which an individual is anxious, irritable, and emotionally unstable (McCrae & John, 1992), and as a moderately heritable personality trait (50% to 80%) considered to be a risk factor for developing major depression and anxiety (Calboli et al., 2010). This leaves between 20% and 50% unexplained in SWB in favour of a combination of volition (what individuals can do to improve their SWB) and circumstances (demographic and situational factors) (Ed Diener, Suh, Lucas, & Smith, 1999).

As for the latter, a promising perspective is that of the life course paradigm which considers behaviour at any point in time to be the product of responses to earlier life experiences and circumstances (e.g., Mayer & Tuma, 1990) and the way the individual has adapted to those circumstances (Moschis, 2007). More in particular, the paradigm indicates that life event incidents such as family disruptions (i.e., divorce, death in the family), marriage, and retirement create a number of physical, social, and emotional strains and conditions to which individuals must adapt (Moschis, 2007). According to Moschis (2007), normative, stress, and human capital are the three theoretical perspectives that provide explanations for the individual's adaptation to earlier-in-life changes. Normative elements refer to the process of socialization in which people acquire skills and attitudes compatible with the roles they enact (i.e., as a consumer) whereas "...the stress perspective views short-term and long-term behavioural changes as outcomes of the person's responses to stress, with homeostatic, control, and behavioural theories offering explanation for changes" (Moschis, 2007, p. 299). That is, life events - negative, positive and neutral - create over the lifetime acute or chronic stress (i.e., loss of parents, disruptive family life, or family poverty), motivating the individual to build a set of coping strategies to restore control over life outcomes. Lastly, human capital refers to the resources, qualifications, skills, and knowledge that people acquire and that influences future income and consumption. I will leave out of further consideration the latter aspect and focus next on the normative and stress element of the life course perspective.

## 2 Objectives

Although previous research on the origins of materialism, either as a value or as a trait, has focused on the relation between materialism and SWB from at least one or more perspectives as discussed earlier, to the best of my knowledge no study has done so by combining PVM, PTM, and aspects from the life course paradigm in one study. The purpose of this research is to examine from a life course perspective the direct and indirect effects of the secure or insecure family environment and neuroticism on the development of PVM and PVM, and subsequently on SWB. I will do so by first discussing Inglehart's theory of economic socialization (Inglehart, 1990), followed by the Organismic Values Model (OVM) developed and validated by Kasser and colleagues (Kasser, 2002; Kasser & Ryan, 1993; Kasser & Ryan, 1996). Both theories contain elements of normative and stress, creating opportunities to gain valuable insights into the origins of materialism. As such, the life course approach can fill gaps in previous research efforts that focus on time- and context dependent consumer materialism (Moschis, 2007). After that, PVM and PTM will be related to both theories and SWB to derive hypotheses. The latter will be tested by means of structural equation modelling (SEM) to test for causal relationships between the variables and to overcome the critic of tentative causal explanations derived from correlational data (Muncy & Eastman, 1998).

### 2.1 Economic socialization in one's formative years and materialism

One of the most influential and widely cited theories on the origins of materialism from a consumer socialization perspective is the theory by Ronald Inglehart (Inglehart, 1990). As part of his general economic socialization theory, Inglehart (1990) presented a theory of developmental psychology that is based on a quasi-Maslowian model of a hierarchy of needs (A. Ahuvia & Wong, 1995). As values are strongly influenced by the personal needs of those who hold them, Inglehart's (1990) theory of developmental psychology distinguishes like Maslow (1943) lower order survival needs and higher order needs. Inglehart and Abramson (1994) contend that only when the satisfaction of the materialistic survival needs can be taken for granted (e.g., due to financial or economic stability and job security), the focus on need fulfilment will gradually shift to higher 'Postmaterialist' goals like belonging, esteem, and aesthetic and intellectual satisfaction.

Fundamental to need satisfaction, is the concept of scarcity (Inglehart, 1990; Inglehart & Abramson, 1994). Scarcity implies that in order to obtain goal achievement, trade-offs need to be made of one finite resource against others. The scarcity hypothesis states that "an individual's priorities reflect one's socioeconomic environment: one places the greatest subjective value on those things that are in relatively short supply" (Inglehart, 1990, p. 68). Thus, scarcity as a result of, for example, economic recession or the loss of one's job will increase people's concern about money and make them place a higher emphasis on materialistic values.

The scarcity concept, in turn, underlies Inglehart's socialization hypothesis that states that "one's basic values reflect the conditions that prevailed during one's pre-adult years" (Inglehart, 1990, p. 68), and that these values remain largely stable over time. That is, as children grow, they are socialized by society to value what's scarce and to form a value system, which generally remains through adulthood. Parks and Guay (2009, p. 676) defined in line with this view values as "learned beliefs that serve as guiding principles about how individuals ought to behave". The combined effect of the socialization and scarcity hypothesis is that those who feel financially or economically deprived during

their formative years are more likely to develop a longtime materialistic value orientation giving priority to the lower order needs of sustenance and safety, while those who experience economic security may stress Postmaterialistic values like personal self-development and autonomy, even at the expense of higher incomes (Inglehart, 1990). Also inspired by Maslow and going beyond Inglehart's body of thought, the Organismic Values Model (OVM) by Kasser and colleagues (Kasser, 2002; Kasser & Ryan, 1993; Kasser & Ryan, 1996) extends Inglehart's theory by making an explicit distinction between two broad classes of goals on the basis of their content: intrinsic goals and extrinsic goals (Kasser & Grow Kasser, 2001; Kasser & Ryan, 1993; Kasser & Ryan, 1996). Intrinsic goals are expressive of desires congruent with actualizing and growth tendencies, whereas extrinsic goals are typically engaged in as means to some other end in that they depend on the contingent reaction or approval of others. The authors have demonstrated that intrinsic goals (e.g., striving for affiliation with others) are associated with higher levels of self-esteem and life satisfaction, whereas extrinsic goal orientation (e.g., striving for financial success) is associated with lower self-esteem and life satisfaction. Kasser, Ryan, Couchman, and Sheldon (2004) proposed from the OVM perspective that when individuals have experiences that do not support their emotional inner needs for safety, security, belongingness, and self-fulfilment, a materialistic value-orientation develops as a result of changing goal orientation. For example, Kasser and Ryan (1993) found that late adolescents evidenced lower well-being (e.g., more depression, lower global adjustment and self-actualization) when aspirations for financial success were highly valued relative to aspirations for self-acceptance.

## 2.2 Family security, goal achievement, and neuroticism

Parents are an important source of financial security and of emotional support and acceptance in the family environment (Kasser, Ryan, Zax, & Sameroff, 1995), which is elementary to the development of feelings of competence and healthy self-esteem in children and adolescents (Kasser et al., 2004). A nurturant and protective family environment providing physical, financial, and emotional security has been found to foster intrinsic goal achievement as part of one's value system whereas family environments unsupportive of adolescents' need for security may lead these adolescents to hold goal aspirations toward obtaining money and material possessions so as to maintain psychological safety and security (Rogers, 1964). For example, Sheldon and Kasser (2008) report on three studies demonstrating that psychological threat can push people away from intrinsic and towards extrinsic goals. The authors applied experimental methodologies, showing that existential threats (mortality), economical threats (underemployment), or interpersonal threats (contingently acceptance by a significant other) made individuals orient more towards goals as financial success, popularity, and image. At the same time, these individuals were less open to goals such as personal growth, affiliation, and community contribution.

Parents' personality may also be relevant to offspring emotional socialization. The meta-analytic review by Prinzie, Stams, Deković, Reijntjes, and Belsky (2009) has shown that parents' personality, in terms of the Big Five, even though generally small in magnitude, is meaningfully related to either positive or negative emotional style parenting practices. One of the strongest predictors of emotional style is the dimension of neuroticism which has been found to associate with a negative emotional style (Steel, Schmidt, & Shultz, 2008). That is, studies show that greater utilization of negative emotion socialization practices by parents is associated with higher levels of parental neuroticism (e.g., Flouri, 1999; Hughes & Gullone, 2010). Furthermore, Prinzie et al. (2009) found that parents who scored lower on agreeableness and higher on neuroticism were less supportive of their children's autonomy needs than were other parents. The authors explained this finding as these parents being probably more inclined to view children's autonomy as an attack on parental authority. Consequently, the neurotic parent may be inclined to execute an authoritarian parental style, imposing on his/her children an absolute set of standards to which they must conform (Furnham & Cheng, 2000). As these parents are already facing great difficulty with socialization skills, emotional availability, and grandiose (job) ideals, these children are more likely to try and cope for and/or with the parent leaving the child in distress (Cherlin, 1999; Whittaker, Harden, See, Meisch, & Westbrook, 2011). Hence, these children are more likely to develop a neurotic personality themselves and to have low self-reliance, responsibility, and achievement motivation. Even if the child's neuroticism has been genetically determined at conception, parental negative emotion practices will affect to an even greater extent the child who is dispositional predisposed to process emotional stimuli in a way similar to the processing found with depressed mood (Martin, 1985). In line with these assumptions, a plethora of studies has found neuroticism to be positively associated with negative affect and negatively with life satisfaction (e.g., Freund & Baltes, 1998; Gruenewald, Mroczek, Ryff, & Singer, 2008; Rusting & Larsen, 1997). These considerations suggest H1 as follows:

H1: There is a negative relationship between perceived family security and neuroticism.

## 2.3 Family security and personality trait materialism

A. C. Ahuvia and Wong (2002) point at an important distinction between the Belk's scale of PTM and Richins' scale of PVM, namely that the former "...relies heavily on indicators of typical emotional reactions that begin with phrases such as the following: "I enjoy..." "I don't like..." "...and so forth" (A. C. Ahuvia & Wong, 2002, p. 391), whereas the latter involves "...an assessment of respondent's cognitive beliefs about the relative importance of various personal

priorities.” (A. C. Ahuvia & Wong, 2002, p. 391). This distinction has implications for the types of antecedent variables that are likely to influence a materialism construct (A. C. Ahuvia & Wong, 2002). As for the Belk measure, the authors reason that personality materialism as measured by Belk’s scale should be more influenced by felt formative affective experiences like deprivation, envy, nongenerosity, and possessiveness, rather than by abstract cognitive beliefs and values constructed with careful deliberations, as measured by Richins and Dawson’s scale.

Studies within the parental socialization paradigm suggest a direct and positive relationship between felt financial and emotional insecurity, and PTM. Based on humanistic theories of self-actualization (e.g., Maslow, 1943; Rogers, 1961), Kasser and Grow Kasser (2001) suggest that people who strongly value the pursuit of wealth and possessions had early in their lives experiences not supportive of their psychological needs to feel close with. As a consequence, individuals who strongly value possessions feel rather insecure about themselves and thus have difficulties with their interpersonal relationships and with personal self-esteem. In support of their theory, Kasser and Grow Kasser’s analysis and comparison of dreams of people high and low in materialistic tendencies showed that the family dreams of people high in materialism were filled with conflict, parent-child role reversal, and a failure on the part of parents to support the child’s developing autonomy. Similarly, some studies report that people high in materialism were more likely to have divorced parents (Burroughs & Rindfleisch, 1997; Roberts, Manolis, & Tanner, 2003). Adolescents with a childhood experience of parental divorce have been found to feel less loved, less secure, and to have lower self-esteem, an effect that seems to continue to affect the individual even years after its occurrence (Størksen, Røysamb, Moum, & Tambs, 2005). In addition, mothers who valued financial success for their teenagers were less nurturant and lived in less advantaged socio-economic circumstances themselves. They were also more likely to pass on to their children their values of financial success. Finally, A. C. Ahuvia and Wong (2002) report a negative relation between dissatisfaction with lower order needs and envy and nongenerosity. The latter result, however, was only marginally significant. The above described findings suggest nevertheless that maternal and family raising factors are potential causes of PTM. This makes sense as formative deprived individuals are more likely to develop low socialization skills, emotional availability, and grandiose ideals (Whittaker et al., 2011). Thus, it stands to reason that they will feel envious of others and show greater unwillingness to share their possessions with others (A. C. Ahuvia & Wong, 2002).

Hence, I formulate the following hypothesis:

H2a: There is a negative relationship between perceived family security and Personality Trait Materialism.

Furthermore, as the Belk Materialism Scale has been found to be strongly affect-laden and to be strongly linked to negative affect and neuroticism, I pose that:

H2b: There is a positive relationship between neuroticism and Personality Trait Materialism.

H2c: There is a negative relationship between Personality Trait Materialism and SWB.

## 2.4 Family security and personal values materialism

There are some considerations as to why the relation between family security and PVM should differ from that between family security and PTM. One of them is that a number of studies have found that the negative relation between PVM and happiness measures is driven almost exclusively by the happiness dimension (e.g., A. Ahuvia, 2008; Roberts & Clement, 2007). Three typical example items measuring happiness materialism are “My life would be better if I owned certain things I don’t have”, “It sometimes bothers me quite a bit that I can’t afford to buy all the things I’d like”, and “I’d be happier if I could afford to buy more things”. Although these three items out of five indicate dissatisfaction with the current material conditions, it remains undetermined whether this dissatisfaction is the result of an enduring need by affluent people for even more possessions, or a statement of frustration by people facing (severe) poverty. It is plausible that the happiness dimension is strongly correlated with PTM because confirming with these cognitive-based items most likely results from affective- and personality based aspects of materialism. If so, the influence of happiness PVM on SWB should be much stronger for people facing severe poverty than for affluent people who might simply regret the fact that they cannot afford to buy everything they like. Support for this idea is found in a study by Giddens, Schermer, and Vernon (2009). These authors found that only PVM happiness was significantly related to the happiness facet from the trait emotional intelligence questionnaire (TEIQue), whereas success PVM and centrality PVM were not.

Another reason is that a closer examination of the Richins and Dawson’s success and centrality materialism scale (Richins & Dawson, 1992) suggests ambiguity in the indicators of materialistic values as to the way in which affluent respondents will interpret the indicators in comparison to the less affluent respondents. That is, as for success materialism, part of the items might elicit stronger agreement response by affluent individuals while other items might evoke stronger agreement response among the less affluent. For example, the item “The things I own say a lot about how well I’m doing in life” most likely will be agreed upon by the affluent more than by the poor, whereas for the item “I admire people who own expensive homes, cars, and clothes” the opposite may be true. The same goes for the centrality items in the Richins and Dawson’s measure, with the distinction that these items should be agreed upon mainly by the wealthy. For example, items like “Buying things gives me a lot of pleasure”, “I like a lot of luxury in my life”, and “The things I own aren’t all that important to me (R)” measure both the extent to which people actually have material possessions as well as the financial means to acquire them. It thus appears that the Richins and Dawson’s

materialism scale has in it a hidden dimension of poverty versus affluence; the happiness items eliciting favourable responses from the poor and the centrality items favouring response agreement among the wealthy, with the success dimension taking an intermediate position. Support for this idea is found in the observation that A. C. Ahuvia and Wong (2002) found a connection between felt formative deprivation and PTM, but not for PVM. Also considering the fact that Belk's scale relies heavily on indicators of typical emotional reactions whereas Richins' scale of PVM is regarded primarily an assessment of respondents' cognitive beliefs about the relative importance of various personal priorities (A. C. Ahuvia & Wong, 2002), I predict the following relations between family security and PVM when PTM is controlled for:

H3a: There is a positive relationship between perceived family security and Personal Values Materialism.

H3b: There is a negative relationship between neuroticism and Personal Values Materialism.

H3c: There is a positive relationship between Personal Values Materialism and SWB.

Finally, based on the previous arguments and deductive reasoning:

H4: There is a positive relationship between Personality Trait Materialism and Personal Values Materialism.

### 3 Method

#### *Participants*

An online survey was filled in by 232 undergraduate and graduate Communication Science students (67 percent female; age range 19-37) at the researcher's university in exchange for extra course credits. A link to the online survey was sent by email to Marketing communications and Online Marketing course participants.

#### *Instrument*

The instrument gathered information about the basic demographic characteristics of the respondents and the study variables, namely family security, neuroticism, PTM, PVM, and SWB. All constructs were measured by asking respondents to express on 5-point Likert-type scales ranging from (1) strongly disagree to (5) strongly agree their agreement with the scale items, unless stated otherwise.

The items used to measure family security, and more in particular financial and emotional family security, were adapted from the Family Resources Scale by Rindfleisch, Burroughs, and Denton (1997). Respondents were asked to indicate for eight need types the degree of support the respondent has received from the family in which he or she grew up. Three need types were selected by the researcher as indicators of financial resources (spending money, food and drink, clothing and footwear), and the five remaining need types were regarded indicators of emotional family security: discipline, emotional support and love, role modelling and example behaviour, life competences and wisdoms, and time sharing and personal attention. Subscales were constructed for financial and emotional security. Cronbach's Alpha's for both subscales were .74 ( $M = 4.00$ ;  $SD = 0.60$ ) and .82 ( $M = 3.97$ ;  $SD = 0.62$ ), respectively.

Neuroticism was measured with the 8-item subscale from the Big Five Inventory, the latter of which have been translated into Dutch by Denissen, Geenen, van Aken, Gosling, and Potter (2008). Respondents were asked to express the degree to which they would characterize themselves "as someone who is..." followed next by each of the eight items, an example of which is "worrying a lot". Scale reliability was satisfactory (Cronbach's Alpha = .77;  $M = 2.72$ ;  $SD = 0.61$ ).

To assess PVM, the short form of the Materialism Value Scale by Richins (2004) was applied. Each individual was asked to evaluate 15 statements. The following subscales containing five items each were calculated: happiness materialism, success materialism, and centrality materialism. Cronbach's Alpha's were .66 ( $M = 2.63$ ;  $SD = 0.61$ ), .77 ( $M = 2.51$ ;  $SD = 0.66$ ), and .70 ( $M = 3.35$ ;  $SD = 0.59$ ), respectively, with the following example items for happiness PVM, success PVM, and centrality PVM, respectively: "I wouldn't be any happier if I owned nicer things" (R), "I like to own things that impress people", and "I like a lot of luxury in my life".

Participant completed the revised materialism scale by Ger and Belk (1996) to measure PTM. This instrument contained 21 scale-items, measuring the following subdimensions: preservation (three items;  $M = 2.60$ ;  $SD = 0.82$ ), envy (five items;  $M = 2.56$ ;  $SD = 0.57$ ), possessiveness (four items;  $M = 3.68$ ;  $SD = 0.59$ ), and nongenerosity (nine items;  $M = 2.42$ ;  $SD = 0.46$ ). Measurement type was the same as for PVM, with Cronbach's Alpha's ranging from an unsatisfactory .41 to an acceptable .64. Despite low reliabilities, it was decided for construct comparison purposes to compute four subscales on the basis of the original subscale-items.

SWB was measured by a combination of a self-esteem measure and a general life satisfaction measure. Self-esteem was measured by Rosenberg's (1965) Self Esteem Scale, designed to measure global feeling of self-worth or self-acceptance. It was rated by the respondents on a four point scale from (1) strongly disagree to (4) strongly agree, for 10 statements designed equally to be positive and negative. Overall Cronbach's Alpha was .87 ( $M = 4.02$ ;  $SD = 0.56$ ), indicating satisfactory reliability. Life satisfaction was measured with the five-item Satisfaction-With-Life Scale by Diener et al. (1985). An example of an item is: "In most ways, my life is close to my ideal". The internal consistency of the scale in this study was .76 (Cronbach's alpha;  $M = 3.54$ ;  $SD = 0.63$ ).

Data were analysed using SPSS and AMOS. A structural equation model was built to test the hypothesized relationships among the study variables.

### 4 Results

Table gives the straight Pearson correlations between the study variables at the subdimensional level. Since hypotheses were formulated at the level of the overall constructs, the individual correlations will not be discussed for hypothesis testing purposes. Instead, a simultaneous test of the hypotheses was conducted using a structural equation model (SEM), as will be discussed in the next paragraph. Pearson correlations are presented to gain useful insights into the data structure in preparation for the SEM-analysis to come. It is worth noting that the following constructs were the highest and significant correlates with self-esteem and life satisfaction: economic security ( $r = .23, p < .001$ ;  $r = .34, p < .001$ , respectively), emotional security ( $r = .30, p < .001$ ;  $r = .45, p < .001$ , respectively), neuroticism ( $r = -.58, p < .001$ ;  $r = .34, p < .01$ , respectively), envy PTM ( $r = -.35, p < .001$ ;  $r = -.37, p < .001$ , respectively), and happiness PVM ( $r = -.29, p < .001$ ;  $r = -.29, p < .001$ , respectively).

Construct	1	2	3	4	5	6	7	8	9	10	11	12
1. Economic security	-	.52***	-.08	-.12!	.13*	-.30***	.04	-.16*	-.03	.13*	.23***	.34***
2. Emotional security		-	-.09	-.09	.08	-.25***	.10	-.14*	.01	.11!	.30***	.45***
3. Neuroticism			-	.11	.11!	.26***	.16*	.18**	.11	.12!	-.58***	-.34**
4. Nongenerosity				-	.24***	.27***	.12!	.23***	.28***	-.00	-.13*	-.10
5. Possessiveness					-	.05	.20**	.08	.06	.07	-.03	.03
6. Envy						-	.11	.39***	.35***	.04	-.35***	-.37***
7. Preservation							-	.18**	.04	.12!	-.02	-.02
8. Happiness								-	.52***	.39***	-.29***	-.29***
9. Success									-	.42***	-.03	-.03
10. Centrality										-	-.03	.02
11. Self-esteem											-	.58***
12. Life satisfaction												-

Table 1: Pearson correlations between the study variables (N=230)

Note. 1 Economic security; 2 Emotional security; 3 Neuroticism; 4 Nongenerosity; 5 Possessiveness; 6 Envy; 7 Preservation; 8 Happiness; 9 Success; 10 Centrality; 11 Self-esteem; 12 Life satisfaction.

\*  $p < 0.05$ . \*\*  $p < 0.01$ . \*\*\*  $p < 0.001$ .

Structural equation analysis was conducted next, using the AMOS v 19.0 software by Arbuckle (2010), with maximum likelihood as the estimation procedure. The model initially tested (Model 1) is depicted in Figure 2. Model 1 assumed in line with theory a direct effect of family security for neuroticism, PTM, and PVM, a direct effect of PTM for PVM, and a direct effect of PTM and PVM for SWB.

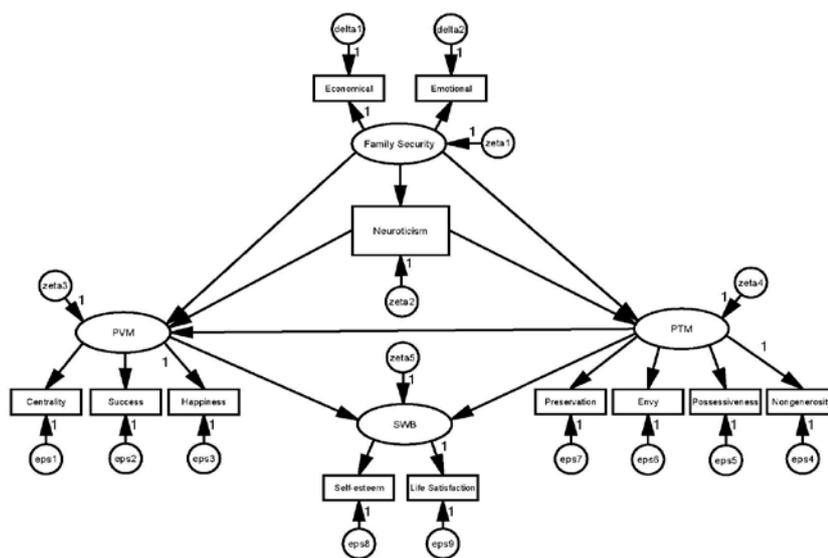


Figure 2: Structural Equation Model 1

The Goodness-of-fit indices indicated a highly inadequate fit of Model 1 with a highly significant chi-square ( $\chi^2 = 150.37$ ;  $df = 47$ ,  $\chi^2/df = 3.20$ ,  $p = .000$ ), and the following indices: GFI = .90, AGFI = .84, RMSEA = .098. Examination of

the Critical Ratios and Modification Indices provided by AMOS, revealed that I should either allow a large number of constructs for their measurement error variances (MEV) to covary, or to propose an equally or larger amount of direct effects between the study variables. Based on my theoretical considerations, I decided to achieve model fit by allowing for the MEV of the study variables to covary with each other as suggested by AMOS. Covariance arrows were added one by one to Model 1 on the basis of the M.I. and Par Change scores, in descending order. Additional arrows were included until model fit was obtained, with no presence of negative variances and covariance matrices indicating fit problems, and no further suggestions for model modifications by AMOS. The final model (Model 2) is shown in Figure 3.

The Goodness-of-fit-indices indicated a more than adequate fit:  $\chi^2 = 26.46$ ,  $df = 36$ ,  $\chi^2/df = 0.74$ ,  $p = .88$ ,  $GFI = .981$ ,  $AGFI = .959$ ,  $RMSEA = .000$ . The model shows in line with predictions that family security had a direct, though marginal, effect on neuroticism (H1; Standardized Path Coefficient (SPC) =  $-.14$ ,  $p < .10$ ), on PTM (H2a; SPC =  $-.41$ ,  $p < .001$ ), and on PVM (H3a; SPC =  $.49$ ,  $p < .001$ ).

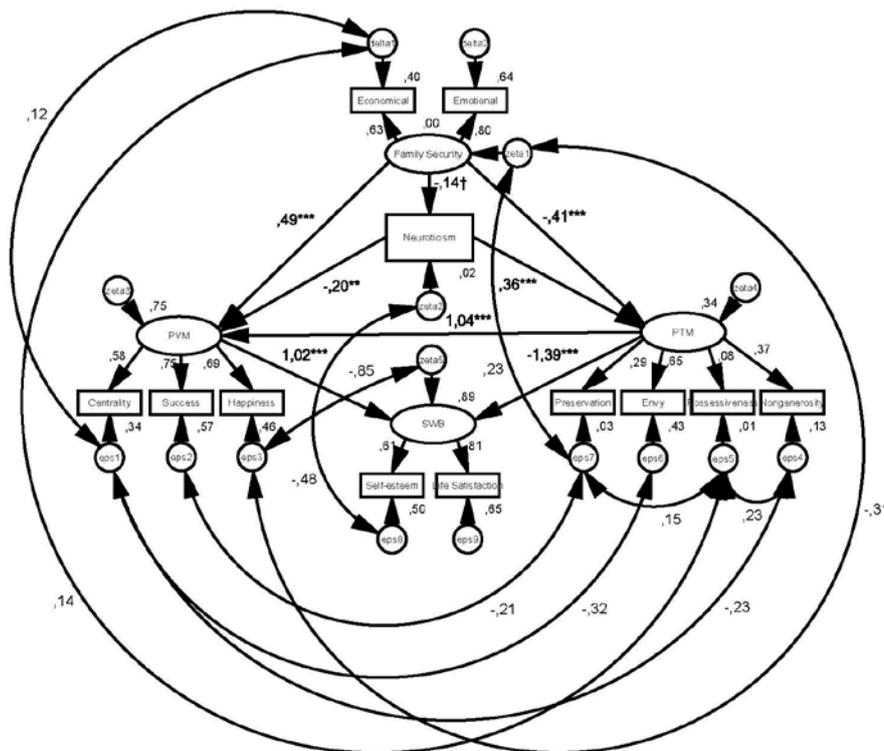


Figure 3: Structural Equation Model 2

Furthermore, in line with H2b and H3b, neuroticism had a direct, significant effect on PTM (SPC =  $.36$ ,  $p < .001$ ) and on PVM (SPC =  $-.20$ ,  $p < .001$ ). Finally, as predicted in H2c and H3c, the path from PTM to SWB, and the path from PVM to SWB was significant (SPC =  $-1.39$ ,  $p < .001$ , and SPC =  $1.02$ ,  $p < .001$ , respectively), showing that PTM was negatively related to SWB and PVM was positively related to SWB. Hence, all hypotheses were confirmed at the 5-percent level or below, except for H1 (10-percent level).

Global examination of the correlation estimates in the final model yields a more differentiated, although highly descriptive, picture of family security and neuroticism effects on materialism, and materialism effects on SWB. For instance, financial or economic security was marginally positively correlated with centrality PVM ( $r = .12$ ,  $p = .10$ ) and possessiveness PTM ( $r = .14$ ,  $p < .05$ ). Centrality PVM, in turn, was negatively correlated with envy PTM ( $r = -.32$ ,  $p < .001$ ) and with nongenerosity PTM ( $r = -.23$ ,  $p < .001$ ). Finally, the relation between happiness PVM with family security and SWB was negative ( $r = -.31$ ,  $p < .01$ , and  $r = -.85$ ,  $p = .001$ , respectively). That is, happiness PVM increased with decreasing family security and SWB.

## 5 Conclusions

The current study was designed to investigate from a life course perspective the extent to which financial and emotional (in)security (family security) in one's formative years and neuroticism contributed to individual differences in Belk's Personality Trait Materialism (PTM), Richins and Dawson's Personal Values Materialism (PVM), and subsequent subjective well-being (SWB). PTM was theorized to be strongly affect-laden, whereas PVM was regarded

primarily an assessment of respondents' cognitive beliefs about the relative importance of various personal priorities (A. C. Ahuvia & Wong, 2002).

In line with expectations, the results of the structural equation analysis showed that family security increased SWB through reduced neuroticism and PTM, and increased PVM. Belk's (1985) materialism measurement has been criticized to produce spurious links with measures of life satisfaction because Belk inferred materialism from measures of related affect-based constructs (A. C. Ahuvia & Wong, 2002; Richins & Rudmin, 1994), like neuroticism (Solberg et al., 2004). While this study showed that this idea bears some truth, the Belk measure has also been found to explain additional unique variance in PVM and SWB over and above that explained by neuroticism. This makes the Belk measure a valuable asset for predicting and explaining materialism in the case of family insecurity.

Furthermore, the findings of this study show that the Richins and Dawson's (1992) Material Values Scale also seems to contain a confounding factor, namely financial prosperity. That is, the endorsement of happiness PVM appears to result from experienced financial and emotional insecurity in one's formative years as shown, among others, by the significant correlations between the construct and family security, and that with SWB. Experiencing sufficient family security appears to be a prerequisite for confirming with the PVM success and centrality scale items after controlling for PTM, as confirmed by the positive relation between family security, PVM, and SWB. Hence, the negative relation between PVM materialism and SWB reported so frequently in the literature might be the result of the happiness PVM subscale measuring the degree of family insecurity experienced in one's formative years. Further research should focus on the strengths, limitations and unique contributions of the Belk materialism measure and the Richins and Dawson materialism measure, as both measures appear to make a unique contribution in predicting and explaining SWB from a life course perspective.

Like all studies, this study has also (obvious) theoretical, methodological, and statistical limitations that need to be taken into account when considering its contributions. However, page limitations restrict me from addressing these limitations. Let me reassure that I have given great effort to work consciously and deliberately, hoping that the current research will promote a continued interest in the field of materialism and SWB. Further, it is hoped that this study will encourage a further assessment of those physical, social, and emotional strains and conditions that contribute to materialism and SWB.

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## AS GREEN AS THE PROFIT REQUIRES IT AND ALLOWS IT TO BE: AN ORGANIZATIONAL CASE STUDY

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### Abstract

This case study was designed as a part of a work package within the EU FP7 project LOCAW, with the purpose to investigate the structural and organizational factors influencing sustainable practices and behaviors in the workplace. We carried out the study in a Romanian private organization, which is the regional provider of public water and wastewater services.

The study had four main objectives: an analysis of EU, national and regional sustainability regulations relevant for the organization; an analysis of political, economic and social conditions in which the organization operates and of demands and pressures of relevant stakeholder groups; an analysis of the ways in which the regulations and conditions previously described are understood and implemented in the mission, strategic plans and everyday operations of the organization; an analysis of existing organizational norms and their potential to act as barriers or drivers to the implementation and success of policies designed to reduce GHG emissions.

Data were gathered via document analysis and in depth interviews with workers situated at different levels of decision-making within the organization. A qualitative analysis was carried out with eleven organizational documents and ten in-depth interviews. We used Situational Analysis (Clarke, 2005) as a theoretical-methodological approach to data treatment.

The results showed that the interest of the organization in achieving real environmental performances has two main aims. First, the focus is on the image benefits following from the good management of the environmental issues in its field of activity, namely WATER, which is itself an element of the natural environment. The second important aim is to attract ethical investments. Within the market context in which the organization runs its business, the only financing possibility for big projects is to obtain funds from the EU. The granting conditions for these funds require the strict compliance of the company with the environmental standards. The results also indicate a hierarchical type of organizational culture in which the leaders rule and want for the organization to be as green as the profit requires it and allows it to be.

Overall, the results of this study emphasized the profit as underlying factor that influences sustainable behaviors and practices at work, even though, apparently, they seem to have real ecological reasons. Everyday organizational practices and behaviors and the regular supply of services take into account the environment protection only to the extent they have no financial cost for the organization.

*Keywords: choice, utilitarianism, socially responsible business*

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## 1 Introduction

Large organizations are responsible for a significant amount of GHG emissions. An estimation in the year 2000, which considered 8 different categories of sources of GHG emissions (industrial processes, power stations, transportation fuels, among others), showed that the potential contribution of large organizations to global warming over the next 100 years will be highly significant: 72 % CO<sub>2</sub>, 18 % Methane, 9 % Nitrous Oxide (Emission Database for Global Atmospheric Research, 2000).

Specialists in the organizational field agree on the fact that the activities in organizations and environmental conditions are related (Dunn, 2002) and consider that companies are responsible for making changes in their behaviour in order to promote environmental sustainability in their activities (Hunt & Auster, 1990; Oskamp, 2000). The general population is also largely concerned about the extensively discussed issue of environmental degradation and the impact corporations have on it. Narrowing the trust gap of the population is a strategic step ahead that companies must make in order to maintain their status and continue their business successfully (Bonini et al., 2008).

As a result, many organisations do not only take responsibility for addressing environmental impacts, but seem to be aware of the business case for integrating sustainability into their business strategies (Govindarajulu & Daily, 2004; Ambec & Lanoie, 2008) and are committing to environmental policies that facilitate a shift towards more sustainable business practices (Jabbour & Santos, 2008). The movement has gained strengths as many organisations compete to be seen as leaders in sustainability (Zibarras & Ballinger, 2011).

As a key practice of everyday life, work is a place and space where the sometimes-contradictory demands of economic profit and environmental sustainability meet and are negotiated, with the resulting effects on work practices, energy consumption and greenhouse gas emissions. As people spend an important part of their lives at work, within a community of values, norms and everyday practices, it is also the place where identities are negotiated, where individual values are transformed and where sustainability-related behaviour is either promoted and rewarded or hindered and discouraged (Brown, Kirpal & Rauner, 2007).

As production and consumption are intimately related, changing patterns of production can not only directly reduce GHG emissions, but can have a significant indirect effect, by influencing what is available for consumption. If we address changes in production patterns, we will have addressed the upstream causes of environmental problems. This has only recently started to be explored in the social sciences (Uzzell & Rathzel, 2009).

### 1.1 Theoretical framework for structural and organizational factors influencing sustainable behaviours at work

Past research has mainly focused on the overall adoption of sustainability practices by firms, take into account only external factors, such as environmental regulation and standards set by governments, new technology, competitive and economic forces or pressures resulting from customer groups and the community (Linnenluecke et al., 2009). Recent studies point to organizational factors in order to explain different intra-organizational responses to sustainability issues, and to offer a broader perspective on how corporate sustainability is understood and implemented within an organization (Howard-Grenville, 2006). These studies identify some important organizational factors for achieving corporate sustainability, such as top management support, human resource management, environmental training, employee empowerment, teamwork and reward systems (Daily & Huang, 2001; Wilkinson et al., 2001) or changes in employee values and underlying assumptions (Crane, 2000).

Linnenluecke & Griffiths (2010) argue that corporate sustainability is a multifaceted concept that requires organizational change and adaptation on different levels. They propose an approach of sustainability in organizations, at three levels. On a surface level, they identify the context for the adoption of sustainability practices that becomes visible through technical solutions, the publication of corporate sustainability reports, and the integration of sustainability measures in human resources performance evaluation or training. On a value level, the adoption of corporate sustainability principles takes place through changes in employees' values and beliefs towards more ethical and more responsible values. Finally, on an underlying level, comes to the fore a change in core assumptions regarding the interdependence of human and ecological systems. The authors also notice a parallel to the three-level typology of organizational culture in the Schein's (1990) model: *the observable culture* (the visible organizational structure, processes and behaviours), *espoused values* (strategies, goals and philosophies), and *underlying assumptions*

(unconscious beliefs and perceptions which form the ultimate source of values and action). Schein's model is the most widely used organizational culture framework (Baumgartner & Zielowski, 2007) and adopts a functionalist view on it. Several studies describe the importance of creating an organizational culture that values the environment, is committed to sustainability and supports environmental sustainability initiatives (Starik & Rands, 1995; Goodman, 2000).

Russell and McIntosh (2011) argue that sustainability must be congruent with the basic underlying values and assumptions of an organizational culture in order for organizations to become truly sustainable. The authors agreed that sustainable organizations differentiate themselves, as Starik & Rands (1995, p. 909) claimed, through „the degree to which its activities can be continued indefinitely without negatively altering the limiting factors that permit the existence and flourishing of other groups of entities, including other organizations”.

## 1.2 Important structural and organizational factors found in previous studies

*Organizational commitment* is one of the most important factors influencing sustainability-related behaviours in the workplace. The findings of Ramus & Steger (2000) indicated that employees respond positively with creative environmental ideas if they perceive a strong organizational commitment to the natural environment. Andersson et al. (2005) found that perceived corporate commitment to sustainability and trust in top management were significantly related to affective organizational commitment and was positively related to sustainability support behaviours of the supervisor. Their findings also suggest that when supervisors perceive that their company is committed to environmental sustainability, they are more likely to respond with pro-environmental behaviours that are, in turn, directed toward the employees they supervise. Ramus & Oppegaard (2007) describe two types of approaches regarding the commitment to sustainability: *compliance-based approaches* - organizational processes that focus on reacting to events or pressures external to the organization and *commitment-based approaches* that are driven by internal, value-based processes, involving an appeal to organizational norms and personal values of organizational members.

*Subjective norms* in the workplace are the perceptions an individual has about the expectations of others whose opinions and approval they value – in this case, these expectations may lead them to perform pro-environmental behaviours (Fishbein & Ajzen, 1975). Peers within an organization do strongly influence each other by sharing insights and modelling new behaviours; this works best when the authority structure encourages this transference. Ideally, the social norms activated in the work environment will eventually become internalized personal norms (also called moral or ethical norms) (Schwartz, 1977) because ethical norms are the strongest drivers for pro-environmental behaviours (Harland, Staats, & Wilke, 1999).

*Executive leadership* has been identified as a critical component of organizational change towards sustainability and it is thought that skilled leadership is required to transform organizational design, governance systems, and culture because leaders contribute to the envisioning and strategic decision-making of sustainable initiatives within an organization (Epstein, 2008 apud Hannon & Callaghan, 2011).

According to Hallstedt et al. (2010), companies with a *strategic* sustainability approach will increase their chances of avoiding cost increases, of identifying new market opportunities, of enhancing recruitment and retention of talents, of building community, improving productivity and their brand value. Sustainability decision-making is likely to be influenced by three types of drivers according to Basu & Palazzo (2008): *performance drivers*, which use social and environmental investments to advance performance; *stakeholder drivers*, for which one needs to meet the demands of external stakeholders and institutions and *motivation drivers* represented by external reasons like pre-empt legal sanctions, enhanced reputation or intrinsic reasons based in virtue ethics. These are very similar to the empirical findings of Bansal and Roth (2000). They identified three drivers: competitiveness, legitimating which helps boost their credibility or avoid penalties, and social responsibility. Organizations typically have two choices of voluntary environmental management strategy: implementation of individual practices (environmental cost accounting or internal audits), or participation in formal voluntary environmental management programs (VEPs), such as green building certification (Jones, 2010).

Several authors pointed out that *human resources* are of high importance in implementing sustainability in organizations (Daily & Huang, 2001; Howard-Grenville, 2007; Arnold, 2010; Linnenluecke & Griffiths, 2010). Neto & Jabbour (2010) point that the alignment of the *human resource management* with the definition of the environmental strategies of the organisation may more completely assimilate the contributions of the interaction between the human resource management practices and the sustainability implementation processes. Spreitzer (2007) found that when organizations empower employees by allowing them more control over their work and a stronger voice, these participatory work practices become skills that the employee will then adopt to strengthen their communities. According to Zutshi & Shoal (2003), top management plays a significant role in the successful implementation and maintenance of any programme because they provide both material resources and intangible resources, like support, encouragement of employees, and commitment of time. The authors found direct a relationship between employee involvement and successful implementation and completion of a programme.

Anjula Gurtoo & Antony (2007) indicate the results of several studies that show significant direct impact of environmental regulations on business that includes *product and process redesign* to include environment friendly materials and processes; systems for life cycle management in the form of waste management, recycling and reuse; and government structures and mechanisms to monitor compliance. The same authors argue that although firms and industries have replaced many materials with eco friendly ones and modified parts of their process in order to reuse certain material, this is seen to have indirect impact on the environment when inefficient technologies in processing the material have lead to increased use of energy, potentially decreasing the environment gain.

Government influences organizations through *legislation* that traditionally has relied upon „command-and-control“ regulations that specify technologies rather than environmental solutions (Nash and Ehrenfeld, 1997). These standards are inefficient in directing the allocation of resources and unlikely to be cost-effective (Watson and Emery, 2004). Starik & Rands (1995) argue that such regulations can be economically inefficient and ecologically suboptimal, because they retard flexibility and impose penalties only for violations of standards. An alternative is the use of market-based regulatory approaches, such as emissions taxes and tradeable permits, which generate economic costs upon firms in proportion to the amount of environmentally harmful outputs they generate (Anderson & Leal, 1991). Such approaches provide incentives for reducing every unit of pollution possible, thus encouraging continuous technological innovation (Breheny, 1992). Delbard (2008) describe the EU environment policy as a typical case of command and control approach, that consists of a large amount of directives, decisions and regulations, some of which directly affecting the corporate world. Companies operating in the EU are subjected to several environmental regulations, notably in the field of effluent discharge and recycling. Regulation is widely considered more expensive and less efficient than voluntary action (Freeman and Kolstad, 2007). Studies indicate that while varieties of factors positively influence voluntary environmental management, regulatory pressures are among the most important (Jones, 2010). Recent findings show that policy initiatives that encourage advanced technology development are best addressed through voluntary initiatives and market-oriented measures, not government mandates (Shinkle & Spencer, 2011). In recent years, however, there has been a tendency in public policy making to delegate some policy activities to private interest organizations or to collaborate with them (Koontz and Thomas, 2006).

### 1.3 Advances beyond previous research

The ongoing project FP7 LOCAW meant to advance understanding of the drivers of and barriers to sustainable lifestyles by an integrative investigation of the determinants of everyday practices and behaviours within large scale organizations on different levels: (a) analysing the patterns of production and consumption in the workplace with their resulting GHG emissions; (b) analysing organizational strategies to reduce emissions and implement EU regulations regarding the “greening” of their production processes; (c) everyday practices and behaviours at work of employees on different levels of decision-making within the organization; (d) the relationship between behaviours and practices at work and behaviours and practices outside work; (e) the patterns of interaction between relevant agents and stakeholders in the organization’s environment and the resulting barriers and drivers for implementing sustainable practices and behaviours in the workplace.

The present case study was designed as a part of work package 3, within the project described above. This work package aims to provide a comprehensive analysis of the macro-factors influencing everyday practices and behaviours in the workplace, in four different organizations. Organizations are nested within a political, economic and social context that creates either barriers or drivers for implementing sustainable working practices. The external context acts as sets of boundary conditions on the organizations, generating specific opportunities and obstacles for change. A comprehensive analysis of these macro-factors will provide relevant information on how to promote policies that enhance opportunities and minimize the influence of obstacles in transitioning to a sustainable low carbon Europe.

### 1.4 The national context in which the organizations operate

In Romania, organizations are subjected to the national laws, which, in their turn, are in principle designed in accordance with the European Union’s policies and laws. Consequently, the EU regulations regarding the environment can only indirectly influence the organisations’ activities in Romania that are placed under the immediate impact of the national laws. Nevertheless, many national laws, including laws concerning the environment, refer directly to the European norms, and enforce their application. When organisations sign non-refundable financing—from European funds—agreements, they commit themselves to observing the EU regulations: in such cases, they subject themselves directly to the European legislation.

With respect to the issue of GHG (greenhouse gases) emissions, Romania committed itself, under the provisions of the Kyoto protocol, to reducing the country’s GHG emissions by 8% until 2012, compared to 1989. Between 1989 and 2009, the overall GHG emissions decreased by 54.17%, and the net emissions by 62.81%. Consequently, Romania has polluted less than it anticipated when it subscribed to the Kyoto Protocol. Thus no legal pressures aiming to impose, on various organizations, the reducing of GHG emissions, were necessary.

## 1.5 Short profile of the case-study organization

As a private organisation that provides public utility services, Aquatim S.A. Timișoara is subordinated to the Local Councils (Timișoara, Jimbolia and Deta) and Timiș District Council. The regulating authority is the National Regulatory Authority for Community and Public Utilities Services and the law that regulates the public utilities and community services is Law no. 51/2006. The water supply and sewerage services law includes, among its stipulations, the following: ensuring the service quality in line with the EU regulations; improving the environmental quality by employing rationally the natural water resources and by adequate wastewater cleaning, according to the environmental law provisions and the EU directives; diminishing the water loss and the energy consumption for water use in the water supply and sewerage systems.

## 2 Objectives

The study had four main objectives: a) an analysis of EU, national and regional sustainability regulations relevant for the organization; b) an analysis of political, economic and social conditions in which the organization operates and of demands and pressures of relevant stakeholder groups; c) an analysis of the ways in which the regulations and conditions previously described are understood and implemented in the mission, strategic plans and everyday operations of the organization; d) an analysis of existing organizational norms and their potential to act as barriers or drivers to the implementation and success of policies designed to reduce GHG emissions.

## 3 Method

Data were gathered via document analysis and in depth interviews with workers situated at different levels of decision-making within the organization.

To identify structural and organizational factors influencing sustainability-related everyday practices within Aquatim, we made an analysis of relevant documents, which contain references to environmental regulations, political, economic and social conditions, strategic plans and everyday operations of the organizations. They were introduced as Hermeneutic Units in the program ATLAS.ti.

The documents analyzed are the next ones:

Document title
Programme of the Instrument for Structural Policies for Pre-Accession Aquatim Investment Programme of its own resources Manual for Integrated Management System Aquatim 2010 and 2011 Annual Reports Aquatim 2011 Newsletters (2,3,4,7,8,9)

*Table 1. List of the documents analysed*

We also made an analysis of 10 interviews with workers situated at different levels of decision-making within the organization. The semi-structured interviews were conducted individually with each interviewee. Throughout them 7 main themes were pursued: good practices; values promoted; rules and norms; attitudes within the company; context; barriers; drivers. This structure of the interview was developed around the reference criteria (prevalently semi-structured) and around the specific themes previously selected on the basis of field analysis and relevant scientific literature. The average duration of an interview was 63 minutes.

The selection of interviewees was made according to a series of criteria—first of all, we established to interview at least one representative from each domain targeted. Secondly, we selected people who held positions that allowed them access to complete and accurate information. The third criterion is the power of decision and implementation of pro-environmental programs.

We selected relevant data using the program Atlas.ti.

Organizational positions and roles of the ten interviewees
Head of environmental quality department Head of regional projects development within the technical department Head of investments within the technical department The PR team leader Head of water quality testing laboratory Head of technical department Head of maintenance office within the technical department Head of sector at the water cleaning station

Head of project implementation unit  
 Head of IS CIR energy and metrology office within the technical department

Table 2. Organizational positions and roles of the ten interviewees

A qualitative analysis was carried out with eleven organizational documents and ten in-depth, semistructured, interviews. We used Situational Analysis (Clarke, 2005) as a theoretical-methodological approach to data treatment.

#### 4 Results

The results of the study have been grouped, according to the Work-package 3 objectives, in the following subchapters: EU, national and regional sustainability regulations; Political, economic and social conditions; The ways in which the regulations and conditions described in the previous section are understood and implemented in the organization; The organizational norms and their potential to act as barriers or drivers.

In interpreting the codes and codes families realized in the Atlas program, we have not considered that important the quotations number, but rather the themes relevant for this work package, generated through the interview. Therefore, conceptual maps for each of these themes will be included in results.

The analysis of **EU, national and regional sustainability regulations relevant for the organization** (figure 1), based on documents analysis and interviews with middle managers, indicate three relevant dimensions of these regulations that impact on (un)sustainable practices and behaviours of the organization. The first dimension is that of the *mandatory national environmental laws and regulations*, which the organization followed strictly to avoid fines and penalties.

The results indicate a good reason that the interviewed managers exhibited for the strict compliance of the organization with environmental laws: if disobeyed, the penalties are proportionate to the gravity of the breach and have therefore the impossibility of accumulating funds for new investments. It should be mentioned that in this case is about environmental laws that apply to this organization operating in the field of water services and not about regulations related directly to reducing GHG emissions.

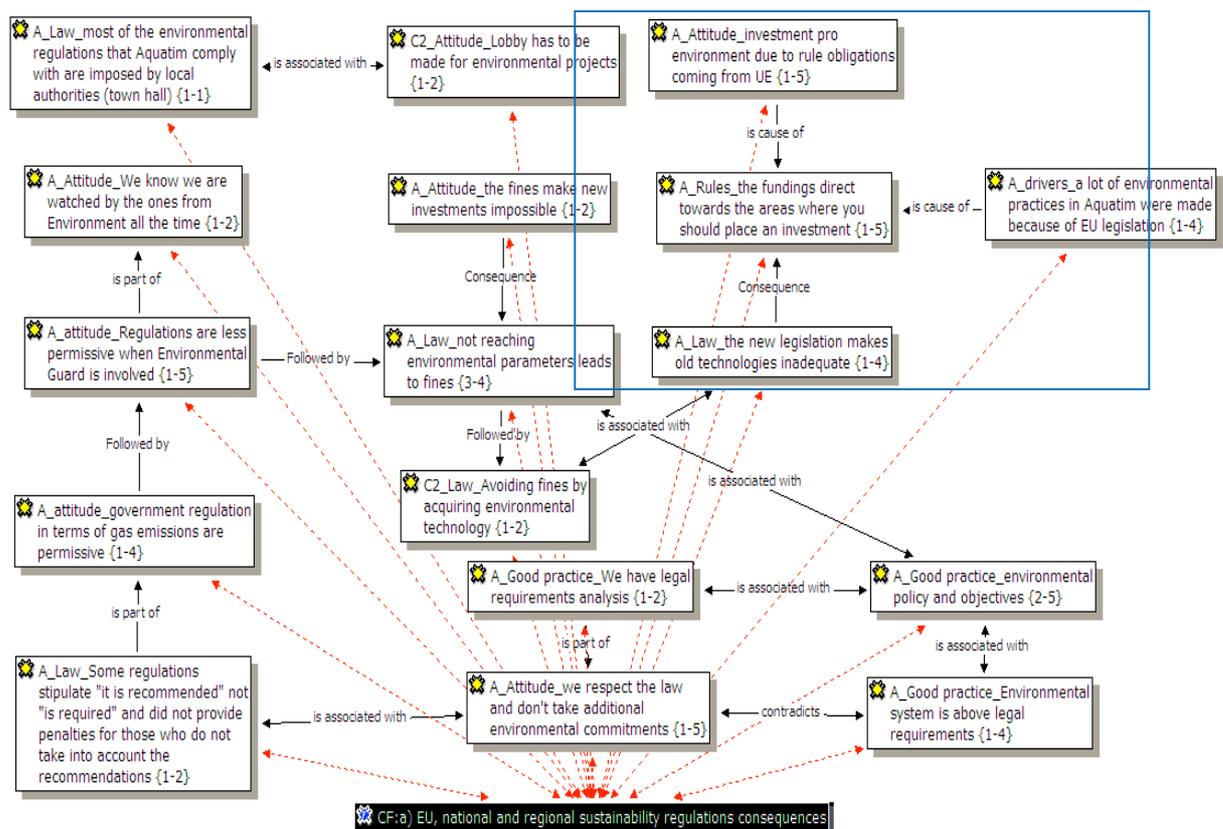


Figure 1. EU, national and sustainability regulations consequences – conceptual map

In Romania, government regulations in terms of gas emissions are permissive. The second dimension concerns *the regulations that the organization must comply when aims to obtain funding* for different projects from the EU or the government. In this case, the organization may choose to conform to the regulations imposed by the authorities or may not receive funds. The legislation states the replacement of old technologies that are no longer adequate, since

they pollute the environment. Consequently, the funding is usually directed towards the areas where should be made an investment, as the one mentioned above. The results of the interview analysis showed that the management acknowledges that most pro-environment investment and many sustainable practices of the organization are due to obligation to comply with regulations derived from funding agreements with EU.

The third dimension, *the environmental management system*, reflect the voluntary choice of the organization to implement the demanding ISO 14001 standards, whose requirements have become regulations in the organization. The interviewees perceive this environmental management system as a motivational factor that led to a better awareness of sustainable practices and they also believe that this system is more comprehensive than the legal requirements. However, the organization only respects the law and does not want to make additional commitments concerning the environment.

The analysis of ***the political, economic and social conditions in which the organization operates*** (figure 2) revealed also three main dimensions of the impact these conditions may have on everyday sustainable practices and behaviours in the organization. First is *the relationship with local and regional authorities* that may facilitate or impede the financing and the effective implementation of investment projects designed to make the organization more sustainable. The interviewees deem that the organization is stronger as long as it collaborates with the mayoralty and it is more eligible for funding on the market. The second dimension concerns *the expansion of business activity* for profit reasons primarily, but also socio-political considerations. The organization aims to extend its services in small villages for which could obtain grant funds from the EU or from the government. Due to the specificity of its activity, as provider of public utility services, the organization holds a natural monopoly, but its management considers the possibility of the occurrence of a competition state from the counties nearby, in case of administrative regionalization. However, the authorities can replace inefficient providers of public utility services. *Customers* represent the third dimension. As main stakeholders, people who benefit from the services that the company provides do not exert any pressure on the company to address the environmental problems. A possible explanation for this situation could be the lack of information needed to understand the seriousness of the problem of GHG emissions from business activities.

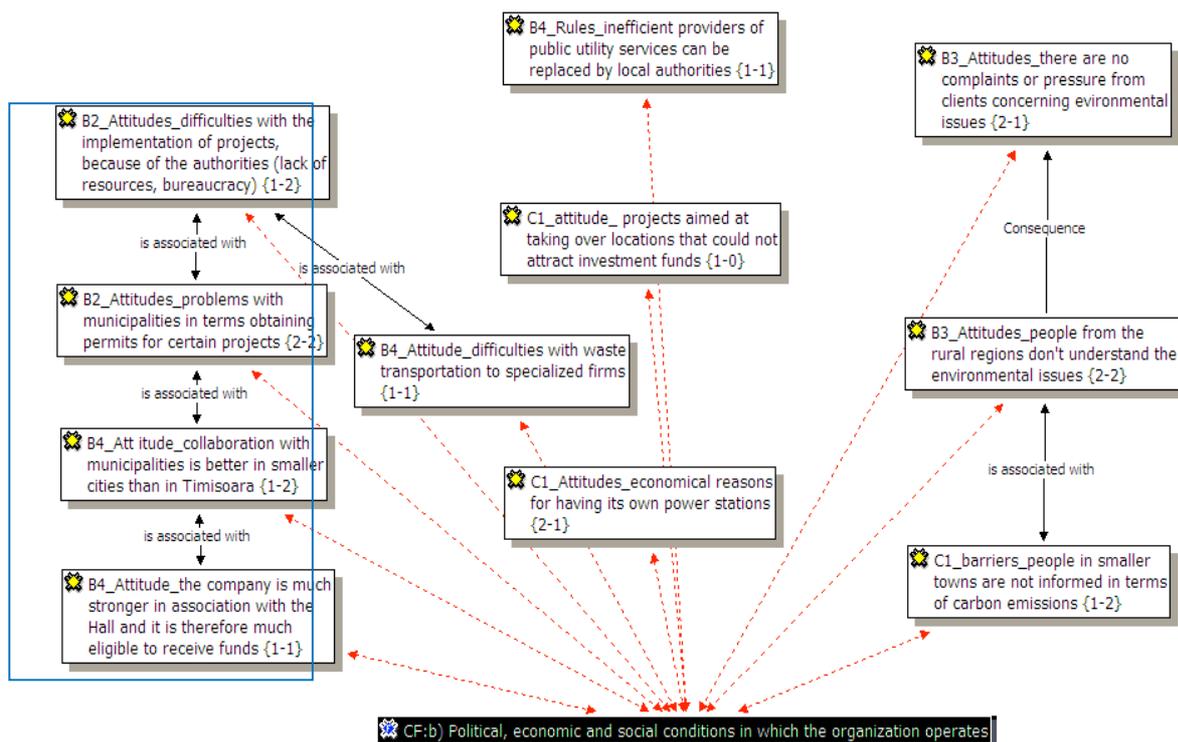


Figure 2. Political, economic and social conditions in which the organization operates – conceptual map

The result of the analysis of ***the ways in which the regulations and conditions previously described are understood and implemented in the organization*** (in the mission, strategic plans and everyday operations of the organization) were found to be more complex.

First, we have found four ways in which the organization is trying to implement in *its mission* the regulations and conditions previously described: (1) a congruent perspective on the environmental issues between the organization and authorities; (2) partnership with European public institutions that have demonstrated a high level of sustainable practices in public service management; (3) focus on research to discover new advanced technologies (and,

consequently, less polluting); (4) improving communication processes for disseminating information about environmental issues.

The implementation of the regulations and conditions described above in *the strategic plans of the organizations* follows three main paths. First, accessing grants from the EU and making investments in new environmentally friendly technologies and equipment. Second, implementing modernization projects for outdated technologies and third, renewal of the fleet with less polluting cars and vehicles. However, analysis of the interviews showed that the strategic plans of the organization do not include focus on reducing GHG emissions specifically, but rather environmental issues are taken into account only from third position.

The results of the analysis show that the basic premise of the *employee – environment relation* is that there are two categories of humans and employees, namely those who voluntarily follow environment regulations because they desire to protect the environment and those who need to be motivated or constrained by the organization to do the same. The defining element for the first category of employees seems to be the level of awareness of the importance of own contribution to the environmental sustainability. The interviewees share different opinions on the ways in which employees from the second depicted category understand and contribute to the implementation inside the organization of environment related regulations. Some consider constraints to be the most efficient method to determine the employees to become aware of the importance of environment and to respect environment regulations. Others think that employees need support from the organization in order to develop attitudes favourable to environment issues, if the organizations desire to facilitate implementation of pro-environmental practices.

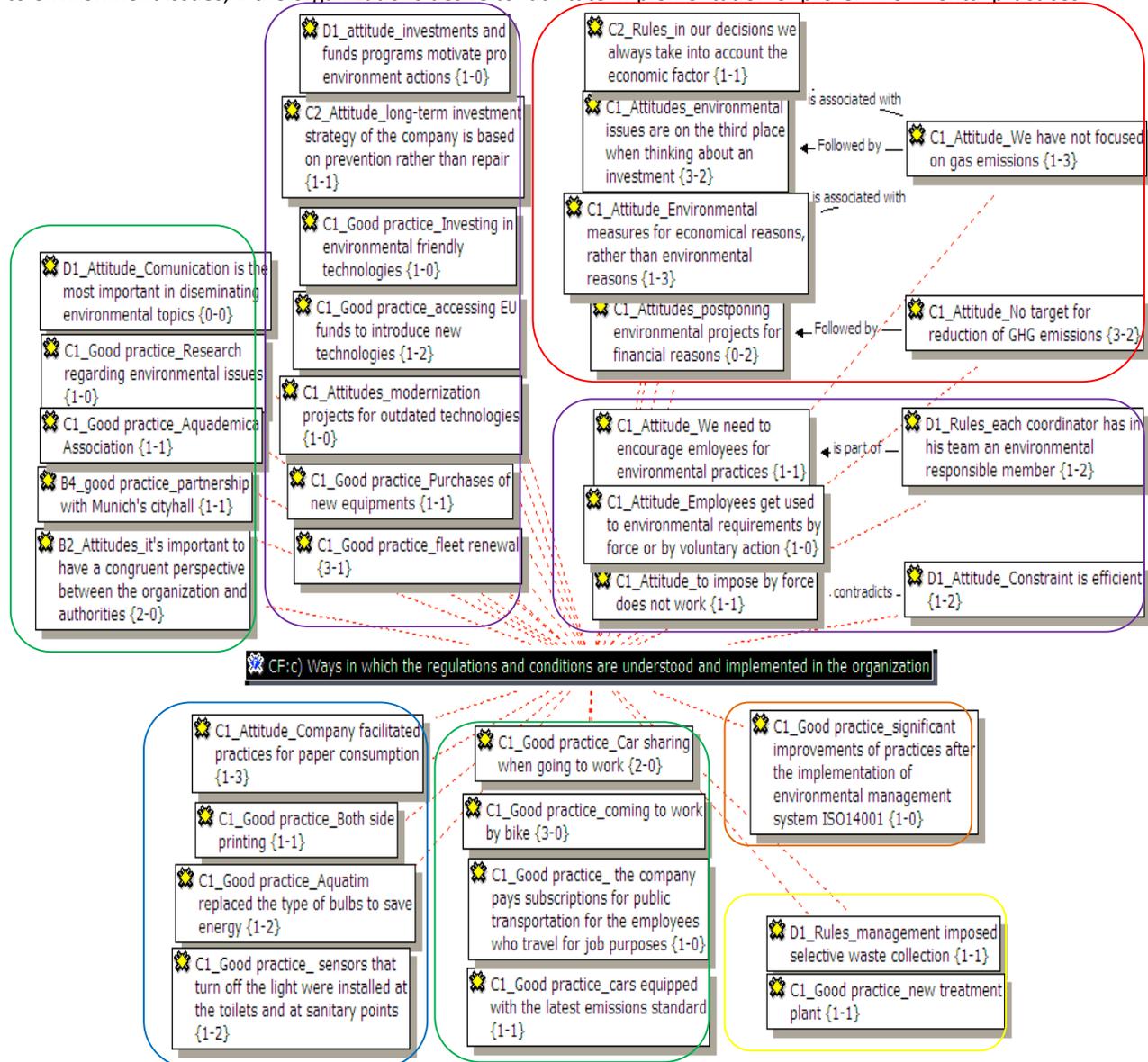


Figure 3. Ways in which the regulations and conditions previously described are understood and implemented in the organization – conceptual map

The introduction and *implementation of the environmental management system* emerged as a mandatory condition for the organization to remain on the market. The benefits following the implementation of the system, such as the obtaining of European funds and the purchase of lesser polluting new technologies, being perceived favourably by customers, motivated the employees to adopt a positive attitude towards the environment and respond favourably through environmental practices at work. The implementation of projects on which those funds were obtained has contributed significantly to reducing GHG emissions. For example, for the rehabilitation of the wastewater treatment plant new technologies have been used, technologies that ensure the compliance with the environmental requirements, both those stipulated by the European legislation and the national one.

The results of the analysis of the ways in which regulations and condition previously described are understood and implemented in the everyday practices of the organization, showed good practices related to three categories of practice: resource consumption saving, mobility and waste management.

In terms of *resources saving*, the results showed the following types of practices: reduction of paper use (the use of e-mail, intranet communication, two-sided printing); reducing energy consumption (process automation, introducing frequency converters and motion sensors for light extinction in some areas of the headquarters).

Concerning the *mobility*, at organizational level, Aquatim offers subscriptions for public transport means to those employees who travel a lot during working hours; provides own means of transport (minibuses) for field trips; lack of sufficient parking spaces, at the office, for employees and customers, determines many of them to use means of public transport, cycling or walking. At organization's employee level, some of the interviewees consider that about 10% of employees go by bicycle to / from work; those who live close to the job walk, others use means of public transport; sharing one car to travel to and from work.

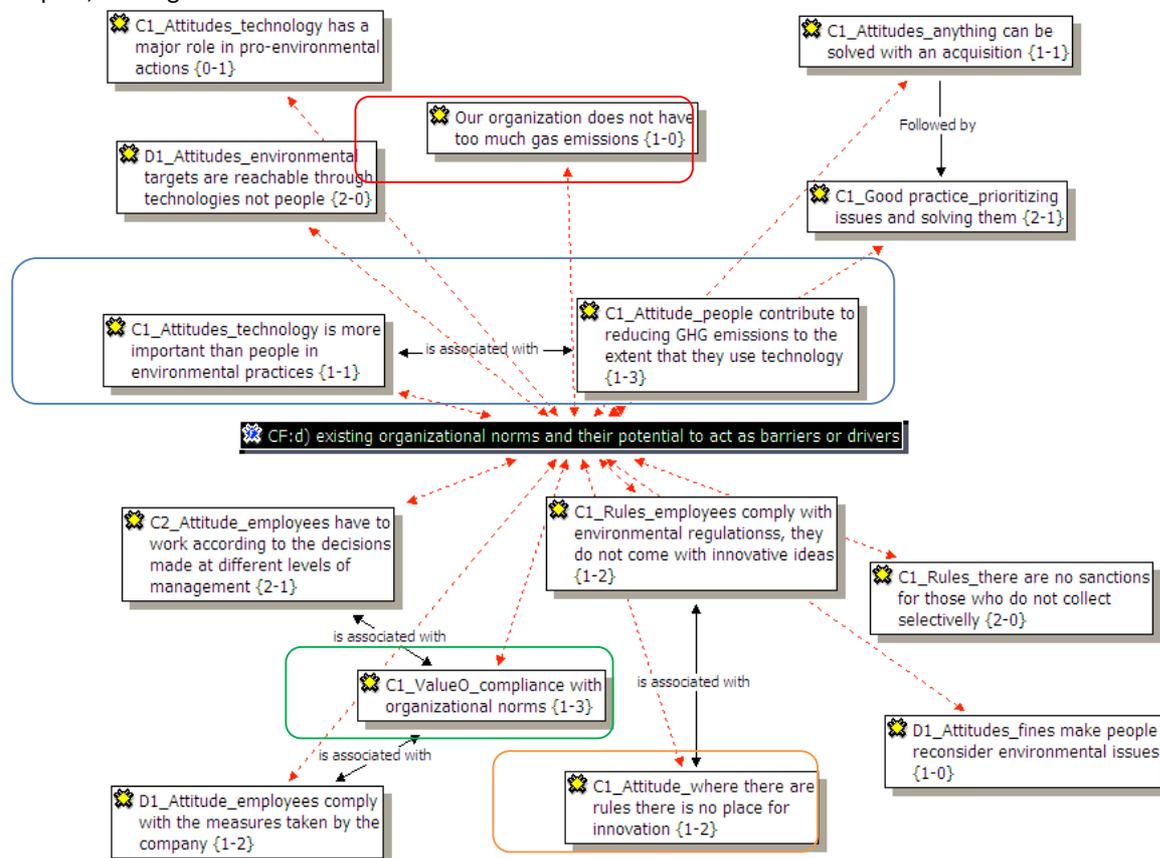


Figure 4. Existing organizational norms and their potential to act as barriers or drivers – conceptual map

In regard to *waste management practices*, the following aspects were mentioned in during the interviews: specifically arranged places, at employees' reach, for selective collection in order to facilitate their compliance waste management regulations (special bins for plastic, paper and glass; a place to collect scrap metal; container for oils); contracts with specialized companies that gather the full containers from Aquatim's locations.

The analysis of *existing organizational norms and their potential to act as barriers or drivers* (figure 4) to the implementation and success of policies designed to reduce greenhouse gas emissions showed interesting results. First is the belief that the company does only pollute the environment to a very small extent. The second is that technology has the main role in diminishing the (already low) GHG emissions of the company.

Management considers that any problem in organization can be solved with a purchase and, if the pollution problem needs to be solved, than acquisition of new technology is the solution. The contribution of people (employees) to generating or reducing GHS emissions is perceived as insignificant. In this organization, employees must comply with the rules and do not come with innovative ideas to improve sustainable practices at the workplace. The central value in organization is compliance with organizational norms.

## 5 Conclusions / Discussion

The results presented enable us to outline a profile of the organization consisting of several main features: self-perceived green organization, heavily focusing on new technologies as solution for environmental problems, with a hierarchical organizational culture and motivated by profit in all activities, including the environmental protection.

The characteristic of the Aquatim organizational culture on which the investigated aspects depend is the type of transactions that define the work relations within the organization. The results of the analysis indicate the presence of a hierarchical type of culture based on observing the procedures and rules in a climate of stability and control. Within this organization the authority resides in rules and the power is exercised by specialists. The decisions are based on detailed analyses and the leaders tend to be conservative and cautious. In Aquatim there is an environmental department and every department has a person responsible with environmental matters. The other employees consider that the environmental problems only concern them to the extent in which they are asked to act by the persons institutionally "responsible" for such matters.

The analysis results highlighted the top-management's important role in reducing the GHG emissions. At this management level, it is decided when and whether it is time to concentrate on certain aspects related to the environment, and the establishment of distinct objectives along these lines can be requested. Until then, all actions and practices regarding the environment are subordinated to other objectives of the organization.

The main aspects relevant to the GHSe issue considered in strategic planning of Aquatim are the following: economic efficiency; compliance with the legislation; image benefits. From the results obtained it can be deduced the lack of a real and constant interest in the environmental issues within the organization, arising from a precarious level of information about the environment among the employees, and from the absence of focalization on certain environmental problems, as well as the lack of specific objectives aiming to resolve a such issues. As for the GHGs reduction objective per se, this theme is virtually inexistent at Aquatim decisional-strategic level.

The organization understands that the compliance with, and implementation of, European, national and regional environmental regulations is crucial to the integrity of its image and to its success in attracting non-refundable funds for large scale investments. The obtaining of ISO 14001 certification and the implementation of the environmental management system reflects the organization's commitment to managing the significant environmental aspects associated to its activities. The specifics of its object of activity compels the company to give special priority to its dealing with environmental issues, as its place on the market and business success depend on its image among the consumers, its compliance with the contracts with local authorities and its eligibility for EU non-refundable funding. Aquatim is not a big GhGe polluter compared to companies from other industrial sectors and hence they consider their environmental performance very high, due to the company's focusing on other environmental aspects even if it pays no significant attention to GHG emissions. The image resulted from the comprehensive interviews analysis shows that the organizational norms concerning the Aquatim employees' behavior converge as far as the observance of regulations, rules and explicit decisions of the company are concerned. Consequently, both *drivers* and *barriers* are to be found at the organizational level.

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## IN THE PUBLIC EYE - DISTRIBUTIONAL CHOICES IN RURAL MALAWI UNDER COMPLETE AND INCOMPLETE INFORMATION

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Sharing norms have often been the focus of interest in development economics due to their direct influence on redistribution, and hence, incentives for productive activity within a community or society. Yet, it is generally not known whether norms of distributive justice are fully internalized by a specific population or domain-specific to a particular informational environment.

This study explores the relative influence of social image concerns and four widely discussed norms of distributive justice on sharing rules in small, tightly knit communities of a developing country.

Specifically, I investigate how divisions of an effort-generated pie depend on whether the receiver in a dictator game knows the size of this social surplus or not, i.e. I determine whether and how the sharing behavior of individuals changes, when they know that their contribution to and share taken of the pie cannot be fully observed by others. To this end, I estimate the relative weight on selfishness to that on strict egalitarianism, inequality aversion, liberal egalitarianism, and libertarianism for a representative sample of subjects living in Malawian villages using data from a unique lab-in-the-field experiment.

I find that decisions are mainly guided by strict egalitarianism and libertarianism, and less strongly by other norms. Interestingly, and despite the large influence of strict egalitarianism, subjects react as intuitively expected to all experimental variations, i.e. subjects of my sample reward own and others' effort, and take relative rates of return and contributions into account. As expected, dictators act more selfishly under incomplete information, i.e. dictators deviate further from the prescriptions of the various norms of distributive justice in situations where their image cannot be damaged by such action. However, I find that this effect is small compared to the effects the norms of distributive justice have on decision making.

Hence, changes in community structures are likely to lead to abrupt but by no means large changes to sharing behavior if we believe the results not to be exceptionally domain-specific.

*Keywords: choice, fairness, inequity aversion, dictator game, individual differences*

## THE IMPACT OF PRESENTATION FORMAT ON VISUAL ATTENTION AND CHOICE IN DISCRETE CHOICE EXPERIMENTS

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Discrete choice experiments in which participants choose between alternatives differing on attribute levels are an important research method for preference elicitation. In such experiments choice stimuli are typically presented in tables with verbally described attributes, in tables with visual attributes, or as product mock-ups simulating realistic products as close as possible. So far little is known about how presentation formats affect visual attention patterns

and choice behavior. This study addresses the question by analyzing visual attention and part-worth utilities in choice experiments across three different presentation formats.

Participants' visual attention was measured by means of eye tracking during a discrete choice experiment for yoghurt products varying on six attributes with two to four levels. The study used a mixed within-between subjects design in which the presentation format varied between a verbal information table, a table with visual attributes levels and a realistic product mock-up presentation.

A strong relationship between attention and choice was observed so that attributes with a higher importance for participant choices also received a higher share of attention. We also observed a quadratic relationship between fixation duration and part-worth utility. This top-down effect of preferences on attention was stronger for the verbal information table, where attributes were highly similar with regards to size, visual saliency and perceptual fluency. Strong heterogeneity effects were observed in part-worth utilities and this was reflected in individual attention biases towards the more important attributes.

Finally, presentation format was found to exert a significant bottom-up effect on visual attention and subsequent choice. Choices in the product mock-up presentation required significantly fewer fixations and less decision time, and more within-alternative transitions were observed compared to the verbal and visual presentation formats. Attributes presented visually or at larger size had a higher impact on participants' choices. These bottom-up effects caused an overestimation of the impact of certain attributes in the table formats compared to the product mock-up presentation.

Visual attention and choice behavior in discrete choice experiments are strongly affected by stimuli presentation format. These results suggest that the choice of presentation format has strong implications for the external validity of discrete choice estimates and should be considered carefully by researchers.

*Keywords: choice, framing*

## ATTITUDE TOWARDS RISK: SITUATIONAL FACTORS AND INDIVIDUAL DIFFERENCES

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The research reported here was designed to determine the relationship between the actual acceptance of risk and individual differences in sensation seeking, declared acceptance of risk in various domains, experience related to individual and group activities, and the nature of the situation (chance and skill).

The DOSPERT scale and Zuckerman's Sensation Seeking Scale were administered to 213 subjects. The subjects also performed two risky tasks. The first one was a video poker game and the other one was a classic task used in achievement motivation research, i.e. throwing a ball into a basket.

In the video poker game, subjects had to decide 3 times whether to keep a small sure win or to change some cards. The risky options gave either a higher win with different probabilities (2%, 20% and 42%) or a loss.

In the skill task subjects chose a distance from which they throw the ball. For each distance they estimated subjective probability of making a shot. In both tasks, subjects also estimated perceived risk of the chosen option. The research group consisted of professional athletes (individual and team sports) and control group.

Respondents made more risky choices in chance than in skill situation, however team athletes were less sensitive (they made similar choices in both situations). Athletes made more risky choices than the others. With the increasing acceptance of risk in various areas of life and the tendency to sensation seeking - growing number of risky choices in both situations.

The actual acceptance of risk is related to sensation seeking, risk acceptance in various areas of life, and often manifests itself in chance situation.

*Keywords: risky choice, risk taking*

## THE INSIDE VIEW OF THE FINANCIAL CRISIS: WHAT METAPHORS TELL US ABOUT HOW PEOPLE UNDERSTAND AND EXPERIENCE THE CRISIS

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In recent years, a new psychological perspective has been added to understanding the experience and behavior of economic actors by metaphor analysis, a method based in cognitive linguistics. For example, in an analysis of financial market metaphors held by foreign exchange traders, metaphorical thinking was shown to correspond with assumptions about how predictable the market is (Oberlechner, Sluneco & Kronberger, 2004). The present study discusses the metaphorical conceptualizations of the recent financial crisis held by the public, and the implications of these metaphors on the social construction of the financial crisis.

Findings are based on 484 interviews about the financial crisis, which were conducted in 2010 with a representative sample of the German population. Using metaphor analysis, we analyzed transcripts of respondents' answers (a) for metaphors, which implicitly underlie overall accounts of the crisis, and (b) for metaphors, which are deliberately chosen to characterize the crisis.

The results of our qualitative analysis show that everyday understanding of the financial crisis revolves around such metaphorical fields as the financial crisis as (1) a fight, (2) a disease, (3) a weight, (4) a criminal misdeed, (5) a natural force, (6) an opportunity, and (7) bodily shivering. Each of these metaphors highlights and hides certain aspects of financial crisis, and each of these metaphors carries a different set of implications on crucial dimensions of financial crises, for example, the role of the individual in the crisis, the origins of the crisis, and questions of causality and responsibility. The results of our quantitative analysis show that metaphor use regarding the financial crisis correlates statistically significantly with economic expectations of crisis outcomes and subjective attitudes towards the crisis.

These results suggest that metaphor analysis, a novel approach in the field of economic psychology, has the power to significantly further our understanding of how people construct their subjective understanding of financial crises, and of their experience and behavior in financial crises.

*Keywords: economic crisis, individual differences*

## THE IMPACT OF THE PLAYER'S ROLE AND INSTRUMENTALITY-RELATED INDIVIDUAL DIFFERENCES ON STRATEGIC DECISION MAKING

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The aim of this study was to investigate how personal characteristics, such as social value orientation (SVO) and Machiavellian attitudes, and the structural features of a modified ultimatum game (UG) influence strategic decision making in a laboratory experiment. We assumed that the instrumentally-minded characteristic of people with proself SVO and higher level of Machiavellian attitudes leads to better strategic reasoning. The effect of players' UG-role (allocator/recipient) on strategic decisions was also tested, because playing in the allocator role can also lead to better strategic decisions by activating power-related attitudes. Furthermore, we assumed that experiencing power in the allocator role boosts strategic reasoning also in the recipient role, especially when someone is motivated to think instrumentally by personality (i.e., proself SVO, higher level of Machiavellianism).

In ultimatum bargaining an allocator has to split a resource as (s)he likes and the recipient can either accept or reject (veto) the offered allocation. In case of rejection both of them receive nothing. The modification of the UG used in our experiment gives an opportunity to the recipients to buy veto power of varying strength, which offers more room for measuring strategic refinement than the basic UG does. Four levels of recipients' veto power were introduced ("full veto" refers to the standard UG; "medium" or "low veto": the outcomes of both parties will be reduced to 1/3 or 2/3

of the proposed sum, respectively; and “no veto” refers to the standard dictator game). Participants first filled in the personality measurements, then played the modified UG. They were financially compensated based on their UG decisions and played both roles of the UG in two experimental periods (allocators in the first period became recipients in the second period and vice versa; participants were randomly paired in both periods).

Results showed that strategic thinking is more prevalent in case of allocators’ decisions than that of recipients’. We point to the contribution of role-activated power-related attitudes to strategic advantage: Machiavellian intelligence induced strategic use of fairness in the allocator role, but did not affect strategic decisions in the recipient role. The impact of SVO on strategic decisions was not that role-dependent and not that strong as the impact of Machiavellianism in the allocator role.

Based on the results we conclude that, beside the structural advantage, the allocator role has a considerable psychological advantage as well in increasing strategic reasoning, especially if the decision-maker is more inclined to think instrumentally.

*Keywords: ultimatum game, individual differences*

## TRUST AS A FACTOR OF CONSUMER’S BEHAVIOR IN THE MARKET OF MEDICAL SERVICES

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### Abstract

The main issue of the research is the lack of knowledge about the characteristics of trust to medical centers and their influence on the consumer behavior

The aim of our work is to study the characteristics of trust as a factor of the consumer’s behavior in the medical services market.

The main problems for the investigation are the following: to identify the reasons of medical clinic choosing; to determine the conditions of trust to the medical facilities (clinics); to achieve the goal the pilot study was conducted. The method of study was the in-depth interview. The sample was 20 men and women, who visit doctors to the medical clinics regularly.

As the result, the reasons of medical clinics choose were found. They are the following: high level of service in the medical centers; high quality of services; the location of medical clinics; low quality of services in the other clinics; high level of trust in medical centers.

Also, two groups of trust’s generating characteristics of medical centers were found - rational and irrational. Rational characteristics of trust can be identified as: knowledge of the qualifications of the doctor (diplomas, certificates); the coincidence of the results of the treatment; positive past experiences of the visit to the doctor. By the irrational components of trust, we carried: personnel sympathy to the doctor; expectation of service quality and highly qualified personnel because of paying money; information from advertising in the media.

The results of investigation are of great practical importance. In the one hand understanding the foundations of trust may be useful in the government’s regulation of social policy in the areas of health. On the other hand results may be useful for increasing "popularity" of medical centers.

*Keywords: choice, trust*

## 1 Introduction

There was only free medical care in USSR. Nowadays, the part of paid medical care is increasing. Therefore, investigations of trust started in Russia not long ago [1]. Psychological studies of trust relate to different facts, including trust to the world [7], trust to yourself. Trust is also investigated as a characteristic of psychological regulation in social groups [3,4].

According to Izumova, trust is considered to be a factor of appeal to medical services. As a result, the connection between trust and an individual’s esteem of risk for the health was revealed. But there was no differentiation between free and paid medical services [2]

Thus the main issue of the research is the lack of knowledge about the characteristics of trust to free and paid medical centers and their influence on the consumer behavior [6].

Trust is an important condition for choosing paid medical clinic. On the one hand, understanding the foundations of trust may be useful in the government's regulation of social policy in the areas of health. On the other hand, results may be useful for increasing "popularity" of medical centers [5].

## 2 Objectives

The main problems for the investigation are the following:

1. To identify the reasons for choosing a medical clinic;
2. To determine the conditions of trust to medical facilities (clinics)

## 3 Method

The investigation was conducted in two stages. The first phase was an in-depth interview. The sample was represented with 20 men and women, who regularly visit doctors in medical clinics.

According the results of in-depth interview, the questionnaire was made, which was the second stage of the investigation. It consisted of the following questions:

- a question about choosing a medical clinic;
- a question about the significance of various factors;
- a question about the significance of the characteristics of trust.

These questions were presented sequentially for the assessment of free and paid medical clinics.

Subjects were asked to rate their agreement with statements on the Likert's scale from 1 to 5. Respondents completed the questionnaire without assistance.

The data were analyzed in the SPSS program, using the following criteria: Student t-test, Wilcoxon test, Kruskal-Wallis criteria.

The sample consisted of 160 people (88 women and 72 men) in the age from 20 to 60. All of them regularly visit doctors in both kinds of medical clinics.

## 4 Results

As the result of in-depth interview, the reasons of the choice of a medical clinic were found. They are the following:

- high quality of services in the medical centers;
- location of medical clinics;
- low quality of services in other clinics;
- high level of trust to medical centers.

Two groups of trust generating characteristics of medical centers were also found - rational and irrational.

There can be identified the following rational characteristics of trust:

- knowledge of the qualifications of the doctor (diplomas, certificates);
- the coincidence of the results of the treatment;
- positive past experiences of the visit to the doctor;

As the irrational components of trust we can identify:

- personal sympathy to the doctor;
- expectation of top quality of service and highly qualified personnel because of paying money;

information from advertising in the media.

As the results of the questionnaire, the characteristics of trust were revealed.

Firstly, the differences in the characteristics, which influence the formation of trust were expose. In order to establish the significance the non-parametric Wilcoxon test was used.

	Mean Ranks		Z	Asump. Sig (2-tailed)
	Free medical services	Paid medical services		
Diplomas and certificates	56,09	66,89	-3,564	,001
Friends have already applied this medical center	52,28	70,08	-7,389	,001
Time, the doctor have spent to the patient	41,2	73,77	-8,229	,001
Hippocrates's oath	64,74	51,10	-5,878	,001
Trust to the doctor	53,78	67,13	-3,977	,001
Experience of medical center applying	50,97	74,06	-6,967	,001
Modern equipment	49,46	75,09	-5,409	,001
Poor speaking doctor	60,07	53,71	-2,333	,002
Fashion looking doctor	66,48	55,51	-3,505	,001
Successful first applying	52,52	66,64	-6,255	,001

Table 1.

Thus, the differences in the characteristics which influence the formation of trust were expose. The rational characteristics influence trust to paid medical clinics including knowledge about medical clinic, positive experience and the coincidence of the results whereas the irrational characteristics (such as personal empathy and positive expectations) influence the trust to free medical clinics.

The differences in the level of trust before applying to the paid and free medical facilities were obtained. We also obtained the significant differences after applying to the paid and free medical clinics. In order to detect differences the non-parametric Wilcoxon test was used. The data are presented in Table 2.

		Mean Ranks	Z	Asump. Sig (2-tailed)
Level of trust before applying	Paid medical services	65,67	-4,507	,001
	Free medical services	55,32		
Level of trust after applying	Paid medical services	72,21	-3,925	,001
	Free medical services	54,04		

Table 2.

Thus, the overall level of trust to paid medical facilities is higher than to free ones. So we can suppose that patients rely upon experience in case of choosing the medical clinic.

The overall higher level of trust to paid medical facilities than to free clinics can indicate that patients assess paid medical clinics as more reliable.

The peculiarities of trust to paid and free medical clinics due to different social and demographic characteristics were obtained.

Characteristics of trust to paid medical centers	Sex	Mean rank	t	Asump. Sig (2-tailed)
Money increases doctor's interest to the patient	male(1)	5,91	2,019	,045
	female(2)	5,3		
Cost of appointment is proportional to the time spared by the doctor	Male (1)	3,21	-1,409	,029
	female(2)	3,28		

Table 3.

So men tend to form trust to paid medical clinic on the ground of financial relationships while women are inclined to pay attention to the emotional component. But both of them form trust basing on irrational characteristics.

The peculiarities in the characteristics of the formation of trust due to the age of the patients were obtained. In order to detect the differences Pearson's correlation coefficient was used. The data are presented in Table 4.

Characteristics of trust to paid medical centers	R- Pearson	Asump. Sig (2-tailed)
Cost of appointment is proportional to the time spared by the doctor	,228**	,004
Advertising in prestigious publications	-,213**	,007
Intention to help	,219**	,005

Table 4.

So we can conjecture that the increasing the age due to growing the significance of the money for forming trust. The old patients form the trust basing on irrational characteristics.

The connection between characteristics of trust and respondents' self-health esteem was obtained. We used Pearson's correlation test for checking it.

Characteristics of trust to paid medical centers	R- Pearson	Asump. Sig (2-tailed)
Friends' opinions	-,216**	,006

Table 5.

Decline the self-health esteem increase the importance of friends' opinions for forming trust of paid medicine clinics. We can suppose that low levels of subjective health-esteem influence on self-esteem. So patients who rated their health as "poor" are not sure about their choice. And they rely upon others, whom they trust more than themselves.

## 5 Conclusions / Discussion

In conclusion, we would like to notice that the form of trust to paid medical clinics base on rational characteristics. However, the irrational characteristics (money) also influence on trust.

As for trust of free medicine clinics, it base on the irrational characteristic only.

Social and demographic characteristics also influence on the formation of trust. Such criteria as age and high self-esteem form the trust on the basis of irrational characteristics (expectations, money and friends' opinions).

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## WHO FEELS CREDIT CONSTRAINED IN EUROPE? THE ROLE OF SOCIAL CAPITAL AND CULTURAL NORMS

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### Abstract

This paper investigates what drives individuals' perceptions of how difficult or easy it would be for them to borrow money. Thus, the current study offers a complementary perspective to the literature initiated by Jappelli (1990) on the determinants of borrowing constraints, as it contributes to the understanding of those factors that influence consumers' assessments of their borrowing capacity. In line with related research, this study considers a number of traditional socio-economic variables as antecedents of borrowing constraints. We also innovate in investigating the role of social capital, which can be a source of power and influence as strong as one's financial holdings (Portes, 1998),

and that has been neglected by related research. Finally, we investigate whether cultural norms moderate the effect of social capital on perceived borrowing constraints.

To conduct this research we rely on the first three rounds of the European Social Survey, covering 22 European countries. This dataset contains a question measuring an individual's perceptions of borrowing constraints and a range of socio-economic variables previously related to objective borrowing constraints. In addition, the dataset contains measures that capture an individual's social capital, namely trust in institutions, trust in people, civic engagement, and frequency of social meetings with friends and relatives. To capture cultural norms, we used Hofstede's (2010) indices for the five dimensions of national culture. Estimations relied on the ordered probit method.

Our results mimic those of other studies that use objective measures for borrowing constraints, namely in that age, income, education, male gender, and being married, all ease borrowing constraints, while being unable to work (due to sickness or unemployment), having been unemployed for a long and recent period, ethnicity and discrimination exacerbate borrowing constraints. In addition, the results show that each of the four indicators of social capital contribute positively to alleviate perceived borrowing constraints. Finally, the results support the predictions that social capital's effects on borrowing constraints are stronger in cultures with a lower power-distance, that are collectivistic, avoid uncertainty, and have a shorter-term orientation. Against predictions, the effect of social capital is stronger in masculine societies.

Although relying on perceptions of borrowing constraints, the study provides results that are consistent with past research considering objective measures of borrowing constraints. In addition, this research reveals that perceptions of borrowing constraints are also affected by social capital, and that these effects are moderated by cultural norms.

*Keywords: psychology of money, loan and debt*

## 1 Introduction

A vast amount of research analyses the effects of borrowing constraints on consumption behaviour (e.g. Zeldes, 1989, Cox and Jappelli, 1993; Jappelli et al., 1998) and on aggregate economic activity (e.g. Scheinkman and Weiss, 1986). This literature demonstrates that borrowing constraints reduces consumption opportunities, hampers economic performance and, thus, it is likely to detrimentally affect individual well-being. Consequently, many have prescribed an alleviation of borrowing constraints. In contrast, others (e.g., Jappelli and Pagano, 1994) advocate some degree of financial repression, because it raises aggregate savings and, thus, fosters physical capital accumulation.

Despite the abundance of literature establishing the existence of borrowing constraints (e.g., Bacchetta and Gerlach, 1997; Jappelli et al. 1998), characterizing the liquidity constrained individuals is a topic that is still underdeveloped. Jappelli (1990), Crook (1996, 2001), Crook and Hochguerte (2007) and Chen and Chivakul (2008) are some of the exceptions. Furthermore, most of these studies either cover a country alone, mainly the USA, or a few countries using different and non-comparable sources of data.

This paucity of studies prevails despite the importance of filling in such a void. Researching the characteristics of borrowing constrained individuals has important macro and micro policy implications (Chen and Chivakul, 2008). At the macro level, knowledge of the characteristics of constrained individuals can be used to guide fiscal policy and gauge its effectiveness (e.g., Crook, 2001; Japelli, 1990). If a parallel between the alleviation of borrowing constraints and a tax cut or a social transfer is established, then it is of the utmost importance to identify the groups of people who suffer more from borrowing constraints and direct those tax cutting or social benefits programs towards them, thus obtaining a more effective and just fiscal policy (Japelli, 1990; Cox and Jappelli, 1993). At a micro level, understanding borrowing constraints determinants helps decoding the financial intermediaries scoring process, thus supplying information/clues on one's borrowing prospects (Chen and Chivakul, 2008). Accordingly, such knowledge can be used to determine appropriate financial education programs for individuals.

Some past studies did not directly observe liquidity constrained individuals, inferring their existence from other individuals' characteristics (e.g., Zeldes, 1989). More recently, others (e.g., Lyons, 2003; Chen and Chivakul, 2008; Magri, 2002) have investigated the characteristics of credit constrained individuals by relying on data that contained an observable measure about credit constrained individuals, namely obtained from consumer surveys, such as the *Survey of Consumer Finances*, which contains a question on whether or not individuals had a credit request rejected by a financial institution.

In this study we take a somewhat different approach to study borrowing constraints by investigating its determinants from an individual's perspective. More specifically, we investigate what drives individuals' perceptions of how difficult or easy would be for them to borrow money. To conduct this research into the drivers of individuals' perceptions about their creditworthiness, we rely on data provided by the European Social Survey (ESS), which covers over thirty countries. In line with related research, this study considers a number of traditional socio-economic variables as antecedents of perceived borrowing constraints. Thus, the current study offers a complementary perspective to the literature initiated by Jappelli (1990) on the determinants of borrowing constraints, as it contributes to understand the factors that influence consumers' assessments of their borrowing capacity, which should influence their decisions

concerning credit application. Such knowledge can be used to influence consumers' behavior regarding credit application. In particular, this knowledge can be used by regulatory agencies as well as financial institutions to influence consumers' decisions in desired ways, namely through the formulation of tailored financial education and communication programs.

Another contribution of this study is that we also investigate the role of social capital in determining individuals' perceptions of borrowing constraints. Social capital, a nonmonetary form of capital, can be a source of power and influence as strong as one's financial holdings, leading Portes (1998, 2-3) to state that "the potential fungibility of diverse sources of [social] capital reduces the distance between the sociological and economic perspectives." Thus, social capital seems to constitute a promising avenue to explain individuals' creditworthiness, but its role in related research has been neglected. Finally, we investigate the extent to which cultural norms moderate the effect of social capital on perceived borrowing constraints, and to do so we use Hofstede's approach to national culture.

## **2 Objectives**

### **2.1 Past research**

Since the seminal paper by Jappelli (1990), a number of studies have followed similar approaches for other periods and countries. For example Cox and Japelli (1993), Crook (1996, 2001) and Lyons (2003) for the USA, Chen and Chivakul (2008) for Bosnia and Herzegovina, Magri (2002) for Italy, and La Cava and Simon (2003) for Australia. Crook and Hochguerte (2007) is the only multiple-country study, considering four OECD countries, the USA, Spain, Italy and the Netherlands, but uses data from a different source for each country. We know from these studies that the probability of being borrowing-constrained is associated with demographic and economic variables. For example, the probability of facing borrowing-constraints falls with age and income (e.g. Jappelli, 1990, Crook, 1996, 2001). In some studies, wealth and education are also important promoters of credit access (e.g., Magri, 2002), but this has not always been supported (see Jappelli, 1990; Crook, 1996; Weller, 2008). Being married has also been the subject of mixed findings (see Jappelli, 1990; Magri, 2002; Crook, 1996, 2001; Weller, 2008). In contrast, belonging to a minority group has been positively associated with the probability of being credit-rationed (Crook, 1996; Weller, 2008). Gender is also frequently examined despite its typical non-significance (e.g. Jappelli, 1990). Unemployment enhances credit constraints (e.g., Chen and Chivakul, 2008), whereas living in rural areas is associated with lower borrowing constraints (Chen and Chivakul, 2008). Family size is also consensually a factor positively influencing credit constraints (e.g., Cox and Jappelli, 1993), as opposed to homeownership, usually facilitating credit access (e.g., Weller, 2008).

### **2.2 Research aims**

As previously stated, this work offers a complementary perspective on borrowing constraints. Accordingly, we investigate the determinants of consumers' perceptions of their creditworthiness, i.e., the extent to which they believe it would be easy/difficult for them to obtain credit. It may seem questionable to use such a subjective measure, because a perception hinges, not only on an individuals' observable or revealable characteristics, but also on an individuals' personality. A dose of optimism may lead to an overestimation of creditworthiness, and too much pessimism to its underestimation. The overly optimistic come exclusively from those that dismiss borrowing, because they do not need financing, otherwise they would have tried to borrow and be turned down, in which case they would have faced reality and loose their optimism. If they do not need financing they are not in a financially stressful position, making sense to consider them as non-borrowing-constrained.

Those that underestimate their creditworthiness may abstain from applying for a loan. Hence, these individuals are credit constrained in the sense that they would be willing to borrow if they thought they would be eligible. These correspond to the discouraged borrowers in Jappelli (1990), who notes that, if consumers face a cost in applying for credit (information related, for example), then they are less likely to apply if they perceive that the likelihood of credit refusal is high. He argues that these individuals should be considered credit-constrained. In fact, he concludes that "discouraged borrowers had good reasons for not applying for credit...if they had, they indeed would probably have been turned down" (p. 224).

Support for the importance of considering a perceptual measure for borrowing constraints is also offered by the Theory of Planned Behavior (Ajzen, 1985), derived from the Theory of Reasoned Action (Fishbein and Ajzen, 1975), which seeks to explain individuals' behaviors. This theory predicts that actual behavior is preceded by behavioral intentions which, in turn, are determined by attitudes, subjective norms and perceived behavior control. Accordingly, this theory predicts that strong intentions to perform a behavior (e.g., apply for credit) occurs when individuals' have a positive attitude towards the behavior; perceive that important others want them to perform such behavior; and, finally, believe that it is easy to perform a certain behavior, which reflects an assessment of a person's abilities/background as well as the need for obtaining the collaboration of others (Cordano and Frieze, 2000). Application of this theory to a credit context suggests that a consumer may perceive positively taking out a loan, may believe that others see positively obtaining a loan, but end up not submitting a credit application because it is likely to

be turned down, due to his/her financial position and other characteristics, along with the need to obtain the approval of other individuals.

Although we recognise that it may go a long way from perceiving a credit constraint until being credit constrained, the above evidence is somewhat reassuring about the adequacy of perceived access to credit to gauge borrowing constraints. Moreover, we value deeply the advantages of using this subjective data, since it provides important information about what potentially drives individuals' behavior, which is important, for example, in tailoring appropriate communication and/or training programmes, which might end up promoting individuals' well-being.

Therefore, in line with related research, this study considers a number of traditional socio-economic variables as antecedents of perceived borrowing constraints. We also aim to contribute by investigating the role of social capital in explaining the extent to which individuals perceive to be borrowing-constrained. Social capital is a nonmonetary form of capital that can have high fungibility (Portes, 1998) and that, as such, appears to be a relevant perspective to explain individuals' perceived access to credit, but that has been neglected by extant research. For example, social capital can facilitate finding a guarantor, and this helps in addressing funding needs. Moreover, social capital may also offer an alternative funding source, thus complementing the role of traditional credit agencies.

However, Bankston (2004, 177) notes that "for the investment of social relations to yield a profit, there must be an interaction between those relations and a set of cultural norms." This suggests that the effects of social capital on perceived borrowing constraints should be moderated by cultural norms. Accordingly, similar social networks and levels of trust in friends may entail different returns across groups, because of the varying content of norms across them. Accordingly, we consider the extent to which norms, approached from a national culture perspective, moderates the effects of social capital on perceived borrowing constraints.

### 2.3 Social capital

Despite the numerous definitions of social capital (e.g., Nieminen et al., 2008; Portes, 1998), the growing consensus in the literature is that "social capital stands for the ability of actors to secure benefits by virtue of membership in social networks or other social structures" (Portes, 1998, 6). A common element in definitions is that social capital is a "social resource that facilitates coordination between actors" (Nieminen et al., 2008, 407). Social capital entails two components (Edwards, 1997; Yamaoka, 2008). A structural component, associated with group membership, i.e., with the relationships between individuals and groups, as well as a cognitive component, associated with the expectations, obligations, and trust embedded in relationships. Thus, social capital relies on a generalised reciprocity, embracing unspecified obligations with an uncertain time span (Portes, 1998). In a similar way, Pichler and Wallace (2009, 320) state that social capital can be decomposed in the social relationship itself, as well as in "the amount and quality of the resources to which people can claim access based on the relationship". Accordingly, a large (heterogeneous) network size is important as it constitutes potential access to the resources of other individuals.

Past research provides evidence regarding the pay-offs of social capital. A heterogeneous social network can be helpful in getting a job (Granovetter, 1974). Peterson et al. (2000) observe that the referrals by current employees had higher job offer rates than other applicants. There is also some evidence that contacts with relatives results in higher wages (Rosenbaum et al., 1999). Agarwal et al. (2011) determined that an individual's social capital contributed significantly to reduce consumer bankruptcy and default likelihood. This evidence clearly suggests that social capital can have an important role in shaping consumers' access to credit. In particular, we expect social capital to be negatively related to perceived borrowing constraints.

### 2.4 National culture and the work of Hofstede

We approach the issue of cultural norms by using the concept of national culture and, in doing so, we rely on the influential work of Hofstede (1980, 1991, 2001, 2010). Hofstede (1980, 21) defines national culture as "the collective programming of the mind which distinguishes the members of one human group from another." Culture entails a body of symbols, heroes, rituals, and values that are shared with others and that are acquired through a learning process embedded in a specific social environment (Hofstede, 1991). Such shared systems have been related to differences in attitudinal and behavioural responses, such as in terms of complaint behaviour (e.g., Patterson, Cowley, and Prasongsukarn, 2006), adoption of new products (e.g., Steenkamp et al., 1999), employees' loyalty towards their employer, as well as individuals' reactions towards others, close or distant (e.g., Triandis, 2004).

In an educational context, Bankston (2004, 177) contends that "if tight, strongly tied networks per se constituted assets for children, it would not matter what particular norms were reinforced by those networks." It is thus very likely that cultural norms will influence the effect of social capital on perceived borrowing constraints. More specifically, different individuals may possess the same number of social ties, but obtain different returns from these because of the nature of the relationships in each culture.

Hofstede (1991) has conceived culture as a multidimensional construct, distinguishing five different dimensions, namely power distance, collectivism versus individualism, femininity vs masculinity, uncertainty avoidance and long-term orientation.

Power distance has been conceived as “the extent to which the less powerful members of organizations and institutions accept and expect that power is distributed unequally (Hofstede, 1991, p. 28). In countries with lower power distance people develop more informal relations and do not see hierarchical positions as deterrents from social interaction, thereby facilitating the payoffs from investing in social capital. We thus expect social capital to have a stronger negative effect on perceived borrowing constraints in cultures marked by a lower power distance.

Uncertainty avoidance is defined as the level of tolerance for uncertainty, indicating how much people act to avoid uncertain or unknown situations (Hofstede, 1980, 1991). In countries with a strong uncertainty avoidance orientation, people tend to be more emotional and security seeking, not adjusting easily to novelty, wishing to avoid personal risk, and preferring structured relationships (Triandis, 1995). We expect social capital to have stronger negative effects on perceived borrowing constraints in cultures characterised by high uncertainty avoidance. The argument is that in such cultures, there are many rules governing behaviour, and when people break them, they are penalized (Triandis, 2004). Given strong rule conformity, individuals know what to expect from others and, therefore, can develop a more clear idea about the pay-off from social capital. Likewise, Triandis adds that in low uncertainty avoidance cultures, there are few rules and that breaking these has no relevant consequences, thus reducing motivation for compliance. This creates uncertainty regarding the behaviour of others, and makes it more difficult to obtain or anticipate benefits from investments in social capital. As Hofstede (1980, 111) put it, “freedom implies uncertainty in the behavior of oneself and of others.”

Individualism “pertains to societies in which the ties between individuals are loose: everyone is expected to look after himself or herself and his or her immediate family. Collectivism as its opposite pertains to societies in which people from birth onwards are integrated into strong, cohesive ingroups, which throughout people’s lifetime continue to protect them in exchange for unquestioning loyalty” (Hofstede, 1991, 51). In a collectivist society, individuals see themselves as members of very cohesive groups, from which they receive protection, and to whom they tend to reciprocate, being more prone to forgo their own interests in favour of the groups’ interests (Triandis and Suh, 2002). Because individuals in collectivist societies are keener on helping one another, we expect the pay-off of social capital investments to be higher (i.e., a stronger negative effect on perceived borrowing constraints).

Masculinity-femininity concerns the extent to which a society has distinct gender roles. Masculine societies promote differentiated gender roles, with men expected to be assertive, and achievement and competitiveness oriented, while feminine societies appreciate gender equality, with both men and women expected to be modest, altruistic, caring, concerned with quality of life (Hofstede, 1991). Accordingly, we expect social capital to contribute more to reduce perceived borrowing constraints in feminine cultures, where the spirit of cooperation, mutual help and caring for others is more acute.

Long term orientation “stands for the fostering of virtues oriented towards future rewards, in particular perseverance and thrift” (Hofstede, 2001: 359). In long term oriented societies people attend to long term values, such as adjustment capacity, persistence and parsimony, in the expectation of future rewards. In short term oriented cultures, people attach more importance to the past and present, hence being more predisposed to respect tradition, return favours, and take action in order to preserve own reputation and honour (Hofstede, 1991). We therefore expect social capital to have a stronger negative impact on perceived borrowing constraints in short-term oriented cultures, in which individuals wish to be perceived as trustworthy and dependable.

### 3 Method

Data is drawn from the European Social Survey (ESS). Since round four introduced a different method of measuring household income<sup>1</sup>, we restrict our analysis to the first three rounds. The data covers 24 countries, but some are totally or partially excluded from this study on account of missing data. Since the dependent variable is a discrete five-outcome ordered variable, we test the characteristics of the borrowing-constrained individuals by estimating the following equation, using the ordered probit estimation method:

$$BC^* = \alpha X_i + \beta_i + \delta_t + e_i$$

with  $BC^*$  consisting in the borrowing constraints level reported by individual  $i$ ,  $X$  is a vector of independent variables,  $\beta$  is the country fixed effect,  $\delta$  is the time effect (dummy variable for each round), and  $e_i$  regards non-available factors. The dependent variable in this study, perceived borrowing constraints, is based on the following ESS question. “If for any reason you were in serious financial difficulties and had to borrow money to make ends meet, how difficult or easy would that be?” The possible answers are: 1. very difficult, 2. quite difficult, 3. neither easy nor difficult, 4. quite easy, 5. very easy. This self-report assessment of borrowing constraints was inverted, so that higher scores represent higher perceived borrowing constraints.

<sup>1</sup> In the first three rounds income intervals are defined in absolute terms, whereas in the fourth round, income intervals are constructed according to national deciles of the country’s household income range.

We consider a number of socio-economic variables most of which have been investigated as antecedents of perceived borrowing constraints, namely, age, gender, marital status, education level, employment status, past unemployment, income, feelings of discrimination combined with belonging to an ethnic group, domicile, and social capital. Gender is a dummy variable with male constituting the base category. Marital status has “single” as the omitted variable. The other categories considered are “married / living with a partner” “divorced / separated” and “widowed”, for which we created dummy variables. For the education level, the omitted category is “primary education or less” and two dummy variables were created, one for “secondary education level”, and another for “tertiary education level”. Employment status concerns a number of dummy variables, with the omitted variable being “in paid work (or away temporarily, employee, self-employed, working for your family business)”. Dummy variables were created for: “unemployed”; “retired”; “home care (doing housework, looking after children or other)”; “in school”; “permanently sick or disabled”; and “other activity”.

We also consider in this study past unemployment experiences, for which we created four dummy variables, designated as: “long & recent”, identifying those individuals with a past unemployment spell over 12 months occurring in the last 5 years; “long and remote”, identifying those with a past unemployment spell over 12 months more than 5 years ago; “short & remote”, designating those with a past unemployment experience lasting from 3 to 12 months and that occurred more than 5 years ago; and “short and recent”, concerning those with a past unemployment spell lasting from 3 to 12 months occurred in the last 5 years.

Income has been adjusted for differences in household size by dividing the mid-point of the monthly total net income interval bracket by the square-root of the number of household members. Total net income adds income from all sources of all household members. Discrimination and ethnics assigns value 1 to those answering yes to any of the following questions: “Would you describe yourself as being a member of a group discriminated against in this country?” Possible answers are colour or race, nationality, religion, language, ethnic group, age, gender, sexuality, disability, other; “Do you belong to a minority ethnic group in [country]?”. Residence (domicile) describes the area where one lives. The base category captures an urban area (a big city or the suburbs/outskirts of a big city), with a dummy indicating residence in a mixed area (town or small city) and another one meaning living in a rural area (country village/farm/home in the countryside).

Despite the importance and attention devoted to social capital, its measurement is still problematic. The measurement of social capital has suffered from multiple definitions of the concept, and from the lack of appropriate data, since surveys tend to be conceived for other purposes (Nieminen et al., 2008). Considering the ESS, we considered the following dimensions: informal networks, civic engagement, trust in people, and trust in institutions. Informal networks is obtained from the ESS question “How often do you meet socially with friends, relatives or work colleagues?” We created a dummy, with the value 1 indicating meeting several times a week or every day. Civic engagement is the outcome of adding up positive answers to the following set of questions: “During the last 12 months, have you done any of the following?...”: “...contacted a politician, government or local government official?; “...worked in a political party or action group?; “...worked in another organisation or association?; “...worn or displayed a campaign badge/sticker?; “...signed a petition?; “...taken part in a lawful public demonstration?; “...boycotted certain products?”. Trust in people is the outcome of averaging the following questions: “Generally speaking, would you say that most people can be trusted, or that you can’t be too careful in dealing with people?; “Do you think that most people would try to take advantage of you if they got the chance or would they try to be fair?; “Would you say that most of the times people try to be helpful or that they are mostly looking out for themselves?”. Answers are given in a scale from 0 to 10. Trust in institutions results from averaging answers on a 0 to 10 scale of how much respondents personally trust each of the following five institutions: “[country]’s parliament”; “the legal system”; “the police”; “politicians”; and “political parties”. As to cultural norms, we relied on the indices provided by Hofstede and Hofstede (2012) regarding the five national culture dimensions, which have been used in past research (e.g., Steenkamp et al., 1999).

## 4 Results and Discussion

### 4.1 The effect of traditional determinants of borrowing constraints

Table 1 presents the estimation results before and after introducing the social capital variables (we omitted the results concerning time and country dummies).

In analysing the effects of the independent variables on the probability of being credit constrained, both demand and supply factors must be considered (e.g. Jappelli, 1990; Magri, 2002). Demand factors determine a consumer’s willingness to enter the credit market by applying for a loan, while supply factors determine a lender’s willingness to lend and, if so, how much, based on the individual’s creditworthiness (Magri, 2002). Our results (see equation 1) show that gender has a negative coefficient, indicating that males are less prone to be borrowing-constrained. The literature most commonly obtains a non-significant effect of gender (e.g., Crook, 1996, 2001). However, we may argue that men tend to have more control than women over finances, and have more financial knowledge. In addition, there are other

attributes that benefit man over woman, like gender discrimination against woman (Jappelli, 1990) and higher remunerated employment positions for man.

Age is not significantly associated with borrowing constraints, and this runs against most related studies (e.g., Jappelli, 1990), which finds evidence of a negative effect of age on credit constraints. Nonetheless, Jappelli argues that age could have an ambiguous effect, due to opposing supply and demand effects. The probability that an individual feels borrowing-constrained is lower for those married/living with a partner, while it is higher for divorced, separated or widowed, as compared to single ones. An explanation on the demand side lies on the economies of scale on the use of durables by married individuals (e.g. Jappelli, 1990), which leads to lower consumption/income ratios. Additionally, on the supply side, the lower mobility of married individuals and the fact that there are two proponents applying together for the loan increases their credit-score (e.g. Jappelli, 1990). In contrast, divorced / separated and widowed individuals do not possess these advantages, and are frequently faced with added financial hardships, following the loss of the partner.

The negative coefficients of the education variables conform to previous studies (e.g., Weller, 2008). Such studies suggest that financial institutions are more willing to finance these individuals because of their financial prospects and financial knowledge. Compared to being employed, any other occupational status worsens perceived borrowing-constraints. Unemployed individuals are marked by a higher uncertainty regarding future income, and this enhances the likelihood of default, implying that financial institutions punish these individuals more severely with credit rationing. This conforms to some studies (e.g., La Cava and Simon, 2003; Chen and Chivakul, 2008), although others obtain a non-significant effect for unemployment (e.g., Jappelli, 1990; Crook, 1996). Home-keepers, sick individuals, and those unable to work, also feel to be more credit rationed, with future income uncertainty possibly accounting for this effect. Financial constraints are also affected by being disabled in La Cava and Simon (2003), and by being inactive in Chen and Chivakul (2008).

	(1)		(2)	
	Coeff.	z	Coeff.	z
<b>Gender</b>	-0.122	-13.93	-0.125	-14.29
<b>Age</b>	-0.009	-1.26	-0.004	-0.62
Age squared	-0.008	-1.57	-0.003	-0.64
<b>Marital status</b>				
Married/l.w.p.	-0.102	-8.38	-0.115	-9.38
Separated	0.064	3.66	0.047	2.68
Widowed	0.048	2.32	0.042	2.02
<b>Education</b>				
Secondary	-0.236	-17.15	-0.216	-15.65
Tertiary	-0.356	-22.17	-0.295	-18.03
<b>Employment status</b>				
Unemployed	0.310	13.92	0.308	13.79
Retired	0.138	8.56	0.137	8.49
Homecare	0.082	5.37	0.080	5.22
In education	0.003	0.14	0.047	2.16
Sick	0.437	15.31	0.415	14.52
Other	0.171	4.26	0.174	4.33
<b>Past unemployment</b>				
Long and recent	0.358	19.38	0.333	17.99
Short and recent	0.233	11.97	0.212	10.90
Long and remote	0.162	8.72	0.154	8.29
Short and remote	0.097	6.43	0.093	6.16
<b>Equiv. Income</b> ×10 <sup>3</sup>	-0.143	-37.79	-0.139	-36.47
<b>Domicile</b>				
Town/small city	-0.016	-1.53	0.017	-1.57
Village/Farm	-0.026	-2.50	-0.022	-2.10
<b>Discrimination &amp; Ethnics</b>	0.191	12.36	0.171	11.01
<b>Informal networks</b>			-0.134	-15.09
<b>Trust in people</b>			-0.040	-15.22
<b>Trust in institutions</b>			-0.028	-11.24
<b>Civic engagement</b>			-0.146	-6.35
Number observations	67 080		67 080	
LR	17 222.90		18 097.87	
LL	-97 050.19		-96 612.70	
Pseudo R <sup>2</sup>	0.0815		0.0856	

Table 1. Borrowing constraints equations.

As to past unemployment experiences, we observe that they intensify perceived borrowing constraints. The results suggest that the harsher the unemployment was in the past, the less collateral exists to propel the individual to a creditworthiness position (supply effect), also raising the need for a loan in the present (demand effect). Past unemployment experiences may also carry a signal concerning future income streams, thus also damaging borrowing constraints. Income behaves as is consensual in the literature (e.g., Jappelli, 1990), reducing perceived borrowing constraints, since higher incomes increase the ability to repay a loan. As to domicile, we observe that living in a rural area seems to reduce one's borrowing constraints as compared to living in a urban area, whereas living in a mixed area does not seem to make any difference. This result accords with Cox and Jappelli (1993), and Chen and Chivakul (2008). The variable that captures discrimination and ethnics is positively related to the probability of feeling borrowing-constrained. This conforms to findings from related studies (e.g., Cox and Jappelli, 1993; Weller, 2008), who argue that lenders discriminate against these applicants, by denying them credit and offering them worse credit conditions.

## 4.2 The effects of social capital

In equation 2 (Table 1) we enlarged the set of explanatory variables by adding the four indicators of social capital, namely informal networks, trust in people, trust in institutions, and civic engagement. The results indicate that all indicators of social capital contribute to mitigate perceived borrowing constraints. Since lending is a risky business, it benefits from people trusting others and trusting institutions, such as those that enforce economic commitments. Trust fosters the expectations of repayment, but it also enhances resources availability in societies that economise in mechanisms meant to prevent dishonest behaviour in economic transactions (Knack and Keefer, 1997). Although trust is an assessment of an individual's trust in other people and institutions, this feeling of trust is related to the sentiment that prevails and is installed in an individual's social territory, i.e. the community where the individual, and other individuals with whom he/she interacts, live. Therefore, feelings of trust, being high, propel the resources to which individuals can claim, namely at the financial level, thus making borrowing from family, friends and others more accessible. Informal networks and civic engagement capture an individual's capacity to develop a social network that may give financial support, or be used as guarantor, helping the individual qualify for a loan. For those who value deeply the social networks they belong to, the fear of social punishment acts as an incentive to honour ones obligations of repayment, thus promoting credit access as well (Agarwal, 2011). Hence, the results concerning social capital support the view that it can have an important economic payoff, supporting Portes' (1998) contentions that it facilitates access to economic resources, and that its potential fungibility reduces the gap between the sociological and economic views. It also supports findings from other studies relating social capital with diverse economic-related benefits (e.g., Peterson et al., 2000; Rosenbaum et al., 1999).

## 4.3 Social capital and borrowing constraints: The moderating effect of culture

Table 2 presents the moderating effects of culture on the relationship between social capital and perceived borrowing constraints. With regard to power distance, we observe in equations (3) and (4) no relevant differences in the coefficients for social capital between low and high power distance cultures. Thus, the effect of social capital is not moderated by power distance, and this runs against our expectations. We reasoned that in low power distance cultures the benefits from a social network would be greater given the more informal relations among people. However, Pichler and Wallace (2009) note that possession of a limited number of powerful connections can constitute a high social capital, providing access to vast resources. Pichler and Wallace further note that many individuals tend to seek network members that are similar to them, and that this might restrain the access to resources. It is thus possible that in high power distance cultures, social capital might include connections with other individuals up in the social ladder, and this might facilitate access to resources. Hence, the non-relevant differences obtained for social capital between high and low power distance cultures may be the result of the balance between these opposing forces at play.

As to collectivism vs individualism, equations (5) and (6) reveal large differences in the coefficients of social capital (except for trust in people), which contributes more pronouncedly to mitigate borrowing constraints in collectivist societies, and this accords with predictions. In particular, we note the coefficient for civic engagement, which is the triple in collectivistic societies, when compared to individualistic ones. We argued that collectivistic societies, because of the tightly knitted groups and accompanying loyalty towards group members (e.g., Triandis and Suh, 2002), would facilitate the materialization of the economic benefits of social capital.

As to femininism vs masculinity, equations (7) and (8) denote that social capital reduces borrowing constraints more substantially in masculine societies. This is most noticeable for trust in people and civic engagement. This result runs against our expectations. We expected that in feminine societies the pay-off from social capital would be stronger due to the higher concern of individuals with one another. An explanation for the result we obtained could be related with the distinction between bridging and bonding social capital. Bridging capital is related with relationships with dissimilar individuals, notably from different stratum of the social hierarchy and different levels of power, which can be more advantageous than bonding capital, related with relationships with similar individuals (Putnam, 2000). It is

possible that in feminine societies, bonding prevails at the expense of bridging social capital, thus limiting access to resources and, therefore, curtailing borrowing capacity.

Equations (9) and (10) present the results for the effects of social capital in low and high uncertainty avoidance cultures. The evidence is that social capital has larger effects in reducing borrowing constraints in high avoidance uncertainty societies, and this is specially so for the civic engagement indicator. This result follows our expectations. In high uncertainty avoidance cultures, individuals seek to minimize uncertainty, specifying rules, building structured relationships, and promoting rule conformance (Triandis, 1995). By working together and sharing resources, individuals can better protect themselves against uncertain environments, and this should facilitate obtaining credit.

With regard to long-term orientation, we observe from equations (11) and (12) that social capital has a stronger effect in reducing borrowing constraints in short-term oriented cultures, and this is particularly so for trust in people and civic engagement. This effect of social capital on short-term oriented cultures conforms to our predictions, based on the reasoning that in such societies, returning favours, preserving honour and reputation are important (Hofstede, 1991).

	(3) Low power distance		(4) High power distance		(5) Individualist societies		(6) Collectivist societies		(7) Masculine societies	
	Coeff	z	Coeff	z	Coeff	z	Coeff	z	Coeff	z
Socially meet	-0.139	-12.41	-0.130	-8.84	-0.119	-11.31	-0.179	-10.73	-0.147	-11.64
Trust people	-0.038	10.68	-0.042	-10.53	-0.038	-11.18	-0.042	-9.88	-0.043	-12.38
Trust in inst.	-0.026	-7.69	-0.032	-8.21	-0.026	-8.03	-0.036	-8.53	-0.031	-9.15
Civic engag.	-0.145	-5.19	-0.144	-3.55	-0.090	-3.39	-0.337	-7.21	-0.193	-5.77
N. obs.	41 382		25 698		46 254		20 826		34 421	
LR	10 108.23		3 469.79		11 591.20		3 544.72		6 819.21	
LL	-59 678.92		-36 680.12		-66609.93		-26 696.53		-49 863.96	
Pseudo R <sup>2</sup>	0.0781		0.0452		0.0800		0.0563		0.0640	
Countries	Austria, Denmark, Finland Germany Hungary Ireland, Luxembourg, Netherlands, Norway, Sweden, Switzerland, United Kingdom		Belgium, Czech Republic, France, Greece, Italy, Poland, Portugal, Slovakia, Slovenia, Spain		Belgium, Denmark, Finland, France, Germany, Hungary, Ireland, Italy, Netherlands, Norway, Sweden, Switzerland, United Kingdom		Austria, Czech Republic, Greece, Luxembourg Poland, Portugal, Slovakia, Slovenia, Spain,		Austria, Belgium, Czech Republic, Germany, Greece, Hungary, Ireland, Italy, Poland, Slovakia, Switzerland, United Kingdom	
	(8) Feminist societies		(9) Low uncertainty avoidance		(10) High uncertainty avoidance		(11) Short-term orientation		(12) Long-term orientation	
	Coeff.	z	Coeff.	z	Coeff.	z	Coeff.	z	Coeff.	z
Socially meet	-0.124	-9.96	-0.131	-11.34	-0.142	-10.22	-0.154	-10.93	-0.123	-10.76
Trust people	-0.034	-8.49	-0.039	-10.51	-0.040	-10.65	-0.044	-11.61	-0.035	-9.38
Trust in inst.	-0.027	-7.14	-0.025	-7.02	-0.033	-9.03	-0.039	-10.73	-0.021	-5.88
Civic engag.	-0.107	3.37	-0.122	-4.19	-0.186	-4.95	-0.230	-6.02	-0.103	-3.56
N. obs.	32 659		38 422		28 658		28 883		38 197	
LR	9 686.60		9 640.17		4 589.31		4 516.28		8 173.96	
LL	-46 544.64		-55 158.22		-41 276.20		-40 843.16		-55 286.65	
Pseudo R <sup>2</sup>	0.0942		0.0804		0.0527		0.0524		0.0688	
Countries	Denmark, Finland, France, Luxembourg, Netherlands, Norway, Portugal, Slovenia, Spain, Sweden		Denmark, Finland, Germany, Ireland, Netherlands, Norway, Slovakia, Sweden, Switzerland, United Kingdom		Austria, Belgium, Czech Republic, France, Greece, Hungary, Italy, Luxembourg, Poland, Portugal, Slovenia, Spain,		Czech Republic, France, Germany, Greece, Hungary, Italy, Poland, Portugal, Slovakia, Spain		Austria, Belgium, Denmark, Finland, Ireland, Luxembourg Netherlands, Norway, United Kingdom, Sweden, Switzerland	

Table 2: Borrowing Constraints Equations with Disaggregations

## 5 Conclusions

This study investigates what drives individuals' perceptions of how difficult or easy it would be for them to borrow money. Thus, it offers a complementary perspective to the literature initiated by Jappelli (1990) on the determinants of borrowing constraints. Analysing those who feel credit constrained is relevant as it is recognised that such individuals will feel restrained from applying for loans, thus having their consumption and well-being curtailed. In line with related research, this study considered a number of traditional socio-economic variables as antecedents of borrowing constraints. Although relying on perceptions of borrowing constraints, the study provides results that closely mirror those of other studies that rely on objective measures for borrowing constraints. We determined that age, income, education, male gender, and being married, all ease borrowing constraints; while being divorced, separated or widowed (rather than single), unemployed, retired, housekeeper, permanently sick or disabled (rather than in paid work), having been unemployed in the past, ethnicity and discrimination, and living in a big city (or its outskirts or suburbs), exacerbate perceived borrowing constraints.

We also innovate in investigating the role of social capital, with the results showing that each of its dimensions, namely informal networks, civic engagement, trust in people, and trust in institutions, all contribute to mitigate perceived borrowing constraints. Finally, we innovated in investigating whether national culture moderated the effect of social capital on perceived borrowing constraints. The results support the predictions that social capital's effects on borrowing constraints are stronger in cultures that are collectivistic, avoid uncertainty, and have a shorter-term orientation. Against predictions, the effect of social capital is stronger in masculine societies. We also do not observe relevant differences for social capital between low and high power distance societies.

In summary, this research has provided light on what drives consumers' perceptions of their access to borrowing being, apparently, one of the first to do so. In addition, we have innovated in using the social capital construct to explain perceived borrowing constraints, and by determining that its effects are moderated by national culture. However, the findings from this research must be balanced against a number of limitations. Due to the information provided by the ESS, we did not distinguish between bridging and bonding social capital. In addition, the perceptual nature of the data contains a number of limitations, although previous studies have shown that perceptions may not always diverge that substantially from objective measurements. We also relied on cross section data, but longitudinal one would have provided clearer insights into the causation mechanisms.

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**PATHOLOGICAL BUYING BEHAVIOR: INVESTIGATING THE TREND OF COMPENSATORY & COMPULSIVE BUYING IN AUSTRIA, DENMARK & GERMANY**

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The present study, initially started in 1991 in Germany, examined the propensity of compensatory respectively compulsive buying behavior in Austria, Denmark, and Germany in 2010 and 2011 in a longitudinal view. Main areas of interest were the development of compensatory and compulsive buying behavior across West and East Germany respectively in Austria and Denmark, as well as its distribution within male and female respondents and age. Additionally, we searched for relevant correlations among the used questionnaires, the German Compulsive Buying Scale (Raab et al. 2005) and the SCS-subscale "Self-Discipline" (Tangney et al. 2004), assuming a remarkable relationship between the ability to regulate one's self and the prominence of consumption and spending behavior.

The size of the current representative survey in 2011 was n = 1001 in Germany, n = 1000 in Austria and n = 1125 in Denmark. The tendency of compulsive buying is measured by using a validated screening instrument for measuring buying behavior, the German Compulsive Buying Scale (Raab et al. 2005), which is the standard method for examining buying addiction in German-speaking countries. The scale differentiates three types of consumer behavior: 1) inconspicuous buying, 2) compensatory buying, and 3) compulsive buying (Faber & O'Guinn 1992). Additionally, self-control abilities are assessed by using the subscale "Self-Discipline" out of the Self-Control Scale (SCS) by Tangney et al. (2004).

In Germany, the amount of people with compulsive buying behavior increased from 6.9% in 2010 to 9.2% in 2011. For Austria and Denmark, the quantity of people buying compulsively remains relatively stable with only slight differences between 2010 and 2011 (7.6% to 7.8% in Austria; 5.8% to 4.5% in Denmark). The distribution between male and female shoppers seems rather balanced in Germany (9.0% male, 9.3% female) while the data of the two other countries show a clear majority of female consumers with conspicuous buying behavior. Younger people, especially from 14 to 25 years, appear more affected by pathological buying habits than older consumers. There is a highly significant correlation between self-control abilities and compulsive buying behavior.

All in all, conspicuous buying behavior in terms of compensatory and compulsive buying remains a stable phenomenon in modern consumer societies with clear criteria for endangerment: female gender, younger age (except in Denmark) and living in West Germany (only for the German distribution). On the basis of these results, the possible implications are examined during the discussion.

*Keywords: money attitudes, overconsumption, conspicuous consumption, self-regulation, self-control*

**CREDIT CARD REPAYMENT DECISIONS: FURTHER EVIDENCE OF THE EFFECTS OF MINIMUM PAYMENT, COST AND LOAN DURATION INFORMATION**

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This paper reports the findings of two experiments following up recent studies demonstrating effects on credit card repayment decisions of information on minimum payment, total cost and loan duration information. In the first experiment it was hypothesized that the anchoring effect of minimum repayment information would be moderated by information on total cost and loan duration information. In the second experiment it was hypothesized that an alternative anchor, the repayment amount necessary to repay the balance in nine months, would counteract the effect of minimum repayment information.

Randomized groups experimental designs were employed involving credit card repayment scenarios. In each experiment three realistic credit card statements were prepared with different outstanding balances and participants were asked in each case how much they would repay that month. Participants were randomly allocated to one of four information conditions depending on additional information provided on the statements. In experiment 1 the conditions were: (1) No minimum repayment given; (2) Minimum repayment; (3) Minimum repayment plus total cost and loan duration information for that repayment; and (4) Minimum repayment plus total cost and loan duration information for the minimum and a higher repayment. In experiment 2 the first two information conditions were as above and the others were: (3) Monthly repayment and interest cost information for repaying the balance in nine months, no minimum repayment; and (4) Minimum repayment plus monthly repayment and interest cost information for repaying the balance in nine months. In addition to responding to the three scenarios, all respondents were asked about concerns they would have about repayment difficulties if they had a substantial consumer loan over three years, and some demographic questions.

In experiment 1, nonparametric tests showed that minimum repayment information had a significant anchoring effect on the average partial payment level that was stronger when additional information was provided. In addition, disposable income and concern about future repayment difficulties were strong predictors of repayment levels. The results of experiment 2 will be reported in detail.

The findings will have important implications for psychological theories of credit decision making and for policies and regulations concerning credit card statement information. Further field research is planned to establish the extent to which the findings generalize to actual credit card repayment behavior.

*Keywords: choice, loan and debt*

## THE ROLE OF FOOD COMMERCIALS ON CHILDREN'S FOOD KNOWLEDGE AND PREFERENCES AND ITS IMPACT ON DIET AND WEIGHT

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To understand the rising prevalence of obesity, it is necessary to take into account the growing obesity infrastructure, which over past decades has developed into an obesogenic environment. This infrastructure is a direct reflection of the mainstream economic growth paradigm also characterized as chronic overconsumption. This study examines the effects of one of the constituent factors of consumer societies and a key contributory factor to childhood obesity: commercial food communication targeted to children and its impact on their food knowledge, preferences, dietary behavior and obesity.

Because evaluations of traditional information- and education-based interventions suggest that they may not sustainably change food patterns, we combine insights from behavioral economics and a human ecological model and thus, operate on different levels:

1. The social environment where the child is embedded in families and peer groups, that influence its food patterns via transposing their social /cultural norms, food dis-/likes, and food habits via exposure and learning processes.
2. The immediate physical environment and its opportunities (e.g., accessibility and availability of healthy food) provides the options and barriers of the immediate "choice architecture" for healthful eating, as well as for physical activity as the other decisive influential factor of becoming overweight.
3. The wider media environment and in particular commercial communication (e.g., food advertising) have been shown to shape food related attitudes, preferences, and practices.

We then investigate the association between these levels and food preferences, food knowledge, dietary behavior and obesity by using a subsample from the IDEFICS study and employing regression analyses.

The results reveal not only that advertising has divergent effects on children's food knowledge and preferences but that food knowledge is *unrelated* to food preferences. Food knowledge and preferences are neither related to diet quality nor dietary intake. Diet is strongly associated with parental norms and attitudes. When it comes to obesity,

only the physical environment is strongly associated, e.g., children with a high TV exposure have also a high weight status.

In sum, this study supports the contention that traditional policy strategies, based primarily on informational and educational goals, are insufficient to decrease the effects of advertising on children. That is, although knowledge about good health remains an unquestioned goal, it cannot adequately guide behavior in a healthier direction. Rather, given the complexity of advertising's effects, such strategies should consider the broader advertising context and attend more to influencing preferences and making the healthy choice the easy choice.

*Keywords: advertising, overconsumption, children*

## THE INFLUENCE OF COLORS ON ATTITUDE AND BEHAVIORAL INTENTIONS IN PROMOTIONAL ACTIVITIES

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### Abstract

The present study attempts to append to the little systematic empirical evidence of the effects of color, which exist in marketing communication literature (Gorn, Chattopadhyay, Yi & Dhal, 1997) by focusing on the background color (not the color of the product) used in promotional activities within an IMC perspective. Background color is investigated with respect to its effect on consumer attitude and purchase intention, whilst examining the possible moderating effects of consumer's mood and involvement.

Three empirical studies were conducted to examine the hypotheses. Questionnaires consisting of three parts were administered to participants. The Ishihara color blindness test was used in an attempt to eliminate color blindness. Participant's moods were manipulated by two oppositely positioned articles. Low and high involvement conditions were created through suggesting the potential of winning a pen and a substantial monetary sum respectively. Pictures of window displays and kiosks in trade shows that differentiated exclusively on their background color were then shown in study 1 and 2. In study 3 respondents had to evaluate a guerrilla marketing activity based on the picture(s) they were administered. For each picture participants were asked to express their attitude and behavior intention (i.e. seeking further information inside the store/ kiosk/ site).

The ANOVAs results indicated a significant main affect of color on both attitude and behavioral intention. A significant interaction was found between color and product involvement, and color and mood for both attitude and behavioral intention. Finally, a significant triple interaction was found for the behavioral intention model, among the three independent factors.

Background color was found to have significant importance in all promotional activities. Cool rather than warm background colors were found to produce more positive attitudes and behavioral intentions power, with the effect being stronger when in a low involvement condition and in a positive mood state. Marketing communications managers should thus carefully consider how to use background colors considering both mood and involvement of consumers. The implication for companies is that although a selection of color that isn't aligned with corporate colors might seem problematic-given strong association's consumers' make- it may indeed prove beneficial in creating positive effect on consumer attitude and behavioral intentions. Future research could be directed toward the examination of individual differences, such as personality traits (e.g. extroverts vs. introverts; Choungourian, 1967) on the basis of research already undertaken.

*Keywords: advertising, individual differences*

## 1 Introduction

Past research has shown that environmental cues, such as colours, provide affective information that directly influences a consumer's processing strategy (e.g. Soldat, Sinclair & Mark, 1997) subsequently influencing the decision making process. Influence on psychological functioning (i.e. feelings and behaviors) is automatic, takes place without conscious intention or awareness (Elliot & Maier, 2007) and despite individual and cultural differences, has been found to be quite consistent (e.g. Kastl & Child, 1968). Empirical evidence on the effects of colour in marketing communication exist (Gorn, Chattopadhyay, Yi & Dhal, 1997) with most focused on the areas of packaging and print

advertising (Bellizzi, Crowley, Hasty, 1983; Levy & Peracchio, 1995) and web pages (Mandel & Johnson, 2002) while other promotional activities, such as guerilla marketing, has not attracted any research attention. Moreover, early evidence indicates that colours have been associated with mood (e.g. Wexner, 1954). However, little research exists which examines the effect of colour on consumer attitudes and purchase intention, while taking into consideration the possibly moderating effect of mood in conjunction with the possibly moderating effect of involvement in various promotional activities other than advertising.

## 2 Objectives

Given the little systematic empirical evidence concerning the effects of colour in marketing (Gorn, Chattopadhyay, Yi & Dhal, 1997) this research attempts primarily to append this gap through the examination of background color used in promotional activities within an integrated marketing communications (IMC) perspective. In essence the effect of background color –color other than the color of the product- is examined in regards to its effect on consumer attitude and purchase intention. Simultaneously the possibly moderating effects of consumer mood and involvement are taken under consideration. The above are accomplished with the examination of three different types of promotional activities namely window displays, consumer trade shows and guerrilla marketing promotions, in three separate studies which aim at collecting input from a wide range of promotional activities.

Further the aim was to provide answers to hypothesis following which were formed by the subsequent reasoning. According to Elliot and Maier (2007) colour is not just about aesthetics; it has been shown to carry specific meanings, and communicate specific information. Bjerstedt (1960) makes a distinction between “warm” colours (i.e. red) and “cool” colours (i.e. blue), suggesting that these have different “psychological meanings” and evoke different associated themes. Warm colours are conceived as being physically stimulating (Bellizzi & Hite, 1992) and possessing strong excitation potential and high arousal qualities (Schaie & Heiss, 1964; Bellizzi, Crowley & Hasty, 1983). In contrast, cool colours seem to have an adverse effect and are perceived as more relaxing and restful (Bellizzi & Hite, 1992; Sharpe, 1974). Moreover, Middlestadt (1990) suggests that blue (i.e. cool) in comparison to red (i.e. warm) background colour leads to more positive purchase intentions for specific categories, such as pens. Thus:

H1: Cool colour background used in promotional activities induces more positive attitudes and behavioural intentions than warm colours.

It is widely accepted that no matter the purchase decision consumers will develop some level of involvement (Engel & Blackwell, 1982). In low involvement conditions, consumers are often “cognitive misers” and don’t engage in extensive information processing (e.g. Alba & Hutchinson, 1987). In low involvement conditions, consumers often employ a variety of judgmental biases such as heuristic processing strategies (e.g. Chaiken, 1980). Moreover, Petty and Cacioppo (1986) suggest that in contrast to high involvement situations, low involved consumers follow a peripheral route to persuasion, in which they tend to rely on environmental characteristics of the message i.e. perceived credibility and/or attractiveness of the source, or atmosphere created (i.e. colours) in the message. Thus:

H2: The effect of background colour used in promotional activities is stronger in low involvement than in high involvement conditions.

Mood affects consumer behavior in a plethora of ways (e.g. Gorn, Goldberg & Basu, 1993) from information processing (e.g. Srull, 1987), attitude toward brand (e.g. Batra & Ray 1986), purchase intention (e.g. Alpert & Alpert, 1990), to influencing reactions to commercials (e.g. Goldberg & Gorn 1987). Additionally, Bower (1991) claims that mood influences consumers’ encoding or time of learning. Past research suggests that when making evaluative judgments, especially when the task is complex or demanding, consumers observe their feelings using them as a direct source of information to draw conclusions (e.g. Schwarz, 1990). Further Soldat, Sinclair and Mark (1997) suggest that environmental cues such as colours provide affective information that directly influences a consumer’s processing strategy. In particular positively valenced (i.e., happy) cues lead to non-systematic processing and negatively valenced (i.e., sad) cues lead to systematic processing. Given that colour is considered as an environmental element (e.g. Petty & Cacioppo, 1986) that mainly affects non-systematic processing the following hypothesis is formed:

H3: The effect of background colour used in promotional activities on attitudes and behavioural intentions is stronger in positive rather than in negative mood states.

Three empirical studies were conducted to examine the hypotheses of the research. Study 1 explored the relations in the window display context, while Studies 2 and 3 examined them in consumer trade shows and guerrilla promotional activities respectively.

### 3 Studies

#### 3.1 Study 1

Colours are used to evoke approach orientation and physical attraction in retail settings (e.g. Bellizzi, Crowley & Hasty, 1983), thus, in Study 1, the effect of colour, purchase involvement and mood on the attitude and behavioural intention towards window displays was explored.

**Participants and experimental design.** A total of 192 students (93 men and 99 women,  $M_{age} = 22.40$ ,  $SD = 2.67$ ) were randomly assigned to the twelve conditions of the following mixed experimental design: 2 (purchase involvement: high or low) x 2 (mood: positive or negative) x 3 (colour of display background: warm or cool or black & white background-control condition). The colour of the background was approached as a within subject variable while involvement and mood were approached as between subjects variables.

**Product selection and Procedure.** On the basis of the results of a preliminary study ( $n = 25$ ), transparent glass home furniture was selected among 35 product categories as an experimental product category with limited associations with specific colours (Bellizzi, Crowley & Hasty, 1983). The questionnaire consisted of three sections. In the first section, participants were briefed and given the Ishihara colour blindness test to test their ability to distinguish various colours. In the second section, the manipulation of mood and purchase involvement took place. Finally, in the third section participants were shown three similar pictures of window displays that differentiated exclusively on their background colour (warm vs. cool vs. black & white colour background). For each display participants were asked to express their attitude and behavioural intention (seeking further information inside the store).

**Manipulations.** Regarding purchase involvement, participants in the low involvement condition were told that the promotional activities that they would evaluate referred to a company that operates abroad. Moreover, they were informed that after the completion of the research they would take part in a lottery to win a pen. Participants in the high involvement condition were told that the promotional activities concerned a furniture company that would open a new store in their region during the next month. Additionally, they were informed that after the completion of the research, they would receive a 200 euro pay check that could be used in the new store. Concerning mood, participants in the negative and the positive condition were asked to read an article that induced negative feelings and an article that induced positive feelings respectively.

**Manipulation checks and measures.** The mean of four 7 – point scales was used to check the success of the purchase involvement manipulation (Park & Hastak, 1994) ( $\alpha = .76$ ). The manipulation of mood was checked by measuring the subject's affective mood state with a four – item, 7 – point semantic differential scale (Allen & Janiszewski, 1989) ( $\alpha = .88$ ).

Respondents expressed their attitude toward the promotional activity (window display) and behavioural intention, which served the role of the dependent variables of the study. Attitude toward the promotional activity (window display) was operationalised using a 7 – point multi item scale (Henthorne, LaTour & Natarajan, 1993) ( $\alpha = .85$ ). Finally, a multi – item, semantic differential scale was adopted (Adjen & Fishbein, 1980) in order to measure the stated inclination of the respondent to engage in a specific behavioural (seeking further information at the store of the given window display) ( $\alpha = .72$ ).

#### 3.2 Study 2

In contrast to Study 1, Study 2 examined the effect of colours on attitude and behavioural intentions in a consumer trade show situation.

**Participants:** One hundred and eighty students (84 male and 96 female,  $M_{age} = 22.10$ ,  $SD = 1.13$ ) were randomly assigned to the twelve conditions of the following mixed experimental design: 2 (purchase involvement: high or low) x 2 (mood: positive or negative) x 3 (colour of kiosk background: warm or cool or black & white background). Similarly to Study 1, the colour of the background was approached as a within subject variable while involvement and mood were approached as between subjects variables.

**Procedure and manipulations:** The procedure was similar to the one followed in Study 1. The main difference was that respondents were shown and asked to evaluate pictures of kiosks in consumer trade shows. The product category of furniture acted as the experimental stimulus. Both purchase involvement and mood were manipulated similarly to Study 1.

**Manipulation checks and measures.** Similarly to Study 1, purchase involvement and mood manipulation check was conducted with Park and Hastak (1994,  $\alpha = .88$ ) and Allen and Janiszewski (1989,  $\alpha = .74$ ) scales respectively. The dependent variables and their measures, were identical to the ones used in Study 1 (i.e. attitude towards the kiosk -  $\alpha = .85$ , behavioural intentions -likelihood of seeking information at the given kiosk -  $\alpha = .77$ ).

#### 3.3 Study 3

Study 3 is a replication of Study 1 in a different promotional context. In contrast to Studies 1 and 2, the effect of colours on attitude and behavioural intentions was examined in a guerilla marketing promotional activity.

Participants: One hundred and seventy-nine students (78 male and 101 female,  $M_{age}=21.20$ ,  $SD = 1.10$ ) were randomly assigned to the twelve conditions of the following mixed experimental design: 2 (purchase involvement: high or low) x 2 (mood: positive or negative) x 3 (colour of the guerrilla marketing tool used: warm or cool or black-white tool). Similarly to Study 1 and Study 2, the colour of the background was approached as a within subject variable while involvement and mood were approached as between subjects variables.

Procedure and manipulations: The only difference from the procedure followed in the previous studies, was that in this study respondents had to evaluate the guerrilla marketing activity based on the pictures they were asked to see. The picture featured a two arm toilet seat which resembled an armchair. Its differently coloured toilet cover had the website of the furniture company printed on it. The experimental stimulus was the product category of furniture. Purchase involvement and mood were manipulated similarly to Studies 1 and 2.

Manipulation checks and measures. Similarly to Study 1, purchase involvement and mood manipulation check was conducted with Park and Hastak (1994,  $\alpha = .92$ ) and Allen and Janiszewski (1989,  $\alpha = .82$ ) scales respectively. The dependent variables and their measures, were identical to the ones used in previous studies (i.e. positive affective attitude-  $\alpha = .87$ , attitude towards the guerrilla activity -  $\alpha = .93$ , behavioural intentions -  $\alpha = .70$ ). Overall evaluation of the guerrilla activity and behavioural intentions (likelihood of seeking information at the website given on the toilet cover) were measured using the same scales as two previous studies.

## 4 Results

All three studies provided enough evidence to confirm most of the initial hypotheses. More specifically results of Study 1 indicated the following: Both the manipulations of purchase involvement ( $M_{high} = 5.51$ ,  $M_{low} = 5.09$ ,  $t(190) = 2.29$ ,  $p < .05$ ) and mood were successful ( $M_{high} = 5.84$ ,  $M_{low} = 5.41$ ,  $t(190) = 2.304$ ,  $p < .05$ ). The results of the repeated measures ANOVA indicated a significant main effect of colour on both attitude ( $M_{cool} = 5.85$ ,  $M_{warm} = 5.05$ ,  $M_{black-white} = 5.12$ ,  $F(2,189) = 183.56$ ,  $p < .001$ ) and behavioural intention ( $M_{cool} = 5.43$ ,  $M_{warm} = 4.75$ ,  $M_{black-white} = 4.91$ ,  $F(2,189) = 155.32$ ,  $p < .001$ ). Post hoc analysis with the use of Scheffe test indicated that the mean for cool colours was significantly greater than for warm colours, for both dependent variables. Hence, H1 is supported. Also, a significant interaction was found between colour and involvement for both attitude ( $F(2,189) = 4.51$ ,  $p < .05$ ) and behavioural intention ( $F(2,189) = 3.21$ ,  $p < .05$ ), supporting H2. H3 is also supported as the interaction between colour and mood was also found significant for both attitude ( $F(2,189) = 3.81$ ,  $p < .05$ ) and behavioural intention ( $F(2,189) = 3.99$ ,  $p < .05$ ). Multiple t-tests among the specific groups revealed that the aforementioned interactions were as hypothesized. No other main effect or interaction was found significant.

As in Study 1, in Study 2 both the manipulations of purchase involvement ( $M_{high} = 5.62$ ,  $M_{low} = 5.21$ ,  $t(178) = 2.872$ ,  $p < .01$ ) and mood were successful ( $M_{high} = 5.56$ ,  $M_{low} = 5.12$ ,  $t(178) = 2.61$ ,  $p < .01$ ). The results of the repeated measures ANOVA indicated a significant main effect of colour on both attitude ( $M_{cool} = 4.75$ ,  $M_{warm} = 4.11$ ,  $M_{black-white} = 4.02$ ,  $F(2,177) = 179.88$ ,  $p < .001$ ) and behavioural intention ( $M_{cool} = 4.33$ ,  $M_{warm} = 3.72$ ,  $M_{black-white} = 3.60$ ,  $F(2,177) = 127.19$ ,  $p < .001$ ). Post hoc analysis with the use of Scheffe test indicated that the mean for cool colours was significantly greater than for warm colours, for both dependent variables. Therefore, H1 is supported. Moreover, the interaction between colour and involvement was found significant only for attitude ( $F(2,177) = 12.666$ ,  $p < .001$ ) supporting only partially H2. H3 is also partially supported, as the interaction between colour and mood was found significant only for behavioural intention ( $F(2,177) = 9.34$ ,  $p < .001$ ). Multiple t-tests among the specific groups revealed that the aforementioned interactions were as hypothesized. No other main effect or interaction was found significant.

Results of Study 3 indicated that both the manipulations of purchase involvement ( $M_{high} = 5.43$ ,  $M_{low} = 4.92$ ,  $t(177) = 3.53$ ,  $p < .001$ ) and mood were successful ( $M_{high} = 4.92$ ,  $M_{low} = 4.65$ ,  $t(177) = 2.88$ ,  $p < .01$ ). The results of the repeated measures ANOVA indicated a significant main effect of colour on both attitude ( $M_{cool} = 4.93$ ,  $M_{warm} = 4.32$ ,  $M_{black-white} = 4.04$ ,  $F(2,176) = 114.17$ ,  $p < .001$ ) and behavioural intention ( $M_{cool} = 4.61$ ,  $M_{warm} = 4.16$ ,  $M_{black-white} = 4.11$ ,  $F(2,176) = 73.89$ ,  $p < .001$ ). Post hoc analysis with the use of Scheffe test indicated that the mean for cool colours was significantly greater than for warm colours, for both dependent variables. Hence, H1 is supported. Moreover, a significant interaction was found between colour and involvement for the behavioural intention ( $F(2,176) = 3.93$ ,  $p < .05$ ) while for the respondents' attitude the specific interaction was found marginally significant ( $F(2,176) = 2.36$ ,  $p < .10$ ). Hence, H2 is also supported. H3 is also supported as the interaction between colour and mood was also found significant for both attitude ( $F(2,176) = 3.62$ ,  $p < .05$ ) and behavioural intention ( $F(2,176) = 4.33$ ,  $p < .05$ ). Multiple t-tests among the specific groups revealed that the aforementioned interactions were as hypothesized. No other main effect or interaction was found significant.

## 5 Discussion

The emerging results are very interesting leading to robust implications for companies. To begin with, the background colour was found to have significant importance across all promotional activities. It should be carefully selected, though, given that in promotional activities where a cool colour background is used, more positive attitudes and behavioural intentions are stimulated compared to those having a warm background colour. This can be explained by

evidence on the ground of previous research underlining cool colours' relaxing theme in contrast to warm colours' arousal power (Bellizzi & Hite, 1992). This effect is proved to be stronger when the promotional activity is addressed to consumers being in a positive mood state or those being in a low involvement condition.

As such, marketing communications managers should carefully consider how to use background colours considering both the consumer's mood and involvement. Consumers' mood should be manipulated in order to have a stronger colour effect, thus, companies that are about to select a background colour in their promotional activity should find ways to ameliorate a customer's mood before he is exposed to the promotional activity. This is paramount to achieve better results, in terms of attitude and behavioural intention. What's more, most companies are engaged to specific corporate colours by means of IMC strategy implementation, meaning that the selection of a colour that isn't aligned with corporate colours might seem to be problematic; nevertheless, it could be, at the same time, very beneficial in creating positive effect on consumers' attitude and behavioural intentions. In that sense, it can be inferred that integration, as perceived by the professional communities is not essentially all about tactical coordination of visual elements so as to be in accordance with the corporate identity. Instead, it is a process involving a more concrete research and delivery to diversified audiences that should be carefully segmented and defined (Schultz & Patti, 2009). In any case, the need for future research is apparent and could be directed toward the examination of individual differences, such as personality traits (e.g. extroverts vs. introverts; Choungourian, 1967) on the basis of research already undertaken.

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## DO WE ASK MONETARY PREMIUM FOR COGNITIVE EFFORT IN AUCTION?

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The research on the influence of cognitive effort on decision making is growing in recent years. We argue that when a cognitive effort is required, the decision-maker asks for a monetary premium for his effort. In our experiment, the participants were asked to bid for lotteries. We created cognitive efforts by asking participants to use a calculator and show that the increase in cognitive efforts increases the monetary premium they request, and leads to better pricing of similar lotteries.

*Keywords: choice, framing, dual process*

## TO BE OR NOT TO BE VACCINATED: A LEARNING MODEL

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Life expectancy has risen dramatically during the twentieth century. A large share of the rise is attributed to vaccinations. With the advent of a variety of effective vaccinations, the incidence of infectious diseases has declined, resulting in a radical decline in mortality. Despite the enormous advances, most contagious diseases have not completely disappeared. The bacteria or viruses that cause them still exist and continue to spread. The Western world still experiences outbreaks of potentially deadly diseases that occur in unvaccinated or inadequately immunized people. Recent examples are whooping cough, tuberculosis, and swine flu (H1N1 Influenza). Immunization is the first and most important step in protecting against such diseases. Despite public interest in achieving full immunization coverage and thereby reducing the burden of vaccine-preventable diseases, the personal costs involved in acquiring a vaccination may cause individuals to avoid vaccinating, leading to a free rider problem.

This paper deals with the individual's decision to receive a vaccination. We consider an outbreak of an infectious disease, during which public health authorities recommend vaccinating the population in order to prevent an epidemic. We assume that a vaccination exists and perfectly immunizes the recipients against the disease, and that

the probability of infection is a decreasing function of the vaccination rate. We present a two-period behavioral model of learning through imitation. In the first period, following the recommendation of the health authorities, a portion of the population decides to obtain the vaccine. These are the *compliant agents*. The rest, the *non-compliant agents*, are exposed to the risks of being infected in the disease. In the second period, those who face the vaccination decision are only the non-compliant agents who have not been infected (hence have not acquired natural immunity). These agents obtain information regarding the utility from obtaining the vaccine versus not obtaining the vaccine, compare the average utilities, and take the action that yields the higher average utility.

Our aim is to draw conclusions on how learning affects the rate of vaccination, specifically regarding the probability distribution of vaccinating over time. In addition, we seek to explore the differences between the learning model and rational decision-making.

The initial result of the learning model is that a higher rate of compliance has an ambiguous effect on the expected value of the total rate of vaccination.

*Keywords: choice, intertemporal choice*

## SAVING FOR A RAINY DAY OR FOR A RAINCOAT? THE ROLE OF SAVING MOTIVES IN HOUSEHOLD FINANCIAL MANAGEMENT

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The ability to make savings is very important not only for national economic systems, but also for proper functioning of individual household budgets. As not all people deal equally well with saving, it is crucial to include psychological variables into research, which aims to understand saving behaviors of individuals. One of the most important research trends connected with saving concentrates on the motives behind human decisions to start making savings, and many different categories were proposed. Analyzing the motives for which people save may help to understand better the saving behavior of households. However, the variety of possible motives causes serious methodological and empirical problems.

The aim of the research was to examine the hypothesis that saving motives can be divided in two categories: concrete goal saving motives (e.g. for a new bike) and abstract goal motives (e.g. "for a rainy day") and that people saving for those two different reasons differ in saving behaviors.

The present study used an adult consumer sample (n=134, 50% females). The subjects were requested to specify their saving motives and asked series of questions concerning their saving behaviors and attitudes toward putting money aside.

As predicted, savers belonging to those two groups used different saving strategies and differed over their saving horizon. Consumers saving for an abstract goal had a longer ( $b=0.27$ ,  $t(132) = 3.19$ ,  $p<0.005$ ) and a more specified ( $b=0.66$ ,  $t(132) = 10.14$ ,  $p<0.001$ ) saving horizon. They were also more prevention-focused ( $b=0.37$ ,  $t(132) = 4.58$ ,  $p<0.001$ ). The aim of saving was more important for consumers saving for a concrete goal ( $b=0.364$ ,  $t(132) = 4.40$ ;  $p<0.001$ ), whereas saving was valued more by consumers saving for an abstract goal ( $b=0.214$ ,  $t(132) = 2.52$ ,  $p<0.05$ ). Consumers belonging to those two groups also differed regarding saving strategies: those saving for a concrete goal tended to choose discretionary saving ( $b=0.35$ ,  $t(132) = 4.24$ ,  $p<0.001$ ). They also declared that they manage to save more effectively ( $b=0.23$ ,  $t(132)=2.76$ ;  $p<0.01$ ). The subjects were also to decide how much they would save out of an unexpectedly received amount of money, and people saving for a concrete goal decided to save more  $F(1, 70) = 8.612$ ;  $p < 0.01$ ;  $\eta^2 = 0.110$ .

The results of the research support the idea that saving motives influence saving behaviors, and further studies may provide a foundation for enlightening the problems associated with saving failure

*Keywords: intertemporal choice, saving*

## INCOME TAXATION AND LABOR SUPPLY OF COUPLES: AN EXPERIMENT ON HOUSEHOLD DECISION-MAKING

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Widespread criticism toward joint taxation exists throughout the academic literature and focuses on its disincentives for the labor supply of secondary earners (mostly women), in that it imposes higher marginal tax rates on their wages. The disincentive to participate in the labor market increases with the difference in earning capacities between spouses. Actually, female full-time labor force participation in Germany is considerably less than the OECD average and lags behind the preferred working time. As microsimulation studies have already shown, a change from joint taxation to individual taxation would improve women's labor market participation. In addition to that, recent work detects that an individual's labor supply decisions are also determined by perceived fairness of income and that personal earnings are evaluated differently between spouses, depending on the household context. Nevertheless, no experimental study on the impact of tax systems on labor supply of couples is available.

We employ a framed field experiment to examine the incentive effects of a change from joint to individual taxation on labor supply with progressive tax rates. In our mixed model design (2x2) established heterosexual cohabiting couples (non-standard subjects) perform under piece rate on real effort tasks in two stages within a given time, with effort serving as our proxy for labor supply. Their income is taxed jointly for one stage and individually for another and there are two types of tasks that are assigned to each of the spouses. The tasks differ in complexity level with corresponding high and low wages and thus determine who is the primary or the secondary earner. Before performing on this paid task, each couple has to decide which partner fulfills one compulsory and uncompensated task that is easy but time consuming. This will give us a realistic insight into intra-household decision-making on couple's time allocation and labor supply of men and women where also unpleasant tasks such as doing the dishes have to be undertaken in addition to paid work.

Our hypotheses are that (1) the labor supply of the secondary earner is smaller in the case of joint rather than individual taxation, (2) labor supply elasticity is larger for women than for men, (3) fairness perceptions (stated in post-questionnaire) have a negative impact on male's labor supply if they are the secondary earner.

*Keywords: tax behavior, individual differences*

## EARNING PROFILES OF EDUCATED MALES AND FEMALES IN ISRAEL: THE EFFECT OF CHILDREN

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A large body of research on the gender wage gap has shown that the difference in wages between single men and single women and between married men without children and married women without children is not that large but that the gap between married men with children and married women with children is significant.

The goals of this study are: to analyze the wage profiles of men and women with an academic education in Israel and the gaps between them; to determine the reasons why the wage gap between men and women grows when children are introduced into the family unit.

To this end, a database was created which includes all individuals who graduated with a first degree from universities and colleges in Israel between the years 1995 and 2008.

Analysis based on the database show the following:

In the year that they graduate, men earn 58 percent more than women on average. The gap grows to 98 percent after ten years and 104 percent after thirteen.

Women's wages grow at an average annual rate of 2.9 percent as compared to 10.2 percent for men.

The main reason for the differences in wage profiles is the number of children in the family unit. Among men, the effect of the number of children is positive (each additional child increases a man's wage by 2.9 percent) as compared to women for whom the effect is negative (each additional child reduces a woman's wage by 5 percent).

Two main reasons were found to explain this phenomenon:

The shift of workers from the private to the public sector. We found that, other things being equal, wages in the public sector are 26 percent lower than in the private sector. We also found that number of children has a positive effect on the probability of a woman moving from the private to the public sector.

The shift of workers from high- to low-paying place of work. It was found that for women number of children has a positive effect on the probability of a move from employment in a high-paying place of work to employment in a low-paying one.

We also analyze the changes occurring in the husband's and wife's earnings following the birth of an additional child. We have found that expanding the family by having more children increases the differences in earnings between the husband and wife.

*Keywords: choice, children, social dilemma*

## RATIONALITY AND PSYCHOLOGICAL ACCURACY OF RISKY CHOICE MODELS BASED ON OPTION- VS. DIMENSION-WISE EVALUATIONS

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Two experiments were carried out to investigate psychological accuracy of risky choice models related either to classical or bounded rationality assumption. In line with the former, individuals trade-off outcomes and probabilities and choose the option with the highest weighted sum. CPT represents such models. In contrast, in models based on bounded rationality assumption, such as Priority Heuristic or Maximization of Cumulated Probability of Winning, there is neither trade-off between payoffs and probabilities nor complex information integration, since choice is based on dimension-wise comparisons. The latter models differ in emphasizing the significance of either the amount or the probability of loss.

Since previous findings do not support either hierarchy, Experiment 1 was designed to verify relative importance of amount and probability of loss. In Experiment 2 the relative accuracy of compensatory models based on global evaluations and non-compensatory models based on dimension-wise comparisons. The focus is on reasoning represented by certain classes of models rather than on distinguishing between specific models with a given class.

In Experiment 1, 208 respondents chose one of four 2-mixed-outcome options. Options were constructed such that options with higher probabilities of loss were assigned smaller losses/higher gains. Thus, criteria based on probability of loss and the amount of loss/gain favored different choices. In Experiment 2, 147 respondents chose one of 3 multi-outcome options with mixed outcomes. First option favors compensatory models (EV or CPT). Second option favors lexicographic models MINIMAX or LPN. It also favors PH, which is a multi-step lexicographic model, where the first step is MINIMAX and the second step is LPN, but with well-defined thresholds. The PH's thresholds are met in all three sets. Finally, Third option favors MCPW. Information search was registered with a modified version of Mouselab Web. Choice fraction and process tracing indices were analyzed.

Respondents made more dimension- than option-wise transitions. However, other indices such as the fraction of information searched across options as well as the ratio of searched information about pay-offs and probabilities do not support either model. The choice strategies used by a majority of respondents varied across situations.

Although the results question diminishing effort behavior, they do not challenge the concept of bounded rationality. This is supported by the reading effect observed in information search and the range sensitivity effect. The most salient argument is, however, that people search information along dimensions. This pattern was found for both multi-outcome and two-outcome lotteries.

*Keywords: choice, framing*

## AFFECTIVE FORECASTS FOR MATERIAL PRODUCTS

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Consumer decision-making is based, amongst other factors, on the anticipated pleasure that different product alternatives may offer. Such affective forecasts are influenced by situational and personal factors. The aim of this study was an investigation of the specific determinants of affective forecasting towards material consumption. First, we tested whether there is a possibility to help consumers make more cautious affective forecasts. Writing a future diary was applied as a defocusing technique that should reduce focalism, the tendency to regard the focal event in a vacuum and to neglect other things that have an influence on future emotions. Second, we explored affective forecasts for different product types. Low involvement products and high involvement products were included in the study. Third, we considered the influence of individual differences on affective forecasts.

A 2x4 factorial design was applied to investigate the influence of writing a future diary and product involvement on affective forecasts concerning material consumption. The experimental group engaged in a future diary task, the control group answered a filler task. Afterwards, all participants made their affective forecasts. Two low involvement and two high involvement products were tested in a between subjects design. Baseline emotions, consumer skepticism towards advertising, materialism and optimism were included as control variables. 286 university students participated in the online-based laboratory study that was run at a large German university.

Results indicate that participants expected to feel better when possessing a high involvement compared to a low involvement product. Positive baseline emotions and materialism were positively correlated with affective forecasts. Consumer skepticism was negatively correlated with affective forecasts. After controlling for these variables the future diary task clearly resulted in less positive (i.e. more cautious) affective forecasts.

The current study extends the research on affective forecasting in the domain of material consumption. On the theoretical level, it contributes to the understanding of the specific drivers of affective forecasts in the consumer context. It shows that product involvement is a central driver of affective forecasts for material products. Moreover, it points out that individual differences in consumer skepticism and materialism influence people's affective forecasts in the consumption context. On the applied level, the study contributes to an understanding of specific strategies for changing affective forecasts. It reveals that it is possible to help consumers make more cautious affective forecasts by encouraging them to think about different aspects of their everyday life besides consumption.

*Keywords: advertising, materialism, individual differences*

## A MATTER OF PERSPECTIVE – WHY PAST MORAL BEHAVIOR CAN ENCOURAGE AND DISCOURAGE FUTURE MORAL BEHAVIOR

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Giving up personal benefits to provide benefits for others makes people perceive themselves in a more positive light. However, there is disagreement on how such a positive self-perception affects subsequent behavior. While some research shows that past moral behavior inspires more future moral behavior (Cornelissen, Pandelaere, Warlop, & Dewitte, 2008), other research shows the opposite (see Merritt, Effron, & Monin, 2010 for a review). In this paper we investigate this puzzling pattern, suggesting that the key to predict the consequences of moral behavior is the type of self-relevant goal information people derive from their past behavior (Fishbach, Zhang, & Koo, 2009).

We ran an experiment with 130 participants who were assigned randomly to a 2 (behavior: moral, non-moral) x 2 (perspective: progress-focus, commitment-focus) design. Participants completed a 'brainstorm task' that served as moral behavior manipulation. In the moral condition, they were asked for ideas to improve the life of a physically disabled student; in the non-moral condition, they were asked for ideas to improve their own life. Next, participants reflected on their behavior in the brainstorm task. In the progress condition, participants reported whether they felt

they had made progress, both concerning the goal to help others and to help themselves. In the commitment condition, participants reported whether they felt they had been committed to these goals. Finally, we asked participants to engage in an ostensibly unrelated 'interpersonal interaction' designed to measure generosity - an anonymous dictator game.

Results showed a significant interaction effect of behavior and perspective on generosity. Thus, when participants perceived their past behavior in terms of progress they showed a moral balancing effect by offering less money after moral behavior than after non-moral behavior. However, when participants perceived their behavior in terms of commitment, they showed a moral highlighting effect by offering more money after moral behavior than after non-moral behavior.

When people are focused on goal progress, past moral behavior informs them about their moral goal accomplishment and thus leads to less moral behavior subsequently. However, if people are focused on goal commitment, past moral behavior informs them about whether moral goals are valuable to them. Learning about the value of a moral goal inspires more future moral behavior. By broadening the scope of the term self-perception, our paper contributes to understanding why a positive self perception sometimes leads to less moral behavior and other times leads to more moral behavior.

*Keywords: framing, altruism, morality, self-regulation*

## HEURISTICS IN COGNITIVE REASONING: A FIELD EXPERIMENT AMONG ISRAELI STUDENTS

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An important objective of the analysis is to investigate the determinants of the likelihood to answer correctly, where two explanatory variables are considered: 1) anchors that support or suppress the cognitive errors; and 2) Cognitive ability, as proxies by personal achievements in final high-school English and Math examinations and the choice in intermediate and high Math level (as opposed to elementary Math level). A second objective of the analysis, related to the comparison between the first and second round of the experiment, is to examine the determinants of the probability to learn. Once again, we consider these two explanatory variables, namely, anchoring effect and cognitive ability. We define the group of learners as students whose grades at the first (second) round of the experiment were below (above) the sample mean. Such an extraordinary improvement cannot be explained solely by the principle of the regression toward the mean.

This research applies data from a field experiment to assess the effects of heuristics on cognitive reasoning. We employ a panel of freshmen economics students who filled 3 types of questionnaire at the beginning and end of the first semester. The basic questionnaire, which provides the control group, consists of seven questions. The support and suppress questionnaires consist of 14 questions. To each of the seven questions common to all groups, we supplemented seven preceding questions. Those provide anchors for subsequent seven questions that either support or suppress the errors in cognitive reasoning. Specifically, we thus evaluate whether students used prior questions as anchors in cognitive reasoning and the relative impact of anchoring and cognitive ability (proxies by high-school achievements). Moreover, we assess the merit of quantitative studies as a mechanism for reducing effects of heuristics.

Results of the first round of the experiment provide strong evidence in support of the anchoring effects. Moreover, the results indicate an improvement in the support questionnaires, which is equivalent to about 11 points in Math high-school exam and about 18.5 points in English high-school exam. Research findings may serve policy makers and teachers for a better programmatic design of quantitative studies.

An important practical conclusion drawn from the latest analysis is the need to diversify and use examples and counter examples in quantitative teaching in order to improve the learning process. If the example given is calculations in percentage points, a counter example should consider the difference between calculations made in absolute numbers and percentage points.

*Keywords: choice, mental accounting*

## CONSUMER ACCEPTANCE OF SMART GRID TECHNOLOGY: A MIXED MOTIVES MODEL

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Climate changes create an urgent need to increase the proportion of electricity from renewable sources, and thereby a need for turning electricity grids into Smart Grids. A Smart Grid involves private consumers in balancing the supply and demand of electricity in the grid by producing and storing electricity and postponing consumption. Hence, for obtaining an optimally functioning grid, consumers need to accept their active role.

In this paper, we focus on private consumers' acceptance of having Smart Grid technology (i.e. a Smart Meter and remote control of electricity consuming equipment) installed in their home. We analyse consumer acceptance in a theoretical framework combining the Technology Acceptance Model (TAM) (Davis, Bagozzi, & Warshaw, 1989) and the Values-Beliefs-Norm (VBN) model (Stern, Dietz, Abel, Guagnano, & Kalof, 1999). According to the TAM, individuals' acceptance of a new technology is primarily determined by perceptions regarding the usefulness and the ease-of-use of the technology. Although we find it highly likely that these perceptions influence the adoption of Smart Grid technologies, it is unlikely that many people expect private benefits from Smart Grid technologies, at least in the near term. Hence, only if usefulness is assessed in terms of positive impacts for society and the environment (i.e., a better functioning grid and integration of more renewable electricity) are Smart Grid technologies likely to be accepted. This suggests that acceptance of Smart Grid technology is a pro-social, pro-environmental behavior. According to the VBN model, this type of behavior is determined by personal norms and, indirectly, value orientations. Hence, we expect that the TAM and VBN models combined will give a better prediction of the acceptance of Smart Grid technology.

An online survey was conducted with random samples of Danish (N=1165), Norwegian (N=1251) and Swiss (N=1242) private electricity consumers.

The results in all three countries confirm that perceived usefulness and ease-of-use as well as personal norms predict acceptance of Smart Grid technology. Adding personal norms to the TAM does not increase the amount of variance in consumer acceptance of Smart Grid technology explained in Norway, however. This suggests that in Norway the acceptance of Smart Grid technologies is less of a moral question than in Switzerland or Denmark.

These results suggest that consumers' acceptance of Smart Grid technology depends on moral considerations in addition to considerations of self-interest.

*Keywords: altruism, social dilemma, morality*

## GREEK RICOCHET? WHAT DROVE POLES' ATTITUDES TO THE EURO IN 2009-2010

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We investigate the determinants of support for the euro adoption in Poland in 2009 and 2010. Using two unique survey datasets, collected in December 2009 and June 2010, we estimate ordered and unordered logit models explaining the respondents' attitude to the introduction of the common currency.

Whereas the public support has generally declined over this period, probably against the background of sovereign debt crises in the euro area, this decline was concentrated along some dimensions. We find that the declared level of information about the euro is a key driver of this support, both in 2009 and -- even more so -- in 2010, as well-informed respondents tend to be significantly more supportive of the common currency than badly-informed ones. We also find some evidence that political views influence the attitude towards the euro, but they are by no means its main determinant. During the crisis, the conviction of euro being a "strong, stable currency" has faded; instead, a negative attitude started to result from low income, high age and low economic knowledge. Surprisingly, in 2010 a more negative attitude was represented by students, white-collar workers and big city residents.

All in all, the public perception of the euro does not seem to be fixed, but evolves with economic and political developments, so that new concerns appear.

*Keywords: money attitudes, euro, economic crisis*

## **1 Introduction**

The primary aim of our study is to identify individual characteristics that influence public support for the euro introduction in Poland. As a European Union (EU) Member State with derogation, Poland is obliged to enter the euro area (EA) at some future date when all necessary conditions are met (Ministry of Finance, 2010). This implies that, at some point, the euro changeover process in Poland will have to be intensified and an extensive campaign launched. Knowledge of what drives the public support for the euro can therefore be useful.

To address this question, we use micro data collected in two surveys conducted on a representative samples by Ipsos Poland for the Polish Ministry of Finance. The scope of our analysis includes two subsamples: data collected in December 2009 and in June 2010. The timespan 2009-2010 marked a very special period in the euro area's history. The so-called Greek crisis began, what changed dramatically the situation in the European financial markets and triggered the process of reforming the economic governance of the EU. Before the announcement of Greece's financial problems, the euro was rather considered as a "safe harbour" or "save haven" amid the global financial turmoil in the aftermath of the Lehman Brothers' spectacular fall in September 2008. The outlook reversed later on, when the sovereign debt problems worsened across Europe. In May 2010, euro area States agreed on loan facility for Greece, financial help was also needed later in 2010 for Ireland and in early 2011 for Portugal. In 2012 a second bailout for Greece was approved by the European leaders. These developments have attracted extensive media coverage and – at least in Poland – have been one of the reasons for the revision of the euro adoption timetable. We argue that they may have had an impact on the public support for the euro not only in euro area countries, but also in non-EA states that prepare to join the club in the future.

All in all, this paper attempts to contribute to the existing literature by explaining (i) the determinants of public support for the euro adoption in Poland, as well as (ii) the initial changes that they underwent in the turbulent first half of 2010 when the so called Greek crisis erupted. Importantly, further evolution of public support for the euro adoption in Poland in response to the escalation of the crisis in the euro area remains open to future research. The more so as meanwhile, the EU made several crucial steps on the path of economic governance reforms.

## **2 Support for euro adoption in Poland in 2009-2010**

In this paper, we use data from a survey conducted in December 2009 and June 2010 by Ipsos Poland for the Polish Ministry of Finance. To see the evolution of public support for the euro introduction since Poland's accession to the European Union, one has, however, to consider longer time series eg. from European Commission's Flash Eurobarometer (FE) or Public Opinion Research Center (CBOS – Centrum Badania Opinii Społecznej) surveys. For the purpose of this article and due to availability of the data at the time of writing, we attached here special attention to the period 2009-2010 only. This particular period was marked by a drop of support for the euro introduction in Poland (i.e. drop in the aggregate share of respondents who described their attitude towards the euro adoption in Poland as definitely positive and rather positive) by 5 percentage points to 38% (see Figure 1). Simultaneously, the share of negative attitudes towards the euro increased by 4 p.p., to 47%. This changed the landscape of public support for adoption of the common currency in Poland, as previously (December 2009) the number of supporters and opponents was equal (43%). Afterwards, the support for the euro decreased even further, so that its evolution in 2011 requires continuation of the research. What is worth mentioning, the gradual drop of support for the euro starting from the second half of 2009 was a wider phenomenon among New Member States of the EU with derogation (see European Commission, 2010).

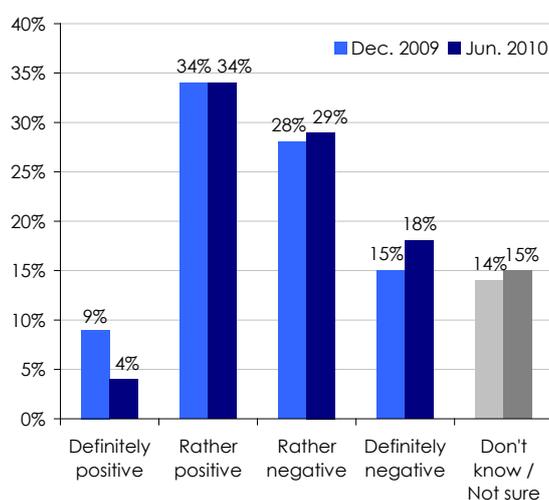


Figure 1. Attitude towards euro adoption in Poland – Ipsos/MF data.

### 3 What explains the euro-enthusiasm? Review of empirical evidence

Existing research reveals a range of determinants of public support for the euro. Both individual characteristics and/or country-specific characteristics that exert a significant impact on the support for the common European currency were analysed. Jonung (2007) provide a stylized summary of previous econometric results. Most of them are based on the data from Eurobarometer surveys. However, a number of studies are founded on country-specific surveys (see for instance: Isengard & Schneider, 2006 – for Germany; Gabel & Hix, 2005 – for the UK; Hobolt & Leblond, 2009 – for Denmark and Sweden; or van Everdingen & van Raaij, 1998 – for the Netherlands), notably some of them using exit polls data collected on the days of referendums on the euro adoption – which took place in Denmark in 2000 (see Jupille & Leblang, 2007) and Sweden in 2003 (see Jonung, 2007; Jupille & Leblang, 2007). Usually, support for the euro prior to its introduction was analysed. By contrast, Isengard and Schneider (2006) focus on explaining changes in individual perceptions of the euro in Germany after its introduction in the form of banknotes and coins. Banducci et al. (2009), on the other hand, compare determinants of support for the euro in the euro area members and countries outside the eurozone.

**Age.** Age is a standard control variable. Although according to Jonung (2007) and Jonung and Conflitti (2008) no systematic pattern emerges for age in the bulk of empirical studies, several studies find age significant (see e.g. Banducci et al., 2003; Allam & Goerres, 2008; Jonung & Conflitti, 2008). On the one hand, it can be argued that the older generation would be in favour of the single currency viewed as a guarantee of peace in Europe. We think, however, that this does not necessarily apply to the New Member States of the EU, as the history of their European integration is relatively short. Consequently, the underlying ideas, in which the beginnings of the integration in Europe after the second World War are rooted, may not be that apparent to their populations as it is the case in the so called “old” Member States. We would rather support another view, that older people would be more critical towards the euro as they may find the adjustment to the new currency more difficult than younger people. Furthermore, elderly people in Poland remember currency changeovers as poverty-inducing and they may be particularly sensitive to all potential aspects of sovereignty issues due to historical conditions.

**Sex.** Similarly, sex is also a commonly adopted control variable and usually it is found to be significant. Women tend to be more euro-sceptical than men (Hayo, 1999; Banducci et al., 2003, 2009; Isengard & Schneider, 2006; Jonung, 2007; Allam & Goerres, 2008). This is probably linked to the general differences in social preferences and risk-aversion between the genders (Croson & Gneezy, 2009), as the women are as a rule more risk averse than men.

**Income.** It is a generally shared view in the literature that individual socio-economic resources like human capital (education) and financial capital (income and wealth) determine whether an individual is likely to gain or lose from the monetary integration with free movement of capital, labour and goods across borders (see e.g. Gabel, 1998; Isengard & Schneider, 2006; Jonung, 2007; Jupille & Leblang, 2007). As a rule, citizens with high incomes are more in favour of the euro than those with low incomes.

**Occupation.** Occupation goes hand in hand with income. Opportunities provided by membership of monetary union are particularly strong for highly skilled workers. For instance, according to the results obtained by Jonung (2007), white-collar workers, self-employed and entrepreneurs were more in favour of the euro in comparison with blue-collar workers. Also the employed are usually more positive towards the euro than the unemployed (for results for non-euro EU countries see Banducci et al., 2009).

**Locality.** For locality, the same way of reasoning as for occupation and income applies. Citizens living in urban, and especially metropolitan, areas are likely to benefit economically more from the effects of monetary integration than inhabitants of rural areas. Jonung and Conflitti (2008) confirmed significance of this variable on the aggregate level for the euro area, whereas Jupille and Leblang (2007) and Jonung (2007) found in the case of Sweden that inhabitants of rural areas were more likely to vote “no” in the euro referendum.

**Balance of costs and benefits of euro adoption.** Obviously, it can be expected that those who anticipate the adoption of the euro to prove beneficial from both individual and national economy perspective would be more supportive towards the monetary integration than others. Support for the euro can be explained from an utilitarian standpoint (see i.a. Gabel, 1998 in the context of support for the European integration in general), according to which support for the euro is based on an individual economic “calculation”. Those who economically benefit more from the monetary integration are simply more likely to support the euro.

*Assessment of euro-related benefits for an individual and for the economy.* The findings of Allam and Goerres (2008) deserve special attention: they concluded that macro-level variables (economic, historical and related to national identity) have stronger impact than micro-level variables of economic self-interest in the case of transition economies. In other words, for transition economies distributional issues seem to matter less than the aggregate national performance and experience of a country. The strong effect of macro expectations on the attitude towards the euro was also identified by van Everdingen and van Raaij (1998). Using data for the Netherlands, they confirmed their hypothesis about the existence of both a direct and an indirect effect of macro-variables on the attitudes towards the euro. The indirect effect works through micro-expectations because people seem to “translate” macro indicators into micro ones, relevant for their personal wellbeing.

Among the *benefits* of the euro adoption, *strong and stable currency* can be mentioned. Previous studies found that a strong currency can be regarded by citizens as a symbol of economic strength. People are less likely to surrender a strong currency than a weak one (Banducci et al., 2003) and, by the same token, are less willing to accept the euro when it is seen as weak vis-à-vis other world currencies (Hobolt & Leblond, 2009).

While concerning *improvement in country's economic situation* – another potential benefit from euro adoption – the results obtained by Gärtner (1997) are noteworthy: the looser monetary and fiscal policy were in the past, the more citizens welcomed the euro. The finding related to the inflation record in the past was similar in a study by Kaltenthaler and Anderson (2001) and Banducci et al. (2003).

A straightforward *cost* of euro adoption is represented by *difficulties in recognizing or adapting to new banknotes and coins*, which can be seen in the context of the results obtained by Isengard and Schneider (2006). They showed for Germany that individuals who had difficulties in handling the money after the introduction of euro banknotes and coins usually continued to be concerned about the euro thereafter.

The existing literature identified *national identity* as a particularly important determinant of the euro support. Often people perceive introduction of the euro as a potential threat for the national identity – what would stand for a cost of the euro introduction. Allam and Goerres (2008) argue that the formation of the attitudes towards the euro is much more complex than any economic analysis of weighing the individual costs and benefits would suggest. The monetary union is not a purely economic project, but by far a political one either. Thus, one perspective alone is unable to adequately address the questions of variations in support for the euro. The authors point therefore to the complementary effects of economics, politics and identities. The negative effect of a high level of national identity on the euro support was found significant in a bulk of studies (see e.g. van Everdingen & van Raaij, 1998; Gabel & Hix, 2005). Remarkably, Banducci et al. (2009) concluded that in the countries inside the EA the economic evaluations are important while identity plays a more important role the outside the EA. Müller-Peters (1998) explains the attitude towards the euro on the basis of different aspects of national identity. She differentiates between the notions of patriotism (categorization dimension) and nationalism (discrimination dimension) and adds the third dimension of European patriotism. From these three, only the European patriotism and the nationalistic stance have particular explanatory power. The first one has a positive impact on the attitude towards the euro, while the second dampens the support.

*Concerns about price increases* associated with the adoption of the euro are a deeply rooted phenomenon across Europe. Almost a year after the euro introduction in form of banknotes and coins more than 80% of euro area citizens expressed the opinion that price conversions in the euro changeover process were carried out to their detriment (European Commission, 2002), i.e. added to the increases of prices. The widespread perception of substantial price increases caused by the changeover to the euro did not find confirmation in official statistics, however. According to Eurostat (2003), the euro changeover effects on prices did not exceed 0.3 p.p. in 2002. What counts, then, is the perceived inflation. Banducci et al. (2009) found that concerns about high inflation dampen the support for the euro both inside and outside the euro area.

**(Objective) knowledge. (Subjective) level of being informed about the euro and its introduction.** Existing research shows that economic knowledge might be the most critical factor influencing the public opinion on economic issues (Walstad, 1997). The level of knowledge is also usually found to affect the support for the euro. In the literature, variables accounting for different kinds of knowledge are used – either proxies for general knowledge/information

level (see e.g. Isengard and Schneider, 2006) or for (objective) knowledge about the EU (see e.g. Hayo, 1999). Better informed individuals are to a considerable extent more likely to know more about the monetary union and the euro. Higher level of knowledge – either general or specifically EU-related – influences positively the support for the euro, while lower level of knowledge tends to weaken the support (due to the fear of the unknown – see Hayo, 1999; Jonung, 2007).

**Partisanship.** Political attitudes are considered to be an important factor influencing individual opinions on the euro. Right-wing supporters, who prefer an orthodox economic policy, would rather support the euro, whereas those with leftist leanings would be sceptical of the benefits of the monetary union. Isengard and Schneider (2006) found that prior to the introduction of the euro banknotes and coins, the Germans with a long-lasting preference for the liberal and green parties used to have less concerns about the euro than supporters of the social democrats. For Sweden, Jonung (2007) concluded that the further to the left, the higher was the probability of a “no” vote in the euro referendum. Though, the authors note that since left-leaning voters are predominantly low-income earners, it is difficult to separate the effect of politics and the one of economic factors. In contrast, Gabel and Hix (2005) found mixed support for the view that parties shape citizens' preferences on the single currency.

Moreover, in some studies other explanatory variables are used, i.a.: assessment of domestic politics/support for the national government, region, membership of a trade union, general attitude towards the future, size of the country (population) or unemployment. However, as these variables are not used in this study, we do not describe them in more detail. A single exception should be made for general attitude towards the EU/Europe, which is commonly used in the studies and found one of the key drivers for the euro support. Specifically, Müller-Peters (1998) found a positive correlation between the European patriotism and the attitude towards the euro, confirmed for majority of European countries. It implies that attachment to Europe most likely translates into support for the euro as a common European symbol. Banducci et al. (2009) show similar results for the EU identity and attitude towards the EU membership. The stronger the attachment to the EU and the better the evaluation of a country's EU membership, the higher the support for the euro in both – countries within and outside the euro area.

## 4 Data and methodology

Our empirical investigation is based on a unique survey dataset collected by Ipsos Poland for the Ministry of Finance in Poland. The questions were designed by the Ministry of Finance (cf Table 1). Before the time of writing, the survey had been conducted twice, in December 2009 and June 2010 via face to face interviews, on a representative sample of 1001 and 1005 (respectively) Poles aged 15 and more. The respondents were located in 100 and 145 communities (NUTS 5 level units in Poland), drawn with probabilities proportional to their number of inhabitants. The sample is structured with respect to gender, age and education level so as to reflect the distribution of these qualities in the Polish population.

Because the paper is intended to analyse the general public's support of the euro adoption in Poland, the dependent variable is based on the responses to the following question on a 5-degree Likert scale: *What is your attitude towards euro adoption in Poland?* 1. definitely positive; 2. rather positive; 3. rather negative; 4. definitely negative; 5. don't know, not sure.

Having regard to estimation efficiency as well as exploiting full available information, and for robustness of the analysis, we consider 4 versions of the dependent variable:

- A. 2 categories: positive (1+2) and negative (3+4);
- B. 3 categories: positive (1+2), neutral (5) and negative (3+4);
- C. 4 categories: definitely positive (1), rather positive (2), rather negative (3) and definitely negative (4);
- D. all 5 categories.

Options A and B should take advantage of a smaller number of categories, provided that the aggregated groups are sufficiently homogeneous. Options C and D, on the other hand, account for the information on the strength of the positive or negative attitude. Also, we make no prior assumptions about the usability of group 5 as the neutral category on the Likert scale and hence differentiate between options A and B on the one hand, and C and D (respectively).

Determinant	Variable description	Hypothesis for Poland
Age	Years	Support for the euro would decrease with age
Household count	Number of people in the household	Support for the euro would decrease with the size of a family
Sex	Dummy variable: (1) woman, (2) man	Support for the euro would be lower among women
Economic knowledge*	A proxy variable for the level of economic awareness, calculated as sum of the following components: (1) 1 for responding correctly to the question „What was the average inflation rate in Poland over the last two years?“ (i.e. selecting „1-5%“ rather than „0%“, „5-10%“, „>10%“ or „I don't know“); (2) 1 for responding to the question „What/Who determines the zloty exchange rate?“ by selecting „the market“ or jointly „the market“ and „National Bank of Poland“ (rather than „Government/ Ministry of Finance“, „Monetary Policy Council“, „European Union“, „International organisations such as IMF“ or others); (3) 1 for (declared) knowledge of at least 4 of 5 of the following concepts: „task budgeting“, „budget deficit“, „zloty exchange rate“, „flat tax rate“, „GDP“; (4) 1 for correct recognition of the Ministry of Finance competence (i.e. selecting at least 3 of the following: „distributing funds and planning spendings“, „preparing and managing the state budget“, „managing, planning and controlling the finance“, „taxes“, „subventions/ interventions“, „legal acts“, while not selecting any of the following: „setting the exchange rate“, „setting the interest rate“, „I don't know“); (5) in 2010, there is an additional component: 1 for responding correctly to the question „Is Poland obliged to adopt the euro?“ („yes“ rather than „no“ or „I don't know“)	Support for the euro would increase with the level of economic knowledge
Income	Natural logarithm of the declared household's per capita income	Support for the euro would increase with the level of income
Personal euro-related cost and benefit balance	4 options: (1) beneficial for the economy and myself, (2) beneficial for the economy but not myself, (3) beneficial for myself but not for the economy, (4) beneficial neither for the economy nor for myself	Support for the euro would be positively correlated with expectations of positive consequences of its introduction
Key benefits	Set of dummy variables indicating at most 3 key benefits from the euro adoption in Poland, selected from the following list: adopting a strong and stable currency; facility for shopping and travelling in the other states of the euro area; more favourable conditions for the external trade development; development of tourism; improvement in Poland's economic situation; increased prestige of Poland on the European and the global scene	Support for the euro would be positively correlated with expectations of positive consequences of its introduction
Key concerns	Set of dummy variables indicating at most 3 key concerns associated with the euro adoption in Poland, selected from the following list: difficulties with recognising or adapting to new banknotes and coins; difficulty with converting values from the zloty to the euro; rounding up and increasing prices by the sellers; losing part of the national identity; deterioration of one's own financial situation; increase in poverty and social inequalities; losing control over the economic policy	Support for the euro would be negatively correlated with expectations of negative consequences of its introduction
Locality	Cities > 200 000, cities 50 000 - 200 000, cities < 50 000 or rural areas	Support for the euro would be higher among inhabitants of urban areas
Self-perceived knowledge about the euro	4 categories: (1) very well informed, (2) rather well informed, (3) rather badly informed, (4) very badly informed, (5) I don't know / I'm not sure	Support for the euro would increase with the level of knowledge about it
Labour market situation	5 categories: (1) unemployed or non-employed, (2) student, (3) pensioner, (4) white-collar or entrepreneur, (5) blue-collar or peasant	Support for the euro would be higher among employed persons, specifically white-collars or entrepreneurs and students
Partisanship	5 categories: (1) wouldn't vote next Sunday, (2) PiS (Law and Justice), (3) SLD (Democratic Left Alliance), (4) PSL (Polish Peasant Party), (5) PO (Civic Platform)	Support for the euro would be higher among supporters of the ruling Civic Platform party
Expectation of substantial price increase after euro adoption	4 categories: (1) no, (2) only to a very limited extent, (3) to a moderate extent, (4) to a considerable extent, (5) I don't know / I'm not sure	Support for the euro would be negatively correlated with higher expectations of substantial price increase after euro adoption

Table 1. Set of potential explanatory variables.

\* It is worth noting that the proxy for economic knowledge employed in our study combines both the objective and subjective knowledge elements.

The use of categorical variable as explained variable requires an adequate econometric model type. The binomial logit model defines the probability of unit  $i$  belonging to one of two groups as  $\pi_i = \frac{\exp(x'_i\beta)}{1 + \exp(x'_i\beta)}$ , which implies

$$\ln\left(\frac{\pi_i}{1 - \pi_i}\right) = \beta_0 + x'_i\beta.$$

There are two possible generalizations of this model to the case in which the dependent variable has more than two categories (indexed  $j=1, \dots, J$ ). Firstly, assuming that the groups can be ordered into a sequence and that the independent variable set  $x$  affects the logit link between category pairs in a linear way and independently of the selected pair, one can formulate the **ordered multinomial** logit regression model. Assuming unity scale (see e.g. Woolridge, 2002, for details), the logit link function can be generalized to

$$\ln\left(\frac{\sum_{l=1}^j \pi_{i,l}}{1 - \sum_{l=1}^j \pi_{i,l}}\right) = \beta_{0,j} + x'_i\beta$$

for categories  $j=0, \dots, J-1$ . As compared to the binary logit model, there is a category-dependent constant (thresholds,  $\beta_{0,j}$ , monotonously increasing in  $j$ ). The last category  $J$  (or, equivalently, the first one) serves as a reference category. Secondly, further generalization comprises dropping the assumption of dependent variable category ordering and hence the equality of coefficient vectors  $\beta$ . The resulting **unordered multinomial regression** model defines the probability of unit  $i$  belonging to category  $j$  as

$$\pi_{i,j} = \frac{\exp(x'_i\beta_j)}{1 + \sum_{k=1}^{J-1} \exp(x'_i\beta_k)},$$

with  $J$  denoting the last category treated as the base category, i.e. the model in terms of logit can be expressed as

$$\ln\left(\frac{\pi_{ij}}{\pi_{iJ}}\right) = \beta_{0,j} + x'_i\beta_j.$$

To differentiate between the two models, one can use the test of parallel lines, i.e. test the validity of  $\beta_{0,j} + x'_i\beta$  against the encompassing alternative of  $\beta_{0,j} + x'_i\beta_j$  with the usual chi-squared distributed likelihood ratio statistic.

Here, we use a logit regression model (option A) and – due to existence of a logical order – an ordered logit regression model. However, taking into consideration the specific nature of the answer 5 (neutral), as well as rejection of the null hypothesis in the test of parallel lines in some ordered logit models (see Table 2), we also run multinomial logit regression. This allows us to take more insight into possible asymmetries between more or less definite attitude on the positive and negative side, the validity of the group 5 as the neutral one on 5-grade scale and the reasons for the rejection of the null hypothesis in the abovementioned test. 7 versions of the model were estimated, according to the number of dependent variable categories and model type: 1 binomial logit, 3 ordered multinomial logit (Table 2) and 3 unordered multinomial logit models (Table 3).

The set of possible explanatory variables has been designed so as to reflect the basic hypotheses considered in the literature, as described in Section 3 (see Table 1). However, due to constraints related to the design of the questionnaire this set of variables is limited. Specifically, attitude towards the EU/Europe is missing as a possible important explanatory variable.

The estimated models were specified according to the principle „from general to specific“. First, the entire set of possible explanatory variables was taken into consideration (see Table 1). The general models contained a number of insignificant explanatory variables which were subsequently eliminated from the models one by one. The use of mechanical criterion (highest p-value) was complemented with cross-checking between individual model variants and some discretionary validation to avoid random dropping of some significant, but collinear variables. However, the order of variable elimination did not affect the final results. Model parameters were estimated separately for 2009 and 2010 sample<sup>1</sup>.

## 5 Results from the logit models

As expected, the conviction of the euro (not) being beneficial is one of the main drivers of positive (negative) attitude towards the common currency. This is, however, only true when future benefits or losses are evaluated both on the macro level (i.e. for the economy) and the micro level (for oneself). The respondents who thought that the euro would be beneficial for themselves, but not for the entire economy, tended significantly towards a negative attitude to the euro in 2009 (thereby confirming the findings of Allam & Goerres, 2008). In 2010, this coefficient ceased to be significantly different from 0. Also, in both samples, the magnitude of the positive effect was stronger than the negative one.

<sup>1</sup> Estimation results for the aggregate sample and significance tests of individual coefficient differences are available from the authors upon request or can be found in the working paper version of the article.

The results of unordered multinomial regression reveal additionally that conviction of low benefits from the euro adoption allows to differentiate predominantly between euro-enthusiasts and euro-skeptics (and not necessarily between euro-enthusiasts and the undecided). Moreover, the respondents' view that the euro would be beneficial for themselves (but not the economy) matters for differentiation between definitely positive and rather positive (in favour of the former). This observation, however, is also limited to 2009 survey.

Among 7 benefits under consideration, only few were insignificant as explanatory variables for the attitude to the euro, and the significant ones had a correctly signed (negative) parameter. Some interesting observations, however, can be made with respect to change between 2009 and 2010. First and above all, the belief in "strong and stable currency" has ceased to be the benefit that most remarkably influenced the attitude to common currency. This variable's parameter has in fact decreased (in magnitude) substantially in all specifications. Secondly, in 2010, euro-enthusiasm thrived mainly on the euro's association with prestige and external trade development. Thirdly, many of the dummy variables describing key indicated benefits (especially "facility for shopping", "external trade development" and "improvement in economic situation") can account for the rejection of the null hypothesis in the tests of parallel lines for 2009 sample. In fact, these variables do not contribute to an efficient discrimination between the positive and neutral groups, while markedly delimiting the group with negative attitude to the euro. This suggests that the neutral group cannot be seen as the median element on the Likert scale and needs an appropriate, separate analysis. All this allows to conclude that the mapping from perceived benefits to support of the common currency has undergone some evolution in the Polish society during the turbulent first half of 2010.

Differences between 2009 and 2010 in terms of key concerns and fears associated with the euro adoption are even more remarkable. Although all the significant estimates are signed correctly again (positive in this case), the number of insignificant ones is considerably higher, especially in 2010. In 2009, the main driver of euro-skepticism on this list was "losing national identity", followed by "deterioration in personal finance" and "difficulties with currency conversion". Half a year later, "fear of poverty and inequalities" turned into the dominant factor influencing the negative attitude to euro adoption, while currency conversion and national identity issues did not seem to play a substantial role. The analysis of the unordered multinomial regressions also reveals that respondents with positive and neutral attitude to the euro seemed to be a homogenous group in terms of key reported concerns, and euro-related fears allowed only to better identify the opponents.

Not surprisingly, the respondents who do not fear substantial price increases after the euro adoption are generally more supportive of the common currency introduction. Also, the lower the expected price increases, the more favourable attitude. In this case, there is no remarkable difference pattern between the 2009 and 2010 survey. Interestingly, the abstract "fear of price hikes" has turned out to be a robustly significant inhibitor of the support for the common currency, as opposed to more specific "fear of rounding up prices by entrepreneurs", although they might appear as similar. The latter variable was insignificant whether or not the former was included in the model. An explanation of this is twofold. Firstly, the fear of price hikes does in fact reduce the support of the common currency, but – in respondents' view – these hikes do not necessarily have to result from rounding up. Secondly, there is a widespread opinion that prices will rise after the euro adoption, but the respondents do not attribute this rise to entrepreneurial malpractice, but – in whatever way – to the euro as such. This issue deserves more attention in future studies.

Another key determinant of the euro adoption is the self-perceived level of information on the common currency. Since in effect of information campaigns people feel better informed (i.e. subjective level of being informed rises), we share the argument of the European Commission (2008) that there is a link between national communication activities on the euro and the citizens' support for the introduction of the common currency. In this study, the appropriate parameters standing for the self-perceived level of knowledge turned out to be significant and signed fully in line with our expectations. Citizens who feel well (or very well) informed about the euro are more supportive of the common currency as compared to the base group of very badly informed respondents. Four facts are noteworthy at this point. Firstly, the magnitude of the parameters clearly exceeds the analogous values for most of the other dummy variables. Secondly, even the respondents who feel "badly" informed about the euro represent a significantly more positive attitude towards it than those who declare themselves as "very badly" informed, which suggests the existence of substantial potential marginal gains from the information campaign. Thirdly, the magnitude of the abovementioned coefficients was significantly higher in 2010 than in 2009. The personal knowledge of the euro-related issues has gained on importance during the euro-crisis in 2010. It might be associated with better availability of euro-related information in the presence of extensive media coverage of the Greek crisis, and in the absence of any official, coordinated information campaign at that time. As a result, such information was not as scarce as it had been before. In practice, the outflow of euro-enthusiasts was not "flat", but highly concentrated in the groups that are badly informed of the common currency. Fourthly, the group that was unable to answer whether or not they are well-informed did not significantly differ from the very badly informed group (unlike the badly informed one).

Both economic knowledge (objective and subjective jointly) and income seem to have gained significance in 2010. The proxy for the former, as well as the natural logarithm of the latter, increase the support for euro adoption. It might be

seen as a confirmation that wealthier and better-educated citizens more strongly support the euro-idea during its crisis that started in 2010.

Unemployment or non-employment does not influence the attitude to the euro, as compared to the reference group of blue-collar workers and peasants. However, 3 other groups differ significantly in this respect from the base category. Firstly, pensioners are significantly more euro-skeptical (both in 2009 and 2010). Secondly, students were more euro-enthusiastic in 2009, but not any more in 2010. Finally, against our expectations, white-collar workers and entrepreneurs became significantly more euro-skeptical in 2010 than the blue-collar workers. To look for an explanation of this puzzle, a more detailed disaggregation of these groups should be considered.

Political preferences were also seen as a possible driver of the attitude towards the euro, as the adoption of common currency is one of the issues which are not subject to general consensus in the highly polarised Polish political scene. Approximately 50% of respondents declared themselves as non-voters (which broadly reflects the official voter frequency data); out of the rest, the dominant groups were formed by the supporters of Civic Platform, as well as Law and Justice. We hypothesized that supporters of the ruling Civic Platform party (PO) would be the most positive towards the euro introduction, whereas the Law and Justice party (PiS) would be not only much less in favour but rather against the introduction of the euro in the foreseeable future, as according to their program formulated in 2009, Poland should first reach 80% of the EU average GDP per capita level. In line with these prior expectations, all the coefficients of dummy variables were estimated as positive, whereby most of them were significantly higher than zero.

In particular, in 2009 the Law and Justice voters exhibited the strongest negative contribution of their political preference to the support for the euro as compared to the base group of Civic Platform voters, followed by Democratic Left Alliance (SLD) voters and non-voters. At that time, the dummy variable for voters of Polish Peasant Party (PSL, junior coalition partner of the Civic Platform) was insignificant. This has changed in 2010, when the non-voter dummy turned insignificant. The parameter of dummy for Law and Justice voters remained significant and positively signed. Interestingly, the strongest *ceteris paribus* "political" effect can be attributed to leftist voters, while the left party itself does not seem to be a declared opponent of the common currency. It has to be noted, however, that SLD and PSL data is characterized by small samples, which might affect the results. Summing up, the political preferences remain a significant contributor to explaining the attitude towards the euro, while – at the same time – not the main one.

The residence of the respondents, was generally insignificant as a determinant of the common currency support. This is against our prior expectations of rural areas or small city inhabitants being more euro-skeptical. If anything, the inhabitants of big cities seemed to be more euro-skeptical in 2010 than people from the rural areas (controlling for other factors). A significant, positive coefficient for this group's dummy variable was obtained in the models with 2 and 4 versions of the dependent variable, i.e. without the neutral group. The unordered logit analysis suggests additionally that it was the big city in 2010 where the adherence to the neutral group was more probable than to the euro-supportive group. It might be an interesting finding for further investigations, aimed at developing an optimum design of the information campaign in the process of euro adoption in Poland.

model # of categories for dependent variable sample year coefficient and p-value		logit				3 categories				ordered logit 4 categories				5 categories			
		2009		2010		2009		2010		2009		2010		2009		2010	
		coef	p	coef	p	coef	p	coef	p	coef	p	coef	p	coef	p	coef	p
constant	1	0,829	0,059	6,490	0,005	-1,181	0,000	-4,176	0,006	-4,966	0,000	-9,281	0,000	-4,743	0,000	-8,036	0,000
	2					-0,174	0,573			-1,314	0,000	-4,874	0,001	-1,447	0,000	-4,089	0,002
	3									1,445	0,000	-2,147	0,155	-0,475	0,069	-3,092	0,017
	4													1,768	0,000	-1,039	0,422
will the euro be beneficial and for whom?	the economy and myself	-1,537	0,000	-1,280	0,028	-1,510	0,000	-1,663	0,000	-1,246	0,000	-1,338	0,000	-1,347	0,000	-1,428	0,000
	the economy but not myself																
	myself but not the economy	0,997	0,006			0,865	0,002			0,652	0,023			0,678	0,007		
	neither the economy nor myself	1,329	0,000	1,222	0,012	1,226	0,000	1,340	0,000	1,031	0,060	0,908	0,001	1,095	0,000	0,999	0,000
key benefits	age (years)											0,019	0,044			0,013	0,109
	strong and stable currency	-1,388	0,000	-0,762	0,075	-1,142	0,000	-0,754	0,014	-1,322	0,030	-0,674	0,030	-1,171	0,000	-0,658	0,016
	facility for shopping	-0,734	0,002	-0,775	0,026	-0,528	0,003			-0,588	0,054	-0,642	0,012	-0,519	0,000	-0,389	0,080
	external trade development	-0,617	0,014	-1,187	0,001	-0,447	0,022	-0,801	0,002	-0,565	0,000	-1,025	0,000	-0,475	0,003	-0,850	0,000
	tourism			-1,026	0,007			-0,559	0,035			-0,612	0,031			-0,444	0,064
	improvement in economic situation	-0,861	0,002	-1,157	0,015	-0,528	0,016			-0,365	0,020	-0,817	0,009	-0,307	0,080	-0,492	0,074
	more prestige	-0,814	0,012	-1,658	0,001	-0,612	0,011	-0,988	0,004	-0,495	0,000	-0,895	0,006	-0,453	0,017	-0,871	0,003
key concerns	new banknotes and coins	0,659	0,026	1,099	0,067					0,440	0,029			0,294	0,100		
	difficulty with currency conversion	0,413	0,100			0,326	0,076			0,367	0,000			0,349	0,020		
	rounding up prices																
	losing national identity	0,853	0,025			0,682	0,022			0,542	0,000			0,570	0,012		
	deterioration in personal finance	0,630	0,007	0,921	0,008	0,569	0,001			0,511	0,000			0,504	0,000	0,311	0,097
	poverty and inequalities	0,460	0,071	1,137	0,004			0,473	0,053	0,000	0,030	0,517	0,027			0,432	0,032
	losing control over economic policy			1,475	0,010	0,789	0,017			0,549	0,000	0,784	0,033	0,644	0,012		
economic knowledge			-0,424	0,015							-0,348	0,004			-0,207	0,048	
income (ln)			-0,617	0,055			-0,381	0,077			-0,526	0,013			-0,430	0,018	
residence	cities > 200 000	0,143	0,618	0,907	0,091	0,219	0,293	0,372	0,290	-0,035	0,861	0,611	0,073	0,031	0,859	0,462	0,112
	cities 50 000 - 200 000	-0,418	0,187	0,008	0,987	-0,371	0,114	-0,118	0,693	-0,058	0,777	-0,007	0,981	-0,145	0,428	-0,054	0,826
	cities < 50 000	0,109	0,697	-0,208	0,581	0,224	0,275	-0,117	0,654	0,214	0,252	-0,350	0,173	0,229	0,166	-0,108	0,620
	country (base)																
do you feel well informed about the euro?	v. well and well	-1,024	0,003	-2,402	0,000	-1,063	0,000	-1,927	0,000	-1,022	0,000	-1,433	0,000	-1,011	0,000	-1,376	0,000
	not sure	0,014	0,977	-0,610	0,460	-0,226	0,469	-0,694	0,105	-0,296	0,388	-0,294	0,582	-0,348	0,188	-0,374	0,323
	badly	-0,472	0,079	-1,375	0,002	-0,331	0,082	-0,767	0,006	-0,665	0,000	-0,950	0,000	-0,496	0,002	-0,642	0,005
labour market	v. badly																
	unemployed or non-employed	-0,436	0,242	-0,068	0,902	-0,389	0,178	-0,047	0,902	-0,245	0,374	0,146	0,705	-0,288	0,236	0,173	0,599
	student	-1,127	0,007	-0,186	0,771	-0,868	0,004	-0,642	0,168	-0,845	0,001	0,521	0,275	-0,781	0,001	0,017	0,967
	pensioner	0,919	0,001	1,009	0,018	0,474	0,020	0,775	0,006	0,516	0,007	0,559	0,120	0,391	0,018	0,577	0,061
	white-collar, entrepreneur	0,043	0,879	0,976	0,030	-0,001	0,995	0,781	0,015	-0,151	0,444	0,883	0,004	-0,132	0,455	0,870	0,001
supported political party	blue-collar, peasant																
	not voting	0,754	0,003	0,263	0,527	0,562	0,003	0,441	0,116	0,374	0,033	0,268	0,353	0,342	0,028	0,298	0,224
	PIS (Law and Justice)	1,014	0,003	0,530	0,235	0,979	0,000	0,718	0,018	0,326	0,161	0,749	0,011	0,525	0,011	0,797	0,002
	SLD (Democratic Left Alliance)	0,769	0,052	1,436	0,044	0,816	0,005	1,306	0,015	0,343	0,201	1,390	0,011	0,485	0,040	1,342	0,004
	PSL (Polish Peasant Party)	0,468	0,505	0,565	0,260	0,548	0,313	0,522	0,151	0,083	0,856	0,849	0,018	0,266	0,533	0,680	0,028
fear of price increases	PO (Civic Platform, base)																
	no	-1,973	0,003	-1,914	0,039	-1,337	0,011	-0,731	0,268	-2,605	0,000	-1,412	0,019	-2,210	0,000	-0,983	0,070
	not sure	-1,362	0,000	-1,304	0,005	-1,148	0,000	-0,725	0,015	-1,024	0,000	-1,285	0,000	-1,006	0,000	-1,018	0,000
	moderate	-1,035	0,000	-0,722	0,048	-0,965	0,000	-0,693	0,007	-0,986	0,000	-0,753	0,004	-0,931	0,000	-0,663	0,004
pseudo-R <sup>2</sup> test of parallel lines (p-value)	substantial (base)																
	Cox-Snell	0,488		0,507		0,468		0,452		0,541		0,572		0,519		0,529	
	Nagelkerke	0,651		0,682		0,541		0,524		0,587		0,626		0,547		0,559	
	McFadden	0,483		0,519		0,316		0,303		0,305		0,345		0,244		0,257	
		-		-		0,000		0,122		0,033		0,920		0,002		0,910	

Table 2. Estimation results for binomial and ordered logit models (dependent variable: support for the euro adoption).

The dependent variable categories are ordered from the most to the least euro-enthusiastic, hence a negative parameter implies a positive influence of a variable's growth on the attitude to the euro. In particular, for dummy explanatory variables, a negative significant parameter value suggests improvement of the attitude to the euro when a factor is present. For categorical explanatory variables (i.e. locality), estimated coefficients (i.e. for cities > 200 000, cities 50 000 - 200 000 and cities < 50 000) are interpreted in terms of difference from the base category (i.e. country). Source: authors.

Table 3. Estimation results for multinomial logit models (dependent variable: support for the euro adoption).

The most euro-enthusiastic category of the dependent variable (1) was set as the base category, and hence a negative parameter implies a positive influence of a variable's growth on the attitude to the euro. In particular, for dummy explanatory variables, a negative significant parameter value suggests improvement of the attitude to the euro when a factor is present. For categorical explanatory variables (i.e. locality), estimated coefficients (i.e. for cities > 200 000, cities 50 000 - 200 000 and cities < 50 000) are interpreted in terms of difference from the base category (i.e. country).

Source: authors.

model	# of categories for dependent variable	multinomial logit																																					
		3 categories				4 categories				5 categories																													
		2009		2010		2009		2010		2009		2010																											
constant	1	0.404	0.403	1.095	0.007	0.349	0.456	1.799	0.000	2.611	0.000	2.919	0.000	2.307	0.003	15.282	0.007	20.008	0.000	17.130	0.002	2.368	0.001	2.915	0.000	3.718	0.000	14.878	0.001	14.880	0.004	18.860	0.000	15.869	0.003				
will the euro be beneficial and for whom?	2	-1.723	0.000	-1.476	0.000	-2.401	0.000	-2.023	0.000	-1.625	0.000	-3.064	0.000	-2.226	0.004	-1.152	0.050	-2.515	0.000	-3.090	0.017	-1.532	0.010	-1.060	0.113	-0.305	0.000	-0.559	0.943	-0.453	0.517	15.933	0.000	16.305	0.000	17.528	0.000	18.048	0.000
key benefits	3	0.160	0.739	0.974	0.007	0.331	0.940	1.309	0.000	0.284	0.498	1.584	0.000	0.763	0.000	0.012	0.636	0.018	0.570	0.055	0.069	0.000	-0.788	0.007	-1.401	0.000	-2.083	0.000	-3.022	0.000	0.643	0.943	-1.402	0.072	0.533	0.434	-2.931	0.077	
key concerns	4	-0.356	0.240	-0.583	0.017	-0.797	0.005	-0.987	0.000	-0.222	0.444	-0.670	0.251	-2.197	0.000	-0.854	0.124	-1.958	0.002	-3.078	0.000	-0.298	0.311	-0.654	0.100	-0.747	0.037	-2.225	0.000	-0.868	0.117	-2.499	0.000	-1.897	0.002	-2.917	0.000		
improvement in economic situation	1	-0.167	0.642	-0.796	0.010	-0.968	0.015	-1.152	0.000	-0.947	0.880	-0.720	0.101	-1.223	0.048	-0.885	0.154	-1.429	0.046	-2.087	0.024	-0.040	0.807	-0.253	0.889	-0.751	0.064	-1.178	0.052	-0.938	0.131	-1.464	0.060	-1.375	0.054	-1.815	0.045		
new bank notes and coins	2	0.206	0.472	0.413	0.080					0.208	0.495	0.516	0.160	1.091	0.010	-0.451	0.186	-0.793	0.037	-1.018	0.010	0.308	0.319	0.567	0.152	0.556	0.128	1.057	0.012										
difficulty with currency conversion	3	-0.011	0.993	0.762	0.040					0.404	0.398	0.961	0.089	1.705	0.008	-0.549	0.142	-0.403	0.438	0.811	0.376	0.785	0.069	-0.335	0.440	-0.403	0.438	0.811	0.376	1.785	0.069	0.202	0.055	0.202	0.055	0.202	0.055		
rising national identity	4	0.146	0.595	0.684	0.003					0.350	0.351	0.944	0.022	0.934	0.040	-0.186	0.794	1.049	0.169	1.387	0.087	0.385	0.432	0.303	0.653	1.042	0.067	1.782	0.006	0.388	0.303	0.502	0.549	1.041	0.010	0.911	0.041		
deterioration in personal finance	1	0.523	0.330	0.821	0.055					0.196	0.794	1.049	0.169	1.387	0.087	-0.451	0.186	-0.793	0.037	-1.018	0.010	1.241	0.171	1.638	0.109	2.009	0.036	2.249	0.027	-0.399	0.232	-0.593	0.112	-0.675	0.058	-0.857	0.025		
losing control over economic policy	2	0.675	0.032	0.204	0.451	0.739	0.016	0.208	0.447	-0.549	0.142	-0.335	0.440	-0.403	0.438	0.811	0.376	1.785	0.069	0.202	0.055	-0.539	0.151	0.232	0.609	-0.235	0.581	-0.462	0.365	0.757	0.010	-1.593	0.015	-2.065	0.001	-1.987	0.003		
economic knowledge	3	-0.277	0.446	-0.475	0.120	0.035	0.920	0.111	0.696	-0.540	0.156	-1.068	0.023	-0.470	0.374	0.442	0.571	0.755	0.371	0.510	0.577	-0.524	0.168	-0.700	0.158	-1.007	0.028	-0.461	0.370	0.418	0.595	0.711	0.419	0.564	0.501	0.317	0.724		
income (ln)	4	-0.068	0.835	0.186	0.460	0.155	0.615	0.036	0.888	0.006	0.967	0.108	0.606	0.432	0.390	0.604	0.422	0.446	0.566	-0.168	0.846	-0.020	0.958	-0.070	0.682	-0.095	0.827	-0.461	0.350	0.681	0.359	1.031	0.215	0.663	0.409	0.239	0.778		
cities > 200 000	1	-1.430	0.001	-1.227	0.000	-2.143	0.000	-0.176	0.000	-0.451	0.325	-0.153	0.740	1.113	0.798	-0.758	0.066	-0.947	0.001	-0.847	0.001	0.256	0.578	-1.213	0.037	-0.995	0.061	-0.767	0.204	12.699	0.962	13.971	0.961	12.715	0.962	11.572	0.965		
cities 50 000 - 200 000	2	-0.781	0.097	-0.535	0.143	0.105	0.810	0.217	0.552	-0.657	0.270	-0.932	0.112	-0.914	0.190	0.978	0.370	-1.034	0.371	-1.42	0.910	-0.581	0.250	-1.289	0.040	-0.930	0.107	-1.090	0.110	-0.948	0.385	-0.731	0.540	-0.987	0.392	-0.212	0.864		
cities < 50 000	3	-1.192	0.005	-1.243	0.002	-0.711	0.095	-0.784	0.030	-0.635	0.138	-1.481	0.008	-2.603	0.002	-0.308	0.746	-1.037	0.360	1.347	0.305	-0.538	0.205	-1.686	0.003	-1.439	0.008	-2.660	0.001	-0.237	0.602	-1.041	0.359	-1.239	0.267	-0.600	0.633		
country (base)	4	0.450	0.146	0.831	0.002	0.584	0.065	0.759	0.006	-0.238	0.600	0.652	0.191	1.072	0.049	0.422	0.750	0.978	0.476	1.205	0.403	-0.198	0.671	1.322	0.535	0.578	0.549	0.977	0.105	0.954	0.788	1.183	0.387	1.008	0.469	1.447	0.308		
v. well and well informed about the euro?	1	-1.414	0.000	0.009	0.973	-0.100	0.756	0.359	0.325	-0.407	0.256	-0.402	0.343	0.519	0.310	0.684	0.366	1.134	0.146	2.233	0.013	-0.414	0.254	-1.782	0.000	-0.274	0.620	-0.574	0.282	0.642	0.353	0.668	0.422	1.236	0.107	2.382	0.008		
unemployed or non-employed	2	1.055	0.001	0.788	0.001	0.208	0.461	0.299	0.223	0.008	0.979	0.664	0.023	0.916	0.044	-0.530	0.594	-0.010	0.990	0.286	0.751	-0.085	0.781	0.977	0.019	0.766	0.643	0.755	0.090	-0.603	0.447	0.169	0.846	0.020	0.891	0.388	0.668		
student	3	0.380	0.390	1.069	0.001	0.918	0.000	1.388	0.000	0.259	0.591	1.436	0.008	0.979	0.725	0.078	0.928	0.689	0.456	1.705	0.008	0.167	0.725	-0.482	0.419	1.289	0.016	0.743	0.240	0.104	0.904	0.812	0.396	0.783	0.393	1.707	0.060		
teacher	4	0.974	0.001	0.824	0.014	1.466	0.022	1.844	0.002	-0.082	0.671	0.716	0.223	0.619	0.371	-0.121	0.933	0.851	0.536	2.316	0.169	-0.063	0.902	0.896	0.157	0.919	0.710	0.712	0.295	-0.164	0.970	0.483	0.784	0.750	0.629	1.885	0.259		
blue-collar, entrepreneur	1	-0.628	0.590	0.382	0.563	0.487	0.247	0.580	0.096	-0.903	0.277	-0.257	0.794	-0.523	0.641	-0.379	0.650	0.212	0.821	1.310	0.210	-0.879	0.284	-1.438	0.289	-0.388	0.710	-0.862	0.431	-0.401	0.634	0.675	-0.469	0.111	0.904	0.987	0.327		
blue-collar, peasant	2	-0.841	0.324	-1.687	0.011	-0.756	0.392	-1.243	0.025	-1.288	0.028	-2.802	0.001	-2.825	0.000	-3.302	0.090	-3.375	0.093	-2.454	0.163	-1.261	0.034	-1.832	0.062	-2.210	0.006	-22.782	0.000	-2.088	0.117	-2.202	0.208	-2.903	0.061	-1.791	0.293		
not voting	3	-0.289	0.412	-1.481	0.000	0.437	0.175	-1.123	0.000	1.241	0.028	0.013	0.984	-1.378	0.061	-1.058	0.412	-1.780	0.160	-3.156	0.022	1.070	0.062	0.667	0.688	-0.469	0.445	-2.116	0.004	-0.975	0.448	-0.121	0.827	-1.477	0.260	-2.623	0.053		
supported political party	4	-0.655	0.037	-1.135	0.000	-0.214	0.459	-1.034	0.000	0.303	0.237	-0.582	0.199	-1.353	0.009	-0.935	0.423	-1.622	0.124	-2.376	0.063	0.431	0.324	-0.327	0.507	-0.732	0.111	-1.702	0.001	-0.839	0.471	-0.790	0.513	-1.627	0.168	-2.114	0.082		
no	1	0.514				0.488				0.580						0.579						0.597																	
not sure	2	0.595				0.561				0.630						0.628						0.607																	
moderate	3	0.361				0.330				0.341						0.351						0.303																	
substantial (base)	4																																						
Cox-Shell	1																																						
Nagelkerke	2																																						
McFadden	3																																						
test of parallel lines (p-value)	4																																						

The age of respondents did not exert a significant influence on the dependent variables in 2009. In 2010, however, its significant negative role in determining the attitude to the euro can be observed. Note that this is the case in 4- and 5-category models. Accordingly, the unordered multinomial regression reveals that it matters only for differentiation between the extreme attitudes, i.e. definitely positive and definitely negative. On the other hand, it does not help to efficiently discriminate between the “rather yes”, “rather no” and “I don't know” options.

Surprisingly, variable indicating sex of respondents was found insignificant in all employed specifications. This is contrary to our expectations and the usual results established in the literature, described in Section 3. We thus do not include this variable in the presented estimation results. Furthermore, the household count has also turned out to be an insignificant variable in all the variations of the model.

## 6 Conclusions

This study investigates the determinants of support for the euro adoption in Poland in 2009 and 2010. Using two unique survey datasets, collected in December 2009 and June 2010, we estimate ordered and unordered logit models explaining the respondents' attitude to the introduction of the common currency.

We find that the declared level of information about the euro is a key driver of this attitude, both in 2009 and – even more so – in 2010. Moreover, in 2010, a proxy for the respondents' economic knowledge has become significant. The relative importance of these factors has increased in the context of the sovereign debt crises in the euro area peripheral countries, which were the main topic of euro-related media coverage in the first half of 2010. These results additionally emphasize the importance of extensive and well-targeted information campaign. Also, there could be substantial marginal gains from such campaign, as even “badly informed” citizens are significantly more supportive of the common currency than “very badly informed” ones.

Our study identified some characteristics of population subgroups which are crucial for explaining the support for the introduction of the single currency in Poland. We found namely that pensioners as well as Law and Justice party (PiS) supporters are the most euro-sceptical occupation and partisanship groups in Poland, irrespective from current economic and political developments. Moreover, contrary to our expectations and to results confirmed in a wide range of previous studies, sex turned out to be insignificant in explaining the public support for the euro.

The results also shed some light on the motives behind the support for the euro. Obviously, those who are convinced that the euro will be beneficial both on the macro and the micro level (i.e. for the economy and for themselves) strongly support the euro. On the contrary, those who think exactly the opposite are against the euro introduction. At the same time it is noteworthy that the conviction of low benefits from the euro adoption allows differentiating predominantly between euro-enthusiasts and euro-sceptics (and not necessarily between euro-enthusiasts and undecided respondents).

A clear implication for the future information campaign is that communicating benefits and costs of the euro, as well as addressing public concerns regarding the single currency, are key to raising the support for the euro. Our results demonstrated that the public perception is not fixed, but evolves with economic and political developments, so that new attitudes and concerns appear. Information campaign should therefore be flexible and adjust to the changing circumstances.

The comparison of 2009 and 2010 results allows us to take insights into how the determinants of the attitude to the euro evolved against the background of the euro area crisis. Whereas the public support has generally declined over this period, this decline was concentrated along some dimensions. First of all, the conviction of euro being a „strong, stable currency” has definitely ceased to drive a positive attitude towards it. Instead, a negative attitude started to result from low income or high age (previously insignificant). Most surprisingly, a relatively more negative attitude in 2010 was represented by students, white-collar workers (as compared to blue-collar), as well as big city residents (as compared to the residents of rural areas). On the other hand, the outflow of common currency supporters was not concentrated in any single electorate of the political parties.

The above conclusions might be of interest to the policymakers, especially those responsible for the profile of the information campaign that should precede the future currency changeover in Poland. They also contribute to better understanding of the dynamics standing behind the public support figures.

Nevertheless, some puzzling evidence discovered in this study needs reconsideration when designing the questionnaire and after future iterations of this survey. Firstly, the dichotomy between (low) “fear of rounding-up prices by entrepreneurs” and (high) “fear of price hikes after the euro adoption” raises the question what stands behind the perception of the latter factor. Secondly, the lack of relationship between residence and attitude towards the euro seems to be puzzling enough to deserve more detailed investigation.

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## GENDER DIFFERENCES IN MENTAL IMAGERY AND RISK PERCEPTION

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The main goal of the present study was to investigate the influence of mental imagery on risk perception. The EEG signal was recorded to measure the intensity of mental images evoked by negative consequences of risky decisions. The second purpose of our study was to provide a new interpretation of gender differences in risk taking and risk perception. We argue that females (in comparison to males) may have more vivid and more stressful visual representation of risk what can explain why females are more risk-avoidant than males.

Seventeen psychology students (8 females) participated in the EEG study. Participants were asked to imagine all possible negative consequences of risky behavior while listening to ten scenarios covering five risk domains. The EEG signal recorded from occipital electrodes during risky and neutral conditions indicated the intensity and vividness of mental images of risky behavior.

In the following experiment, 60 participants (30 females) reported subjective stress induced by previously presented risky scenarios. Additionally, the individual differences in anxiety and risk-taking tendencies were measured.

The results showed that the intensity of mental imagery processes measured by the attenuation of alpha band power registered in occipital sites correlated negatively with risk assessment. Such relationship was clearly observed in the group of males. With the increase of the mental imagery intensity, males assessed risk of imaged scenario as lower, and they were more willing to accept this risk. Females did not show such a tendency. Although, they imagined consequences of risk more intensively, imagery did not influence risk assessment, but was marginally negatively correlated with willingness to take risk.

In the second experiment, risky scenarios induced more negative thoughts that significantly influenced reported stress only in the group of females. A corresponding pattern in males was not observed.

The findings of our study provide a new explanation of the discrepant results of research on gender differences in risk perception. The way in which people assess risk in everyday situations depends on the vividness of mental representation of this situation. More intense mental images of risk lead to different reactions in males and females, which are modulated, by the stress level driven by vividness of these images.

*Keywords: risk taking, risk perception, brain, individual differences*

## LENDING DECISION MAKING IN BANKS - A CRITICAL INCIDENT STUDY OF LOAN OFFICERS

Carl-Christian Tronnberg<sup>1</sup>, Sven Hemlin<sup>1</sup><sup>1</sup> Department of Psychology and Gothenburg Research Institute/University of Gothenburg**Abstract**

In this study we investigated by means of the critical incident technique how 88 loan officers of four Swedish banks accounted for their decision making when they assessed loan applications from business companies.

We used the critical incident technique and asked about difficult loan cases that the loan officers had encountered. In this exploration we found that in line with previous studies that intuitive reasoning is used but to a lesser extent than deliberate analysis. Second, we found a number of differences between loan officers that could be traced to bank affiliation. Third, loan officers reported difficulties in decision making regarding soft information (e.g. client relationship) that was more prevalent than difficulties with hard information (e.g. financial information).

We conclude that both situational (e.g. information type) and organizational factors (e.g. lending technology) influence loan officers' decision making. The findings have implications for research in that intuitive reasoning appear to be a characteristic in loan officers decision making which should, a) be explained, and, b) analyzed how it influences decision outcomes. The findings have an interest for bankers because the results clarify the difficulties for loan officers in the lending situation.

*Keywords: choice, dual process, loan and debt*

## 1 Introduction

Research on decision making in banks has dealt with the effect of task characteristics on loan officers' decision making (Biggs, Bedard, Gaber, & Linsmeier, 1985), the influence of different information retrieval systems on credit risk decisions (Rodgers, 1991), and the influence of financial information on lending decisions (Casey, 1980). In their study, Biggs et al. (1985) concluded that bank loan officers who face increased task size use non-compensatory decision strategies (e.g., they neglect important evaluation information and make decisions based on a single criterion). If confronted with similar tasks simultaneously, loan officers tend to conduct a more thorough evaluation, using compensatory strategies. Loan officers who are characterized as data-driven (i.e., officers who use a bottom-up strategy when evaluating data and who focus on financial data) make more thorough evaluations of loan applicants than loan officers characterized as conceptually driven (i.e., officers who use a top-down strategy and who focus on the context and their expectations of the loan applicants) (Rodgers, 1991). Casey (1980), who demonstrate that loan officers with more information could not predict bankruptcy better than loan officers with considerably less information, suggests that information overload diminishes loan officers' ability to process information. Hwang and Lin (1999) provide support for this conclusion in their review that shows more information does not always result in better decisions and that the way in which information is presented is crucial for making good decisions.

In recent years, researchers have distinguished between two processes that precede decisions (Kahneman, 2011; Slovic, 1996). The two processes differ based on the amount of cognitive effort involved in making decisions (Hogarth, 2001, 2010). Decisions requiring high cognitive effort can be described as deliberate and conscious, whereas decisions requiring low cognitive effort can be described as automatic and unconscious (Meyers, 2002). The latter process, which exists outside awareness, is referred to as intuition (Hogarth, 2005) or "gut feel" (Sadler-Smith & Shefy, 2004). Although gut feel is a manifestation of intuition and not identical with intuition, the two terms are often used interchangeably (Harung, 1993; Parikh, 1994). Although the use of intuition in managerial decision making has long been acknowledged (Simon, 1987), it is still widely discussed (Dane & Pratt, 2007; Miller & Ireland, 2005; Sadler-Smith & Shefy, 2004).

There is some research on the use of intuition and its relationship with deliberative analysis in banking (e.g., Agor, 1986; Sadler-Smith, 2004). Two recent qualitative studies in particular shed new light on intuition in lending decision making (Hensman & Sadler-Smith, 2011; Lipshitz & Shulimovitz, 2007). Based on retrospective interviews with bank loan officers, these two studies conclude that loan officers regularly use intuitive reasoning as well as deliberate reasoning in credit decisions. Moreover, the loan officers in the two studies report that reliance on intuitive reasoning (e.g., trusting their feelings about loan applications) results in better evaluations of loan applicants' creditworthiness than reliance on deliberative reasoning (e.g., examining financial information). Hensman and Sadler-Smith (2011) also found that individual factors (e.g., loan officers' experience), organizational factors (e.g., bank hierarchy), and organizational conventions are all influential in intuitive decision making.

Hensman and Sadler-Smith (2011) and others (e.g., Greifeneder, Bless, & Tuan Pham, 2011) have found that the use of intuition in decision making depends on situational and organizational factors rather than only on individual factors (e.g., the lack of motivation that Chaiken and Trope (1999) describe). The importance and influence of situational factors on decision making have been much debated by researchers for a number of years (see, e.g., Gigerenzer, 2007; Hogarth & Karelaia, 2007). Kahneman and Klein (2009) emphasized the importance of situational factors on decision making in their theory of "high-validity" and "low-validity settings". In brief, high-validity settings are settings in which there is a stable relationship between cues and outcomes. In addition, it is required in such settings that there are a fixed number of possible outcomes as well as rules governing cues and outcomes. Low-validity settings are those in which the outcomes have an unstable relationship with the cues.

In their studies, Hensman and Sadler-Smith (2011) and Lipshitz and Shulimovitz (2007) express favorable opinions of bank loan officers' use of intuition in making credit decisions. However, traditionally, intuitive decision making is considered less reliable than deliberate decision making. The argument is that intuitive decision making, which is more susceptible to personal biases (Kahneman, Slovic, & Tversky, 1982; Tversky & Kahneman, 1974) may result in a higher risk of loan defaults.

The research in bank loans has also focused on the standard lending practices banks use to evaluate loan applicants. Two such practices are relationship lending and transactional lending. Relationship lending focuses on the personal relationship between the loan officer and the loan applicant. Bank loan officers who use relationship lending base their credit decisions on information that cannot be easily quantified, such as impressions from personal contact with the loan applicant and other information not found in financial records (Boot, 2000). Relationship lending requires that loan officers have a close relationship with loan applicants as well as an understanding of their business context (Berger & Udell, 2002). Bank loan officers who are more oriented towards a transactional lending practice, on the other hand, base their decisions on quantitative information, such as cash flows, annual reports, and liquidity measures (Berger & Udell, 2006). Furthermore, transactional lending often requires that loan officers use computerized assistance in making decisions (Thomas, 2000).

Economic research has shown that the use of these two lending practices can be highly influential in assessing the creditworthiness of loan applicants. However, the results of this influence are not clear. Transactional lending leads to risk-taking but only if the credit-scoring system used is decisive and not advisory (Berger, Frame, & Miller 2005). Relationship lending in general leads to more risk-taking (Degryse & van Cayseele, 2000; Jiménez & Saurina, 2004) and greater costs associated with approved loans (Hernández-Cánovas & Martínez-Solano, 2010). To our knowledge, however, this research, which suggests that both lending practices are risky, was conducted using only high-level data from summary statistics (e.g., approved loans versus unapproved loans in banks for certain time periods). Therefore, these findings are not necessarily generalizable at the individual level (i.e., at the level of loan officers). Thus, it remains an open question as to how banks choose between relationship lending and transactional lending in evaluating loan applications.

The basis of all lending decisions in banks is risk assessment. Bank risk can be classified into two risk categories. The risk of loan default by the borrower is a Type I error which could result in credit losses for the bank; the risk of lost profit if a loan to a solvent borrower is denied is a Type II error which could result in lower profits for the bank. To assess these risks, banks use more objective data such as the loan applicant's cash flow statements (Thomas, 2000) and subjective data such as the evaluation of the loan applicant's creditworthiness (Hedelin & Sjöberg, 1993).

## 2 Objectives

This paper explores how bank loan officers make difficult lending decisions on loan applications by SMEs. The aim of the paper is to investigate, compare, and contrast loan officers' use of intuitive analysis and deliberate analysis in this context. A second aim is to examine the situational and organizational factors that influence bank loan officers' decision making. Situational factors refer to the characteristics of the transaction (e.g., low risk or high risk; the use of soft and hard information) and the lender-borrower relationship (e.g., existing client or new client). Organizational factors refer to bank-specific characteristics such as policies and rules (e.g., the lending practices used by loan officers in credit decisions).

## 3 Method

### 3.1 Participants

We interviewed 88 loan officers at the four largest banks in Sweden (21 at Bank A, 28 at Bank B, 18 at Bank C, and 21 at Bank D) using a modified version of Flanagan's (1954) critical incident technique. There were 61 (69.3 % male participants and 27 (30.7 %) female participants. Of the 88 participants, 79 (89.8 %) had some higher education and 9 (10.2 %) had a college degree. The general loan decision experience in years was as follows:  $M = 17.68$ ,  $SD = 9.04$ . The commercial loan decision experience in years was as follows:  $M = 14.47$ ,  $SD = 7.84$ .

### 3.2 Procedure

Bank managers at the four banks asked their loan officers to participate in the study. We chose these managers based on advice from the banks' customer services divisions. We tape-recorded our interviews in the participants' offices, sometimes with one loan officer present and sometimes with two loan officers present. Except for one interview in which both authors were present, the first author conducted the interviews alone. In one instance, the first author took notes instead of tape-recording the interview. The interviews lasted between 5 and 20 minutes, with an average length of about 10 minutes. Interviews were carried out in the summer and fall of 2011. We applied the critical incident technique by collecting lending incidents that the participants retrieved from recent memory (Flanagan, 1954).

We did not try to direct the responses toward any particular method of decision making but rather let the participants describe their experiences freely. Flanagan instructs users to ask participants for "critical incidents" about events one wants to explore. In our case, it was inappropriate to use "critical loans" as the prompt since this term is too vague a description of a loan incident. We chose the more comprehensible and simpler term "difficult loans" that we thought a loan officer would find easier to understand and retrieve from memory. It is also possible to characterize a difficult loan as a critical loan, but we found the more precise wording better suited to our purpose. The author(s) explained difficult loans by saying they were loan situations where the participants had "doubts between approving and not approving a loan". We asked the participants to retrieve the most recent difficult loans they had experienced. After they recalled these loans, we asked them to describe the incidents according to the instructions for critical incidents (instructions that were somewhat modified to fit credit evaluations).

We guided the participants in their descriptions with the following request and questions. Describe the parts of this case that you find to be most important, as precisely as possible. Our first question was: How did you think when you made your decision? Our second question was: What were the difficulties you encountered in making the decision? Our third question was: How difficult was this lending decision? According to Flanagan (1954), the third question should concern the participant's reason for identifying the incident as critical. We phrased our third question so that each participant would focus on the difficulty of the critical incident. Finally, we asked: What was the result (of the

decision)? Our purpose with this question was to learn the outcomes of the loan officers' decisions (or in some cases, the managers' decisions that were based on the loan officers' recommendation).

In a few interviews the participants had difficulty answering these questions. In those instances, we asked additional questions for clarification (e.g., *Why did you find this case difficult? What made you finally decide to approve the loan?*). We used this question/answer procedure three times with all participants as recommended by the critical incident technique.

### 3.3 Analysis of interview responses

We applied content analysis (Miles & Huberman, 1994) to the critical incidents results. First, we coded the incidents using In Vivo Coding to preserve the meaning of the participants' statements. One or more codes that described the fullness of the incident were assigned to each incident. Second, we categorized the incidents on the basis of their meaning content. We reduced the large number of categories to a few categories of higher complexity. At this point we also reduced the number of codes per incident. Third, we decided which categories to retain and which category labels to use. This procedure was carried out with the categories *Situation*, *Difficulties* and *Decision outcomes*. When analyzing *Behaviors* we used the following four categories (from a pilot study at one bank) in our analysis of how loan officers' describe their loan decision making:

1. Deliberate analysis, general
2. Deliberate analysis, economic
3. Intuitive analysis, general
4. Intuitive analysis, relational

We then constructed inclusion criteria for each category.

### 3.4 Inter-rater agreement

We conducted a reliability check between our codes and those used by an independent researcher. This reliability check was conducted on 25 (10%) randomly selected incidents in each of the three groups of incidents in order to attain a valid kappa value (Lombard, Snyder-Duch, & Campanella Bracken, 2002) The inter-rater agreement was outstanding for situations ( $\kappa = 0.91, p < 0.01$ ), moderate for behaviors ( $\kappa = 0.50, p < 0.01$ ), outstanding for difficulties ( $\kappa = 0.85, p < 0.01$ ), and outstanding for results ( $\kappa = 0.91, p < 0.01$ ) (Landis & Koch, 1977).

## 4 Results

Eighty participants (90.9 %) reported three incidents, five participants (5.7 %) reported two incidents, and three participants (3.4 %) reported one incident. In total, we collected 253 critical incidents of loan decisions. We deleted five incidents since they did not fit into any of our categories. This left us with 248 critical incidents.

### 4.1 Situations

We used two main situation categories: *Client type* and *Risk level of transaction*. The first category was used for the duration of the relationship between loan officers and loan applicants. The second category was for the type of transactional risk (e.g. risk associated with leases or risk associated with interest rate movements). We then divided these two categories into two subcategories each. See Table 1.

Table 1

*Categories and Subcategories of Critical Incident (CI) Situations Reported by Loan Officers (n = 88) in Four Swedish Banks*

Categories/Subcategories	Bank A (n = 21)	Bank B (n = 28)	Bank C (n = 18)	Bank D (n = 21)	Total (n = 88)
<b>Client type</b>	<b>59</b>	<b>78</b>	<b>48</b>	<b>62</b>	<b>247*</b>
- Existing client	38	55	37	45	175
- New client	21	23	11	17	72
<b>Risk level of transaction</b>	<b>62</b>	<b>81</b>	<b>47</b>	<b>62</b>	<b>252**</b>
- Low risk transactions	49	60	31	45	185
- High risk transactions	13	21	16	17	67

Note. The incidents in this section are not unique to one category. Therefore we do not report aggregated totals.

\* Four of the incidents did not contain information on client type.

\*\*One of the incidents did not contain information on valence of transaction.

## 4.2 Situational subcategories

For *Client type*, the subcategories are *Existing clients* and *New clients*. An example description of an Existing client is: “a client to whom we have already granted a loan” (Loan officer at Bank A). An example description of a New client is: “a client with whom we have been trying to do business with for a long time” (Loan officer at Bank A). The results were: Existing clients (175) and New clients (74),  $\chi^2(1, N = 249) = 40.97, p < 0.01$ .<sup>1</sup>

For *Risk level of transaction*, the subcategories are *High risk transactions* and *Low risk transactions*. Example descriptions of High risk transactions referred to the loan applicant’s economic difficulties, such as shortage of cash, sales problems or low liquidity. For instance, the statement “a manufacturing company with production in Sweden and abroad is facing some sort of problems with liquidity” is categorized as a High risk transaction (Loan officer at Bank B). Example descriptions of Low risk transactions referred to the loan applicant’s request for specific terms on interest rates, leasing arrangements, and loan restructuring. For instance, the statement “the client wanted to get a loan to expand the property” is categorized as a Low risk transaction (Loan officer in Bank A). We found that there were significantly more incidents of Low risk transactions (185) than High risk transactions (67),  $\chi^2(1, N = 252) = 55.25, p < 0.01$ .

In summary, for difficult situations, loan officers reported significantly more incidents with *Existing clients* than with *New clients*. They also reported significantly more incidents of *Low risk transactions* than incidents of *High risk transactions*. No bank differences concerning the risk level of transactions were found.

## 4.3 Behaviors

We used two main behavior categories: *Deliberate analysis* and *Intuitive analysis*. The first category refers to loan officers’ behavior when they use cognitive awareness and various strategies to evaluate the information presented. The second category refers to loan officers’ behavior when they rely, in an automatic manner, on a feeling or a hunch. We then divided these two categories into two subcategories each. See Table 2.

Table 2

*Categories and Subcategories of CI Behaviors Reported by Loan Officers (n = 88) in Four Swedish Banks*

Categories/Subcategories	Bank A (n = 21)	Bank B (n = 28)	Bank C (n = 18)	Bank D (n = 21)	Total (n = 88)
<b>Deliberate analysis</b>	<b>48</b>	<b>54</b>	<b>44</b>	<b>37</b>	<b>183</b>
-Deliberate analysis, general	20	29	30	32	111
-Deliberate analysis, economic	28	25	14	5	72
<b>Intuitive analysis</b>	<b>14</b>	<b>25</b>	<b>3</b>	<b>25</b>	<b>67</b>
- Intuitive analysis, general	3	14	0	12	29
- Intuitive analysis, relational	11	11	3	13	38
<b>Total No. of CI (%)</b>	<b>62 (25 %)</b>	<b>79 (31 %)</b>	<b>47 (19 %)</b>	<b>62 (25 %)</b>	<b>250 (100 %)</b>

## 4.4 Behavior subcategories

For *Deliberate analysis*, the subcategories are *general* and an *economic*. Incidents categorized as *Deliberate analysis, general* are incidents in which loan officers made decisions using cognitive awareness. An example statement is: “I had to weigh pros and cons. We have to take into consideration that the company may face bankruptcy ... and weigh this against our credit instructions...” (Loan officer at Bank C). Incidents categorized as *Deliberate analysis, economic* reflected consideration of additional economic factors such as cash flows, liquidity, and profitability. An example statement is: “We focused on the cash flow in this case, as we always do...” (Loan officer at Bank C). *Deliberate*

<sup>1</sup> We are aware of the potential problems with using chi-2 analysis on intra dependent data (e.g., every loan officer reported more than one incident). Although the intra dependence may pose problems with under evaluation of the standard error, this dependence has been shown to have the largest effect when the numbers of clusters are small (<25) (Nam & Kwon, 2009). There are methods for correcting for this intra dependence (Rosner & Milton, 1988; Rao & Scott, 1992), but to our knowledge, no software exists that handles these procedures.

*analysis, general* (111) was reported more frequently than *Deliberate analysis, economic* (72),  $\chi^2(1, N = 183) = 8.31, p < 0.01$ .

For *Intuitive analysis*, the subcategories are *general* and *relational*. Incidents categorized as *Intuitive analysis, general* are incidents in which the loan officers made decisions using cognitive automation (their gut feel or another emotion). An example statement is: “*You always think the same way when making a credit assessment. You feel in your stomach if it feels good, In this case, it did*” (Loan officer at Bank B). Incidents categorized as *Intuitive analysis, relational* were similar to those categorized as *Intuitive analysis, general* but with an additional focus on the lender-borrower relationship. In these incidents, the loan officers had other borrower information besides the borrower’s financial information (e.g., personal information acquired in a shared context such as a soccer club or neighborhood). An example statement is: “*The relationship is very important. I know that they are good people.*” (Loan officer at Bank B). In summary, incidents categorized *Deliberate analysis* were significantly higher in number (183) than incidents categorized *Intuitive analysis* (67)  $\chi^2(1, N = 250) = 52.27, p < 0.01$ .

#### 4.5 Bank differences

Loan officers at Banks A, B, and C (Bank D is the exception) reported significantly more critical incidents in which *Deliberate analysis* was used than *Intuitive analysis* ( $\chi^2(1, N = 62) = 18.64, p < 0.01$ ,  $\chi^2(1, N = 79) = 10.65, p < 0.01$ , and  $\chi^2(1, N = 47) = 35.77, p < 0.01$ , respectively). There were no significant differences between the banks as far the number of incidents of *Deliberate analysis*, but there was a significant difference concerning *Intuitive analysis*  $\chi^2(3, N = 67) = 12.81, p < 0.01$ . Pairwise comparisons show that loan officers at Bank C reported significantly fewer incidents of *Intuitive analysis* than Bank A  $\chi^2(1, N = 17) = 4.52, p = 0.03$ , Bank B  $\chi^2(1, N = 28) = 8.85, p < 0.01$ , and Bank D  $\chi^2(1, N = 28) = 12.03, p < 0.01$ .

In summary, *Deliberate analysis* is reported three times as often as *Intuitive analysis* by the loan officers.

#### 4.6 Difficulties

We used four categories for the types of difficulties loan officers experienced: *Soft information* (129 incidents or 53 %), *Hard information* (54 incidents or 22 %), *Mixed information* (42 incidents or 17 %), and *Other difficulties* (20 incidents or 8 %). There were significantly more incidents coded as *Soft information* than *Hard information*  $\chi^2(1, N = 183) = 30.74, p < 0.01$ , *Mixed information*  $\chi^2(1, N = 171) = 44.26, p < 0.01$ , and *Other difficulties*  $\chi^2(1, N = 149) = 79.74, p < 0.01$ . Incidents coded as *Hard information* were also significantly higher reported than *Other difficulties*  $\chi^2(1, N = 74) = 15.62, p < 0.01$ .

The bank lending literature defines soft information as information that cannot be obtained from financial records. Access to such information requires that loan officers have personal relationships with loan applicants (Boot, 2000). In our study, we made a similar distinction between hard and soft information. We categorized incidents that described difficulties with both soft and hard information as *Mixed information*. We categorized incidents that described difficulties not categorized as *Soft, Hard* or *Mixed information* as *Other difficulties*, (e.g., difficulties related to internal communication). See Table 3.

Table 3

*Categories and Subcategories of CI Difficulties Reported by Loan Officers (n = 88) in Four Swedish Banks*

Categories/Subcategories	Bank A (n = 21)	Bank B (n = 28)	Bank C (n = 18)	Bank D (n = 21)	Total (n = 88)
<b>Soft information</b>	<b>27</b>	<b>52</b>	<b>24</b>	<b>26</b>	<b>129</b>
- Client relationship	14	38	10	13	75
- Company management	13	14	14	13	54
<b>Hard information</b>	<b>22</b>	<b>12</b>	<b>8</b>	<b>12</b>	<b>54</b>
- Financial information	15	9	7	12	43
- Actual economical circumstances	7	3	1	0	11
<b>Mixed information</b>	<b>6</b>	<b>14</b>	<b>10</b>	<b>12</b>	<b>42</b>
- Forecasts	6	14	10	12	42
<b>Other difficulties</b>	<b>4</b>	<b>1</b>	<b>6</b>	<b>9</b>	<b>20</b>
- Internal communication	4	1	6	9	20
<b>Total No. of CI (%)</b>	<b>59 (24 %)</b>	<b>79 (32 %)</b>	<b>48 (20 %)</b>	<b>59 (24 %)</b>	<b>245 (100 %)</b>

#### 4.7 Soft information difficulties

This category consists of two subcategories: *Client relationship* and *Companies' management*. One important difficulty in the first subcategory refers to the problems that arise in explaining why loans are not approved. An example statement is: "to communicate with the client in the decision ... to be able to steer the client in a good way, and yet not lose the client ... the difficulty was more to explain the conditions." (Loan officer at Bank A). The second subcategory concerns loan applicants' lack of experience or knowledge. An example statement was: "to evaluate them as people and their ability to lead the company, because they had no experience in leading companies in this industry." (Loan officer at Bank A).

#### 4.8 Hard information difficulties

This category consists of two subcategories: *Financial information* and *Actual economic circumstances*. The first subcategory concerns the difficulty loan officers have when the loan applicant's financial information is very extensive or new to them. Loan officers then are challenged to process and evaluate such information. An example statement is: "We in the bank are not accountants or tax experts..." (Loan officer at Bank C). The second subcategory consists of factual difficulties that do not involve subjective judgment. An example statement is: "The difficulties in this incident are the absence of information on the company's assets." (Loan officer at Bank B).

#### 4.9 Mixed information difficulties.

This category consists of mixed difficulties (both hard and soft information difficulties). Often these difficulties, which frequently arise in discussions with the loan officers' bank colleagues, relate to the loan applicant's future prospects and to the market and world economies. Example questions are: "Will the company achieve its projected sales? Will the company retain its margins? Is this a product for the Swedish market?" (Loan officer at Bank D).

#### 4.10 Other difficulties

This category consists of difficulties that do not fit into the other three categories. An example statement is "to persuade the bank, moreover, that this is right, this is not the risk as you can see it, but the risk that I see." (Loan officer at Bank D).

In summary, the principal difficulties in the loan officers' work relate mainly to the categories of *Soft information* (129) and *Hard information* (54). Fewer difficulties were reported in the other two categories: *Mixed information* (42) and *Other difficulties* (20).

#### 4.11 Bank differences

We found bank differences as far as *Hard information* difficulties  $\chi^2(3, N = 54) = 8.72, p = 0.03$ . Pairwise comparisons showed that loan officers at Bank A reported significantly more incidents in this category than loan officers at Bank B,  $\chi^2(1, N = 34) = 6.63, p = 0.01$  and at Bank C  $\chi^2(1, N = 30) = 4.27, p = 0.04$ . Furthermore, we found bank differences between reported incidents for *Other difficulties* ( $p = 0.02$ , Fisher's exact test). Pairwise comparisons showed that the loan officers at Bank B reported significantly fewer incidents than loan officers at Bank C ( $p = 0.02$ , Fisher's exact test) and at Bank D ( $p > 0.01$ , Fisher's exact test).

In summary, we found differences in *Hard information* and *Other difficulties* among the banks. However, we observed no differences in *Soft information* difficulties among the banks.

#### 4.12 Decision outcomes: loan application approval or disapproval

We collected data on the outcome of each decision (i.e., loan application approval/disapproval). The distribution of the three categories – loan approvals (179), loan disapprovals (55), and no decision (19) differed  $\chi^2(2, N = 253) = 167.08, p > 0.01$ . More loans were approved than disapproved,  $\chi^2(1, N = 234) = 65.71, p > 0.01$ . However, with no additional data, we can make no further analyses. Banks did not differ as far as reported decisions. See Table 4.

Table 4

Categories of CI Decision Outcomes Reported by Loan Officers (n = 88) in Four Swedish Banks

Categories	Bank A (n = 21)	Bank B (n = 28)	Bank C (n = 18)	Bank D (n = 21)	Total (n = 88)
Loan approvals	47	56	34	42	179
Loan disapprovals	11	19	12	13	55
No decision	4	6	2	7	19
Total No. of CI	62	81	48	62	253
(%)	(24.5 %)	(32 %)	(19 %)	(24.5 %)	(100 %)

### 4.13 Overall results

In summary, our findings show that loan officers reported more critical incidents with *Existing clients* than with *New clients*. The loan officers also reported significantly more *Low risk situations* incidents than *High risk situation* incidents. Furthermore, we found loan officers used *Deliberate analysis* three times as often as *Intuitive analysis*. We found that loan officers encountered more difficulties in making loan decisions based on *Soft information* than on *Hard information*. We also found that significantly more loans were approved than were disapproved or undecided. Table 5 summarizes the findings for the four banks.

Table 5

*Summary of Reported Situations, Behaviors, Difficulties and Decision Outcomes for The Banks*

Category	Bank A	Bank B	Bank C	Bank D
<b>Situation</b>				
- Client type		No differences		
- Risk level of transaction		No differences		
<b>Behavior</b>				
- Deliberate				
- Intuitive			Low	
<b>Difficulties</b>				
- Soft information		No differences		
- Hard information	High	Low	Low	
- Mixed information				
- Other difficulties		Low	High	High
<b>Decision outcomes</b>				
- Approved loans		No differences		
- Disapproved loans		No differences		
- No decision		No differences		

## 5 Conclusions / Discussion

Most bank lending studies, which are generally conducted in the field of economics, deal with banks at the aggregate level. Our study takes a psychological approach in its analysis of bank loan officers' decision making. Our primary aim was to explore how loan officers describe their most recent difficult assessment as far as SME loans. Our secondary aim was to explore the situational and organizational factors that are involved in the loan decision making process.

Therefore, given these aims, we conducted an empirical study using the established critical incident technique (Flanagan, 1954) that, to our knowledge, has not been used previously in studies of loans officers' decision making. First, the use of critical incident technique fits with Gore and Sadler-Smith's (2011) recommendation to use more standardized methods of interviewing loan officers. Second, the critical incident technique situates this study between research that takes a deductive approach (Bruns & Fletcher, 2008) and research that takes an inductive approach (Hensman & Sadler-Smith, 2011; Lipshitz & Shulimovitz, 2007) on lending decision making. Third, the critical incident technique results in findings that have external validity in this study since the loan officers describe how they make their decisions in difficult SME lending situations which have taken place in real-life settings.

Our discussion is structured as follows. First, we discuss the decision making practices used in loan application evaluations. Second, we discuss the situational influences on decision making for loan applications. Third, we discuss the influence of bank organization on decision making for loan applications. Fourth, we draw attention to the limitations of our study. Last, we offer suggestions for additional research in this area of decision making at banks.

### 5.1 Intuitive and deliberate analyses

First, our results show that the loan officers in our sample use deliberate analysis more often than intuitive analysis in making difficult loan application decisions. Khatri and Ng (2000) also found that loan officers use gut feel only moderately in making loan decisions (employees in the computer industry use gut feel more for their decisions). Our finding that loan officers report the use of intuition is consistent with results by Hensman and Sadler-Smith (2011) and Lipshitz and Shulimovitz (2007). However, in those two studies, the researchers specifically requested identification of situations in which intuition was used; this methodology, to some extent, infringed on the question of base-rate of intuitive decision making in banks.

In our study, we did not ask participants directly about their use of intuitive analysis or deliberate analysis. Instead, loan officers were free to describe their thinking in the specific decision making situations as they remembered it. Our

methodology gave us more opportunity to learn how loan officers report their decisions and how frequently they use deliberate analysis and intuitive analysis. In addition, our sample was relatively large compared to the sample sizes in earlier studies on loan officers' decision making (e.g., Hensman & Sadler-Smith, 2011; Lipshitz & Shulimovitz, 2007). Our results show that intuitive reasoning may not be as common with bank loan officers as has been claimed (see Hodgkinson, Sadler-Smith, Burke, Claxton, & Sparrow, 2009).

Because we limited our study to difficult loan application situations, it may be argued that intuitive reasoning is used, as frequently, if not more so, in the easy or general loan application situations that we did not investigate. However, research shows that intuitive reasoning seems more prevalent in more complex situations than in simpler situations (Agor, 1986). Although researchers (e.g., Agor, 1986; Gore & Sadler-Smith, 2011; Hensman & Sadler-Smith, 2011) stress the importance of intuitive reasoning in managerial decision making, the relative importance of research on intuitive decision making must be viewed in light of its everyday occurrence. Previous studies base their claim that intuitive reasoning is used in managerial decision making largely on theoretical arguments and small sample sizes. These studies fail to offer strong evidence of the extent to which intuition is used in managerial decision making (Agor, 1986; Hensman & Sadler-Smith, 2011; Lipshitz & Shulimovitz, 2007). By investigating intuition as a separate analytical process and by not interpreting results related to deliberative analysis, we may reach a restricted or even faulty view of decision making processes (Hogarth, 2010). Our argument is that the main question is not how different factors affect intuition and deliberation uniquely, but rather how the decision making process is affected as a whole.

Second, our results show that the analytical processes for credit evaluations differ among the four Swedish banks in our sample. Loan officers at three of the four banks used deliberate analysis to a significantly greater extent than intuitive analysis. These results on the differences in the use of intuitive analysis and deliberate analysis at the banks support Hensman and Sadler-Smith's (2011) findings that organizational factors influence the use of intuition in lending decision making and that factors such as organizational constraints and hierarchy influence intuitive decision making in banks. In accordance with these findings, we suggest that the organization's (i.e., the bank's) policies and rules for credit evaluations and loan officer training influence how loan officers make decisions about commercial loan applications). The implication is that a bank's lending practices may influence decision making processes.

We propose that banks that use transactional lending practices cause loan officers to rely more strongly on deliberate analysis, while banks that use relational lending practices cause loan officers to rely more on intuitive analysis (Trönberg & Hemlin, 2011). The lending practice a bank chooses may also influence the complexity of its loan officers' decisions, as suggested above. The influence of organizational factors on how individuals make decisions is not only important for bank loan officers specifically but also for the research on psychological decision making generally. Since Simon (1955; 1956) presented his theories on bounded rationality, decisional context has been acknowledged as a influential factor for individual decision making (see also March, 1986). However, whereas much of the recent research has focused on the theoretical validity of the judgment and decision making strand (Dijksterhuis, Bos, Nordgren & van Baaren, 2006; Dijksterhuis & Nordgren, 2006; Glöckner & Wittmann, 2010; Huizenga, Wetzels, Ravenzwaaij, & Wagenmakers, 2012), our research strives to explore and explain the circumstances involved in the different processes in decision making (e.g. intuitive analysis and deliberate analysis) that occur in a banking context.

## 5.2 The lending situation

In our study, loan officers' difficulties in loan application decision making predominantly related to their use of soft information (see also Boot, 2000; Stein, 2002). As noted above, this is information that cannot be obtained from financial records or other quantitative reports. Stein (2002) described such information as follows: "*information that cannot be directly verified by anyone other than the agent who produces it*" (p. 1892). Twice the number of critical incidents identified by loan officers in our study concerned soft information compared to hard information. Previous results on the influence of soft and hard information on decision making diverge. Bruns and Fletcher (2008) found that loan officers favored objective information on past profitability of companies over the more subjective information of management competence. Similarly, Mason and Stark (2004), found objective measures more influential in loan application evaluations. Yet Hedelin and Sjöberg (1993), in a survey of loan officers' decision making, found that the loan applicant's characteristics had a significant influence on the loan officer's decision.

A possible explanation for these different results may be found in the different research methods used. Various studies have structured their interview questions differently. Bruns and Fletcher (2008) and Hedelin and Sjöberg (1993), for example, presented the participants with structured questionnaires and guided their answers by offering different alternatives. Mason and Stark (2004), however, gave the participants some freedom in their recollection and reporting of their decision making processes. In our study, we treated soft information as a broad concept that included management quality and the personal relationship between borrower and lender. In the earlier studies, soft information was identified as, among other things, the personal characteristics of the loan applicants (Hedelin & Sjöberg, 1993), the competence of management (Bruns & Fletcher, 2008) and the entrepreneur's skills (Mason & Stark, 2004). We conclude that the soft information loan officers use in lending decision making consists of a number of information elements. Researchers may weigh the importance of these elements differently.

We found there were significantly fewer reported critical incidents in new client relationships than in existing client relationships. In conjunction with result that the main difficulties involve soft information, a picture emerges that could be described as a *soft budget constraint problem*. This term is used in the lending literature to refer to situations that pose a challenge to the lender-borrower relationship when loan applicants apply for a new loan to cover previous losses (Boot, 2000). In such situations, the loan officer has to consider the risk of loaning additional funds to an applicant who is experiencing financial problems. The *soft budget constraint problem* occurs more frequently at banks that rely more on relational lending practices than at banks that focus on the transaction and avoid the relationship issues (Boot, 2000). However, the research suggests that long-term lender-borrower relationships are advantageous for loan applicants, research also has shown that such applicants are more likely to receive a high risk rating than applicants in more short-term relationships (McNamara & Bromiley, 1997).

The difficulty of knowing when to end a transaction that is in decline is also a well-researched issue in investment psychology. For example, Odean (1998) and Barber, Odean, and Zheng (2005) showed that investors tend to hold shares and other investments that are selling below their purchase price in order to avoid the realization of losses. However, this action may not be appropriate as the selling price may continue to fall. When such investors finally decide to sell their investments, the selling price may be yet lower and the loss even greater. The well-known loss aversion phenomenon may also be a partial explanation for the difficulties encountered in terminating a transaction. For example, in banking, the loan officer and the bank may fear the loss of a valuable client (Kahneman & Tversky, 1979).

We found, in our study, the problem of not knowing when to end a questionable loan relationship is perhaps at least as difficult as the investor situation described above. Loan officers are influenced both by the economic aspects of the transaction and by their lender-borrower relationship. Therefore, lending decision making is essentially risk assessment in a "low-validity" setting (Kahneman & Klein, 2009) that makes work life a challenge for loan officers.

There may be a reporting error in the finding that more difficulties arise with existing clients than with new clients. It is plausible that a sample of bank lending situations would consist of predominantly existing clients because of the obvious fact that a client can be new only once. However, the explanation may also be that there is greater risk with existing clients. As previously discussed, difficulties arise more from relational situations than from transactional situations.

Finally, our results show that the sample of incidents is skewed towards incidents in which the loans were approved. A possible explanation is that, in general, banks approve most loans. On the other hand the current financial crisis may suggest that this not true. Another possible explanation is the influence of social desirability in loan officers' reports. Loan officers are inclined to approve rather than disapprove loan applications.

### 5.3 Limitations of the study

We did not make a random selection of participating loan officers. We contacted the four largest banks in Sweden through their regional managers. The regional manager at one bank provided us with loan officer names. The regional managers at the other three banks delegated the request to their subordinate executives who gave us loan officer names. Thus the loan officers whom the managers selected for participation in our study may have been chosen for particular reasons (e.g., their stronger compliance with bank policies or their greater suitability for purposes of the study). Another potential research problem arose because, in some instances, participants from the same banks identified the same critical incidents. Where possible, in these instances, we asked participants to recall a different incident. Furthermore, when the participants identified prospect incidents (business ventures proposed to them and probably to other banks), there was a possible duplication of incidents among the loan officers from different banks (we note that the four banks operate in the same national context). Thus there was the possibility of limited variability among the critical incidents. Moreover, in the interpretation of our results, it is important to bear in mind that we wanted the participants to report only difficult incidents. Thus, because it is reasonable to assume more analysis is required in difficult decisions, the generalizability of our results to less difficult cases may be limited. We also acknowledge the influential work by Nisbett and Wilson (1977) that questioned the validity of verbal reports. They argue that the introspective access to cognitive processes may be small and that verbal reports are flawed. However, the use of critical incident may have diminished the problems of verbal reports. First, we instructed participants to recall cases that had taken place near in time. Second, by asking for difficult cases we strived for cases that were salient for the participants. Both of these factors have been shown to be advantageous for getting valid reports and the critical incident technique has been suggested as a method for diminishing the validity problems of verbal reporting (Ericsson & Simon, 1980; White, 1980). Furthermore, the validity problem of verbal reporting has also been claimed to have the severest negative consequences for research with a deductive aim (Ericsson & Simon, 1980). Since our research is inductive the severity of the problem is softened. Finally, although we specifically asked for incidents consisting of loans to SMEs we did not collect information on the size of the applied loan. Banks course of action differ to some extent on the basis of loan size and we may therefore have collected information that varied because of loan size rather than due to organizational or individual differences.

## 5.4 Future research

Our research has produced new findings on the use of deliberate analysis and intuitive analysis in lending decision making. We have also shown that the use of gut feel in lending decision making differs among banks. This finding places earlier research, which has neglected the organizational effects (i.e., the bank effect) on such decision making, in a new perspective. One possible discriminating factor among banks may be their use of different lending practices. Such practices are described in the research as the cues loan officers judge most important when they evaluate a loan application (Bruns & Fletcher, 2008; Mason & Stark, 2008) and consider the personal characteristics of the loan applicant (Hedelin & Sjöberg, 1993; Wilson, Carter, Tagg, Shaw, & Lam, 2007).

However, further research on the effects of lending practices on lending decision making in banks is needed. We suggest this research should be conducted using improved measuring tools for both the analytical processes and the lending practices. Consideration should be given to whether clearly objective information (e.g., financial records, cash flow analyses, etc.) in lending decision making is processed deliberately (and exclusively) or if such information is also compared with more subjective information (e.g. client's personal characteristics) that is processed more intuitively.

Furthermore, the use of intuition in decision making continues to be a highly relevant research topic. In a recently published review on the use of emotions in making judgments, Greifeneder et al. (2011) stress that if research on intuitive decision making is going to have ecological importance, how and when intuition influences decisions should be investigated. A question of equal importance is whether intuitive decision making yields valid decisions. In the context of loan application evaluations, this question is of great importance for the loan officer, the bank, and the loan applicant. We believe our study may be useful to other researchers as they study the circumstances surrounding intuitive decision making and its validity. Finally, although we acknowledge the influential work on intuition as a stand-alone construct from deliberate processing (Glöckner & Witteman, 2010; Hensman & Sadler-Smith, 2011; Lipshitz & Shulimovitz, 2007), we think it is important to investigate the two constructs together, especially in applied research fields (such as the banking industry) where delivery of externally valid conclusions is essential. However, if deliberation is neglected in theoretical research on intuitive decision making, we risk diminishing our understanding of intuition (Hogarth, 2010).

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## DISTORTION OF MORAL JUDGMENTS IN DECISIONS UNDER TEMPTATION

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Hypothesis was tested that when a choice alternative is profitable but unethical, the decision maker will tend to neutralize its moral disadvantage through reformulating it in a more neutral or positive way. One method to achieve this goal is to categorize the act in such a way that the category label no longer evokes any strong negative moral emotions. An alternative way is to distort the moral negative outcome of the act and its probability.

The experimental group of 56 students participated in an auction. As a currency in this auction, each respondent got five 5-point and five 10 point chips for him and his opponent. Distribution of chips between respondent and his opponent were set by experimenters, and the same for all respondents. Participants were told that it was a result of lottery. Each respondent drew following chips: one 10 point and four 5 point. Respondent's task was to send five chips to his opponent. Respondents were told that there was no possibility of checking their honesty. Before sending chips to opponents, respondents filled in questionnaire concerning ethical aspects of this task. The experimental subject's task was also presented to control group which filled in the same questionnaire, but made no decisions.

Large majority of experimental subjects decided to violate moral norm concerning fair play in this task. They did this to a higher degree than they predicted their colleagues would do. However, our main hypothesis has not been supported: when making decisions under temptation subjects were not prone to distort moral judgments. We attribute this to the fact that violating the moral norm used in our experimental task did not evoke strong negative emotions. Seemingly, making decisions under temptation leads to distortion of moral judgments only when violation of moral norm evokes strong negative moral emotions.

*Keywords: morality, deontology, utilitarianism*

## DISENTANGLING THE CAUSAL RELATIONSHIP BETWEEN MATERIALISM AND PLANETARY WELL-BEING: EVIDENCE FROM THE UK AND CHILE

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Global warming is the biggest human challenge of the 21st Century. Peoples' values and life goals have played a key role in the environmental degradation. Cross-sectional research has shown that materialistic values are negatively linked to ecological identification (EI), pro-environmental attitudes (EA) and ecologically responsible behaviors (ERB). However, correlational studies do not allow for cause and effect inferences, and to date there is no longitudinal analysis published in the field. The main objective of our research is to be the first disentangling the correct direction of the links between materialism and planetary well-being over time. We expect that materialism is causally antecedent to EI, EA and ERB.

We tested our hypotheses among samples of adult graduates in the UK (N = 606; 63% of the wave 1 sample) and Chile (N = 258; 43% of the wave 1 sample). We employed widely used scales (sent online) in the field with good psychometric properties.

Using autoregressive cross-lagged models, we find that in the UK, materialism is causally antecedent to EI, EA and ERB. Results showed that materialistic values predict lower ecological identification, lower pro-environmental attitudes and lower ecologically responsible behaviour. In Chile, materialism is causally antecedent to EI and ERB. Materialistic values predict just lower ecological identification and lower ecologically responsible behaviour.

This research project is the first demonstrating a negative causal link between materialistic values and several indicators of planetary well-being. It shows that our consumer culture orientation have wide-ranging negative consequences for the future of the planet Earth. Theoretical and applied implications are discussed, as well as directions for future research.

*Keywords: overconsumption, materialism, development, altruism*

## EAT NOW, EXERCISE LATER: THE RELATION BETWEEN CONSIDERATION OF IMMEDIATE AND FUTURE CONSEQUENCES AND HEALTHY BEHAVIOR

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In the light of the current obesity epidemic it is important to gain a better understanding of the choices individuals make with regard to their eating and exercising behavior. As these choices typically involve trade-offs between present and future consequences, time orientation (i.e., the extent to which individuals care about the present and the future) is an important predictor for how individuals deal with these choices. Knowledge about such predictors will allow for more efficient interventions in the battle against obesity. Time orientation varies between, but also within individuals. Considerable variation in time orientation has been found across domains (e.g., health, money), but results on these domain-differences are mixed. We propose, therefore, that time orientation should be measured at a more specific level and we do so for the behavioral domains of eating and exercising. The aim of this study is to explain eating and exercising behavior by means of domain-specific time orientation. We hypothesize that domain-specific time orientation predicts behavior within a domain but not across domains. In addition, we expect that consideration of immediate consequences is more important for eating behavior, whereas consideration of future consequences is more important for exercising behavior.

Two studies were conducted among students (N=55) and the general public (N=165). Participants completed two adapted versions of the Consideration of Future Consequences Scale (CFC), labeled CFC-Food and CFC-Exercise. In addition, participants reported their eating and exercising behavior. We analyzed differences in time orientation for food and exercising and their predictive ability of self-reported behavior.

Both studies show that CFC-Food, but not CFC-Exercise, predicts self-reported eating behavior. Similarly, CFC-Exercise, but not CFC-Food, predicts self-reported exercising behavior. Furthermore, both CFC-Food and CFC-Exercise were found to consist of two subscales, CFC-Future and CFC-Immediate. A four-factor model, in which CFC-Food/Future, CFC-Food/Immediate, CFC-Exercise/Future and CFC-Exercise/Immediate factors are distinguished, has the best fit with the data as compared to one- or two-factor models or separate models for food and exercise. Moreover, it was found that self-reported eating behavior is only predicted by CFC-Food/Immediate, whereas self-reported exercising behavior is only predicted by CFC-Exercise/Future.

Domain-specific time orientation predicts behavior within a behavioral domain but not across behavioral domains. That is, time orientation regarding food does not predict one's exercising behavior and vice versa. Moreover, which aspect of time orientation predicts behavior differs across domains. Whereas considering immediate consequences is more important for eating behavior, considering future consequences is more important for exercising behavior.

*Keywords: intertemporal choice, individual differences*

## COMPONENTS OF TRUST IN FINANCIAL INSTITUTIONS. A COMPARISON OF GREECE, RUSSIA, THE NETHERLANDS, AND TURKEY

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Trust is a crucial element for companies in their relationship with its stakeholders (customers, employees, suppliers, investors). In a four-nation study, we measure the determinants of trust in order to explain trust and to give direction to managerial actions to improve trust among consumers/citizens of a nation. These four nations are Greece, Russia, The Netherlands, and Turkey. Seven determinants (competence, stability, integrity, customer orientation, transparency, value congruence, and reputation) could be reduced to three main determinants of trust: competence, trustworthy behaviour and stability. These three main determinants were measured by 14 actionable statements. With these three components about 60 percent of the variance of trust can be explained in the four countries. With the priority matrices we give direction to managerial actions to improve and/or to maintain trust.

*Keywords: economic expectations, trust, confidence, cross-cultural differences, financial crisis*

## SUSTAINABLE FOOD CONSUMPTION: ACT-RELATED OR PRODUCT-RELATED BEHAVIOR?

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Changes in food consumption will be needed to address the sustainability problem. The aim of this research is to explore sustainable food consumption by distinguishing different types of behavior. More specific, the distinction between act-related (sustainable behavioral acts such as using your own shopping bag or dietary changes such as lowering meat consumption) and product-related (choices for sustainable product alternatives, e.g. free-range or organic products) behaviors will be investigated, and consumer clusters differing on these behaviors will be identified. Three focus groups were conducted (N=18) followed by an online survey (N=941) in the Netherlands in 2011. Questions asked dealt with the extent to which participants conducted different sustainable behaviors with regard to food, and their intention to conduct these behaviors in the future. First, factor analysis has been used to classify these behaviors into different types. Second, cluster analysis has been conducted to search for consumer segments, differing in these behaviors.

Factor analysis shows that sustainable food behaviors can be grouped into five factors: one product-related factor, and four act-related factors: an easy-act factor (e.g. using a shopping list, bringing own shopping bag, cutting vegetables yourself, separating waste), an eating-less factor, a sustainable acquisition factor (buying at the farmer or on the market and growing own vegetables) and a vegetarianism-related factor. Cluster analysis on these five factors distinguishes four clusters. Cluster 1 (N=223) is 'the Sustainers' and score high on all factors. This cluster combines act-

and product-related behaviors. Cluster 2 (N=337) is 'the Potential-Sustainers', with the highest score on easy-act and high scores on the product-related factor and the eating-less factor. This cluster scores low on the vegetarianism-related and sustainable acquisition factors. Cluster 2 combines product-related behaviors with easy to accomplish types of act-related behaviors. Cluster 3 (N=251) is 'the Dietary Inerts', as scores are low on the eating-less factor, the vegetarianism-related factor and the product-related factor and average on the other factors. This cluster scores very low on product-related behaviors and somewhat higher on act-related behaviors. Cluster 4 (N=130) is 'the Non-Sustainers', as scores are low on all factors. Significant differences between the clusters have been found on health orientation, personal and social norms with respect to health and sustainability, food involvement, subjective knowledge and gender.

It can be concluded that the distinction between act-related and product-related sustainable food behaviors can be helpful for segmentation purposes, but act-related behaviors need to be further subdivided.

*Keywords: overconsumption, individual differences*

## TIME DISCOUNTING AND WILLINGNESS TO PAY FOR THE NATURE ENVIRONMENT; A FIELD EXPERIMENT IN THE TIDELAND IN JAPAN

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The main issue in evaluating the environment is measuring the gap in willingness to pay and accepting the environment as a static problem. However, there is a time lag between the payment for the environment and the reward for doing so.

To protect or recover the environment, we need to pay now for the future environment. Thus, if we analyze cost-benefits, discounted future utility from a better environment should be compared to the amount paid beforehand. While time lag was ignored in previous papers, our paper focuses on the time discounting and evaluation of the environment.

We carried out the experiment in February 2012 with 18 subjects who applied through a web site.

To measure the discount rate, we gave subjects the option to postpone receiving any amount of their reward and offered a possible 20 percent extra for one month. Eleven out of eighteen subjects selected immediate receipt of reward, therefore, we can conclude that the valuation of willingness to pay is strongly biased by the discount rate. Although we need to collect a lot of data for all seasons, we found that people who are willing to pay a lot for the preservation of tideland have lower discount rate. After informed that the tax is used to get rid of too much algae from the tideland, we asked how it should be paid. Over half people answered the preservation of the tideland should be paid by increasing issue national bond.

Our results shows that discounting future may severe obstacle for the preservation of nature environment , however, clarifying the appropriate method to pay forward is useful.

*Keywords: framing, intertemporal choice, altruism, reciprocity*

## THE IMPACT OF ECONOMIC SOCIALIZATION ON ADULT SAVING AND SPENDING

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Our aim is to investigate the long term impact of distinct aspects of economic socialization on adult economic behavior in European countries, with a particular focus on saving. We consider elements of economic socialization separately in order to study the role of the various mechanisms for the of shaping economic behavior.

We have used two data sets: one, part of a three-generation study of economic behavior carried out in Norway and the United Kingdom, the other, the DNB Household survey in the Netherlands. The former has a fuller set of economic

socialization questions, but more limited economic measures, and is a sample of parents. The latter has a more limited set of economic socialization questions, but a more extensive set of economic measures and economic and psychological concepts, and is a representative sample of the Dutch population.

The two studies together provide firm evidence for the long term impact economic socialization on adult economic behavior. The results show that guidance and discussion by parents have an impact on the 'planning ahead' domain of economic behavior. This is evident in both studies: there are univariate relationships between parental encouragement and having a longer time horizon, future time perspective and saving in both study 1 and study 2, and the regression analyses show that parental encouragement has an independent impact on saving. In study 2, parental encouragement also has an impact on the 'managing money' domain (with those having experienced this finding it easier to control their spending, having a positive attitude towards thrift and feeling in control of their financial destiny), and on the 'staying informed' domain, as their financial knowledge was also greater.

The pattern for the other economic socialization variables is less consistent but still interpretable. Doing household chores for money fosters an internal locus of control, and is linked with conscientiousness and saving. Receiving pocket money is associated with greater financial knowledge, being less likely to believe that economic outcomes were a matter of chance, and saving.

Given the desire of most parents to foster 'planning ahead' in their children, they should make the effort to teach budgeting and encourage saving. Providing pocket money is almost certainly beneficial, but whether tying it to doing chores is a good idea is debatable as whilst this appears to be linked with conscientiousness, it is also linked with present hedonism. Working for others is probably on balance a good thing

*Keywords: saving, development, adolescents*

## ACTIVATION OF MONEY VS TRANSCENDENCE AND SOCIAL BEHAVIOR, DEPENDING ON THE DOMINANCE OF MORAL/EFFICIENCY CHARACTERISTICS

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The research conducted so far show that activation of the cognitive schema of money causes a specific behavior in the area of helping or asking for help. People who have activated this pattern less willingly and more seldom offered help but also rarely asked for it (Vojs, Zaleskiewicz, Gajsiorska).

The aim of the presentation is to answer the question of how the activation of the pattern of money and credit cards versus transcendence scheme affects the social behavior of people. In addition, the research examined to what extent the expected effect of the influence of activation of the pattern of money, credit cards and transcendence scheme involves the dominance of moral and efficiency characteristics in the subject's self image. In the present study it was assumed that the concept of a credit card as a symbol of money will produce an effect similar to that observed previously for money and that activation of the notion of transcendence of the respondents (i.e. increased willingness to help) would induce the opposite effect. It was assumed that the effect of activation of the concept of money and transcendence would depend on whether a person is dominated in their self image by moral or efficiency characteristics.

Experiments were conducted in the research project: 3 times (group: activation of the concept of money vs. activation of the concept of credit cards vs. activation of the notion of transcendence) 2 times (the dominant features of the self image on: morality vs. efficiency). People having and using payment / credit cards, declaring any faith took part in the research. Cognitive schemas were activated in the experiments using semantic tasks and using images of money, credit cards and religious symbols. In the experiments, the desire to help other people or asking for help were the dependent variable.

The results indicated that people who have activated the credit card scheme, similarly (but less significantly) as the active scheme of money, were less likely to give assistance, but also rarely asked for it. On the contrary, people who have activated the transcendent pattern associated with religion were more willing to give assistance and willingly accepted getting help from others. The results concerning the relationship between the dominant self image showed that the image of the moral self is important for the respondents. The results and their implications will be discussed.

*Keywords: choice, psychology of money, money attitudes, money reminders, donation/charity, cooperation/competition*

## THE ECONOMIC WORLD OF CHILDREN FROM THEIR OWN POINT OF VIEW

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### Abstract

Studies of economic socialization often focus on children's understanding of and adaptation to the economic world of adults. In contrast, less attention is paid to children's own economic world, which may well involve activities inherited from the monetary economy of adults, but also endogenous activities whose nature and mechanisms remain largely unknown. The first objective of the present research was to characterize the economic activities that children and adolescent might engage with. The second objective was to generate an in-depth qualitative account of the context and qualities of these activities.

In the first stage we surveyed the prevalence and nature of economic activity amongst boys and girls aged 10, 12 and 14, students in primary and secondary schools in southwest England ( $n=484$ ). The survey inquired about activities related to: *pocket money*, *consuming*, *transferring value*, *generating value* and *accumulating value*. The second stage was conducted in three schools that had participated in the survey. Over three weeks, diaries, self-documentation cards, focus groups and parents' questionnaires were triangulated to explore the contexts, motives and means involved in the activities reported in the survey. Here we focus on two primary schools that draw pupils from a wide range of socioeconomic backgrounds ( $n=47$ ).

The survey showed that getting, spending and producing money increased with age, whereas the transference of value was prevalent across ages, the same as saving at home. Collecting was the only activity that declined with age. In the second stage, children's diaries showed more consumption in the more advantaged school, but no differences in transference, generation or accumulation of value; and overall, children's activities showed no relationship with the economic socialization practices of their parents. Children made abundant accounts of their economic activities with the documentation cards and during the focus groups. Their means to undertake their activities showed a mix of autonomy and assistance from peers and parents. Their consumption showed mainly individualistic and commercial motives, whereas both individual and social motives in commercial and domestic environments were described for transferring and accumulating.

Adult-like activities are certainly part of the economic world of children. However, equally important and frequent are the activities they construct by themselves with relative independence from adults, e.g., swapping and collecting. These activities deserve attention because they are a significant component of children's life, and because they might be precursors of adult's economic behavior.

*Keywords: children, development, adolescents*

### 1 Introduction

Webley and Lea (1993) outlined two research directions in the agenda of economic socialization. One direction would study how children develop an understanding of adults' economy (e.g., Gudmunson & Danes, 2011; Leiser & Beth Halachmi, 2006). This direction has received much more attention than the second one, which ought to examine the economic world constructed by children themselves. The research presented here follows this line of research, documenting activities that fall outside conventional economy and with relative little adult influence. Thus, economic activity is defined broadly to include non-monetary activity that is likely to occur within the context of children's individual motivations and interactions with their peers and family, e.g., collecting and swapping, as well as monetary activities akin to adults' formal economy e.g., spending money and saving.

This study is part of a larger project that explores the relationship between children's economic activity and their learning of mathematics. Previously, a large survey was conducted in order to study the prevalence of children's economic activity (Xolocotzin Eligio & Jay, 2011). Here we present a study that extends this survey triangulating diary studies, self-documentation and questionnaires for parents in order to elaborate a detailed account of the scope and quality of children's economic activity from their own point of view.

## 1.1 Money usage and economic socialization

Parental beliefs about pocket money might be a major influence on children's economic behaviours. Surveys conducted by Furnham (1999a, 2001) with populations similar to the one of the present study showed much agreement (e.g., no differences in terms of class) amongst parents in that children should receive pocket money, be encouraged to save, and be discouraged to borrow and lend money. Parents also agreed that pocket money plays an important role in children's economic socialization; but disregarded practices recommended by so-called experts (e.g., authors of books regarding children's financial education). Moreover, there was substantial variation about issues such as whether pocket money should be conditioned to making chores or academic performance, or withheld as a form of punishment.

Children's monetary practices reflect parental regulation. In a survey of children's saving and spending habits conducted by Furnham (1999b) most children reported pocket money as their main source of income, and many reported borrowing, lending and saving. Perhaps reflecting the bias to attend "formal" forms of economic socialization, this survey concentrated on documenting children's institutionalized saving. i.e., in a bank account, even though saving at home in a money-box was the most frequently reported form of saving. Another survey (Lewis & Scott, 2000) also showed that most children get pocket money from parents, and also indicated that children receive limited parental orientation to understand financial concepts (e.g., interest rate) and, consequently, their understanding of these concepts is rather limited.

Allocation and usage of pocket money is an important topic because economic experience during childhood is likely to predict economic behaviour during adulthood (e.g., for saving, Ashby, Schoon, & Webley, 2011). The extent to what children use money beyond parental influence, and in spite of their apparent misunderstanding of financial concepts remains an open question, one that is addressed in this study.

## 1.2 Non-monetary activity

Children's misunderstanding of financial concepts (Leiser & Beth Halachmi, 2006; Lewis & Scott, 2000) probably reflects the fact that these concepts are not part of the economic situations that children face in their everyday life, which can be regarded as economic even if unrelated to formal economic institutions and conventions, e.g., banks or money. There have been attempts to document economic activities of this kind. Zelizer (2002) reviewed literature that describes different forms of transactions (production, consumption and distribution of value) involved in children's social relationships, and that follow norms established by children themselves, e.g., the selection and meaning of gifts (also Clarke, 2007). In the same line, Nukaga (2008) studied the role of ethnic identity in children's food trading during lunch time, an activity in which the value of lunches in the playground economy is linked to issues such as minority identity and integration, rather than to their monetary value. Webley (1996) described the capitalist nature of children's marble playing, in which there is one child who provides the capital (marbles) and another who provides the labour (a skilled player), being the profits divided. Finally, Cook (2001) explained how the complexity of the characters and rules involved in the trading of Pokemon cards excluded parents and teachers, making the collection and trading of these cards a largely autonomous activity.

These activities have been rarely addressed in previous literature of economic socialization. Therefore, issues such as their incidence and the extent to what children construct them autonomously remain unclear. The methodology of the present study addresses these issues.

## 1.3 Previous research in this project

Previously, we surveyed the incidence of economic activity amongst children in primary and secondary school. The sample consisted of 484 boys and girls aged 10, 12 and 14, students in a representative range of primary and secondary schools in a middle-size city located in southwest England. The survey covered a range of topics such as the things that children value, their usage of pocket money, as well as the incidence of monetary and non-monetary economic activities. The complete set of results has been presented somewhere else (Xolocotzin Eligio & Jay, 2011). Figure 1 shows that non-monetary activities are as prevalent as monetary activities. These findings are extended in this study.

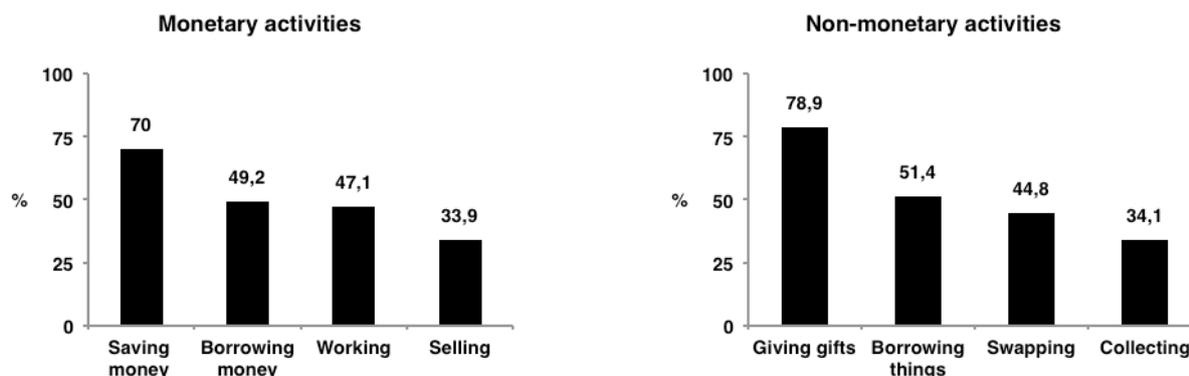


Figure 1 Incidence of monetary and non-monetary economic activities amongst girls and boys aged 10, 12 and 14 (n=484)

## 2 Objectives

Objective 1: Explore the scope and quality of children's economic activity

Objective 2: Explore parents' awareness and involvement in children's economic activity

## 3 Method

### 3.1 Participants

Participants were drawn from schools that participated in the survey described above. 46 were primary students (Mean age 10.62 years, 28 girls) and 37 were secondary students (Mean age 12.36 years, 18 girls).

### 3.2 Materials and procedure

In each school, data were collected over three weeks using diaries, documentation cards and questionnaires for parents or carers. There were also group interviews, which centred on the mathematics involved in children's activities. For the sake of space, the findings of the group interviews are not presented in this study.

During week 1, children were introduced to the study and each one received a diary booklet and a questionnaire for their parents or carers. The diary booklet was designed for children to register their activities during four days. There were lists of monetary and non-monetary activities, and children were asked to mark those they did at the end of each day. The list of monetary activities included receiving pocket money, saving at home, various forms of spending money, and ways of producing monetary value, e.g., doing chores for money or selling things. Listed non-monetary activities included collecting, giving gifts and various forms of transferring goods such as swapping and borrowing.

The questionnaire for parents or carers included questions for parents to report their provision of pocket money (e.g., frequency) as well as their awareness of other non-monetary activities (e.g., swapping and collecting).

During week 2, children conducted a self-documentation activity. They were presented with two sets of cards. One set included six cards of monetary activities: *Working*, *Selling*, *Borrowing money*, *Lending money*, *Spending*, and *Saving*. The other set included five cards of non-monetary activities: *Borrowing things*, *Lending things*, *Giving gifts*, *Swapping things* and *Collecting*. Children selected one card of each set according to what they were likely to do during the following week. Each card included four open-ended questions that asked about the goods, persons, contexts and ways of doing a given activity. Also, children were given a digital camera to take a picture to represent the activity.

## 4 Results

### 4.1 Diaries

Table 1 shows the prevalence of children's economic activities. Percentages of children who reported each activity were fairly similar across ages, except for few exceptions such as receiving pocket money; reported by 20 % more individuals in secondary than in primary. Buying something with friends was reported by the majority of children and more frequently than other forms of consumption, such as simply spending money or asking parents to buy something for them. About half of children reported saving money at home. The least reported activities were those involving the transfer of money and those that generated monetary value, such as borrowing or lending money, doing chores to get money, selling things or doing paid jobs.

Activity	Primary (n=46)	Secondary (n= 37)
<b>Monetary</b>		
Bought something with my friends	65.2 (30)	59.5 (22)
Received pocket money	45.7 (21)	64.9 (24)
Saved money on a money box	52.2 (24)	40.5 (15)
Spent money	45.7 (21)	40.5 (15)
Asked my parents to buy something for me	43.5 (20)	32.4 (12)
Did chores to get pocket money	30.4 (14)	32.4 (12)
Borrowed or lent money	28.3 (13)	29.7 (11)
Sold something	15.2 (7)	16.2 (6)
Did a paid job outside my house	6.5 (3)	5.4 (2)
<b>Non-monetary</b>		
Borrow or lend things	54.3 (25)	62.2 (23)
Giving or receiving gifts	39.1 (18)	48.6 (18)
Swapping things	39.1 (18)	24.3 (9)
Collecting	26.1 (12)	21.6 (8)

Table 1 Percentages and frequency (in parentheses) of children who reported each activity listed in the diaries at least once

In terms of non-monetary activities, the most reported were those involving the temporary transference of goods, such as borrowing or lending, indicated by about half of participants. Receiving gifts was reported by around half of participants, swapping things was more reported by primary students than by secondary students (about 40 % and 20 % respectively), and collecting was reported by about a quarter of participants.

## 4.2 Documentation cards

### Analysis

65 children (28 from primary school) returned 119 cards. Of these cards, 34 documented *Spending money*, 28 *Lending, borrowing or swapping*, 19 *Saving*, 17 *Collecting*, 7 *Selling or Working*, 7 *Giving gifts* and 4 *Borrowing or lending money*. Answers given to each question on each card were taken as the unit of analysis. 493 answers were collected, out of which 41 were unclassifiable (e.g., unreadable or difficult to make sense, e.g., *Where do you save money? Yes*). Consequently, the analysis involved 452 answers, classified in three themes: Motive, Context and Means.

### Motive

Motive referred to the utility driving individuals' activity. An answer could describe utility in terms of tangibles such as goods or money, or in terms of intangible benefits derived from the meaning of the activity, e.g., reputation. There were three categories of motives:

*Individualistic*. Answers mentioning the acquisition of goods that give individual enjoyment or reward, or indicating that the goods or benefits obtained with the activity are not shared with others, benefit others, or used in an activity that others also do. For example:

*What do you like buying? Sweets and toys*

*Do you know anyone who collects the same things you collect? No*

*Social*. Answers in this category indicate that the activity is carried out to benefit others, or that the goods and benefits of the activity are used or shared with others. For example:

*What do you do with the things you collect? I trade them*

*Why do you lend? Because they need it*

*Unspecific*. Instances of this category indicate that goods or money are used or accumulated but no specific reason to do it is given. Other instances include those answers indicating that an activity is carried "just because". For example:

*What do you do with the money you are paid? I spend it*

### Context

The environment in which the activity takes place. There were two categories:

*Domestic*. The activity occurred at home, at school or at someone else's home. For example:

*Where do you lend things? At home with my friends*

*Commercial*. The activity occurs in contexts such as shops but also at places with a formal economic structure such as car-boot sales. For example:

*Where do you save your money? In a post office account*

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**Means**

This theme referred to the ways in which children resolved the activity.

*Autonomous.* The answer mentions at least one regulatory action that the individual performs without help or advice from parents, friends or other people. These could be simple actions such as looking at the tags when shopping or more sophisticated ones such as writing down how much money is spent. For example:

*How do you know what is worth collecting? By the price, and I know someone who is collecting them*

*Assisted.* The answer makes explicit reference to the help or advice from parents or friends to carry out the activity. For example:

*Who help you to spend money? My parents*

*Unregulated.* The activity is carried with no apparent strategy and without the help of others, denoting lack of knowledge or regulation. For example:

*How do you know what is worth collecting? I do not know*

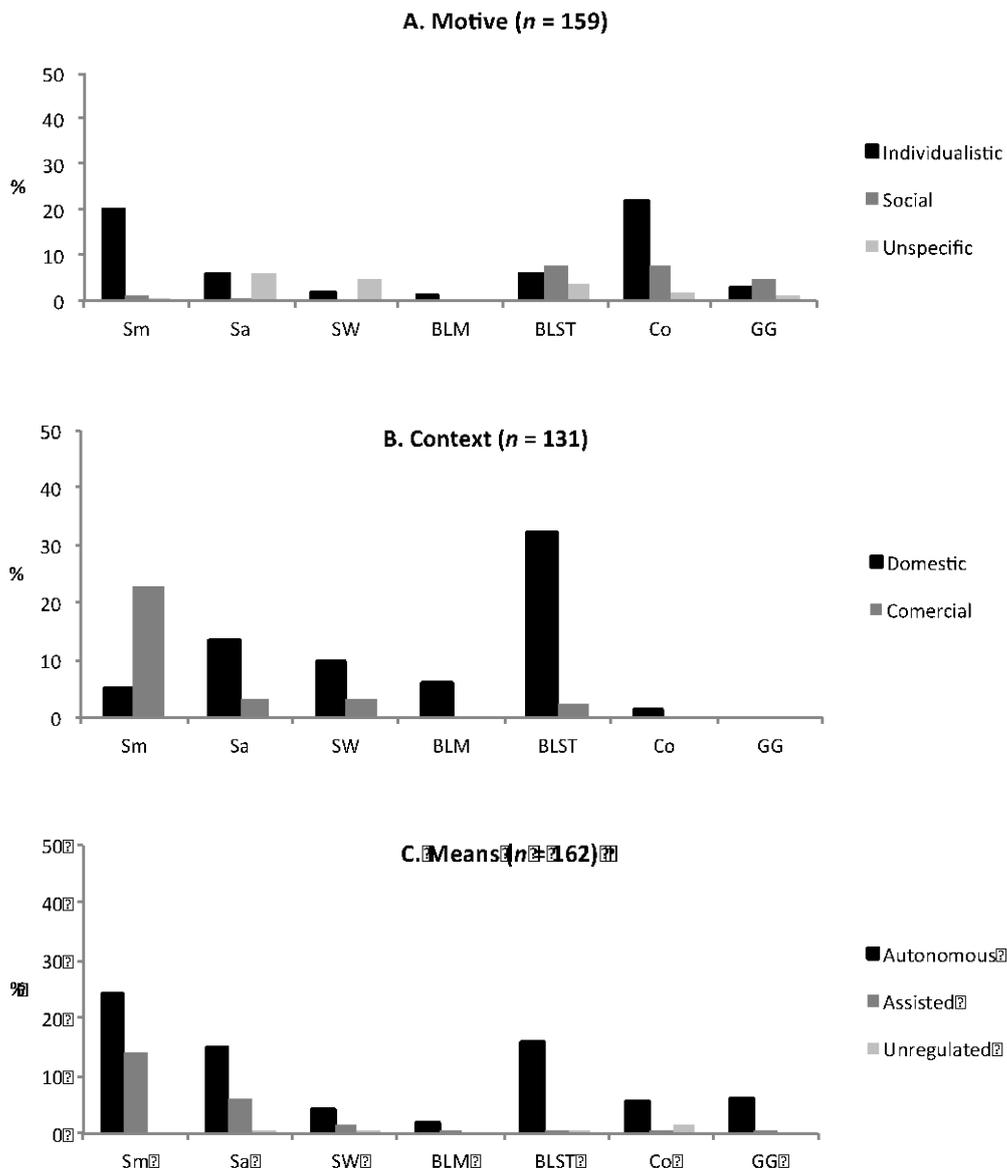
**Results**

Initial exploratory analysis showed no differences between the answers of primary and secondary children and, therefore, their data are presented together. Roughly the same numbers of answers were classified on each theme. Within each theme, certain categories were more frequent than others, and their distribution varied by activity.

Figure 2A shows the results for the theme Motive. 18.3 % of answers denoted unspecified motivations and 21.9 % denoted social motivations. These kinds of motives had rather low frequencies across activities. In contrast, 59.8 % of answers denoted individualistic motivations and concentrated on activities such as spending money and collecting. These results suggest that the motives were not a prominent component of children's documentations for most activities except spending money and collecting, activities that seem to follow individual motives.

Figure 2B shows the results for the theme Context. 31.4 % of answers referred to commercial contexts, most of them in relation to spending money. In comparison, 68 % of answers described domestic contexts, especially in reference to non-monetary activities such as borrowing, lending and swapping things. A modest amount of answers referring to domestic contexts were mentioned in relation to activities such as saving and selling or working. These results indicate that most economic activities described by children, except for spending money, tend to occur in domestic contexts such as the house or the school. Moreover, the context seems to be a fairly prominent component of children's descriptions of activities that involve the transference of goods.

Figure 2C shows the results for Means. Only 3 % of the answers denoted unregulated means, whereas 24 % referred to assisted means, e.g., parents' guidance or help from a friend. 72.9 % referred to autonomous means; that is, using strategies such as counting money when shopping, without making explicit reference to the intervention of anyone. Most references to autonomous means were given in relation to spending money, and slightly less in relation to saving, borrowing, lending, and swapping things. Autonomous means were also mentioned in other activities, but with lower frequencies. Most answers denoting assisted means concentrated on spending money, to a lesser extent on saving, and were virtually absent in the rest of the activities.



Sm= Spending money, Sa= Saving, SW= Selling or working, BLM= Borrowing or lending money, BLST= Borrowing, learning, or swapping things, Co=Collecting, GG=Giving or receiving gifts

Figure 2 Distribution of answers by activity in the themes: Motive (A), Context (B) and Means (C).

### 4.3 Parents' questionnaires

62 (% 74) participants returned questionnaires answered by their partners. Most parents of secondary students reported giving pocket money to their children, whereas only about half of parents of primary students reported so. Other than that, responses of primary and secondary students were fairly similar.

Only a small number of parents give pocket money daily or rarely. Parents prefer to give pocket money weekly - also monthly in the case of secondary students. About half of parents reported they condition pocket money to the completion of chores, whereas the other half does not ask their children to do anything, and very few negotiate the amount of money with their children. The majority of parents reported their children get money in ways other than pocket money, mainly by doing extra chores and less frequently to mark special occasions (e.g., birthdays), by request, from relatives, and very rarely from paid jobs. In terms of guidance for using pocket money, about half of parents make recommendations to their children about how to use their money, mostly in the form of generic advice such as spending carefully. Parents who advise their children to save their pocket money are in the minority.

Questions	Primary (n= 35)	Secondary (n= 27)
Monetary		
Do you give pocket money to your child? (Yes)	54.3 (19)	81.5 (22)
How often?		
Daily	5.7 (2)	7.4 (2)
Every week	37.1 (13)	40.7 (11)
Monthly	2.9 (1)	29.6 (8)
Rarely	2.9 (1)	0 (0)
What does your child have to do to get pocket money?		
Chores	42.9 (15)	37.0 (10)
Nothing	34.3 (12)	29.6 (8)
Behave	0 (0)	7.4 (2)
Do you bargain the amount of pocket money with your child? (Yes)	22.9 (8)	11.1 (3)
Does your child get money in ways other than pocket money?	74.3 (26)	70.4 (19)
Extra chores	28.6 (10)	25.9 (7)
On special occasions	17.1 (6)	18.5 (5)
By request	17.1 (6)	7.4 (2)
From relatives	17.1 (6)	3.7 (1)
With paid jobs	0 (0)	3.7 (1)
Do you recommend to your child how to spend his/her pocket money money? (Yes)	48.6 (17)	44.4 (12)
Spending carefully	31.4 (11)	29.6 (8)
Saving	8.6 (3)	18.5 (5)
How does your child spend her or his own money?		
Food	45.7 (16)	37.0 (10)
Leisure	31.4 (11)	33.3 (9)
Saving	17.1 (6)	40.7 (11)
Clothes	17.1 (6)	18.5 (5)
Gifts	5.7 (2)	14.8 (4)
Do you encourage your child to save his/her money in a money-box?	74.3 (26)	63.0 (17)
Non-monetary		
What are the three most cherished possessions of your child?		
Games	37.1 (13)	25.9 (7)
Toys or sports gear	31.4 (11)	25.9 (7)
Gadgets/computer	20 (7)	29.6 (8)
Mobile	11.4 (4)	22.2 (6)
Sentimental objects	14.3 (5)	25.9 (7)
Clothes	2.9 (1)	14.8 (4)
Pets	8.6 (3)	7.4 (2)
Do you know if your child collects anything? (Yes)	48.6 (17)	40.7 (11)
Collectibles (e.g., cards)	28.6 (10)	29 (8)
Clothes	5.7 (2)	0 (0)
Games	2.9 (1)	7.4 (2)
Do you know if your child borrows things from his or her friends?	20 (7)	25.9 (7)
Do you know if your child swaps things with her or his friends?	28.6 (10)	0 (0)
Does your child give gifts (e.g., at birthday parties?) (Yes)	74.3 (26)	92.6 (25)
Does he/she pay for the gifts with her or his own money?	17.1 (6)	37.0 (10)

*Table 2 Percentage and frequency (in parentheses) of the answers to the parents' questionnaire*

In terms of awareness and involvement in children's usage of money, about half of parents did not report knowing what their children spend their money on. Those who did so mentioned low-cost food (e.g., sweets) and leisure objects (e.g., games). Interestingly, most parents reported that they encourage their children to save, in contradiction to what they reported in relation to pocket money.

Most parents did not report the three most cherished possessions of their children. Those who did so mentioned games, toys, sports gear and gadgets and computers, and to a lesser extent mobiles, sentimental objects (e.g., pictures of relatives), clothes and pets. As for non-monetary activities, about half of parents reported their children collect something, mainly trading cards and less frequently clothes and games. In terms of transferring goods, only about a quarter of parents reported their children borrow things from their friends, and swapping was reported by about a third of parents in primary school, and by none in secondary. Finally, most parents reported that their children give gifts, e.g., at parties. However, only a quarter of parents of primary students, and a third of parents of secondary students, reported that their child pays for these gifts him/herself.

## 5 Discussion

The diaries data was consistent with the data collected with the previous survey. Both showed that children engage with a range of monetary and non-monetary activities. However, the diary gave us data localised in a specific period of time, unlike the more global view obtained with the survey. Also, more specific activities were observed with the diaries. The documentation cards indicated that children's economic activities are usually driven by individualistic motives, and resolved autonomously in both commercial and domestic contexts. The parents' questionnaire showed a certain degree of parental control and involvement in regards of children's monetary activities, but also a certain lack of awareness of the non-monetary activities. Here we discuss the results in terms of children's monetary and non-monetary activities.

### 5.1 Getting and using money

Pocket money was the main way of getting money. Most children reported receiving pocket money, especially secondary students. Similarly, most parents reported giving pocket money, especially parents of secondary students. Most parents condition pocket money to the completion of chores, but about a third of parents do not ask their children to do anything. Similarly, the amount of pocket money is rarely subject to bargain or negotiation. What this suggests is that although giving pocket money is a common practice, the norms ruling it are likely to differ.

Our data showed both inconsistencies and consistencies with previous research conducted by Furnham (1999b). Unlike participants in the Furnham survey, borrowing or lending money was rarely reported, in both the diaries and the documentation cards. In contrast, diaries were consistent with Furnham's survey in terms of the low frequency of activities such as doing jobs or selling things for money. Consequently, only a small number of children decided to document activities such as working or selling and when they did so it occurred mostly at home (e.g., doing chores), and very rarely in commercial contexts. Overall, it is clear that children heavily depend on parents to get money. This is confirmed by the parents' questionnaire. Most parents reported their children get money in ways other than pocket money, although these ways were also controlled by them and included doing extra chores, giving money on special occasions, or by request. Only one parent reported his/her child engaged in a paid job.

In spite of their dependence on parents to get money, children seemed to have independence in terms of how they use their money. More than half of parents do not advise their children how to use their pocket money, and if they do so the recommendations tend to be quite generic, e.g., "spend carefully". It is interesting that most parents advise their children to save their money when this is not pocket money. Moreover, a little more than half of parents did not report knowing how their children spend their money. These findings seem consistent with children's reports. Their most frequently reported ways of using money denote little parental influence, such as spending money with friends, mentioned by most children, followed by saving in a money-box and spend money. In fact, less than half of children reported asking their parents to buy things for them.

The documentation cards gave a more detailed view of children's relative independence at spending and saving money. Spending money was the most documented activity, and saving was also fairly common. Spending money was driven mainly by individualistic motives (e.g., getting food or clothes). Naturally, spending money occurred much more on commercial contexts, e.g., shops, than in domestic ones. Interestingly, autonomous means of spending (e.g., keeping track of the amount to spend) were much more prominent than assisted ones (e.g., help from parents or friends), whereas unregulated means were totally absent. Motives were not a prominent theme in children's accounts of their saving, one could speculate that for them, saving is an activity with intrinsic utility, or is mainly done because parents recommend it (similar to Furnham, 1999b). More prominent was that saving tended to occur in domestic contexts, mostly at home in a money-box, and that it involved more autonomous means (e.g., counting the money) than assisted ones (e.g., asking parents to say how much to save). Thus, even if parents recommend children to save, their saving behaviours are largely self-regulated.

## 5.2 Non-monetary activities

Non-monetary activities were as frequent as activities directed to get and use money. The most frequent ones were those that involve temporary transferences of low-value goods, such as borrowing or lending things, reported by more than half of children. Giving or receiving gifts and swapping were also reported, albeit with less frequency. It is important to note that the proportion of parents who reported that their children engage with these activities was lower than the proportion of children who reported them. Inversely, the proportion of children who reported collecting was lower (about a quarter) than the proportion of parents who reported their children collect (about a half). What this suggests is that some parents have limited awareness and, consequently, little influence, in the way in which their children construct and resolve these kinds of activities. Consistent with this interpretation, less than half of parents listed the most cherished possessions of their children.

The documentation cards pictured a more detailed view of the nature and context of non-monetary activities. No specific motives seemed especially important for activities such as borrowing, lending, or swapping things, since social, individualistic and unspecific motives were referred with similarly low frequencies. Perhaps the motives driving these activities are less clear than for others. For example, swapping, an activity that might benefit both the counterpart and oneself and combine both individualistic and social motives. In contrast, an activity such as collecting seemed to have an important individualistic motive, e.g., the enjoyment derived from sorting a collection of toys. The most prominent features of borrowing, lending and swapping were their occurrence in domestic contexts and the autonomy that they seem to involve.

## 5.3 Limitations

We worked in schools that draw students from different socioeconomic backgrounds and ethnicities. However, future studies would be welcomed that draw from larger samples that allow for interesting comparisons, e.g., in terms of class. Also, here we concentrated in describing the kinds of activities that children engage with, and in exploring the general nature of these activities. In future, research should be addressed to explain with more details the sort of reasoning and strategies involved in these activities.

## 6 Conclusion

Children engage in a range of activities that can be regarded as economic in spite of being alien to the economic world of adults and, moreover, many of them seem to take place outside parental influence. Studying these activities is important not only because they form part of the current life of children, but also because these activities might be important precursors of adult economic activity.

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## INDOOR TANNING, SUNBATHING, AND THE HAZARD OF SKIN CANCER: THE EFFECT OF THE TAN TAX

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Indoor tanning has gained popularity in the U.S. since the early 1980's, with approximately 30 million Americans currently visiting tanning salons each year. While the tanning industry claims to offer a quick and harmless alternative to sunbathing, there is growing evidence that the ultraviolet radiation emitted by tanning lamps is no less dangerous than that produced by natural sunlight. The present paper offers a rational-choice model for addressing the individual's indoor and outdoor tanning decision, which is applied to examining the individual's response to the recent imposition of an excise tax on indoor tanning and the consequent effect on the hazard of developing skin cancer.

While a tan tax will reduce the number of indoor tanning sessions and increase the number of sunbathing sessions, the total number of tanning events will decrease. Still, given certain conditions on the parameters of the model, the imposition of a tan tax will *increase* the hazard of developing skin cancer.

*Keywords: risky choice, tax behavior*

## ASSESSMENT OF HETEROGENEITY OF EXCESSIVE BUYERS BASED ON AFFECTIVE STATES PRECEDING BUYING LAPSES

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Compulsive buying has been predominantly viewed as the chronic need to manage negative affective states (O'Guinn & Faber, 1989). However, the mood repair view of compulsive buying is not consistent with findings that the experience of boredom and positive emotions prior to buying lapses among compulsive buyers is also very frequent (e.g., Faber & Christenson, 1996; Miltenberger et al., 2003). This inconsistency suggests the possibility that there may be subtypes of compulsive buyers with different affective motives of engaging in buying lapses.

Inspired by recent research on heterogeneity of drinkers based on distinct affective triggers of alcohol consumption study, such as negative affect, boredom and positive affect (Stewart et al. 2008), we investigated the possibility that compulsive buyers may consist of subtypes whose buying lapses are preceded by different affective states has not been examined. The main objectives of this research are to (1) systematically assess the heterogeneity of compulsive buyers based on affective states that precede their buying lapses, and to (2) investigate dispositional traits that characterize distinct subtypes of compulsive buyers. By linking affective triggers of buying lapses with disparate accounts of dispositional traits associated with compulsive buying (e.g., Faber 2004; Dittmar 2005), we hypothesized the following:

H1: The subtype of compulsive buyers with marked frequency of buying in response to negative emotions (i.e., the "escape seekers") have more severe compulsive buying tendency than the subtype of compulsive buyers who frequently buying in response to boredom (i.e., "excitement seekers").

H2: The "escape seeker" subtype is higher in hypersensitive narcissism and lower in self-esteem than the "excitement seeker" subtype.

H3: The "excitement seeker" subtype is more materialistic than the "escape seeker" subtype and ordinary (non-compulsive) buyers with high impulsive buying tendencies.

A survey was administered to adults who reported experiencing 2 or more major buying lapses in the past 4 weeks (N = 419). Latent cluster analysis was used to identify clusters of buyers. The hypotheses received strong support by our data.

Findings from this study indicate that there are two subtypes of compulsive buyers: the escape seekers with strong vulnerable to negative emotions and the excitement seekers with strong vulnerability to boredom and low arousal. Furthermore, our findings indicate that ordinary consumers with high impulse buying tendencies are distinct from the subtypes of compulsive buyers.

*Keywords: overconsumption, materialism, individual differences, self-control*

## THE SYMBOLIC POWER OF MONEY AS AN EXISTENTIAL ANXIETY BUFFER

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Our previous studies demonstrated that reminders of mortality increase the subjective value of and the need and desire for money. The underlying theoretical assumption has been that money can soothe existential anxiety — in the presence of existential anxiety, the appeal of money is amplified. The present paper entails a more direct examination of this assumption and tests whether the physical presence of money can lessen death anxiety. Specifically, participants were made to interact with money, and their level of fear of death was assessed as the dependent variable. If money is the existential anxiety buffer that we argue it is, physical interactions with money should result in decreased existential anxiety.

In two different experimental conditions, participants were exposed to either real money or play money (similar to money used in the Monopoly game). The rationale for including play money in our study in addition to real money was to test the idea that it is money as a concept that has the power to soothe existential anxiety, and not necessarily money as a physical instrument of economic exchange. Next, all participants filled out questionnaires measuring fear of death and fear of the dentist.

As expected, participants primed with money (real money or play money) reported lower fear of death than control participants,  $F(2, 117) = 2.981, p = .055$ ; mean ( $M$ ) real money prime = 5.30,  $SD = 2.83$ ;  $M$  play money prime = 5.20,  $SD = 2.66$ ;  $M$  control = 6.53,  $SD = 2.61$ . The two money conditions did not differ between each other ( $p > .87$ ), but both were significantly different from the control condition,  $t(78) = 2.012; p = .048$ , for real money prime versus control;  $t(78) = 2.247; p = .027$ , for play money prime versus control. No differences between groups were found in the reported fear of the dentist.

Results of this study lent support to our hypothesis, by revealing that priming the concept of money significantly reduced participants' fear of death. Moreover, the impact of money priming did not depend on what form of money was applied (real money or play money). These results are in line with our argumentation that the concept of money can play a significant role in buffering the anxiety evoked by the awareness of one's mortality. People desire money not only to buy and consume goods, but also because it has the power to soothe existential fears.

*Keywords: psychology of money, money reminders, sacrum/profanum theory*

# Posters

## ASYMMETRIC DISCOUNTING IN VALUATION OF REWARD POINTS

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Reward points as sales promotion tools are of increased prevalence as a type of currency. In this paper, we explored variants in consumer's valuations on reward points. In consideration of the prevalence of reward points as a type of currency in Japan, the direction of conversion of reward points is the key variant; cash-points direction is the conversion of cash into reward points, and points-cash direction is the conversion of reward points into cash. Our research question was to find out if the degree of discounting the subjective value of points depends on the direction of conversion as well as asymmetric discounting in temporal choice (Loewenstein, 1988). In the study we reported two experiments. Experiment 1 asked participants to indicate an acceptable amount with open-ended questions in both directions of point conversion. In Experiment 2, Choice titration (Weber et al., 2007) was used.

Experiment 1 asked 164 undergraduates and graduates to indicate an acceptable amount with open-ended questions in both directions of point conversion, using reward points issued by a major convenience store chain. In Experiment 2, 300 volunteers completed an on-line survey, using Amazon gift points. Participants of cash-points direction were given a series of binary choices between a 500-yen gift in cash and a gift certificate in points, worth 1 yen each; the amount value of the points increased. Points-cash respondents were given a series of binary choices between a 500-point gift certificate and a cash gift; the amount value of cash increased.

Respondents in Experiment 1 discounted the value of the points more in the cash-points direction than in the points-cash direction. Additionally, in the points-cash direction, more respondents did not discount in the conversion of the points into cash. Experiment 2 repeatedly showed asymmetric discounting in the valuation of reward points between the cash-points direction and the points-cash one.

We have found out asymmetric discounting in the valuation of reward points. This result suggests that a change of the conversion direction in valuation of reward points causes consumers to shift their focus of attention to different aspects of reward points. These shifts of respondents' focus were affected by the accessibility of their memory relevant to the valuation of reward points. Cash-points direction would remind consumers of transaction utility of reward points, whereas points-cash direction would evoke acquisition utility of reward points.

*Keywords: framing, mental accounting, psychology of money, money attitudes, prices, reward points*

## MAKING OF MIGRATION PREFERENCES

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Perfect technical rationality and the consequent rational choice paradigm, for centuries, guided the scholarly thinking in different disciplines engaged in behavioral decision research. However, if we boil down this paradigm then we end up at a more fundamental concept of preference. Rational choice theory is, for the most part, a theory of preference-relations. Yet, despite their fundamental importance, empirical knowledge regarding the origin, development, and dynamics of preferences is still very limited. After documenting the 'hallmark' constructive nature of preferences, the 'cultural turn' of the post-1990s psychological research proposed the conjoint or disjoint models of human agency and associated processes laying at the heart of distinct observed patterns of preferences and decision making. The research has been voluminous, in last couple of decades, in translating these self-construal ideas into cross-cultural explanations about individual preferences. All such theoretical developments, either in economics or in psychology, are also pertinent to the conceptualization of migration preferences. Thus, the literature on preferences, as it stands now, suggests that prior to engaging in migration behavior people neither construct their preferences suddenly in the process of elicitation nor they follow the given and exogenous preferences. In addition, the tendency to take culture as a homogeneous entity has far reaching implications for making generalizations in diverse Indian context. Hence, it becomes imperative rather to ask how migration preferences come into being or how are they formed? How do the

social-psychological processes shape the formation of migration preferences? More precisely, how the multiple self-definitions affect migration preferences? Which identities become more salient in the context of migration preferences? And more broadly what would be a proper conceptual framework that may possibly lead to a proper theorization of economic agent vis-a-vis preferences? With the help of experimental studies, in the present paper a kind of psychological perspective is provided capable of (a) addressing how to handle the intra-cultural differences in migration preferences; (b) explaining the intra and inter individual differences in preference for migration; and (c) extending the reach of the self-categorization theory to include mobility intention.

*Keywords: choice, uncertainty, self-regulation, preferences, mobility*

## A DISCUSSION ABOUT ENVIRONMENTAL PSYCHOLOGY, ECONOMIC PSYCHOLOGY AND LEGAL ASPECTS OF PUBLIC

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The present work uses two everyday situations as a prototype analysis. The use of water in public restrooms and the use of plastic bags in a popular market to show that the study of human behavior taking into account psychological, social and economic variables and legal issues may be more useful for the conduct of public policies that actually promote behavioral changes.

It was used a cross-table to compare the two situations based on its similarities and on its differences for public policy based on economic, social and environmental consequences.

The use of water in public restrooms is related to care of the physical environment that ensures the use by the next person, but also involves increased consumption of the natural resources so important to mankind. Reducing the use of plastic bags is a key topic for urban health. The issue is so serious that we talk about white pollution that also affects the marine life. But the reduction in the use of that product or its total replacement implies loss of employment and change in economic dynamics. The first situation present the use of water to allow that others persons that use the bathroom. In the second situation, the plastic bags are used for individual interests, for shopping transport.

Hardin (1968) created the expression "The tragedy of commons" to explain the situation when the individuals interests are in conflict with collective interests. The analyses of social and environmental impact of changing behaviors are not simple. It is always related to individual and collective interest. It is necessary to develop social technology to handle environmental issues, more than any other technology. Understanding the relationship between behavior, economy and laws can help this process to make better public policies.

*Keywords: risk perception, overconsumption, social dilemma, socially responsible business,*

## DEVELOPMENT OF AN IDEOLOGICAL ORIENTATION SCALE: THE CHALLENGES OF MEASURING THE ECONOMIC DIMENSION OF IDEOLOGY

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### Abstract

Individual ideological orientation (identifying oneself as leftist/liberal vs. rightist/conservative) is primarily determined by two dimensions. The first is acceptance vs. rejection of social change. The second is acceptance vs. rejection of inequality. The former dimension corresponds to the social aspect of ideological orientation, whereas the latter corresponds to the economic aspect. In most Western democracies, both dimensions are robustly correlated (social conservatism is often combined with support for economic meritocracy, whereas social liberalism is more often

combined with economic egalitarianism). In post-communist countries, both dimensions are not correlated in the same way (Thorisdottir et al., 2007). This presents a challenge for measurement of ideological orientation, because the usual bipolar self-placement scales are not applicable. Instead, multi-item rating scales should be used to measure separately the social and economic attitudes underlying each dimension of ideological orientation. This paper presents the first stage of development of a sub-scale designed to measure the economic dimension of ideological orientation. The results of development of an 8-item scale for measuring the social dimension of ideological orientation have been presented elsewhere (Trups-Kalne & Dimdins, 2011).

Through several pilot studies, 16 statements were selected from a larger item pool developed to measure attitudes towards various aspects of economic inequality and state role in economics. After Study 1 (N = 104), 8 statements forming a coherent factor structure and acceptable internal reliability were selected. In Study 2 (N = 130), the 8-item economic attitudes scale was administered along with the above-mentioned social conservatism scale and the Protestant Ethic Scale (PEC). Higher score on the economic attitudes scale indicates support for state role in economics (such as state-guaranteed employment or control over private-sector wages).

The support for state role (SSR) was positively correlated with social conservatism and was not correlated with PEC score. Social conservatism, in turn, was positively correlated with age and PEC score, in line with theoretical predictions.

The result that social conservatism is associated with support for state role in economics rather than support for economic meritocracy may reflect a uniquely post-Communist political attitude structure, where the role of state is associated with regulation of both social and economic processes. The psychometric properties of the SSR scale were acceptable, but the results suggested that the perceived meaning of some items changed with current socio-economic developments. Possibilities to increase the reliability of the SSR scale and suggestions for further validation are discussed.

*Keywords: inequity aversion, individual differences, economic attitudes, ideology*

## 1 Introduction

In recent years the field of psychology has observed a constant growth of interest in studying individual ideological political orientation (i.e., identifying oneself as leftist/liberal vs. rightist/conservative) as a psychological phenomenon. Jost (2006) reviewed a number of studies (both experimental studies and large-scale surveys with representative samples), showing that ideological self-placement co-varied with meaningful psychological differences between individuals. Elsewhere it has been shown that accepting a certain political ideology serves to satisfy epistemic, existential, and relational needs of individuals (Jost, Federico, & Napier, 2009). Ideological orientation, such as being liberal, centrist, or conservative, has been linked to certain personality traits, for example, social dominance orientation (Pratto, Sidanius, Stallworth, & Malle, 1994), and right-wing authoritarianism (Altemeyer, 1998). Ideological orientation is also related to certain information processing styles, such as need for cognitive closure and cognitive complexity (Jost, Glaser, Kruglanski, & Sulloway, 2003). In addition, at least under certain conditions, political orientation has been linked with subjective well-being of individuals (Napier & Jost, 2008). Effects of political orientation on judgments and behavior can be observed both for conscious, controlled information processing (e.g. Cohen, 2003) and unconscious, automatic information processing (e.g., Lieberman, Schreiber, & Ochsner, 2003; Oppenheimer & Trail, 2010). This field of study has been gaining momentum and seems sure to maintain its topicality in the years to come.

At the same time, as the psychological research of political ideology grows in its scope, depth, and popularity, some conceptual and methodological limitations of the existing knowledge base become apparent. One such limitation stems from the fact that the fields of political psychology and social psychology are heavily dominated by research conducted and theories developed in the United States of America. Although there sure are certain universal features serving as the psychological bases of more liberal or more conservative ideological orientation, it is also obvious that certain cross-cultural differences may exist in the psychological contents, structure, and expression of political ideologies, depending on the political culture and social norms dominant in various countries. For example, Thorisdottir, Jost, Liviatan, and Shrout (2007) found that values and attitudes underlying left-right self-placement were correlated differently in Europe than they were in the United States; in addition, there were significant differences between Eastern and Western European countries in the attitudinal structure underlying ideological political orientation of individuals. More research is necessary to distinguish between the more profound, universal psychological mechanisms contributing to certain ideological orientation, and the more variable, culture-specific organization of political values and attitudes, as well as context-specific factors that may influence the concrete expressions of political opinions depending on the given situation. A necessary step in studying ideological orientation and its correlates is development of valid and reliable measurement methods of such constructs as liberalism/ conservatism or leftist/ rightist ideological orientation.

## 1.1 Structure of ideological orientation

There is no unequivocal agreement within social sciences as to how politico-ideological orientation should be defined; both theoretical conceptualizations and practical operationalization of liberalism, conservatism, rightist or leftist political orientation have changed over time and continue to differ widely (Jost et al., 2009; Knight, 1999). In psychology individual ideological orientation is often seen as primarily comprised of two dimensions (cf. Choma, Ashton, & Hafer, 2010; Jost et al., 2003). The first is acceptance vs. rejection of social change. The second is acceptance vs. rejection of inequality. The former dimension corresponds to the social aspect of ideological orientation, whereas the latter corresponds to the economic aspect. Duckitt and colleagues (Duckitt, Wagner, du Plessis, & Birum, 2002) have identified right-wing authoritarianism as the psychological basis for the former dimension (correlated with social conservatism), whereas social dominance orientation underlies the latter dimension (correlated with support for economic meritocracy). Another theoretical conceptualization of the psychological basis of ideological orientation is offered by Schwartz (1994). Schwartz's theory is based on 10 basic value types, which in most cultures are grouped along two basic dimensions—self-transcendence vs. self-enhancement and openness to change vs. conservation. In terms of political ideologies, the former dimension corresponds to rejection vs. acceptance of social inequality, and economic inequality in particular. The latter dimension corresponds to acceptance vs. rejection of social change. Consequently, openness to change values in combination with self-transcendence values correspond to a more leftist political orientation, whereas self-enhancement values in combination with conservation values correspond to a more rightist orientation.

In most Western democracies, both dimensions are robustly correlated: social conservatism is often combined with support for economic meritocracy, whereas social liberalism is more often combined with economic egalitarianism, and other combinations are relatively rare (Jost et al., 2009). However, as demonstrated by Thorisdottir and colleagues, in post-communist countries both dimensions are not correlated in the same way (Thorisdottir et al., 2007). A recent survey in Latvia revealed that a combination of economic leftism and social conservatism is by far the most dominant variant of ideological orientation in this country (SKDS, 2012). Such findings demonstrate that while the two-dimensional structure of ideological orientation may be a relatively universal feature, around which political, social and economic attitudes are organized in various countries, the relation between the two dimensions is culture-specific.

## 1.2 Measurement of ideological orientation

There are two main approaches to measuring ideological orientation (Knight, 1999). The first approach is direct measurement of liberalism-conservatism, or leftist-rightist political orientation by asking the respondent to place oneself on a bipolar rating scale. A 7-point Likert-type scale ranging from "1 = Extremely/ strongly liberal" to "7 = Extremely/ strongly conservative" with "4 = Moderate/ Neutral/ Middle of the road" being the midpoint is one of the most popular measures of politico-ideological orientation in the United States, showing good validity and reliability (Jost, 2006). A variation of the 7-point scale ranging from "1 = very left" to "7 = very right" has also been used in measuring political orientation (Van Leeuwen & Park, 2009). This approach has been more effective in measuring ideological orientation in countries with well-developed political culture where respondents have a shared understanding of the terms denoting political ideologies.

The other approach is multi-item measurement of ideological orientation that typically uses some summated rating scales measuring various social, political and economic attitudes that are related to liberal vs. conservative, or right vs. left political ideologies. The main advantage of this approach is that it does not require any special understanding of political concepts on behalf of the respondents. Researchers are free to determine the content of political ideology and they can select issues that in a theoretically justified manner differentiate between individuals with varying ideological orientation. This reduces both systematic and random error in measurement of ideological orientation as individual difference variable. At the same time, it may narrow the contents and meaning of ideological orientation in particular studies, because different scholars may emphasize different facets of political ideology in the measurements they devise (Knight, 1999). This may complicate comparison of results across various studies. At the same time, this may be the only approach to measuring ideological orientation in populations who have little understanding, or biased understanding, of direct ideological labels. For example, the SKDS (2012) study that compared the ideological self-placement with scores on multi-item measures among the inhabitants of Latvia found a substantial discrepancy between both kinds of ratings both for economic and social dimensions of ideological orientation. Such results justify the need for valid and reliable multi-item measures designed for evaluation of both dimensions of political ideology in specific cultural contexts.

## 1.3 Economic dimension of ideological orientation

Broadly defined, the economic dimension of ideological orientation (economic left vs. economic right) reflects the acceptance versus rejection of inequality in society, in particular, economic inequality. More specifically, economic attitudes related to equality/ inequality are mostly focused on the role of state in reducing the economic inequality

and redistribution of income within a given society. At the one end of economic dimension (economic right) is support for meritocracy where each individual is responsible for one's economic outcomes and is free to reap the full rewards of economic success. At the other end (economic left) is support for economic egalitarianism where the state intervenes in the economic activities of its subjects to ensure equality of outcome (a.k.a. equality of rewards). The former end of economic dimension is often conceptualized as socioeconomic individualism and support for capitalism, whereas the latter end can be defined in terms of egalitarianism, humanitarianism, or support for big government (Feldman, 1999). Common issues that are covered in multi-item rating scales measuring the economic dimension of ideological orientation include state role in ensuring equality, redistribution of income through taxation and through state control of wages and prices, explanations of poverty, attitudes towards various social benefits to those in need, and support/ opposition for the principles and practices of free market and capitalism (see Feldman, 1999, for a review).

## 2 Objectives

The purpose of the current study was to develop a multi-item summated rating scale for measuring the economic dimension of ideological orientation in the cultural context of a post-Soviet society. The study reported in this paper is part of a wider research project aimed at developing an ideological orientation scale covering both dimensions of political ideology. The other part of the project--development of an 8-item scale for measuring the social dimension of ideological orientation, has been completed and its results have been presented elsewhere (Trups-Kalne & Dimdins, 2011). The current study presents the first stage of the development of a support for state role (SSR) scale, with the aim to make the scale available to a wider community of researchers who can contribute to further validation and fine-tuning of the measure.

## 3 Method

The research reported in this paper was conducted in three stages. In the first stage, the initial item pool for scale development was created. The items were created in two ways. First, previous literature on political ideology and economic values and attitudes was analysed, looking for issues and measurement items used by the previous researchers. Second, students at a Political Psychology course taught at University of Latvia by the author of this study conducted brainstorming sessions as a part of class assignment during seminars devoted to psychological operationalization of political ideology. During these brainstorming sessions, students were formulating statements for measuring the economic aspects of politico-ideological orientation, and selecting the best-worded statements. The brainstorming sessions were conducted in the fall semester of 2010 and the spring semester of 2011. The students received course credit for their input in this process. Several small-scale pre-testing/ pilot studies were conducted to select 16 items (from the initial pool of around 50 items) that were non-overlapping and best-worded.

In the second stage of the study (Study 1), these 16 items were administered to 103 participants (39% male, 61% female; median age = 32 years, mean age  $M = 36$  years,  $SD = 15$  years). The data was collected as a part of a project assignment during the Political Psychology course taught by the author in spring of 2011. In this assignment, each student administered the survey to 3-4 individuals of varying gender, age, and educational background. The data was analysed by the author of the study. The students received class credit for completing the assignment, and were provided feedback about, and a chance to discuss, the results of the study in another seminar devoted to the measurement issues of political ideology. After Study 1, 8 statements forming a coherent factor structure and acceptable internal reliability were selected for further research.

In the third stage of the study (Study 2), the 8-item scale created in the previous stage was administered to a sample of 130 respondents (42% male, 58% female; median age = 26 years, mean age  $M = 33$  years,  $SD = 16$  years). In addition to the 8-item economic attitudes scale, the Social Conservatism scale developed by Trups-Kalne and Dimdins (2011) and the Protestant Ethic Scale (Mirels & Garrett, 1971) were also administered. The Social Conservatism scale consists of 8 items, where the respondents are asked to rate their attitude towards various phenomena in the society on a 7-point Likert-type scale. Examples of the scale items are "gay marriage", "greater influence of religion in education", "change of traditional gender roles" (reversed-scored), and "protection of marriage in the Constitution". The social conservatism index is calculated as the mean score across all 8 items (after the appropriate reverse scoring where necessary). Higher score indicates a more conservative stance (i.e., support for traditional values).

The Protestant Ethic scale is composed of 19 items that originally were rated on a 4-point Likert-type scale, but in this study a 7-point scale was used. Most of the scale items deal with the virtues of hard work and individual effort. Examples of scale items are "Most people who don't succeed in life are just plain lazy" and "If one works hard enough he is likely to make a good life for himself". The Protestant Ethic index was calculated as the average score across all 19 items (after the appropriate reverse scoring where necessary). A higher score indicates stronger support for hard work and individual effort as a basis for economic prosperity.

The data was collected as a part of a project assignment during the Political Psychology course taught by the author in spring of 2012, and the procedure for data collection was identical to that of Study 1. All surveys were administered in Latvian.

## 4 Results

First, an exploratory principal component analysis with Varimax rotation was conducted on the ratings for all 16 items in Study 1. To save space, the results are not reproduced here in detail. The initial analysis yielded 5 factors accounting for 62% of the total variance. Six items with loadings above 0.5 on the same factor were selected as the core items of the scale. Internal consistency reliability (Cronbach's Alpha) and principal component analysis with forced extraction of one factor was repeatedly performed by adding and removing other items to these six, until the best possible item combination was found (i.e., providing the highest Alpha value and highest explained variance for a one-factor solution in the principal component analysis). The eight items providing the best results are shown in Table 1.

SSR items	Study 1 (N = 103)		Study 2 (N = 130)	
	Factor loading	Item-total correlation	Factor loading	Item-total correlation
Increasing the retirement age*	-.62	.48	.41	.21
State-guaranteed jobs for inhabitants	.68	.53	.63	.44
State-covered higher education	.59	.43	.60	.38
Increased unemployment benefits <sup>a</sup>	.49	.34	.55	.37
Promoting economic equality in society	.66	.52	.59	.41
State-controlled maximum income cap for private persons	.68	.54	.55	.40
Greater state control over private sector wages <sup>a</sup>	.57	.44	.55	.42
Fully state-covered healthcare system	.71	.56	.62	.39

Table 1. Factor loadings and corrected item-total correlations for the Support for State Role (SSR) scale.

Note: \* reversed-scored item; <sup>a</sup> these items originally did not load on the same factor in Study 1.

The one-factor principal component analysis and reliability analysis was repeated also for the results of Study 2. It should be noted that in both studies the total explained variance for the one-factor solution was relatively low--39.5% in Study 1 and 32% in Study 2. The internal reliability of the scale in both studies was acceptable (in Study 1,  $Alpha = .77$ ; in Study 2,  $Alpha = .68$ ). When interpreting these results, one should keep in mind that the wordings of the eight items combined in the Support for State Role scale are worded very differently and cover various areas of possible state intervention in the economic processes. Under these circumstances, it is very difficult to achieve a consistent one-factor structure and high internal reliability of the scale. Therefore the current reliability statistics were considered sufficient to create an index as the average score across the five items (after reversing the ratings of the first item) for further analysis. A higher SSR index indicates stronger support for a state role in the economy.

The SSR index was correlated with the average scores of the Social Conservatism scale ( $Alpha = 0.66$ ) and the Protestant Ethic scale ( $Alpha = 0.72$ ). The SSR index was positively correlated with the Social Conservatism index ( $r = .33, p < .001$ ); there were no other significant correlations between the SSR index and any of the variables. In addition, the Social Conservatism index was positively correlated with participant age ( $r = .42, p < .001$ ) and the Protestant Ethic score ( $r = .25, p < .01$ ). There was also a significant correlation between the Protestant Ethic score and participant age ( $r = .23, p < .01$ ).

## 5 Conclusions / Discussion

The results of the reported studies illustrate the difficulties of measuring the economic dimension of ideology as a single psychological construct. The first difficulty stems from the fact that support for state role in reducing the economic inequality can be expressed in attitudes towards multiple and diverse issues. As a result, it is difficult to formulate a multiple-item scale with a consistent one-factor structure and high internal reliability. One possible solution to this problem is narrowing down the range of phenomena covered by the scale items, to concentrate on more similar phenomena, and/or to rephrase the current formulations so that they are more similar to each other in their verbal expression. The other possible solution is splitting up the measurement of the economic dimension of ideological orientation in multiple subscales. This approach, though, loses the advantage of having two easy-to-administer and easy-to-interpret scales for the measurement of the two dimensions of political ideology--one for each dimension. It is clear that the solution requires some trade-off between the conceptual elegance and psychometric qualities of the measure. Minimizing this trade-off is the main challenge in further development of the SSR scale.

Another tendency that can be observed when comparing the results of both studies is that the inter-correlations among at least some of the scale items were different in Study 1 and Study 2. Both studies were conducted within a year of each other. These results suggest a possibility that the perceived meaning of some scale items might have changed with current socio-economic developments in the Latvian society. It presents another challenge (though not unique to the measurement of economic attitudes) of developing a reliable measure that would maintain a more or

less consistent internal structure of the scale, irrespective of contemporary trends in public discourse and public sentiment.

The other challenge illustrated by the current paper is the culture-specificity of the expression--and relations between--both dimensions of ideological orientation. In most Western cultures (and most certainly in the American culture) one would expect a negative correlation between the SSR index and the Social Conservatism score; the results of Study 2 show the opposite pattern. It is also notable that there was no significant correlation between the SSR index and the Protestant Ethic score (where one might have expected a negative relationship from the theory and previous research). At the same time, all the other significant correlations observed in the data are in line with expectations from the theory, bolstering the overall validity of Study 2. These findings are in line with results from the recent SKDS (2012) study, which revealed that the majority of the population of Latvia combine economic leftism with social conservatism in their social, political, and economic attitudes. The result that social conservatism is associated with support for state role in economics rather than support for economic meritocracy may reflect a uniquely post-Communist political attitude structure, where the role of state is associated with regulation of both social and economic processes, and where the state is expected to take care of the economic needs of its subjects. It would be interesting to replicate these findings in other post-Communist countries.

Despite the shortcomings and challenges revealed by the studies reported above, the results of these studies can be interpreted as promising (considering the diverse formulations of the current scale items, their psychometric properties reported here were acceptable) and can be used as a basis for further work in the SSR scale development.

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## MARITAL ROLES IN MARKET DECISION MAKING

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Changes in consumption patterns should be considered from gender point of view. Role of women in social life as well as decision-making within the household is increasing. In every household it's members play social roles which are determined by traditions, culture and customs. Research of marital roles in consumer decision taking was carried out at Polish households in 1990, 2005 and 2010.

Methodology used was adopted from classical survey ran by Davis and Rigeau (1974) with some modifications. The survey covered households consisting of at least two adults of different gender who run household jointly and take all economic and financial decisions. The research measures the role extent of feminine and masculine decisions. It covers also syncretic and autonomous decisions.

The number of decisions traditionally linked up to playing characteristic roles for both gender is diminishing. Also syncretic (joint) decisions eroded significantly. However the number of autonomic decisions increased considerably. Results of survey showed possibilities to pursue further research and verify a hypothesis that households representing higher income, wealth and education levels of both partners show faster atomization of consumption decisions. Traditional borders conditioned by gender, which were perceived, became non-existent.

There is diminishing emotional ties within households. Furthermore decisions traditionally perceived as male ones lost their masculine character and moved to autonomic decision area. That phenomenon touched decisions such as car or DIY tools. At other side decisions with strong feminine domination such as foodstuffs or cosmetics lost their evident femininity.

*Keywords: choice, individual differences, marital roles, consumer behavior, market decisions, households, gender*

## THE ROLE OF CONSTRUCTIVE COMPETITIVE STRATEGIES IN ESTABLISHING EFFECTIVE WORK RELATIONSHIPS

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Our objective was to analyze and assess experimentally the use of different competitive strategies by personnel of educational organizations.

The investigation was done on the sample of 300 heads and employees of educational organizations using the *Organizational Level of Competitiveness* questionnaire (A. Fil) in 2009-2011.

Analyses of the respondents' answers found that competition was quite a widespread phenomenon in the respondents' life (98%). The commonest competitive strategies used by the educational organization employees were the **destructive competitive** strategies (71% of the respondents) made up of the aggressive, challenging, hostile, and emotionally inadequate behaviors. The **constructive competitive** strategy (referred to as a strategy of competitive interactions that imply a civil cooperation between individuals in achieving their equally important goals and/or satisfying their needs by means of development and representation of their competitive assets) was used by only 20% of the respondents. It is natural and logical that the constructive competitive strategy is the best way of establishing and maintaining good work relations in organizations.

9% of the respondents were shown to use the **avoiding competitive** strategy characterized by individuals' conscious or unconscious avoidance of competitive situations and interactions with potential or real competitors (refusal of

previously important goals, passivity, low levels of assertiveness, passiveness, none-of-my-business attitude, ostrich-like behavior, etc.). Despite this strategy's seeming simplicity and naturalness it is hardly effective.

Since the destructive strategies are the most widespread strategies used by the personnel of educational organizations in interacting with their co-workers it is important to train the personnel in constructive competitive strategies being a prerequisite of effective and productive work relations. It is also advisable to train heads of educational organizations in organizational competition management.

*Keywords: cooperation/competition, individual differences, competitive strategies*

## DISTINCTIVE FEATURES OF THE UNEMPLOYED WHO WANT TO START A BUSINESS AS A PREREQUISITE OF THEIR COMPETITIVENESS

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The economic crisis has increased unemployment rate in Ukraine. Business competitiveness of the growing number of the unemployed who want to start their own businesses attracts attention of researchers. Our objective was to find out the competitiveness critical psychological conditions of the unemployed who want to start their own business.

Using the *Kulikov Dominant Psychological Condition* questionnaire we determined the respondents' psychological conditions along the *calmness – anxiety* and *life satisfaction – life dissatisfaction* axes. According to Kulikov (2007), the dominant psychological condition is characteristic of an individual at a certain period of life rather than at a given moment, which depends on a given situation. In other words, peoples' dominant conditions shape their present-moment conditions. The dominant psychological conditions were measured according to the following scale: very high scores – over 65 points, high scores – 60 - 65 points, average scores – 41 - 59 points, and low scores – less than 40 points.

The investigation was conducted on the sample of 203 jobless people (43.3% females and 56.7% males) who took a retraining business course at Kiev's City Employment Center in 2010-2011.

The mean value along the *calmness – anxiety* axis was 57.21 points: the respondents didn't tend to exaggerate the threat to their well-being irrespectively of the current situation, didn't expect negative situations and were quite self-confident. The mean value along the *life satisfaction – life dissatisfaction* axis was 61.42 points: the respondents were generally satisfied with their lives and self-realization, were capable of bearing responsibility for their lives and highly valued their personal efficiency. The obtained results suggested that in situations of competitive interactions future businessmen more likely would use the constructive and self-sufficient strategies.

Women were more satisfied with their lives than men (63.45 points against 59.85 respectively) - *life satisfaction – life dissatisfaction* measure. In the *calmness – anxiety* measure gender differences had only statistical tendencies ( $p=0.058$ ).

In designing competitiveness developing courses for the unemployed who plan to start their own businesses it is advisable to keep in mind the trainees' psychological conditions.

*Keywords: cooperation/competition, individual differences, unemployed*

## MAPPING THE RATE OF ENERGY EFFICIENCY ADOPTION TO CONSUMER PSYCHOLOGICAL TRAITS: A CONCEPTUAL FRAMEWORK

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This current research attempts to map consumer psychological characteristics with the likely speed of their adoption of technological advances. Specifically, this research brings together the VALS consumer segments (developed by Strategic Business Insights) and the Roger's adoption curve of innovation within the specific context of energy efficiency programs supported by public and private programs.

Given the energy concerns within the globe and across the United States, there is need to motivate individuals to undertake energy efficiency programs (such as fuel assistance, weatherization). Even though such energy conservation resources exist, data shows that consumers – commercial and residential – are resistant to adopt such efforts. Some key deterrents include: (i) limited consumer understanding on long-term payoffs that energy efficiency programs can produce, and (ii) a lack of consumer motivation to undertake such projects with a pronounced tendency to consider post-pone such decisions.

The VALS survey categorizes consumers into at least one of the 8 categories while taking into account demographics (such as age, income, education), motivation (viz. ideals, achievement, and self-expression) and resources (such as innovativeness, novelty seeking). On the other hand, the Roger's Adoption Curve seeks to explain how new ideas spread across individuals over time while defining 5 stages of adoption - dissemination of knowledge, persuasion, decision making, implementation, and confirmation where consumers are assured of the efficiency of the innovation they undertaken – through an S-shaped curve. This curve also characterizes individual categories in terms of their likely rate of innovation adoption (consumer categories include innovators, early adopters, early majority, late majority, and laggards).

The proposed conceptual framework attempts to bring together the VALS consumer segmentation and the Roger's S-shaped adoption curve specifically in the context of energy conservation and efficiency programs. Such mapping will assist in development of specific communication message suited to meet the needs of a well-defined target audience.

*Keywords: utilitarianism, socially responsible investing, individual differences, VALS, Roger*

## THE PERCEPTION OF “CHANCES FOR GETTING AHEAD” IN POLAND, HUNGARY AND CZECH REPUBLIC

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The goal of the paper is to show increasing salaries and income inequality in Poland comparing to neighboring transition countries - Czech Republic and Hungary. According to frequently quoted research (Wilamson 1985, Galdor, Thisddon 1996), the difference between income of highly qualified specialist and other workers diminishes with economic development. This stage has been not attained in Poland.

The drive to comply as quickly as possible with the requirements of the economic efficiency resulted in less solidarity and social protection than in the old market economies of Western Europe. As public institutions perform less efficiently as a result of limited funds, the development of human capital depends more and more on the effort of the family and its accumulated wealth. Savings are used in the investment in housing, durables, and human capital in a form of education and caring for health. These last goals are the source of social polarization (Liberda 2007).

Method – statistical and econometric analysis of the data from International Social Survey Program – special research “Social Inequality” conducted in the years 1992 and 1999 and 2010. Data from Polish Household Budget Surveys for the years 1996-2009 and from Polish General Social Survey were also used. The paper concerns mostly Poland but some comparisons with Hungary as well as Czech Republic – are discussed.

Income inequality has increased from the beginning of transition to market economy This increase has been particularly visible in Poland. Nowadays Poland belongs to the group of EU countries where indexes of inequality are the highest. This is not the case of Hungary and Czech Republic

The perception of social mobility has been decreasing in Poland and in Hungary in the last fifteen years. In Poland two phases in this process can be observed. In the 1990 ties the perception of the opportunities for social advancement has decreased with time and depended more and more on level of education attained. In the same time the feeling of inequality in access to education has increased. In the present century level of education was not the significant factor in subjective chances for social advancement. This was against opinion how important this factor should be in “getting ahead”.

To conclude, the rate and structure of income and social inequality is not supported by public opinion and it is a source of grooving social frustration.

*Key words: fairness, inequity aversion*

## THE INFLUENCE OF LOSS-GAIN PERSPECTIVE AND SELF-REFERENCE ON THE EFFECTIVENESS OF CAUSE RELATED MARKETING CAMPAIGN

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Cause Related Marketing (CRM) originated in the late 20th century and refers to marketing activities aimed at collecting funds for a specific social goal while building brand image and company reputation. The aim of the research presented in this paper concerns the impact of two psychological factors on the effectiveness of the advertising campaign in CRM strategy. The study examines how the gain and loss framing described in the prospect theory of Kahneman and Tversky as well as the cognitive mechanism of Self-referencing can moderate the effectiveness of CRM campaign.

An experimental study with 2x2 factorial design was conducted to examine the influence of the gain-loss perspective and Self-referencing on the dependent variable, which was CRM campaign effectiveness. The study involved 512 women and 344 men who participated in an online survey. An advertising poster of mineral water constituted an experimental manipulation. The measurement of the dependent variable (CRM campaign effectiveness) was based on a questionnaire of remembering and evaluating elements of the CRM campaign.

The results proved significant effect of the impact of the gain-loss perspective and Self-referencing on the CRM campaign effectiveness. The average overall rating of the campaign was significantly higher in conditions where the benefits of the campaign were shown from the perspective of losses than when they were shown from the perspective of potential profits. Self-referencing also differentiates general assessment of the CRM campaign. The average overall rating of the campaign was higher in conditions where the advertisement did not refer to consumers' Self.

The results of the study suggest that the effectiveness of CRM campaigns can be influenced by the content of the advertising message. One of the factors modifying this efficiency is the gain-loss perspective. It was proved that representing social benefits of CRM campaign from the perspective of potential losses is more efficient both for remembering elements of the campaign and its overall assessment than the perspective of potential profits. It was also shown that the direct referencing to the consumers' Self do not have a positive impact on the assessment of the campaign. It turned out that in the case of a difficult or controversial problem of CRM social action (e.g. ischemic heart disease) it is better to place the responsibility for its result not in a consumer but in a company or producer.

*Keywords: framing, prospect theory, donation/charity, advertising, socially responsible business, Cause Related Marketing, self-referencing*

## MENTAL ACCOUNTING AND CONSUMER DECISIONS: INCOME SOURCE EFFECTS

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From an economic point of view, money is assumed to be fungible. Thus, no labels should be attached to income. Regardless of the source of income, spending patterns should follow the principle of maximising utility. The theory of mental accounting (Thaler, 1999) contradicts this assumption. Mental accounting is a set of cognitive operations that is used by individuals to organize and keep track of financial transactions (Thaler, 1999, p. 183): Income and expenditures are grouped into categories (e.g. housing, food). According to Fogel (1997), the categorization of income affects the spending behavior.

We conducted a pretest ( $N=33$ ) to figure out if different sources and uses are either perceived as serious or frivolous. Results showed that tax refund is perceived as a serious, whereas casino winning is perceived as a frivolous income source. Based on these results we developed four scenarios, using a 2 x 2 design (tax refund vs. casino winning; 25€ vs.

250€). Each participant ( $N = 107$ ) read one scenario and had to rank six specific alternative uses of the money. Additionally they had to answer five items measuring mental accounting.

The results indicate a significant main effect of income source and mental accounting and a significant three-way interaction ( $F(2,98) = 3.21, p < .05$ ). A small amount of money is spent independent of the income source and the use of mental accounting. People who use mental accounting and received a high amount of money differ in their spending behavior regarding the source of income: Money out of a serious income source (tax refund) is spent on a serious use (e.g. paying back bills). Casino winnings, as a frivolous income source, are spent on frivolous expenditures (e.g. buying presents).

Contrary to the predictions of economic theory, the data support the hypotheses that categorization of income source affects consumer decisions. The results show that the amount of money received is a relevant factor in whether or not income will be accounted to different spending category related to its source.

In marketing, these findings can be used by positioning products either as necessities (for serious sources) or luxury goods (for frivolous sources). Marketers may also promote serious products or services (e.g. insurance), after the tax day.

*Keywords: mental accounting, consumer behavior, choice, consumer decisions*

## HOW DOES THE ABILITY TO RECOGNIZE AND USE EMOTIONS IN DECISIONS INFLUENCE ECONOMIC BEHAVIOURS AND PREFERENCES?

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In the 1990s Damasio's article began so called emotional revolution in the field of decision-making researches (Bonini, Ranyard, Mitton, 2009). It resulted in many studies taking into account the emotional aspect of decision-making. Most of the research concerning economic decisions has focused on the impact of different emotional states on decision-making. However, we could not find the paper with comparison of the economic decisions made by individuals with different ability to recognize and use emotions in decisions. That's why the aim of this study is to compare economic behaviors and preferences of alexithymic individuals to people with high level of emotional intelligence.

Alexithymic can be characterized by a high intensity of negative emotions, low-intensity of positive emotions, concrete thinking, focusing on the facts and preferring things they know well (Taylor, 1994). In contrast to them, people with high level of emotional intelligence experience more positive emotions than negative, think in way, focus on fantasy and imagination and they search for novelty (Salovey and Mayer, 1990). Therefore we have expected a significant difference in the way of economic decision-making between those two groups. Alexithymic shall be more rational and less emotional in their economic decisions than people with high level of emotional intelligence.

Firstly, all participants played computer version of the trust game with real pay offs. Secondly, they fulfill three questionnaires: PKIE (measuring emotional intelligence), TAS-26 (Alexithymia's diagnostic tool) and economic behaviour questionnaire created for this study. According to the results of PKIE and TAS-26 we divided people into two comparison groups: people with high level of emotional intelligence and those who have alexithymia. The third questionnaire was designed in order to measure the individual preferences in the various economic behaviors (e.g. paying taxes, insurance, charity).

The results of the study will enrich our knowledge about economic behaviors and preferences of alexithymic individuals and people with high emotional intelligence.

*Keywords: choice, trust, trust game, individual differences, emotional intelligence*

## CHILDHOOD AND TOYS CONSUMPTION: A STUDY IN BRAZIL

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The goal of this paper was to verify toys consumption by children, aged from seven to nine years, based on the point of view of the children, their parents, and the store seller.

The research was done through an investigation based on a qualitative-descriptive analysis. There were considered three groups: three seller men; 52 children and their parents at the store (PDV); and a group interview with 26 children from an education institution. Results were analyzed based on the content analysis of the interview.

Related to the toy market Children's day was considered to be the best selling date. Regarding to the most wanted toys and their attractiveness, it was noticed the prevalence of those made by Mattel, and among the most mentioned were the Barbie Doll, and the Hot Wheels cars, besides the Monster High dolls, the Poly dolls, and the Max Steel dolls. The main attractiveness pointed out by the children were: to have light, color, sound, movement, can be played with others, that can be collected, and those with accessories. In the aspect of searching information about the knowledge of toys, the children mentioned their siblings, their schoolmates, their cousins, their neighbors, and their parents. However in the process of toy choice decision, the sons choose which toys will be bought, according to their parents' financial limitations. It was observed, by the answerer's speech that in different situations there is the necessity to negotiate with their children, according to the following criterion: a good behavior at school, or even good home organization. Even though according to influential factors, the answerers were unanimous indicating that television was the biggest information source for kids, being the named "closed" channels the major agent of them. Other relevant factors in the parent's answers were cousins, schoolmates, neighbors, Internet, and the sell point (location). At the least, taking the discard in consideration, it was noticed that the majority of children donate their toys, following parents' orientation.

This work debates the relation of childhood and toys consumption in Belo Horizonte - Brazil. It was discussed that children are turning into young consumers, leading companies to a new niche, once they find out about the potential of consumption in these little guys. It was noticed the easiness that children move in this context: - thinking, buying and discussing about the toys. On the other hand, it is important to recognize the special influence of the TV and children's parents on this consumption.

*Keywords: choice, advertising, children, development*

## EFFECTS OF EMPLOYEES' AGE, OVERALL WORK EXPERIENCE AND EXPERIENCE IN THE ORGANIZATION ON THEIR ORGANIZATIONAL COMMITMENT

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An important psychological determinant of organizations' efficiency today is their staff's organizational commitment which prevents staff turnover and absenteeism, shapes employees' job satisfaction, decreases job stress as well as promotes employees' career growth. We aimed at finding out levels of bank employees' organizational commitment and its correlations with their age, overall work experience, and length of work in the organization. The investigation was done on the sample of 306 commercial bank employees in Donetsk region in 2010 using *the Organizational Commitment Questionnaire* (Grub, Dunham, Castaneda).

Results

1. The investigation found that high levels of organizational commitment were poorly present in the bank employees. The most present was *the normative commitment* (31.6 % of the respondents), followed by *the continuance commitment* (22.1 %) and *the affective commitment* (6.6 %).

2. The investigation found statistically significant correlations between the respondents' *age* and their organizational commitment, in particular, with their affective commitment ( $p < 0.05$ ), continuance commitment ( $p < 0.001$ ), and normative commitment ( $p < 0.05$ ). These correlations imply that the older the employees grew, the more continuance committed and normative committed they became. As to the affective commitment, the most attached to the organizations were shown to be the employees aged 25 through 34 years and those aged 35 through 45 years

whereas in the 'extreme' age groups (younger than 25 and older than 45 years) organizational commitment was less present.

3. The investigation found statistically significant correlations between the respondents' *overall work experience* and their organizational commitment, *in particular*, with their affective commitment ( $p < 0.05$ ), continuance commitment ( $p < 0.01$ ), and normative commitment ( $p < 0.05$ ). In other words, the more work experienced the respondents were, the more attached to their organizations they became which is especially visible in relation to continuance and normative commitments.

4. The investigation found statistically significant correlations between the respondents' *length of work in the present organization* and their continuance commitment ( $p < 0.05$ ): the most committed were the employees who had been working in their present banks from 9 through 15 years and more than 15 years.

The investigation findings suggest the necessity of strengthening employees' organizational commitment taking into account the effects of the identified factors. The findings could be helpful for managers' and organizational psychologists in their work with personnel.

*Keywords: individual differences, self-regulation, organization, staff, staff's organizational commitment*

## IS THE QUALITY OF WORKING LIFE EXPENSIVE?

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### Abstract

The quality of working life represents significant components of life satisfaction and well-being. Employees' satisfaction with various work aspects has a positive impact on organizational performance, innovativeness and competitiveness and also on employees' engagement, extra organizational behavior or career development. As work and organizational contextual factors have been undergoing globally significant changes the importance of QWL has been growing. Nevertheless that the concept of QWL started to emerge in western countries during 70<sup>th</sup> QWL is not well-known within Czech organizational and work context even now. The gap is caused by various socioeconomic factors, e.g. by different political system till 1989.

The application of QWL in organizations depends significantly on managerial understanding of QWL, their attitudes and approaches towards QWL and their estimation of implementation costs.

The aim of this pilot study was to identify managerial perception of quality of working life, their attitudes towards this issue and rough estimation of costs.

Respondents: 20 managers (SME, large organizations)

Methodological approach: 2 focus groups (N=6), questionnaire. The questionnaire has 2 parts. 1<sup>st</sup> was applied before FG, its items focused on understanding QWL components and estimating QWL implementation costs. Two FG were realized after applying the 1<sup>st</sup> part of the questionnaire. 2<sup>nd</sup> part of the questionnaire involves items focused on the Walton criteria. This part is planned to be applied during autumn. The whole research project is planned for two years. Managers consider remuneration system and working conditions (namely technological equipment) as major QWL components. That's why they suppose that implementation of QWL is expensive. Their choice of perceived QWL variables reports about their framing of QWL with financial investments. Almost half of them do not perceive job design, meaningful work, autonomous work or interpersonal relations as impactful on employee satisfaction, organizational performance or development. They suppose that such factors are not very important for the majority of employees. Respondents' attitudes and opinions are anchored with stereotypes relevant to and McGregor Y theory appropriate to previous socialistic industrial context. According their views quality is always expensive. When Czech economy is facing problems their organizations can't afford such luxury.

*Keywords: framing, choice*

## 1 Introduction

Quality of working life (QWL) as a term was introduced at the end of 60<sup>th</sup> (Bowditch, Buono, Stewart, 2008). Its roots are interconnected with Hoppock's findings, Mayo's experiments and humanistic psychology. Hoppock's finding (Landy, Conte, 2007) indicated that workers in certain occupational groups (professionals and managers) were happier than those in others (unskilled laborers). Mayo's famous and much discussed, but controversial, series of studies

evoked interest in research of employee attitudes, job performance, and job satisfaction. Theories of Maslow, Herzberg and McGregor reinforced research in job satisfaction and dissatisfaction, its antecedents and consequences in work and organizational context. Various aspects were explored. Examples of research finding are represented in famous Hackman and Oldham's concept of job design and in soft HRM approaches (Wright, Rudolph, 1994). Well-known is Walton (1975, in Rose et al., 2006, p. 2152) concept proposing 8 major areas of QWL: adequate and fair compensation, safe and healthy work conditions, opportunity for development human capacities, opportunity for continued growth and security, social integration in the work organization, constitutionalism in the work organisation, work and total life space and social importance of work life. His concept includes significant factors relevant to work itself and to work conditions; it is possible to perceive these aspects as an analogy to Herzberg's hygienic factors and motivators.

Global societal and economic changes have been impacted on work and organizational contextual factors. Their consequences represented by waves of restructuring and downsizing in 90<sup>th</sup> renewed attention to QWL. The importance of QWL has been growing not only in context of global competition or knowledge economy, but also in context of value changes significant for Generation Y (Johnson, Johnson, 2010).

The quality of working life represents significant components of life satisfaction and well-being. All over the world are realized various surveys focusing various aforesaid issues (Gospel, 2003). The QWL factors have direct or indirect influence on well-being, life satisfaction, organizational performance, innovativeness and competitiveness, employees' engagement, extra organizational behavior career development, and so forth. As contextual factors are changing the construct of QWL is evolving. Serey (2006) definition of QWL includes besides other things opportunities to exercise one's talent and capacities and for an autonomous work.

However the construct of QWL started to emerge in western countries during 70<sup>th</sup> QWL, it is not well known within Czech organizational and work context even now. Greatest attention is given to work-life balance in context of gender studies or to negative consequences of working life in context of health psychology. The gap is caused by various socioeconomic factors, e.g. by different political system till 1989.

## 2 Objectives

An objective of this paper is to present results from the pilot study (1<sup>st</sup> stage of the research project focused on QWL in Czech organizational context) realized in March 2012.

Besides organizational contextual factors an application of QWL philosophy and concepts depends significantly on managers' understanding of QWL, their attitudes and approaches towards QWL and probably also on their estimation of implementation costs.

That's why the aims of the pilot study were focused on identification meaning and understanding QWL by managers, on their attitudes towards QWL factors and on their rough estimation of QWL implementation costs.

## 3 Method

A triangular approach is generally considered as most appropriate within social science (Saunders, Lewis, Thornhill, 2000). This approach, a combination of qualitative and quantitative methods, was assessed as relevant both to the research project and to the pilot study.

The pilot study employed questionnaire method and focus group.

Respondents: 20 managers (SME, large organizations).

Methodological approach: 2 focus groups (N=6), questionnaire. The questionnaire was developed for this pilot study.

The questionnaire has two parts. 1<sup>st</sup> part was applied before realization of focus groups, its items focused on perception and understanding QWL components and on estimating QWL implementation costs.

Two focus groups were realized after applying the 1<sup>st</sup> part of the questionnaire. 2<sup>nd</sup> part of the questionnaire involves items relevant to significant QWL factors. This part is planned to be applied during autumn with the same group of respondents.

The whole research project is planned for two years.

## 4 Results

Results obtained from the two focus groups and from the 1<sup>st</sup> part of the questionnaire give an indication of a little bit narrow perception of QWL. Almost half of respondents' doesn't perceive job design, meaningful work, autonomous work or interpersonal relations as impactful on employee satisfaction, organizational performance or development. They suppose that such factors are not very important for the majority of employees.

The majority of respondents consider remuneration system and working conditions, namely technological equipment, as major QWL components. That's why they suppose that implementation of QWL is expensive. Their attitudes towards opportunity of further implementation are a little bit ambiguous.

Their choice of most important perceived QWL variables from a list of variables reports about their framing of QWL with financial investments. Respondents selected remuneration system and working conditions as more significant for employees than job design or other QWL factors.

## 5 Discussion

Presented results are only partial. They report how a small group of managers perceive QWL factors. Nevertheless that findings are only partial they may indicate a more general framing issue.

In the case of perception of job design, meaningful work, autonomous work or interpersonal relations as factors with a low impact on employee satisfaction or organizational performance it is possible to suppose those respondents' attitudes and opinions are anchored with stereotypes. These stereotypes are relevant to previous socialistic organizational and work context. Such perception and corresponding attitudes resemble also McGregor X theory.

Respondents assessed QWL implementation as expensive. They considered remuneration system and working conditions, particularly technologies, as major QWL factors. Therefore their appraisal of QWL as an expensive construct sounds as logical. Their perception of QWL is influenced by their understanding of quality. According their view quality is always costly. Their understanding of QWL issue reports about their framing of QWL with financial investments. Respondents remarked that when Czech economy is facing problems their organizations can't afford such luxury.

The above mentioned findings are only partial. After obtaining more comprehensive and representative future research results more precise analysis and conclusions are planned to be realized.

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## LEVELS OF MANAGERS' PSYCHOLOGICAL MANAGEMENT READINESS IN POWER SUPPLYING COMPANIES

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To find out levels and factors of development of power supplying company managers' psychological management readiness.

The investigation was done on the sample of 450 managers from power supplying companies in Poltava region using the computerized psychological testing system *Professor-2000* which included *Koniukhov Biographical Test (BEMKON-1)*, *Cattell 16-PF Questionnaire*, adapted version of *MMPI*, *Quantity Relations* and *Complex Analogues* intelligence tests as well as objective assessments of managers' work performance according to different criteria.

Results

1. On the whole, the managers of power supplying companies were found to have poorly developed psychological management readiness: 22.4% of them had it at low level, 43.6% at average level, and 34.0% at high level.
2. Levels of psychological management readiness statistically significantly correlated ( $p = 0.001$ ) with *the type* of work: it was higher in the respondents from sales departments than in those from transportation departments (39.9% and 27.6% respectively).
3. Psychological management readiness statistically significantly correlated ( $p = 0.001$ ) with *the position*: it was highly developed in 43.5% of inspectors, 37.9% of sales managers, and 24.2% of transportation managers and dispatchers. Levels of psychological management readiness statistically positively significantly correlated ( $p = 0.05$ ) with *work*

*experience*: highly developed management readiness was found in 26.3% of those with less than 10 years' work experience, in 33.6% of those with 11 through 20 years' work experience, and in 38.9% of those with 21 through 30 years' experience. Levels of psychological management readiness did not statistically significantly correlate with managers' *education*. The levels of psychological management readiness statistically significantly positively correlated with *age* ( $p = 0.01$ ): it was highly developed in 20.5% of those younger than 30 years, 32.7% of those aged 31-40 years, and 42.0% of those aged 41-50 years. However among the respondents aged 51-60 years the number of those with highly developed management readiness slightly decreased (38.7%).

4. Levels of psychological management readiness statistically significantly correlated with *managers' proficiency* ( $p = 0.001$ ): it was highly developed in 65.6% of those certified as proficient and in 19.7% of those certified as non-proficient managers.

On the whole, power supplying company managers had poorly developed psychological management readiness, which correlated with their type of work, position, experience, age, and proficiency. The situation can be improved the necessity of a special psychological management readiness trainings courses. The findings can be helpful for practicing psychologists who work in the production sector, particularly power sector.

*Keywords: individual differences, intelligence, energy supplying companies; managers of power supplying companies*

## INNOVATIVENESS AS AN IMPORTANT PSYCHOLOGICAL CHARACTERISTIC OF EDUCATION MANAGERS' ENTREPRENEURIAL BEHAVIOR

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Sustained development of educational organizations has become a prerequisite of their effective work. Educational organization managers' entrepreneurial behavior appears to be an important determinant of educational organizations' development today.

According to the model of entrepreneurial behavior (E.V. Kredentser, 2008), innovativeness, that is readiness for innovations, is an important psychological characteristic of an individual. Some aspects of readiness for innovations in the context of Ukrainian educational organizations have been investigated by L.M. Karamushka, V.M. Ivkin, N.M. Khmel et al.

1. To find out levels of educational organization managers' innovation readiness and its correlations with gender, age, length of service and levels of organizations' development.

The investigation was conducted in 2010–2011 on the sample of 100 education managers in Ukraine using interviews and tests (*Manager and Transformations* and *How does your organization develop?* modified by L.M. Karamushka). Mathematical analysis of the data was done using SPSS, v.13.

55.6 % of the respondents had low, 42.2 % average and 2.2 % high levels of innovativeness. Levels of innovativeness statistically significantly correlated ( $p < 0.01$ ) with gender: 100 % of females had highly developed innovativeness compared to males. Levels of managers' innovativeness inversely correlated ( $p < 0.05$ ) with length of service: the longer the overall service, the less ready for innovation making were the respondents. The correlation analysis showed that levels of managers' innovativeness statistically significantly ( $p < 0.01$ ) positively correlated with organizations' development, that is high levels of managers' innovation readiness associated with high levels of organizations' development and vice versa. Thus, 27.1 % of the respondents with low levels of innovativeness assessed their organizations' development as critical and 64.6 % as problematic. Only 8.3 % of the respondents with low levels of innovativeness compared to 75 % of those with high levels of innovativeness considered their organizations' development as constructive. Disperse analyses found that males and females differed in levels of innovation readiness if their organizations were at the constructive level of development. Female managers of educational organizations who had high innovation readiness were more inclined to perceive their organizations' development as constructive than males. The most innovative were shown to be the managers with 10 years' and 10 - 15 years' length of service in organizations at the constructive level of development.

The identified problems suggest the necessity of a special social-psychological training to develop educational organization managers' entrepreneurial behavior.

*Keywords: development, individual differences, entrepreneurial behavior, innovativeness, organizational development*

## THE IMPACT OF PRIOR STOCK TRADING EXPERIENCE ON INVESTMENT PORTFOLIO RISK AND PROPENSITY TOWARDS THE DISPOSITION EFFECT

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This study presents the results of research on dependencies between prior experience in the stock exchange, overconfidence, disposition effect, and risk diversification. The empirical analysis was conducted on the data base of decisions made by participants of the stock market internet simulation organized by business press publisher, Parkiet, at the turn of 2006 and 2007.

In this study, we have verified the following hypotheses:

H1: Prior experience in the real stock exchange causes overconfidence.

H2: Overconfidence leads to errors in risk diversification.

H3: Participants in the game with previous experience in the stock market are less prone towards the disposition effect, as compared with participants with no experience.

All three hypotheses were confirmed on the basis of the analyses. People with prior experience in actual stock trading had less diversified portfolios with a smaller number of companies and greater portfolio risk, but they were less vulnerable to the disposition effect. In addition to financial measures (standard deviation of returns), we have used psychological measures of risk, i.e., investment and gambling risk taking propensity measured by the DOSPRT and SIRI scales. In a previous study on the same data set, we had demonstrated that contrarian investors are more prone to the disposition effect than investors who use a momentum strategy (Tyszka et al. 2012).

*Keywords: behavioral finance, overconfidence, risk diversification, the disposition effect.*

## ENTREPRENEURS' BUSINESS NEGOTIATION MOTIVES AS A CONDITION OF EFFICIENT BUSINESS ACTIVITY

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An important condition of efficient entrepreneurship is the development of business activities motivation, in particular the business negotiation motivation. We analyzed the levels of development of the entrepreneurs' business negotiation motives and the role of social motives in this process.

The investigation was done on the sample of 246 Ukrainian entrepreneurs (33.9% males and 66.1% females) using the *Motives of Business activity* questionnaire (Karamushka, Lagodzinska).

It was found that in conducting business negotiations the entrepreneurs' *financial and profit motives* (conclusion of profitable contracts, getting profits) were the most developed: 80.6% of businesswomen and 76.1% of businessmen had this motive highly developed. Besides, the *motives of financial welfare* (securing financial welfare of families and one's own financial welfare) were the second most developed motives found in 74.6% of males and 62.0% of females which suggests that the entrepreneurs' financial and economic well-being is the most important driving force of their business negotiating activity.

In conducting business negotiations the entrepreneurs were less guided by the *motives of developing and stimulating orientation* that were divided into two groups. The first group (business activity motives proper) included the motives of establishment of new contacts, resolution of significant business-relevant problems, and getting new experiences. These motives were found in 59.2% of the respondents (52.2% males and 51.5% females). The second group was made up of the motives of professional development, self-realization, and testing of one's own capabilities, which belonged to the personal motives. These motives were found in 65.7% of the respondents (46.3% males and 34.3% females).

The least represented among the business negotiation motives were the entrepreneurs' *social motives* which included the motives of customers' provision with new products and services as well as resolution of socially important problems. These motives were highly developed in 55.9% of males and 27.3% females. It's noteworthy that the

presence of the motive of resolution of socially important problems being the most 'social' motive in only every third respondent suggests poor actualization of entrepreneurs' social motives in conducting business negotiations. The investigation found low development of entrepreneurs' social motives in conducting business negotiations which shows the need to balance entrepreneurs' business motives, in particular their social motives and those relevant to the professional development and self-realization along with the motives of their financial and economic welfare.

*Keywords: uncertainty, individual differences, entrepreneurs, business negotiations, entrepreneurs' business negotiation motives*

## EMOTIONAL DIFFICULTIES FACED BY ENTREPRENEURS IN CONDUCTING BUSINESS NEGOTIATIONS

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An important aspect of business activity is business negotiating. We analyzed difficulties experienced by businessmen in conducting business negotiations and the role of emotional difficulties as well as the effects of businessmen's gender, age, and work experience on severity of their emotional difficulties in conducting business negotiations. The investigation was done on the sample of 246 entrepreneurs of different age and experience from in Ukraine. The data were collected using *Entrepreneurs' Business Negotiations Difficulties* questionnaire (Karamushka, Lagodzinska) and content-analysis. Mathematical processing of the data was done with SPSS (v. 13). The majority of the respondents (83.3%) were found to have difficulties in preparing and conducting business negotiations with a mere 16.7% of them being free of any difficulties under consideration. The identified business negotiation difficulties were divided into the *financial-economic* and *psychological* groups. The respondents who had the psychological difficulties outnumbered those with the financial-economic difficulties (63.7% against 24.3% of the respondents respectively). Thus it can be concluded that psychological difficulties occupy an important place among the difficulties encountered by businessmen in preparing and conducting negotiations. *Managerial-economic difficulties* faced by businessmen in preparing and conducting negotiations formed the following three groups: *financial-economic* difficulties, *pricing* difficulties, and *goods variety and shipment* difficulties. Two types of psychological difficulties were identified. Type one psychological difficulties included those related to the negotiators' communication and interaction: poor communication skills, ignorance of basic negotiation rules, ignorance or neglect of the counterparts' cultural distinctions. Type two psychological differences dealt with the respondents' negative emotions: lack of self-confidence, nervousness, fear of behavioral inadequacy, negative emotional states, fear of wrong decision-making, poor self-control, biased attitudes toward counterparts, etc. The investigation found the prevalence of the respondents' emotional difficulties over communicative difficulties in preparing and conducting business negotiations (58.3% and 41.7% of the respondents respectively). Emotional difficulties were shown to be more characteristic of females than males ( $p < 0.001$ ), young businessmen (younger than 30 years of age,  $p < 0.001$ ), and those whose work experience was less than five years ( $p < 0.01$ ). In preparing and conducting business negotiations entrepreneurs are faced with both financial-economic and psychological difficulties. The leading role among the psychological difficulties is played by the emotional difficulties. Businessmen should undergo a special psychological training to be able to cope with their emotional problems during business negotiations.

*Keywords: individual differences, self-regulation, self-control, entrepreneurs, business negotiations, difficulties*

## INFERENCE OF WILLINGNESS TO PURCHASE AND AFFECTIVE STATES: INDEPENDENT AND INTERDEPENDENT CONSTRUALS OF THE SELF

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The present study aims to examine the influence of surrounding people on the inference of willingness to purchase and affective states by comparing independent and interdependent construals of the self.

Participants ( $N = 154$ ) completed a questionnaire to measure, on a scale, independent and interdependent construals of the self (Kiuchi, 1995). An illustration was presented to the participants. The picture showed a girl with clothes in her hand, with two other girls, in a clothing shop. The participants were asked to infer the target girl's (the girl with the clothes in her hand) willingness to purchase the goods and her affective states.

The participants whose "Independent" scores were higher than "Interdependent" scores were grouped under the category of "Independent" ( $N = 41$ ), while those who scored higher on "Interdependent" than on "Independent" fell under "Interdependent" ( $N = 113$ ). The target girl's willingness to purchase and her affective states between "Independent" and "Interdependent" were compared. There was no substantial difference between the two with regard to willingness to purchase (*good*;  $t(152) = .52$ , *want*;  $t(152) = 1.19$ , *purchase*;  $t(152) = 1.11$ ,  $p > .1$ , respectively). On the other hand, the scores of the inference of the target's affective states for "Interdependent" were higher than for "Independent" (*happy*;  $t(152) = 2.07$ ,  $p < .05$ ).

The results demonstrated that surrounding people influenced the inference of the affective states more for "Interdependent" people as compared to for "Independent" people. "Interdependent" people thought that the target was happier when she had other people around her. In general, Japanese people, who tend to be "Interdependent," inferred more emotions for people who have other people around them as opposed to American people, who tend to be "Independent" (Uchida, 2009). The results indicated that "Interdependent" people infer stronger emotions when they are with other people. On the other hand, surrounding people have little impact on the inference of willingness to purchase, regardless of the independent and interdependent construals of the self. Future studies will be necessary to compare the differences between independent and interdependent construals of the self in different cultures and elaborate on the differences in the willingness to purchase.

Keywords: choice, individual differences, emotion, culture

## MONEY ATTITUDES AND ENTREPRENEURSHIP

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According to Schumpeter (1947, p. 151), the entrepreneur is responsible for "the doing of new things or the doing of things that are already being done in a new way". In the business literature, a popular view of the entrepreneur is someone who "perceives an opportunity, and creates an organization to pursue it" (Bygrave, Hofer, 1991, p 14). In other words, entrepreneur is the one who undertakes innovations, finance and business acumen in an effort to transform innovations into economic goods. It is obvious that entrepreneurs are motivated by financial outcomes of their activity (Ang, 2000). There is no research on the relation between entrepreneurship and money attitudes (MA), so this paper is devoted to fill this gap.

We conducted three studies on the relation between entrepreneurship and MA. In study 1 ( $n=97$ ) we collected data from  $n=54$  entrepreneurs (owning own firm and employing at least one non-related person) and  $n=44$  non-entrepreneurs (employees and students). We measured MA (MAQ, Gasiorowska, 2008) and entrepreneurial abilities (KUP, Noworol, 2004). Study 2 and 3 were conducted on the representative Polish samples, respectively  $n=1005$  (CAWI) and  $n=540$  (CATI). In these studies we measured the entrepreneurial intention as well as MA.

In study 1, results of step-wise regression showed that entrepreneurial abilities were related to *occasion seeking, control and planning, debt aversion* and negatively to *financial anxiety* ( $R^2=0.423$ ). However, having own firm was not related to the entrepreneurial abilities, but to *occasion seeking and control and planning* (Cox  $R^2=0.275$ ). In study 2, having own firm was related to *occasion seeking and debt aversion*, and in study 3 – to *occasion seeking and control and planning*. We found that entrepreneurial intention in both study 2 and 3 was related to *occasion seeking* and (negatively) to *debt aversion*. Additionally, entrepreneurs declare significantly higher income than non-entrepreneurs, but subjective evaluation of the financial situation does not differ between these two groups, and those with own firm request significantly more money as the minimum monthly income for they families than the rest of respondents.

To conclude, in three studies we found systematic relation between entrepreneurship and money attitudes. The most important MA dimension that differentiates entrepreneurs from non-entrepreneurs is the tendency to look for and take advantage of the occasions to earn money. Also, factual entrepreneurs are characterized by higher level of the debt aversion, for non-entrepreneurs this factor decreases the readiness to become a firm owner.

*Keywords: psychology of money, money attitudes, individual differences, entrepreneurship*

## DETERMINANTS OF CONSUMER CHOICE TOWARDS LUXURY BRANDS: DIFFERENCES BETWEEN ONE-BRAND STORES AND OUTLET STORES CONSUMERS

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### Abstract

The aim of this study was to identify variables that promote consumer choice. In order to do that, it is necessary to identify cognitive and behavioral variables below the act of consumption and to investigate factors that generate and influence choice of specific brand (Semprini, 1996). When it comes to intangible and valued variables related to the brand, it is necessary to introduce the concept of brand equity, that is, the power of brand lies in the minds of consumers or customers (Keller K.L, 2003, p. 59). Brand equity provides marketers with a vital strategic bridge from their past to their future (Keller K.L, 2003, p.61).

Consumer behavior was analyzed in three specific moments: 1) decision antecedents, indeed, the relationships among super ordinate goals are particularly efficacious in the formation of beliefs and attitudes in consumer choices (Bagozzi, 1998, p. 196); 2) buying behavior and its relationship with brand equity (Keller K.L., 2007); 3) behavioral intention, or post-purchase behavior (Fishbein M., Ajzen I., 1981; Bagozzi R.P., 1999). The model was applied on two groups of Italian consumers: consumers who buy luxury brands in one-brand stores (N=201), and consumers who buy luxury brands in outlet stores (N=150).

Our results suggest two different guidelines of consumption. Consumers who buy luxury brands in one-brand stores are attached to performance and the superiority of brand. For these consumers the attachment to luxury brand is a utilitarian and hedonic value: through the luxury products they show their status and their position in the society (Ragone, 1968; Veblen, 1971; Sombart, 1982; Featherstone, 1994; Phau & Prendergast, 2000; Dubois, Laurent, & Czeller, 2001). Moreover, results of Hierarchical Value Maps (Bagozzi, Henderson, Dabholkar & Iacobucci, 1996; Bagozzi & Edwards, 1998; Bagozzi, Bergami, & Leone, 2003) show that the most categories, which are the origin and source of other goals, are “better fit” and “glamour” categories

Finally, these consumers will buy again in one-brand stores if people important to them approve this choice. On the other hand, consumers who buy luxury brands in outlet stores believe that luxury products have more credibility and quality. Their choice is motivated by the desire to spend less and have the best; these consumers will buy again in outlet stores if the product is easily to find and reasonably priced.

*Keywords: overconsumption, conspicuous consumption, materialism, behavior, consumers, brand equity, choice, goals*

### 1 Introduction

The aim of this study is to identify variables that promote consumer choice. In order to do that, it is necessary to identify motivational, cognitive and behavioral variables underlying the act of consumption and to investigate factors that generate and influence the choice of a specific brand (Semprini, 1996). When it comes to intangible and valued variables related to the brand, it is necessary to introduce the concept of brand equity: the “*power of brand lies in the*

*minds of consumers or customers*" (Keller, 2003, p. 59). "*Brand equity provides marketers with a vital strategic bridge from their past to their future*" (Keller, 2003, p.61).

### 1.1 The social value of consumption and the attribution of the luxury brand value

Consumption permeates our entire lives and is an integral part of all of our daily activities. Through the experience of the individual consumer consumption shapes and forges his own personality (Siri, 2004). Recently, the analysis of the meaning of goods and cultural habits of consumers has become a rich research soil. Indeed, the cause of this phenomenon entails not only good's utility but also, and especially, their symbolic anthropological and cultural value, together with their instrumental connotation of social action (Fabris, 1974). The meaning of goods, therefore, is not unidirectional but complex and multifaceted (Alberoni, 1964). The personal satisfaction looked for by the individual through the act of purchasing goods, is not only linked to the attainment of his basic needs, but is also the result of an inner desire for affirmation of his identity. Through the consumption, the individual conveys his multiple-selves that conveys through his participation in various relational contexts (Harrè, 2000). In this sense, Katona (1951) was the first to criticize the classical conception of the rational behavior. The author distinguishes between everyday repetitive behaviors, in which rationality gives way to habit, and new or uncertain situations, that give birth to the identity of a rational or irrational consumer. According to Katona, this depends on two factors: convenience and past experience. New insights sprung from his studies, for example, the focus on the mechanisms that lead to changes in attitudes in purchase intentions (Ajzen & Fishbein, 1980). If the act of consumption is not only the result of a hedonistic and narcissistic satisfaction, but is the expression of a social *formae mentis*, of a "public sentiment", one of the tools that promote the "reading" of the consumer behavior may be the relation that the consumer develops with the "Brand". The brand, is an element of preference not only to identify the product, but also as the synthesis of tangible and intangible characteristics that makes it, even over time, a unique and inimitable article. The brand allows the customer to express his own preference, loyalty, and it is evocative of a world full of positive values<sup>1</sup>. In particular, intangibles and value characteristics linked to the brand, are related to the concept of brand equity (Aaker, 1991; Keller, 1998); which is the heritage of the brand and the bases generating the value that constitutes this same heritage, thanks to which consumers express their consent in respect of a specific brand. The luxury brand is a particular type of brand recently studied because of the relationship that manages to establish with the consume. From the point of view of the consumer, in the case of luxury, what makes the most of the brand is the *griffe*: the name of his maker, the handmade manufacturing and the very selective distribution, are the factors that lead the consumer to purchase the product (Aiello & Donvito, 2006). In the world of luxury is important to create strategic brand building interventions (luxury brands), its definition depends on the very identity that it wants to adopt. The construction of a luxury brand is realized thanks to five major factors: 1) it must be able to evoke exclusivity; 2) it must possess a well-known brand identity; 3) it must enjoy a high reputation; 4) it must be able to generate a high perceived quality through which it builds its own credibility; 5) it must obtain high levels of customer loyalty (Phau & Prendergast, 2000, p.123). Beyond this, however, the emotions of the costumer influence consumers' perceptions of the quality of the product and the subsequent purchase process. As part of the decision-making process, in fact, they are considered as an added value and not as a disturbing element that favors the loss of control (Bagozzi, Gopinath, & Nyer, 1999).

## 2 Objectives

The objective of this research is to investigate the consumption behavior of those who choose luxury brands in clothing and accessories. Particularly, the aim is to analyze the determinants of the choice, the consumer's behavior due to the relationship established with the brand and the post-purchase intent among consumers who buy luxury products in the outlet stores and those buying such goods in one-brand stores.

To identify the different attitudes towards the consumption of luxury products of buyers in outlet stores and of those in one-brand stores, we used a three-dimensional analysis, which are part of the consumer buying cycle (Costabile, 1996): motivation and orientation to the consumption behavior (Bagozzi, Bergami & Leone, 2003), cognitive basis in the purchase behavior towards luxury brands (Keller, 2001; 2003) and behavioral basis that favor the intent of the consumers of luxury brands to repurchase the product (Bagozzi, 1999).

To detect the reasons that underlie the consumption behavior we made reference to Bagozzi's *Hierarchical Value Maps* (Bagozzi, Bergami, & Leone 2003; Bagozzi & Edwards, 1998). Using this model, you can highlight the role played by the affective-emotional factors in determining behavior-experience. The Hierarchical Value Maps, has the aim to identify the "*goal-directed behavior*", or else, the behavior of the consumer, related to the choice of consumption, in terms of a hierarchical structure of increasingly abstract objectives, which are connected to each other through the means of final ratios.

For the analysis of the cognitive basis of the purchasing behavior of consumers, which in fact relates to the relationships that the consumer has with the brand, we used the model CBBE (*Customer Based Brand Equity*) by Keller

<sup>1</sup> Positive value meaning "*the representation of a condition considered desirable by the individual, an objective to reach, or a wished quality considered worth of an investment, the aim shared by many*" (Semprini, 1996, p.84).

(2001, 2003). The reference dimension that inspires Keller is to identify the value that consumers assign to the brand and, at the same time, the one that gives it meaning and identity. In this sense, in the memory of the consumer information nodes are activated (concepts, images, symbols) that connect the individual association and the brand (Keller, 1993, 1999). Keller distinguishes two bases of value: brand awareness and brand image. The brand awareness is defined by “*various capacities to be remembered (brand recall) and recognized (brand recognition); brand image is enhanced by favorable associations that the consumer develops toward the brand*” (Keller, 1999, p. 45). Based on these dimensions Keller develops a theoretical model of brand equity (CBBE) aimed to measure the areas (Brand Building Blocks) that are useful to investigate the value that consumers assign to the brand at the time of purchase. Starting from these theoretical basis, Keller (2003) indicates six factors or salient dimensions: *salience*, which indicates the ability of the brand to be imprinted in memory; *performance*, which concerns the provision of the brand; *image*, which is the mode through which the target perceives the luxury brand; *judgments*, which are based on opinions that consumers provide on luxury brands, which is developed into further sub-dimensions such as *credibility*, *quality*, *consideration*, and *superiority*; *feeling*, which is built on the basis of emotional responses that consumers give on the brand (luxury); *resonance*, which focuses on identification that the customer has with the brand, and that is built thanks to the creation of four sub-dimensions: *fidelity*, *attachment*, *community*, and *commitment*.

To identify behavioral bases of purchase of the consumer of luxury brands is useful to identify all the “predictive” variables that can promote the intention of the two groups of consumers (those who purchase in one-brand stores and those who purchase in the outlet store) to return to buy more luxury brands. For this analysis we have used the Theory of Self-Regulation (Bagozzi, 1998; Bagozzi, Gurhan-Canli & Priester, 2002). This theory was inspired by two previous theories: 1) The Theory of Reasoned Action developed by Ajzen and Fishbein (1980), which is one of the fundamental models for the understanding and explaining of social action: attitudes, behaviors and values regulate the lives of individuals; 2) Theory of Planned Behaviour by Ajzen (1991) which is a variant of the earlier Theory of Reasoned Action, as there is an added behavioral intention: the perceived behavioral control. According to the Theory of Self-Regulation (Bagozzi, 1998), behavioral intentions are influenced by: *affective and evaluative attitudes*, *social identity*, *subjective norms*, *desire*, and *perceived behavioral control*.

### 3 Method

#### 3.1 Participant and procedure

Three hundred fifty consumers have participated to the study: 201 consumers who usually buy luxury brands, in clothing and accessories segment, in one-brand stores and 149 consumers who buy luxury brands in outlet stores. Regarding consumers who purchase luxury brand products in one-brand stores, they are predominantly male (67.2%) and belong mostly to the age group ranged from 18 to 24 years (32.3%) and that ranged 25 to 34 years (26.9%). With regard to the educational level and income, most participants have high school degrees (47.3%) and an income ranged from € 30.000 to € 70.000 (52.2%). Finally, with regard to the profession, most of the participants are employed (39.8%) and students (38.8%). With regard to consumers who buy in outlet stores, they are predominantly female (56.4%), and are aged from 35 to 44 years (39.6%); the qualification is primarily high school degree (34.2 %), followed by post graduate studies (25.5%); finally, with regard to employment, participants are mostly retired (27.5%) and entrepreneurs/freelancers/managers (24.2%). Participants have been interviewed through a questionnaire containing measures of investigated constructs. The interview was held inside luxury one-brand stores or outlet stores.

#### **Measure**

Reasons that guide the purchase

To detect the Hierarchical Value Maps of Bagozzi (Bagozzi, Bergami, & Leone, 2003; Bagozzi & Edwards, 1998), participants have been asked to list up to five reasons for choosing luxury brand products. Therefore, for every reason, they have been asked to explain the reasons for its importance. Once expressed the reason of the importance, we further asked to explain why it was important just expressed.

#### **Cognitive basis in the purchase**

To detect the cognitive basis of purchase behavior, the two groups of consumers were asked to answer to 64 items representing the six factors proposed by Keller (2003): Brand salience (4 items); Brand Imagery (6 item); Brand Performance (9 items); Consumer Feelings (7 items); Consumer Judgments that are further divided into 4 sub-dimensions: Quality (4 items), Credibility (10 items), Consideration (3 items), Superiority (2 items); Consumer Brand Resonance, which is divided into four sub-dimensions: Loyalty (6 items), Attachment (4 items), Community (4 items), Engagement (5 items). Examples of items are: “The luxury brands come to my aid in all possible situations” (Quality) and “The luxury accessories and clothing are more reliable” (Consideration). Participants responded to each item on a 5-point scale, where 1 meant strongly disagree and 5 strongly agree. The factors reliability is between .68 (Superiority) and .96 (Credibility).

Behavioral basis of purchase

To identify behavioral basis of purchase, the intentions and the behavioral variables that influence them were measured (Bagozzi, 1998; Bagozzi, Gurhan-Canli & Priester 2002).

Behavioral intentions. This variable was measured by the item: "How likely are you to repurchase luxury accessories and clothing?". Participants responded on a 4-point scale from very unlikely to very likely.

Evaluative and affective attitude. Consumers were asked to evaluate the concept "The Luxury Brand" on 17 7-points semantic differential items (Osgood, 1957): ten assessed evaluation attitude (e.g. useful-useless) and seven assessed affective attitude (e.g. "pleasant-unpleasant"). The alphas for the affective and evaluative attitude are equal respectively to .81 and .73.

Social identity. Participants have been asked to express the relationship between two identities ("Who Buys Luxury Brands" and "Yourself") expressing an opinion on a 7-point scale, from widely separated to completely overlapped (Bagozzi & Bergami, 2000).

Subjective norms. To detect this construct we asked participants to answer the question "People most important for me endorse my decision to buy luxury accessories and clothing", on a 4-point scale (from completely false to completely true).

Desire. To detect this construct we asked consumers to express their opinion on a 4-point scale (from completely false to completely true) on the statement "I would like to buy again luxury accessories and clothing".

Perceived behavioral control. This variable was measured through the statement "If I wish, it would be easy for me to buy more luxury clothing and accessories". Participants responded on a 4-point scale from completely false to completely true.

## 4 Results

### 4.1 Reasons that guide purchasing behaviour

In order to detect the motivational aspects of the consumer choice, the answers provided by participants were categorized into 13 categories for one-brand store consumers (Table 1) and 14 categories for outlet store consumers (Table 2). The implication matrix was then constructed for both groups. This matrix lists reasons, number of times each reason leads to another reason, the in-degrees (number of times each reason was the subject of a connection), and out-degrees (number of times each reason has been the object and origin). Starting from the matrix of the implications, the hierarchical trees for the two types of consumers have been constructed. Within the hierarchical tree, the reasons were sorted according to the abstraction index (Bagozzi & Edwards, 1998; Bagozzi, Bergami, & Leone, 2003), which expresses the degree to which a reason is the ultimate goal to be reached: the higher the value, the more the reason was abstract. The relations within hierarchy tree, for both groups, are those mentioned by at least 5% of participants, indeed those that reach at least a frequency 10 for consumers who buy luxury brands in the one-brand stores and 7 for consumers who buy luxury brands in the outlet stores.

Abstraction Ratio		1	2	3	4	5	6	7	8	9	10	11	12	13	Out-degrees
0.385	1.Aesthetically pleasing	0	6	7	3	2	10	1	12	2	0	22	2	0	67
0.415	2.Quality	4	0	5	15	10	20	35	7	19	1	13	3	2	134
0.228	3.Like me	10	31	0	59	32	56	9	39	26	9	25	14	2	312
0.575	4.Distinction/ exclusive	3	5	24	0	25	9	1	13	3	0	3	7	0	93
0.621	5.Status / Social Class	5	2	11	10	0	4	1	8	10	0	8	3	2	64
0.675	6.Glamour	12	11	2	5	9	0	2	3	8	0	9	1	1	63
0.677	7.Long duration	0	13	5	4	0	2	0	2	1	1	2	0	0	30
0.619	8.Fashion	3	2	17	5	6	6	4	0	4	1	6	4	3	61
0.601	9.Reliability	0	10	7	18	6	8	0	2	0	0	2	2	0	55
0.382	10.Quality of service (store)	2	6	4	0	0	0	7	0	0	0	0	1	1	21
0.765	11.Fit	1	4	0	0	4	12	1	2	5	1	0	0	0	28
0.507	12. Inaccessible/I can afford it	1	5	10	3	4	4	2	3	2	0	1	0	1	36
0.333	13. Advertising	1	0	0	4	7	0	0	10	3	0	0	0	0	25
	In-degrees	42	95	92	126	105	131	63	99	83	13	91	37	12	989

Table 1. Implication matrix for one-brand store consumers

Abstraction ratio		1	2	3	4	5	6	7	8	9	10	11	12	13	14	Out-degrees
0.320	1. Saving	0	17	3	0	0	0	3	5	0	31	4	46	4	9	123
0.360	2. Enjoy luxury goods	12	0	17	20	2	0	18	10	0	0	0	3	2	19	103
0.573	3. Quality of Product	5	9	0	6	0	0	5	2	1	2	0	1	0	4	35
0.810	4. Long duration	2	2	5	0	0	0	1	0	0	0	0	1	0	0	11
0.534	5. Pleasant Environment	5	2	1	0	0	0	0	1	0	0	17	1	5	9	41
0.797	6. Kinds Staff	0	2	0	0	2	0	0	1	0	0	0	0	0	7	12
0.547	7. Exclusivity	2	6	2	3	5	1	0	6	0	0	3	1	3	7	39
0.516	8. Confidence in the product	4	8	12	9	2	1	2	0	0	1	2	0	0	3	44
0.712	9. Parking	1	1	0	0	1	0	0	0	0	0	4	1	10	1	19
0.770	10. Economic Crisis	7	1	2	1	0	0	0	0	0	0	0	2	0	1	14
0.540	11. Relax	2	0	0	0	14	2	1	1	1	0	0	3	9	7	40
0.435	12. MoreChoice	7	5	1	1	4	0	3	1	1	4	5	0	16	13	61
0.439	13. Amenity (place)	11	1	1	3	5	3	5	6	1	1	11	7	0	5	60
0.553	14. Feeling of warmth (product)	0	4	3	1	6	2	4	3	1	0	8	1	5	0	38
	In- degrees	58	58	47	45	41	9	42	36	5	39	54	67	54	85	640

Table 2. Implication matrix for outlet stores consumers

With regard to the group of consumers who purchase luxury brands in one-brand stores, the most abstract category is the “Fit” that is linked to other categories such as “Quality”, “Beautiful” and “Long life”. Therefore, it seems that the first choice orientation is tied mostly to the concept of quality and safety. A second orientation that could be defined as more “hedonistic” is “I am pleased with it/I like it”. This category, which is also the most central (see Bagozzi, Bergami, & Leone, 2003), is connected to other categories such as “Status”, “Distinction”, “Fashion”, “They are not easily accessible/I can afford it”. It points out another order of important reasons for the consumer of luxury goods, which is the desire to own a luxury product and to stand out being one among the few who can afford it.

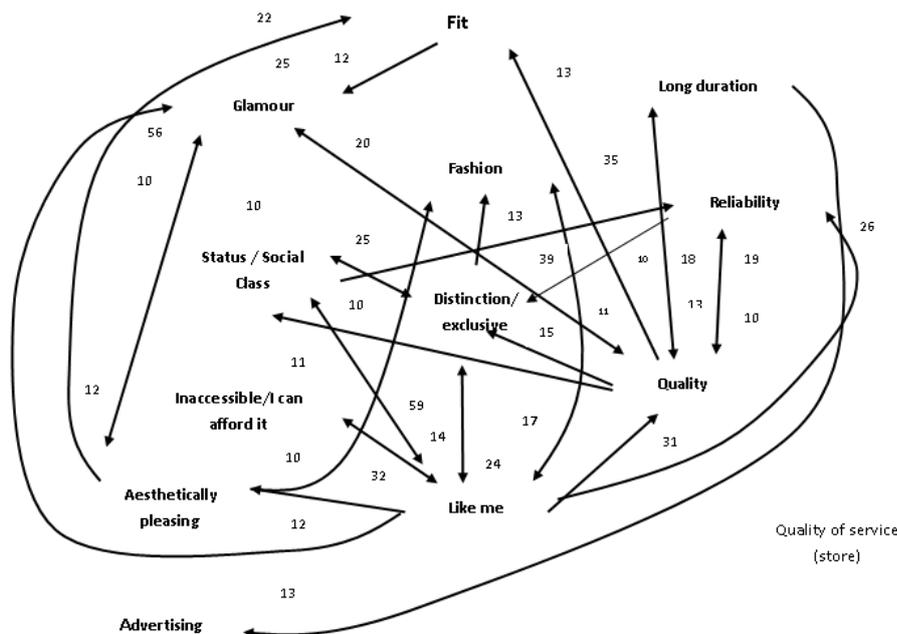


Fig 1. Cognitive maps of reasons for one-brand store consumers (N=201; cut off= 10)

For the consumers purchasing luxury brands in outlet stores, the most abstract category indicated by the consumer was “Long duration”, followed by “Kind staff” and “Economic crisis”. Therefore, the choice orientation of consumers surveyed, with respect to the former category, is based more on the qualitative nature of the product rather than on the image that derives from it.

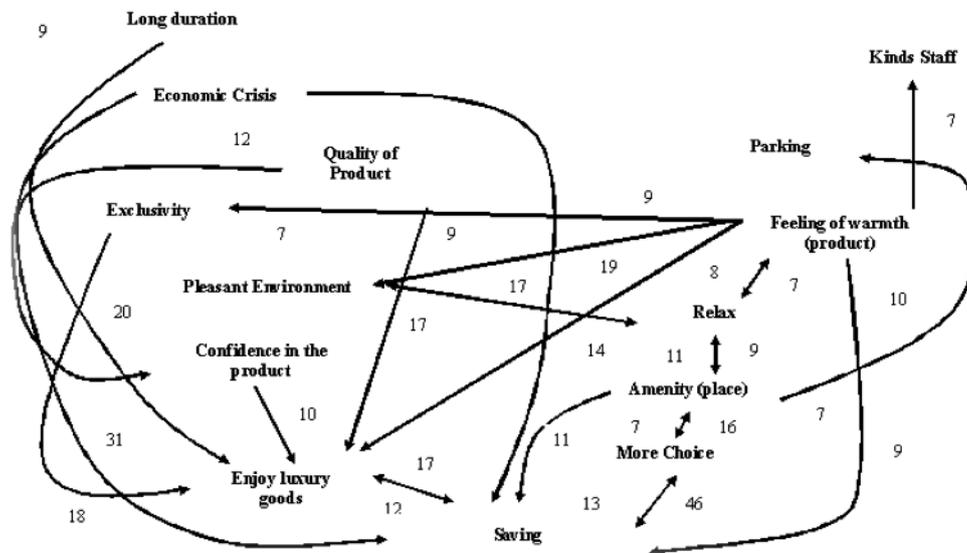
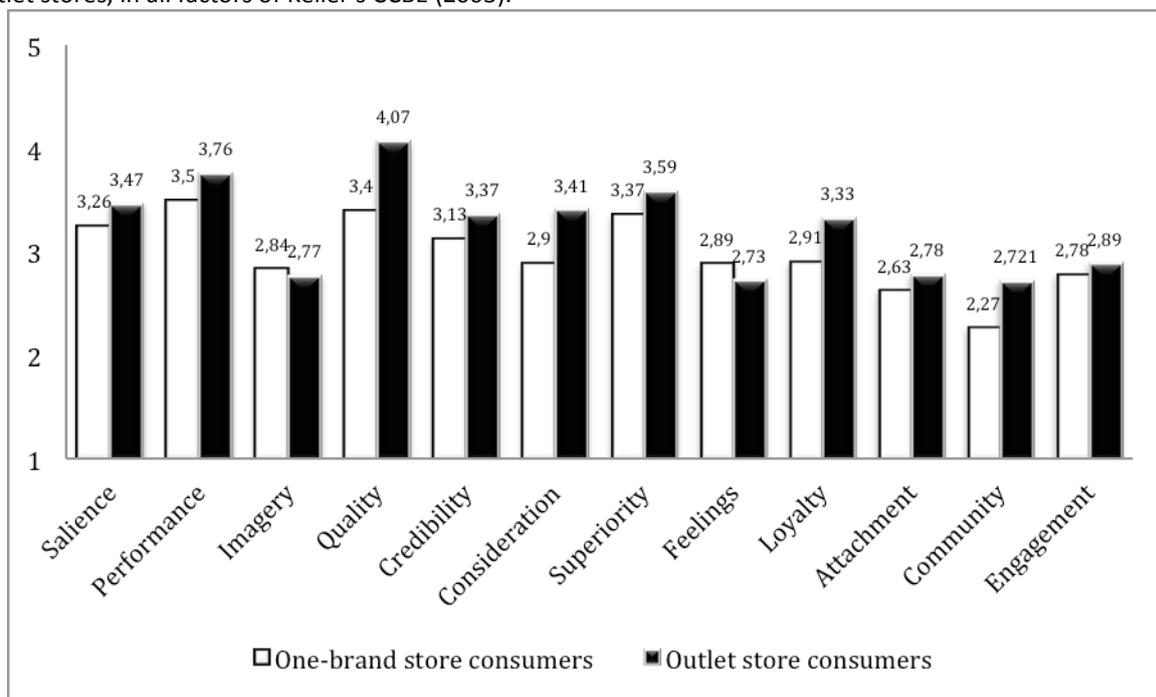


Fig 2. Cognitive maps of reasons for outlet stores consumer (N=149; cut off= 7.45)

#### 4.2 The cognitive basis of purchasing behavior

To detect the existence of differences between the two groups of consumers relating to factors identified by Keller’s model (2003), the analysis of variance with a two-levels factor between subjects (consumer group: outlet store vs. one-brand store) was applied. From analysis resulted a significant multivariate effect,  $F(12,337) = 18.21, p < .001$ ; in addition, except for the factors “Image” and “Commitment”, the univariate effects were significant,  $F_s(1,348) > 4.09, p < .05$ . These results indicate a stronger cognitive bond from consumers of luxury brand goods that purchase in outlet stores, in all factors of Keller’s CCBE (2003).



Graph 1. Means of Keller’s factors for two groups of consumers.

### 4.3 The behavioral basis of purchase

As regards the variables that affect the intention to repurchase the product (subjective norms, perceived behavioral control, desire, social identity, evaluative and affective attitude) a stepwise regression was applied, separately for each of the two groups.

One-brand store consumers				
Step		Beta	R <sup>2</sup>	R <sup>2</sup> Change
1	Subjective norms	.43***		
			.18***	
2	Subjective norms	.36***		
	Social identity	.21**		
			.22***	.04**
3	Subjective norms	.35***		
	Social identity	.19**		
	Evaluative attitude	.15*		
			.24***	.02*
4	Subjective norms	.32***		
	Social identity	.19**		
	Evaluative attitude	.17**		
	Perceived behavioral control	.16*		
			.26***	.02**
5	Subjective norms	.31***		
	Social identity	.23***		
	Evaluative attitude	.26***		
	Perceived behavioral control	.17**		
	Affective attitude	.16*		
			.27***	.01*
Outlet store consumers				
1	Desire	.32**		
			.09***	

Table 3. Stepwise linear regression for two consumers groups. Dependent variable: intention.

Note. Betas are standardized coefficients. \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Regarding consumers who buy luxury brands in one-brand stores, the purchase intent derived largely from subjective norms, followed by social identity, evaluative attitude perceived behavioral control and affective attitude. With respect to the group of consumers purchasing luxury brands in outlet stores, the purchase intention was determined only by desire.

## 5 Conclusions

This study is part of the analysis of the phenomenon of the *culture of consumption*, which stands for the preferred field of comparison between socio-economic and subjective dynamics, between standardization and identification, between the dream and the need. It is evident that this soil can be defined as the place where it is possible to observe the transformation of objects into symbols, the interaction between the everyday routine and sense making (Fabris, 2003). Compared with the starting hypothesis, whose objective was to investigate motivational, cognitive, and behavioral aspects leading the consumer of luxury brands to purchase in a one-brand store or in a outlet store, some considerations deserve to be mentioned. Regarding to the motivations that guide the purchasing behavior: consumers who buy in one-brand stores are oriented to the choice by the feeling of security that derives wearing a luxury product. However, the search for such safety is primarily governed by the desire to show affiliation to a specific status, showing a hedonistic attitude towards the brand (Veblen, 1881). Instead, consumers who purchase luxury products in outlet stores are motivated by the quality of the product, which has a long duration, and their attitude is utilitarian (Katona, 1951). Regarding the cognitive basis, in both groups it is clear that the qualitative aspect creates the most long-lasting bond with the brand, although this is more evident in the group of consumers who buy in outlet stores. Finally, with regard to the behavioral bases of purchase, people buying in one-brand stores will repurchase luxury products especially because they receive social approval. On the other hand, people purchasing in outlet stores will purchase again the product because they desire to buy luxury products.

Building a strong brand is essential for the positioning of the product on the market, and to emphasize quality and uniqueness of its products and services (Keller, 2003). This leads to the consideration that identifying and analyzing the relations of mutual influence between the behavior of consumers and the determinants of the brand values, allows to acquire an interpretative model of the consumer-brand relationship, and at the enterprise level, to define in a predictive way those decisions connected to the brand.

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## THE INFLUENCE OF SCENTS ON CONSUMER BEHAVIOR ON IMPULSE BUYING BEHAVIOR

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This field study was carried out in a filling station in Poland with the aim to test the efficiency of a sensory marketing strategy. We were interested in the effect of ambient scents on consumers' perception and impulse buying behavior. Impulse buying is often triggered in and by a specific shopping environment (Betty & Ferrell, 1998). The aim of this study was to observe if an artificial scent, congruent with the product, had an impact on consumers' emotional and behavioral response and what role it played in impulse buying behavior.

Three experimental conditions have been designed: one scented with "coffee", one scented with "café latté" and a control condition (without scent). Two professional diffusers were used to spread the scent in the retail space. Two types of data were collected: purely quantitative data (the service station's daily transactions) and (questionnaire-based surveys carried out on 120 clients).

The data confirm the hypothesis of the positive impact of olfactory marketing on customers' evaluation of products and on the consumers' evaluation of the stations atmosphere. The results also confirmed that scents could lead to increase sales. We also found that consumers who claim to be sensible to scents, like younger people, are more likely to buy impulsively than other tested groups.

In conclusion, given the specific characteristics of the olfactory system, as direct link to the limbic system and the durability of olfactory memory, this type of marketing seems to be a revolutionary and effective strategy for the retail industry.

*Keywords: market efficiency, overconsumption, neuromarketing, olfactive marketing*

## THE TEENAGER AND CLOTHING CONSUMPTION

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This paper analyses the adolescents' consumer behavior aged 12 in the clothes consumption. This work is a qualitative research with focus group methodology. There were 42 students from public and private schools.

The results showed that the adolescents use the clothing as a form of express and identify themselves with others, and confirm that the media plays an influencing role when taking decisions about consumption. The interviewees agree that the celebrities are their references on how to dress, to speak and to be, but they show unfaithful to the brands. The consumption particularities on the different social classes indicate a segmented public who needs research about their behavior, because besides influencing a great deal of the family consumption they will also be the future adult consumers.

This study brings the results of the clothing Brazilian industry interest, which is one of the greatest in the world, in a stiff competition market.

*Keywords: choice, advertising, adolescents, individual differences*

## AFFINITY INDEX - METHODOLOGICAL AND EMPIRICAL ANALYSIS

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The aim of the presented study is to verify an improved indicator (the Adjusted Affinity Index) investigating numerical quantification of perceived similarity between two objects or concepts. The adjustment of the Affinity Index (Kleine & Kernan, 1988) allows, due to the application of fuzzy logic, to employ continuous values (from 0 to 1) referring to membership function and resulting in restricting or widening the criteria of similarity. Further, the adjustment considers the composition of values used to calculate the index, omitted in previous models.

The indicator is validated through comparative analysis of two international and four national brands of chocolate in two countries (Poland and Italy) with an application of continued associations method (Szalay & Deese 1978). Further, an analysis of 3 print advertisements of low-involving products is performed (in Italy). All the studies were conducted in an online mode.

An application of two consecutive adjustments provides predicted changes in the value of Affinity with respect to the composition of single statements, lowering down the value of affinity in all of the analyzed cases: chocolate brands: Alpen Gold, Lindt, Milka, Wedel, Perugina, Novi and elements of 3 print advertisements.

The validation process gives contribution to empirical literature on similarity assessment by to offering a more precise approach, which addresses complex cases in which similarity can be easily overestimated.

*Keywords: choice, advertising, Affinity Index, similarity*

## PSYCHOLOGICAL FACTORS OF COMMERCIAL ORGANIZATIONS' COMPETITIVENESS

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Our objective was to find out factors of commercial organizations' competitiveness and correlations between employee-assessed levels of their own and organizations' competitiveness.

The investigation was done on the sample of 230 managers and employees at a private bank, hotel and restaurant complexes, and advertising agencies in Kiev in 2011 using the *Complex assessment of organizations' competitiveness* (Fil, 2008).

Managers and employees assessed themselves as highly competitive (80% on the used scale), which suggests their satisfaction with themselves as competitive professionals. These findings call for further investigation of the real, not self-perceived, psychological attributes of the respondents (cognitive, emotional, behavioral strategies, etc.). Only 55% of the organizations were assessed as competitive, which revealed some misbalance with the respondents' self-assessed competitiveness. These findings showed respondents' certain dissatisfaction with their organizations, which may result in staff turnover and loss of competitive.

Analysis of the factors of the commercial organizations' competitiveness found that the mega-level factor (the country's competitiveness at the international level) was noted by only 20% of the respondents as important which suggests the reverse correlation between the country's and the organizations' competitiveness. The organization's specialization was more important than the organization's administrative location (45% vs. 25% of the respondents) - the macro-level factors. The organizations' location in a prestigious area or expensive office center do not automatically guarantee the organizations' competitiveness. Among the mezzo-level factors the most important were shown to be the rivals' competitiveness (45%), the organizations' image (35%), the competitiveness of the organizations' services (35%), customers' and business partners' competitiveness (30% each), and material and financial basis (30%). It stressed the roles of the rivals' market behaviors and the organization's positive image.

The micro-level factors of competitiveness were shown to be the most relevant: employees' competitiveness (50.0%) and superiors' competitiveness (40%) proved the leading role of the human factor in ensuring organizations'

competitiveness. The following correlation was found: the lower the level of the factor (from mega- down to micro-level) the greater is the significance for the organizations' competitiveness.

The findings proved the importance of the investigation of psychological aspects of organizations' competitiveness and the role of psychological factors whose knowledge can be helpful in enhancing organizations' competitiveness.

*Keywords: cooperation/competition, individual differences, commercial organizations, organizations' competitiveness*

## INVESTMENT STRATEGY, DEMOGRAPHIC VARIABLES AND SOURCE OF INCOME

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The main aim of presented research was to examine differences in the likelihood of taking risky investment decisions and chosen investment strategies depends on demographic variables and source of income.

Participants. 260 people took part in the study. They were Warsaw small entrepreneurs, sale workers, administration workers and students. Participation was voluntary.

The likelihood of taking risky investment decisions, and chosen strategy connected with these decisions, were examined with a set of item describing different investment situations developed by an author of this poster. Demographic variables that was measured: age, sex, education, real and perceived income and source of income. Independently of age, sex, real and perceived income people prefer safe asset for long term and risky one for short term.

Assets chosen by person her or himself and chosen by some financial specialist for him or her have the same level of risk for example for people with a different education level and different level of risk for example for young people. Inducting the source of income change the situation.

Independently of the single demographic variable people choose safer options when assets are bought for long term and more risky options for short-term assets. That situation changes when the source of income variable is inducted to the model.

Taking risky investment decision when person can choose an asset him or herself and when someone else changes the asset for him or her depends on even single demographic variable.

*Keywords: investments, choice, risky choice, risk taking, investment strategy*

## THE STUDENT AS CONSUMER, COURSE SATISFACTION AND WELL-BEING: THE ROLE OF STUDENT IDENTITY IN UK HIGHER EDUCATION (HE)

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This study extends previous work on identity processes in HE (Sonnenberg & Morris, 2011). Drawing on the Social Identity Tradition (Turner et al., 1987; Haslam, 2004, 2010), this study explores the relevance 'consumer' and 'learner' identities have for HE students' learning, course satisfaction and well-being. In the UK, the marketization of HE (Brown, 2011; Foskett, 2011; Maringe, 2005) is rapidly redefining the relationship between academics and students: academics are increasingly regarded as 'service providers' and students as 'customers' or 'consumers' (Furedi, 2011; Molesworth et al., 2009). Preliminary experimental evidence suggests that defining students as 'consumers' – as opposed to 'learners' – can have a negative impact on the perceived quality of their HE experience (Sonnenberg & Morris, 2011). However, thus far, there is little evidence in support of students' own endorsement of these identities. Furthermore, the extent to which these identities relate to other learning-relevant indices and students' overall well-being remains unexplored.

Participants (N = 221) were recruited from universities across the UK. Respondents completed an online survey measuring the following variables: (i) *student identity* – tapping the extent to which students identified as 'consumers' and 'learners' (measure adapted from Sonnenberg & Morris, 2011, Butler et al., 2011), (ii) *dedication to course* – assessing students' commitment to their studies, (iii) students' perceived *sense of belonging* to their university

(Hausmann et al., 2009), (iv) *course satisfaction* – students' satisfaction with the quality of their chosen course (adapted from the National Student Survey) and (v) *well-being* – students' perceived satisfaction with their life in general (Diener et al., 1985, Lyubomirsky & Lepper, 1999).

There were statistically reliable differences between participants who predominantly defined their student identity in terms of being a 'consumer' and those whose 'learner' identity was more salient. 'Consumers' reported feeling less dedicated to their studies and had a diminished sense of belonging to their university in comparison to 'learners'. Moreover, participants who mainly defined their student identity in 'consumer' terms were less satisfied with their HE experience and the quality of their course. Finally, in comparison to 'learners', 'consumers' reported significantly lower well-being.

Whilst 'learners' and 'consumers' do not constitute completely separate dimensions of student identity, this study provides further evidence that identity processes are implicated in students' assessment of the quality of their HE experience as well as their general well-being. We discuss the potential implications of these findings for students' future learning outcomes, course satisfaction and well-being.

*Keywords: psychology of money, materialism, student identity; consumers; learners; well-being; course satisfaction; National Student Survey*

## BETWEEN THE SHAMPOO AND THE PHYSICIAN – COGNITIVE STRUCTURING IN CONSUMERS' DECISIONS

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The present research examines to what extent the consumers' decision making process is affected by the importance of the product. Specifically we compared the decision making of choosing a physician to that of choosing a shampoo. Since decision making processes are strongly affected by cognitive structuring, and the later is related to gender, we examined also the effect of gender.

The study was conducted using process tracing software – MouseLab. In MouseLab, information is presented on the computer screen in a covered information matrix. Participants have to move the mouse cursor onto boxes to uncover each of it. Steps of information search are recorded and are subsequently used to identify decision making process (Willemsen, Johnson, 2011). Subjects were 53 women and 40 men (age M=27.10, years of education M=16.12) who volunteered to participate in the study. The tasks were to decide among four physicians and four brands of shampoo. Each option included information in different levels of relevancy to the decision (peripheral as well as central cues). The dependent measures reflected implicit (f.e. reaction time) and explicit measures (f.e. choosing of one alternative from the several given options) of the decision making process.

The results of the study show that while there is no interaction effect of gender by importance of decision, on a between subject analysis, men were found to be less differentiating (higher correlations) between the two types of decisions than women.

These results are interpreted as supporting the findings about the greater extent of cognitive structuring (the creation and use of abstract mental representations, which are simplified generalizations of previous experience) of male consumers than females (Bar-Tal, Jarymowicz, 2010).

*Keywords: choice, individual differences*

## PERCEPTION OF RISK AND BENEFITS OF MANMADE AND NATURAL HAZARDS

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The study was conducted to check whether the perception of risk and benefits are related to origin of hazards, here, manmade or natural. This was investigated for liked and unliked hazards. The holistic evaluation of risk and benefits was analyzed. It was expected that the inverse relation holds for unliked manmade hazards, and such relation results

from perception of high risk and low benefits. On the other hand the inverse relation for liked natural hazards the inverse relation should result from perception of low risk and high benefits. The second purpose of the study was to analyze the relation between perception of environmental, health, and economic consequences and origin of hazards. 179 participants: 128 female and 51 male, age from 15 to 48 ( $M=24.03$ ;  $MD=23.00$ ) took part in this Internet based experiment. Responders judged eight health, environmental and economic consequences on 11-point response scale (from -5 very negative to +5 very positive) for 10 investigated hazards. They also rated a risk and benefits for all hazards on 11-point responses scale (from 0 - very low to 10 - very high). The investigated hazards differ on two dimensions origin and evoked (positive and negative emotions). For example nuclear power plants genetically modified food (GMO) are treated as unliked manmade hazards, while organic food is an example of liked natural activity.

On average evaluation of health, environmental and economic consequences were neutral or positive for all hazards but nuclear power plant, fossil fuel power station, wildfires and volcanoes. For liked activities consequences were evaluated more favorable than for unliked. A very strong simple effects were observed for both - the origin and emotion dimensions in perception of risk and benefits. The effect of emotions was observed for evaluation of risk as well as benefit. The impact of the origin was observed only for evaluation of risk. For all investigated hazards the inverse relation was observed, there was neither effect of origin nor emotion.

This data is in agreement with the affect heuristic proposed by Slovic and colleagues.

*Keywords: risk taking, risk perception*

## THE INFLUENCE OF MOTHERS' MONEY ATTITUDES ON THEIR CHILDREN SAVING

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The poster will present an analysis of the influence of mothers' attitudes towards money on their children's saving motives and attitudes towards saving. Earlier research (Gąsiorowska, 2008) showed that attitudes towards saving can transmit from parents to children, and allowed formulating hypotheses on its associations with adolescent saving attitudes and motives.

The study analyzed adolescent attitudes toward saving measured by „Saving Attitudes Scale” (Otto, 2009) on five dimensions (1/saving struggle, 2/saving as a good thing, 3/proud, 4/dependency on parents 5/parents as guides) and different saving motives. The SPP (Gąsiorowska, 2008) was used to measure mothers' money attitudes on the following dimensions: 1/control and planning, 2/power, 3/anxiety, 4/debt aversion 5/occasion seeking 5/money as evil 6/cash. To verify the hypotheses, the sample of 160 Polish adolescents and their mothers was surveyed.

The results showed that certain money attitudes of mothers could influence motives and saving attitudes of their adolescent children. Significant and positive influence of mothers' debt aversion on children's saving was found. Furthermore, perceiving by mothers money as a powerful tool for influencing others and as a mean of success was related with negative saving attitudes of their children.

The results lead to conclusion that mothers' attitudes towards money are important in economic socialization and form, in some extent, their children's saving notions and behaviors. In her discussion of the findings the author focuses on earlier studies on money attitudes formation.

*Keywords: saving, adolescents, saving attitudes, money attitudes*

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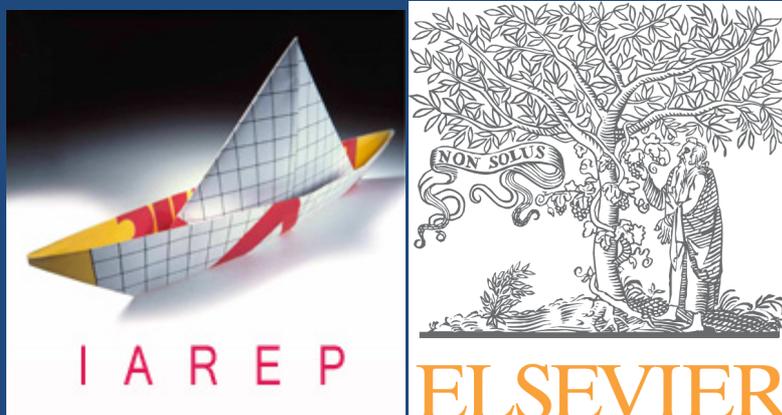
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