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## **6. Moderating effect of learning enjoyment on the relationship between learning self-efficacy and emotions among university students**

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### **Abstract**

The aim of this study was to examine whether learning enjoyment moderates the relationship between learning self-efficacy and emotions. Learning competences have two components: the first one is the knowledge and abilities how to learn effectively with subjective sense of learning self-efficacy, second involves positive attitude associated with drawing pleasure from learning. Emotions examined in the study had different valences and included love, happiness, anger, sadness, shame and fear. The sample consisted of 245 university students (151 women, 88 men, 6 people did not report gender). Mean age was  $M = 21.39$  years ( $SD = 2.04$ ). Valid and reliable psychometric tools were applied. Hypotheses were partially confirmed. Even though, learning enjoyment did not moderate the relationship between learning self-efficacy and positive emotions, the relationship between self-efficacy and positive emotions was the strongest when the high level of learning enjoyment was taken into consideration. What is more, learning enjoyment did not moderate the relationship between learning self-efficacy and negative emotions. The prospective implications of the results in the context of different learning attitudes and academic emotions are discussed.

### **1. Introduction**

The importance of the learning competences is increasingly being recognized by the authorities (European Commission 2007). As education becomes not only European but also global priority, the need to develop research concerning determinants of effective learning grows. Learning competences have two components: first comprises knowledge and abilities to learn effectively with subjective sense of learning self-efficacy, second involves positive attitude associated with drawing pleasure from learning (Atroszko 2013).

Theory and previous research show that self-efficacy has an impact on one's cognition, emotions and behavior. In learning-related approach subjective feeling of self-efficacy would have an effect on how people perceive their capabilities to acquire and use knowledge required to attain their goal, which is high academic performance. Individuals who perceive themselves as self-efficacious have optimistic self-beliefs about their competences and expect positive outcome of future actions, thus, they produce positive, rather than negative, affect. What is more, they may experience a low level of negative emotions in a threatening and/or stressful situations (Bandura 1997). In contrary, individuals who have low efficacy and therefore low self-esteem will experience negative emotions such as anxiety, depression, helplessness and distress (Bandura 1997).

The purpose of pleasure is to motivate individuals to pursue rewards, which include three components: liking, wanting and learning (Berridge & Robinson 2003). Pleasure in its definition is commonly associated with positive affect. However, pleasure is a complex phenomenon with two levels: subjective feeling and objective measurable hedonic reactions. What is more, dissociations between those two levels can occur (Kent 2015). It was noted that the hedonic valence of dissociated “wanting” can easily flip from positive incentive into a negative valence of anxiety, frustration, or fear. These are negative emotions but it would not necessarily disrupt the motivating power of the wanting (Berridge 2015). Deriving pleasure from learning may not be connected only to positive phenomena. Previous research showed its

connection to study addiction, which is also positively related to dysfunctional perfectionism, getaway from personal problems into learning, and experiencing negative emotions (Atroszko 2015). Initially study addicts seem to override their frequently experienced negative emotions with pleasure derived from learning. However, in a long run this initial pleasure may develop into compulsion and not only cease to provide getaway from negative feelings, but will also generate additional high distress due to unsolved personal problems and growing pressure from focusing only on one sphere of life – learning. This seems to be the main reason why learning enjoyment was positively related to both study addiction and negative emotions in previous studies.

Previous studies showed that negative emotions following two types of behaviors related to communion and agency fall into two bundles of emotions which are called agitation syndrome for moral transgression and dejection syndrome for failure (Wojciszke 2010). Agency emotions experienced in the wake of failure are more depressive and consist of apathy, disappointment, tiredness, sadness and depression (Wojciszke & Dowhyluk 2003).

Achievement emotions, which are emotions related to educational domain, are defined as emotions tied directly to achievement activities or achievement outcomes (Pekrun 2007). According to the control value theory of achievement, emotions created by Pekrun (2009) control appraisals and value appraisals are the proximal determinants of specific learning-related emotions. Subjective control is assumed to depend on causal expectancies and causal attributions that imply appraisals of control. Subjective values are conceptualized as subjective importance of activities and outcomes and are divided into intrinsic values which contain affirming an activity per se, even if it does not produce any relevant outcomes, and extrinsic values adequate to the instrumental utility of activities. Pekrun (1988) suggested that intensity and valence of achievement emotions are a multiplicative function of appraisals of controllability and value, and what is more, that the subjective value moderates the effect of perceived control on achievement emotions (Pekrun 2007).

This theoretical and empirical context leads to creating a premise that a person who considers his/her own activities and outcomes in learning as being under subjective control will experience positive emotions more frequently if this domain will be positively evaluated, that is, if he/she will be drawing pleasure from learning.

On the basis of previous research and theoretical frameworks it is hypothesized that: learning enjoyment moderates the relationship between learning self-efficacy and negative emotions (H1); with high level of learning enjoyment the relationship between learning self-efficacy and negative emotions is negative (H1a); with low level of learning enjoyment the relationship between learning self-efficacy and negative emotions is negative and it is weaker than for the high pleasure (H1b); learning enjoyment moderates the relationship between learning self-efficacy and positive emotions (H2); with high level of learning enjoyment the relationship between learning self-efficacy and positive emotions is positive (H2a); with low level of learning enjoyment the relationship between learning self-efficacy and positive emotions is positive and it is weaker than for the high pleasure (H2b).

## **2. Methods**

**Participants.** Two hundred forty five students took part in this study: 151 women (61.6%), 88 men (35.9%), 6 people (2.4%) did not report gender. The mean age of the sample was  $M = 21.39$  ( $SD = 2.04$ ). Participants were from University of Gdańsk and Koszalin University of Technology. Students were from different faculties (psychology, IT, mechatronics, criminology) and modes of study.

**Measures.** Learning-related Pleasure and Self-Efficacy were measured with Multidimensional Inventory - Learning Profile of a Student (MI-LpoS) (Atroszko 2013), which assesses the learning-related behaviors, attitudes, feelings and beliefs. Respondents provided answers on a five-point Likert scale, from (1) very rarely to (5) very often. It showed adequate reliability and validity, as well as good psychometric properties in previous research (Atroszko

2015). In this paper the results from two above-mentioned subscales are presented with Cronbach's alpha reliability of .87 for Pleasure and .82 for Self-Efficacy.

Scale for the measurement of mood and six emotions (Wojciszke & Baryła 2005), a scale used to measure six emotions, namely two positive: happiness and affection, and four negative: fear, anger, guilt and sadness. It consists of 24 adjectives describing discrete emotions, four for each basic emotion. The response alternatives range from (1) never to (7) always, meaning how often these emotions occur. It showed good validity and reliability. In this paper emotions were presented in two subsets: positive emotions and negative emotions. For the present sample the Cronbach's alpha reliability coefficient was .86 for positive emotions and .93 for negative emotions.

Procedure. Data collection used convenience sampling. Students were invited to participate anonymously in the study during lectures or classes, more than 90% agreed to do so. Participation in the study was anonymous and no monetary or other material rewards were offered.

Statistical analysis. Means, standard deviations, percentages and correlation coefficients were calculated. Two hierarchical regression analyses were conducted. The dependent variables were negative emotions in the first model and positive emotions in the second model. An interaction term between self-efficacy in learning and pleasure of learning was created. In both models independent variables were the same. In the first step sex and age were added. Independent variables added in the second step were pleasure and self-efficacy. In the third step interaction was added. Three benchmarks for pleasure of learning based on mean score and standard deviation were set. They included: mean score, mean score minus one standard deviation, and mean score plus one standard deviation. Tests of significance of regression slopes at these benchmarks were conducted. All tests were two-tailed, and the significance level was set to  $\alpha = .05$ . For all linear regression analyses, preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity and multicollinearity. Unstandardized regression coefficients were reported. Bootstrap method with bias corrected 95% confidence intervals and 10,000 bootstrap samples was used. All statistical analyses were conducted in IBM SPSS 23.

### 3. Results

Tab. 1 presents mean scores, standard deviations and percentages for the study variables as well as interrelationships between them.

**Tab. 2** Mean scores and standard deviations, percentages, and Pearson correlation coefficients between the study variables.

	<i>M (SD)/%</i>	2	3	4	5	6
1 Age	21.39 (2.04)	.16*	.08	.13*	.10	.02
2 Sex <sup>a</sup>	35.9% <i>men</i>		.09	-.08	-.25**	.02
3 Self-efficacy	16.58 (4.09)			.54**	.23**	-.16*
4 Pleasure	9.46 (3.75)				.01	.14*
5 Positive emotions	4.72 (1.16)					-.29**
6 Negative emotions	2.93 (1.15)					

<sup>a</sup>Point-biserial correlation coefficient (0 = *women*, 1 = *men*). \*  $p < .05$ , \*\*  $p < .01$ .

In the first model the regression analysis for negative emotions showed that the independent variables added in step 1 explained .0% of the variance ( $F_{2,226} = .00, p = 1$ ). Two independent variables added in step 2 explained 9.4% of the variance ( $F_{4,224} = 5.79, p < .001$ ). Interaction term added in step 3 was statistically non-significant (see Table 2).

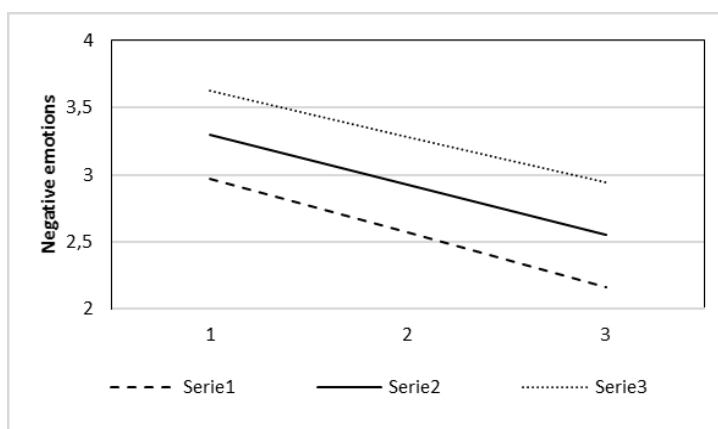
**Tab. 2** Results of hierarchical multiple regression analyses in which age, sex, learning competencies (pleasure and self-efficacy), and interactions were regressed upon the scores on emotions (positive and negative) (unstandardized regression coefficients are reported).

Step	Predictor	Model 1		Model 2	
		<i>B</i>	$\Delta R^2$	<i>B</i>	$\Delta R^2$
1	Age	-.00	.000	.08*	.093
	Sex <sup>a</sup>	-.01		-.72**	
2	Age	-.02	.094	.08*	.098
	Sex <sup>a</sup>	.13		-.84**	
	Pleasure	.10**		-.08**	
	Self-efficacy	-.10**		.11**	
3	Age	-.02	.001	.07*	.010
	Sex <sup>a</sup>	.12		-.85**	
	Pleasure	.06		-.20*	
	Self-efficacy	-.11**		.06	
	Interaction	.00		.01	
Total <i>R</i> <sup>2</sup>			.095		.201

<sup>a</sup>0 = women, 1 = men. \*  $p < .05$ , \*\*  $p < .01$ .

Interaction plot is showed in Figure 1. Conditional effect of focal predictor (self-efficacy) at chart values of the moderator variable (pleasure) showed that there was negative relationship between learning self-efficacy and negative emotions for high level of learning enjoyment ( $B = -.08, p = .010, 95\% \text{ CI } [-.15, -.02]$ ), for mean learning enjoyment ( $B = -.09, p < .001, 95\% \text{ CI } [-.14, -.05]$ ) and for low learning enjoyment ( $B = -.10, p < .001, 95\% \text{ CI } [-.15, -.05]$ ).

In the second model the regression analysis for positive emotions showed that independent variables added in step 1 explained 9.3% of the variance ( $F_{2,226} = 11.57, p < .001$ ). Two independent variables added in step 2 explained 9.8% of the variance ( $F_{4,224} = 13.23, p < .001$ ) Interaction term added in step 3 was statistically non-significant (see Table 2).



**Fig. 3.** The effect of learning enjoyment on the relationship between learning self-efficacy and negative emotions.

Figure 2. shows interaction plot. Conditional effect of focal predictor (self-efficacy) at chart values of the moderator variable (pleasure) showed that there was positive relationship between learning self-efficacy and positive emotions for high level of learning enjoyment ( $B = .14, p < .001, 95\% \text{ CI } [.08, .20]$ ), for mean learning enjoyment ( $B = .12, p < .001, 95\% \text{ CI } [.08, .16]$ ) and for low learning enjoyment ( $B = .09, p < .001, 95\% \text{ CI } [.05, .14]$ ).



**Fig. 2.** The effect of learning enjoyment on the relationship between learning self-efficacy and positive emotions.

#### 4. Discussion

Hypothesis 1 was not confirmed. Learning enjoyment did not moderate the relationship between learning self-efficacy and negative emotions. What is more, individuals who presented high level of learning enjoyment were group experiencing the highest intensity of negative emotions irrespective of level of learning self-efficacy. This result could be related to study addiction which is positively related to pleasure derived from learning and can be defined as being overly concerned with studying, being driven by an uncontrollable studying motivation, and to put so much time and effort into studying that it impairs private relationships, spare-time activities, and/or health (Atroszko et al. 2015). Moreover, susceptibility to experiencing negative emotions and emotional instability should be positively related to escalation of study addiction symptoms with time (Atroszko et al. 2016). Previous studies showed that learning enjoyment was positively related to involvement in learning, getaway from personal problems into learning, time spend on learning, perfectionism in learning, learning self-efficacy (but there was no relationship with global self-efficacy) and also experiencing negative emotions, specifically fear and shame (Atroszko 2015). Results indicate that drawing pleasure from learning could be way for individuals who study compulsively to get away from negative emotions. This dysfunctional way of coping with negative emotions could initially override them with pleasure derived from learning, especially when person have subjective sense of learning self-efficacy. However, in long-term initial pleasure may develop (in predisposed individuals) into learning compulsion, which in turn may lead to huge psychological and social costs and in a result to an increase in experiencing negative emotions.

Hypothesis 2 was partially confirmed. Even though, learning enjoyment did not moderate the relationship between learning self-efficacy and positive emotions, the relationship between self-efficacy and positive emotions was the strongest when the high level of learning enjoyment was taken into consideration. Individuals drawing low pleasure from learning have the highest intensity of positive emotions on all levels of self-efficacy. This could be related to the fact that they may have instrumental attitude to learning evinced in not being emotionally engaged in learning as a process, but perceiving this as an instrument to achieving goals. Consequently, they will not identify potential failure as personal to the same extent as people perceiving learning as very significant and valued domain of life. What is more, in the case of success they will be interpreting situation as evidence of self-efficacy (Bandura 1977). The relationship between self-efficacy and positive emotions considering high level of pleasure was positive, which is congruent with theory and previous studies (Pekrun 2006). Nonetheless,

frequency of positive emotions for high level of pleasure was lower than for low level of pleasure. This could be related to the emotion regulating mechanisms of study addiction which is positively related to learning enjoyment (Atroszko et al. 2015). Individuals who study compulsively initially tend to get away from negative emotions to pleasure of learning. If they have knowledge and abilities to learn effectively, they will be experiencing positive emotions, but not in the same range as people who are not addicted.

Obtained results brought to light a complex relationship between three investigated phenomena. Considering the lowest level of positive emotions in the group of students with the highest level of pleasure leads to conclusion that it should be investigated in terms of study addiction and its role in the mechanism of developing this kind of addiction.

As far as the Authors are aware, the present study is the first to investigate the moderating effect of learning enjoyment on the relationship between self-efficacy and emotions. In terms of strengths, valid and reliable measures were used in the study. Still, the present study has some limitations. Sample was not representative and study participants were predominantly female, therefore, the results may be generalized to the population with some reservation. Moreover, self-report measures were used, consequently the results may suffer from general weakness related to this methodology. Additionally, the study was cross-sectional, thus it is impossible to clearly identify causes and effects. Future studies should overcome these limitations. Moreover, the potential role of study addiction and emotion regulatory processes related to it should be investigated in relation to learning competences and pleasure. Another issue is to investigate which specific emotions are related to particular competences.

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