TRANSITION FROM ENTREPRENEURSHIP EDUCATION TO ENTREPRENEURIAL INTENTION: A CROSS-CULTURAL EFFECT

PRZEJŚCIE OD KSZTAŁCENIA PRZEDSIĘBIORCZEGO DO INTENCJI PRZEDSIĘBIORCZYCH: UJĘCIE MIĘDZYKULTUROWE

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Abstract

Through a cross-cultural examination, this study aims to analyse a move from the field of entrepreneurship education (EE) to entrepreneurial intention (EI). Specifically, we carried out mediation (perceived behavioural control (PBC) and attitude towards entrepreneurship (ATE)) and moderation (gender and country) analysis. The study surveyed 546 Polish and Spanish university students and used a multi-group analysis to test the model across groups. The results reveal that attitude and PBC partially mediate the effect of EE on EI. Moreover, the results show that the model is consistent in both countries. The study contributes to the comparative international entrepreneurship literature on how the theory of planned behaviour (TPB) applies in different contexts and implications it has for this field of study.


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Keywords: attitude, behavioural control, entrepreneurship education, entrepreneurial intention, Poland, Spain.

Streszczenie
Niniejsza praca ma na celu przedstawienie wyników badań analizy przejścia z obszaru edukacji w zakresie przedsiębiorczości do intencji przedsiębiorczych w ujęciu międzyculturowym. W szczególności przeprowadziliśmy analizę mediacji (postrzeganej kontroli zachowania i postaw wobec przedsiębiorczości) oraz analizy moderacji (płci i kraju studentów). W badaniu wzięło udział 546 polskich i hiszpańskich studentów, a do przetestowania modelu w różnych grupach wykorzystano analizę wielogrupową. Wyniki badań wskazują, że postawy wobec przedsiębiorczości i postrzegana kontrola zachowania częściowo pośredniczą we wpływie nauczania przedsiębiorczości na intencje przedsiębiorcze. Ponadto wyniki pokazują, że model jest zgodny w obu krajach. Badanie stanowi wkład w studia porównawcze w ujęciu międzynarodowym dotyczące przedsiębiorczości na temat zastosowania teorii planowanego zachowania (theory of planned behaviour) w różnych kontekstach i implikacji, jakie ma ona dla tego obszaru badań.

Słowa kluczowe: postawa, kontrola behawioralna, edukacja w zakresie przedsiębiorczości, intencje, Polska, Hiszpania

INTRODUCTION

Entrepreneurs shape the economy at different levels. Van Praag and Versloot (2007) argue that entrepreneurship drives job creation and wealth generation. To foster entrepreneurship, the European Commission (2003) suggested educational programmes to encourage entrepreneurial intentions (EI). In their assessment, The Commission reported that entrepreneurship education (EE) has a positive effect on the EIs of students and alumni who obtained EE compared to their colleagues who did not. The European Commission (2015) stated that EE has positive effects on educational institutions, the economy, and society as a whole.

The European Union has advocated for an educational system that encourages entrepreneurship and serves as a catalyst for economic growth (Wach, 2014). Polish business and non-business schools are adopting this approach (Kosala, Pichur, 2008; Płaziak, Rachwał, 2014). Ruiz-Navarro et al. (2019) report that 4.5% of Spanish students plan to start a business after graduation and 24.5% within five years. Entrepreneurial training is important for connecting universities and society.

This study compared the EIs of male and female students from Poland and Spain, focusing on their attitude and perceived behavioural control (PBC) or self-efficacy. Gender is a key factor in entrepreneurship, as women tend to participate less than men (Hindle et al., 2009; Kurczewska, Białek, 2014; Sieger et al., 2016; Nowiński et al., 2019). Vamvaka et al. (2020) explored how gender affects
attitude, PBC, and intention, but their sample was limited to one university and one field of study (information technology). This study expanded the scope to include a sample of students from two universities and two countries (Spain and Poland). Furthermore, this tested the cross-cultural equivalence of the measurement instruments to avoid drawing wrong conclusions (Gorgievski et al., 2018). Based on the survey of 310 Serbian students, Dragin et al. (2022) concluded that male students had higher EI. However, their study was limited to tourism and hospitality students in one country. This study expanded the scope to include all faculties of two institutions. Akhtar et al. (2022), also suggested more research with larger and more diverse samples of university students across different countries and institutions, as well as comparative studies (Ali et al., 2023). Hence, this study examines how Spanish and Polish university students’ EIs are influenced by Ajzen’s (1991) theory of planned behaviour (TPB), as in the case of studies by other authors (e.g. Wach, Wojciechowski, 2016; Che Nawi et al., 2022; Ngoc Tuan, Pham, 2022). Specifically, the study explores the role of two key variables of the TPB in shaping EIs. This paper also tests the applicability of the TPB across different cultures and countries and identifies which components are (not) universal. Moreover, we examine how gender and culture/country moderate the effects of intentions and their antecedents. It also explores the role of EE in influencing EI through a mediation mechanism. This study advances the literature on gender, culture/country, EE, and EI. From the foregoing, the paper’s primary goal is to examine how the TPB may be used to study the transition from the field of EE to EI. We specifically performed moderation (gender and country) and mediation (PBC and attitude) analyses.

The subjective norm (SN) component of TPB was omitted from this study because it is inconsistent. According to Moriano et al. (2012), the relationships among TPB components are equally strong and comparable across cultures, except for the relation of SNs and intentions. For many cultures, attitude and self-efficacy were the main predictors of EIs, while SNs were the least important and most variable. Perhaps the effect of SNs on EI is weak because young people make entrepreneurial career decisions based on personal (attitude and self-efficacy) rather than social (SN) considerations (Krueger et al., 2000).

This study consists of four parts. First, we develop several hypotheses (Fig. 1) based on a critical review of the literature on EIs, education, and gender. Second, we describe our research methods and data analysis. Third, we present our main results and compare them with existing studies in the field. Finally, we highlight the theoretical and practical implications of our paper, acknowledge its limitations, and propose future research directions.
LITERATURE REVIEW AND HYPOTHESIS

Theory of planned behaviour (TPB)

According to Ashari et al. (2022), TPB explains and predicts EI. The theory suggests that EI depends on three factors: attitude, SN, and PBC towards entrepreneurship (Vamvaka et al., 2020). Using the TPB and Global Entrepreneurship Monitor data, Virasa et al. (2022) compared the predictors of EI in six ASEAN countries and found that TPB antecedents affect EI. This study examines how two TPB antecedents (attitude and self-efficacy) influence the EIs of university students in Spain and Poland, considering gender and country differences.

Entrepreneurial intention (EI)

According to the TPB (Ajzen, 1991), one’s intention to do behaviour is the main factor that influences performance. Intention explains about 30% of the difference in behaviour (Armitage, Conner, 2001).

Attitude towards entrepreneurship (ATE)

The attitude towards a behaviour refers to “the degree to which a person has a favourable or unfavourable evaluation or appraisal of the behaviour in question” (Ajzen, 1991). Ali et al. (2023) found that attitude predicted further education intentions for 690 Saudi Arabian students. Several studies (Robledo et al., 2015; Rachwał, Wach, 2016; Amofah, Saladrigues, 2022; Kobylińska, 2022; Nawi et al., 2022; Wach, Bilan, 2023) also confirmed the positive and significant effect of attitude on EI among university students. However, Lin et al. (2022) reported no positive relationship between attitude and EI for Chinese students in Madrid, Spain. Based on these findings, we hypothesise that:
H1: Attitude towards entrepreneurship (ATE) has a positive impact on EIs for both genders across Spain and Poland.

Perceived behavioural control (PBC)

Perceived behavioural control is how easy or hard people think it is to do a certain behaviour, based on their past experiences of overcoming challenges (Ajzen, 1991). Bayona-Oré (2023) found that PBC positively influenced EI among 642 university students in Peru. Lin et al. (2022) also reported a positive correlation between PBC and EI of university students, but they recommended a larger sample size for more general and valid results. Several studies support the positive effect of entrepreneurial self-efficacy on intentions (Robledo et al., 2015; Amofah,
Saladrigues, 2022; Kobylińska, 2022a causal quantitative methodology (structural equation modeling; Nawi et al., 2022). For example, Wach and Bilan (2023) surveyed students in Krakow, Poland and found that self-efficacy influenced their EI. Similarly, Anwar et al. (2022), Kibler (2013), Saoula et al. (2023), and Shahab et al. (2019) reported a favourable and significant relationship between the two variables. Based on this evidence, we propose the following hypothesis:

**H2**: PBC has a positive impact on EI for both genders across Spain and Poland.

### Entrepreneurship education (EE)

Entrepreneurial education teaches not only business skills but also critical thinking and self-esteem. Bae et al. (2014, p. 219) define EE as ‘education for entrepreneurial attitudes and skills’. Wang et al.’s (2023) study aims to explore the direct or indirect impacts of entrepreneurship education on entrepreneurial intentions through entrepreneurial self-efficacy and explore the moderating role of psychological capital. Sample data were collected by sending online electronic questionnaires to university students in some universities in Guangxi. A structural equation model was used to test the 757 valid sample data. The results showed that: (1) study showed how EE influences EI through entrepreneurial self-efficacy and psychological capital. Wang et al. (2023) used a structural equation model to analyse 757 valid samples from university students in Guangxi and found that EE significantly boosts EI. However, the link between EE and EI is not clear-cut. Some studies (e.g., Barbosa et al., 2008; Packham et al., 2010; Westhead, Solesvik, 2016; Anwar et al., 2022) reported a positive effect, while others (e.g., Nowiński, Haddoud, 2019; Iwu et al., 2021; Lin et al., 2022) found no significant or negative relationship. Wardana et al. (2020) used structural equation modelling (SEM) to analyse online survey data from Malang, East Java, Indonesia. They concluded that EE enhances entrepreneurial self-efficacy and attitude (Wardana et al., 2020). Based on previous research (Piperopoulos, Dimov, 2015; Hassi, 2016), we hypothesise that:

**H3**: EE has a positive impact on ATE;

**H4**: EE has a positive impact on PBC;

**H5**: EE has a positive impact on EI.

### Mediation and moderation

According to Ajzen (2011), attitudes, social norms, and PBC act as a moderating force between all background variables and individual values and intentions. Other studies, on the other hand, discovered that entrepreneurial self-efficacy acted as a partial mediator, increasing the direct influence of antecedents on EI (Krakauer et al., 2018). Kibler (2013) applied the TPB to examine how geograph-
ical characteristics affect EIs among Finnish working-age people. Kibler (2013) found that some of these factors were moderated by geography, but none of them were mediated. Wang et al. (2023) argued that entrepreneurial self-efficacy (ESE) was a complete mediator between TPB factors and EI. Cheung and Lau (2008) supported that claim by showing that ESE fully mediated the link between EE and EI. However, Anwar et al. (2022) contradicted that claim by showing that ESE only partially mediated the link between EE and EI. Chen (2010) found that self-efficacy mediated the effect of EE on intention. Souitaris et al. (2007) compared science and technology students before and after EE and observed higher levels of attitude and intention mediated by self-efficacy. Rauch and Hulsink (2015) also confirmed that self-efficacy affects intention directly and indirectly through EE.

According to theory and some empirical evidence, gender and country may affect how the TPB components relate to each other. For instance, Wang et al. (2023) found significant gender differences in college students’ EIs. Previous studies also showed that women were less motivated than men to start their own businesses (Anwar, Saleem, 2019) and that male graduate students were more open to agro-business than female students (Nawi et al., 2022). However, Robledo et al. (2015) argued that gender did not moderate the relationship between behavioural control and attitude and that gender did not matter in understanding entrepreneurial inclinations. Robledo et al. (2015) further suggested that the old stereotypes of self-employment and entrepreneurship being mainly male domains may be changing. Devi (2023) also pointed out that gender had no impact on students’ intentions. Ko and Jin (2017) predicted that the country variable would moderate the relationship between attitude and intention based on a cross-cultural study of the USA and China. In a review of culture and its role in the theory of reasoned action/TPB, Hassan et al. (2016), also found some variation in how attitude and PBC influenced intention across countries and contexts. From the foregoing, we hypothesise that:

H6: ATE and PBC mediate the relation between EE and EI;
H7: Gender moderates the positive relationship between EE and the antecedents of TPB (ATE and PBC);
H8: Gender moderates the positive relationship between the antecedents of TPB (ATE and PBC) and EI.
H9: Country moderates the positive relationship between EI and the antecedents of TPB (ATE and PBC);

![Fig. 1. Conceptual framework](image)

EE – entrepreneurship education; EI – entrepreneurial intention; ATE – attitude towards entrepreneurship; PBC – perceived behavioural control
Source: own elaboration.
H10: Country positively moderates the nexus between the antecedents of TPB (ATE and PBC) and EI.

**METHOD AND MATERIALS**

Two European countries were used as a case study to explore the relationship between entrepreneurship education and intentions. Consequently, we surveyed 243 students from the University of Lleida and 303 from the Pedagogical University of Krakow using items from Amofah and Saladrigues (2022) and Liñán and Chen (2009). The study used Trivedi’s (2016) scale to measure the research model constructs on a five-point Likert scale, where 1 means strong disagreement and 5 means strong agreement.

**SAMPLE**

A sample of students in Spain and Poland were selected by their common characteristics. Spain and Poland are countries with relatively low masculine indexes. Besides, a study sample of six countries by Moriano et al. (2012) established that Poland and Spain display high in-group collectivism behaviour. We designed and conveniently administered questionnaire surveys to 546 students in Spain and Poland. The student samples were consistent with previous studies on EI (Amofah et al., 2020; Vamvaka et al., 2020; Amofah, Saladrigues, 2022). The original version of the questionnaires was translated into Polish and Spanish by professional translators and cross-checked by another translator. Despite the fact that the respondents were given the option to answer the questionnaire in either English or their respective languages, they both completed the questionnaire in their mother tongue (Spanish and Polish). The questionnaires were administered online in both countries. The virtual administration of questionnaires has become more prudent because of the COVID-19 pandemic. The sample consisted of 186 males (34%) and 360 females (66%). We apply SEM-PLS to analyse the data with SmartPLS and R software.

**RESULTS**

**Measurement model**

The study used two single-item constructs (gender and country) and four latent constructs with multiple items to measure entrepreneurial intentions (EI), attitude towards entrepreneurship (ATE), perceived behavioural control (PBC), and entrepreneurship education (EE). All the latent constructs used Likert-scale items. This study differed from Nowiński et al. (2019) in using a latent construct
with multiple items for EE. The study checked the reliability of the reflective variables using Cronbach’s alpha and composite reliability, and the convergent validity using average variance extracted (AVE). Table 1 shows that all the measures performed well. The study also established discriminant validity by ensuring that the AVE values were higher than the correlations among the latent variables, as suggested by Fornell and Larcker (1981). This is confirmed in Table 2. The study did not find any multicollinearity problems in the model (i.e., low correlations among the independent latent variables; see Table 2).

**Table 1.** Full-sample measurement model (reliability indicators)/Composites and measures

<table>
<thead>
<tr>
<th>Items</th>
<th>Loadings</th>
<th>Composite reliability</th>
<th>AVE</th>
<th>Cronbach’s alpha</th>
<th>rho_A</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATE</td>
<td></td>
<td>0.942</td>
<td>0.890</td>
<td>0.878</td>
<td>0.890</td>
</tr>
<tr>
<td>ATE2</td>
<td></td>
<td>0.957</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATE4</td>
<td></td>
<td>0.930</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EI</td>
<td></td>
<td>0.982</td>
<td>0.948</td>
<td>0.972</td>
<td>0.948</td>
</tr>
<tr>
<td>EI2</td>
<td></td>
<td>0.969</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EI4</td>
<td></td>
<td>0.977</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EI6</td>
<td></td>
<td>0.974</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PBC</td>
<td></td>
<td>0.960</td>
<td>0.922</td>
<td>0.916</td>
<td>0.922</td>
</tr>
<tr>
<td>PBC2</td>
<td></td>
<td>0.957</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PBC5</td>
<td></td>
<td>0.964</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td></td>
<td>0.988</td>
<td>0.842</td>
<td>0.986</td>
<td>0.842</td>
</tr>
<tr>
<td>EE1</td>
<td></td>
<td>0.942</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE11</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>EE12</td>
<td></td>
<td>0.949</td>
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<td></td>
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<tr>
<td>EE13</td>
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<td>0.918</td>
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<tr>
<td>EE14</td>
<td></td>
<td>0.868</td>
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<tr>
<td>EE17</td>
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<td>0.869</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>EE18</td>
<td></td>
<td>0.945</td>
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</tr>
<tr>
<td>EE2</td>
<td></td>
<td>0.955</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE3</td>
<td></td>
<td>0.849</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>EE4</td>
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<td>0.946</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>EE5</td>
<td></td>
<td>0.933</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE6</td>
<td></td>
<td>0.931</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE7</td>
<td></td>
<td>0.847</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE8</td>
<td></td>
<td>0.935</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE9</td>
<td></td>
<td>0.930</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

EE – entrepreneurship education; EI – entrepreneurial intention; ATE – attitude towards entrepreneurship; AVE – average variance extracted; PBC – perceived behavioural control

Source: own elaboration based on survey results.
Table 1 shows how much each variable contributes to each factor, measured by the factor loading. This is the correlation between the variable and the factor. A factor loading of 0.7 or more means that the factor captures enough of the variable’s variance. Table 2 shows the discriminant validity analysis, which indicates a good measurement model. The correlations between the observed variables and the other latent variables are low. The AVE values are all higher than the latent variable correlations.

Table 2. Discriminant validity

<table>
<thead>
<tr>
<th>Items</th>
<th>ATE</th>
<th>EE</th>
<th>EI</th>
<th>PBC</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATE</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td>0.451</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EI</td>
<td>0.520</td>
<td>0.496</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>PBC</td>
<td>0.490</td>
<td>0.343</td>
<td>0.509</td>
<td>1</td>
</tr>
<tr>
<td>AVE</td>
<td>0.890</td>
<td>0.948</td>
<td>0.922</td>
<td>0.842</td>
</tr>
</tbody>
</table>

Table 2. Discriminant validity

EE – entrepreneurship education; EI – entrepreneurial intention; ATE – attitude towards entrepreneurship; AVE – average variance extracted; PBC – perceived behavioural control

Source: own elaboration based on survey results.

Table 3. Validation measures

<table>
<thead>
<tr>
<th>Measures</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>R-Square</td>
<td>0.564 (ATE)</td>
</tr>
<tr>
<td></td>
<td>0.900 (EI)</td>
</tr>
<tr>
<td></td>
<td>0.552 (PBC)</td>
</tr>
<tr>
<td>Chi-Square (P-Value)</td>
<td>0.00</td>
</tr>
<tr>
<td>CFI</td>
<td>0.93</td>
</tr>
<tr>
<td>TLI</td>
<td>0.94</td>
</tr>
<tr>
<td>RMSEA</td>
<td>0.03</td>
</tr>
<tr>
<td>SRMR</td>
<td>0.06</td>
</tr>
</tbody>
</table>

Table 3. Validation measures

EI – entrepreneurial intention; ATE – attitude towards entrepreneurship; PBC – perceived behavioural control; CFI – comparative fit index; TLI – Tucker-Lewis index; RMSEA – root mean square error of approximation; SRMR – standardised root mean squared residual

Source: own elaboration based on survey results.

Structural model analysis

We tested the structural model after validating the measurement model. Table 4 shows the path coefficients and significance levels. The reliability, validity, and divergent analyses confirm our measurement model is good. The independent latent variables have low correlations, so multicollinearity is not a problem. The model fit indices are good, except for the chi-square test with a p-value below 0.05, which
rejects the model. This is likely due to the large sample size (n = 546). Curran et al. (2002) found that the chi-square test is sensitive to the sample size. The model is acceptable. We analysed the coefficients of determination, $R^2$, which show how well the regression models fit the data. The higher the $R^2$, the better the model explains the variation in the outcome variable. Variables ATE, PBC, and EI had $R^2$ values of 0.564, 0.552, and 0.900 respectively. These values are good according to Chin (1998). This means EE explains 56.4% of the variation in ATE; EE explains 55.2% of the variation in PBC; and EE, ATE, and PBC explain 90.0% of the variation in EI (Table 3). Hoda et al. (2021) found a combined EI of 52.2% $R^2$ in a study of Indian and Saudi Arabian students.

We tested our hypotheses with 5,000 bootstrapped samples (Table 4). We compared how ATE affects EI for men and women in Spain and Poland. ATE positively influences EI for both genders in both countries.

**Multigroup analysis**

This study used multigroup structural equation modelling to compare the EIs of men and women in Spain and Poland. It tested the measurement invariance of factor loadings and latent variables across groups using four models (configural, metric, scalar, and strict). The difference in CFI between each model and the configural model was used to determine invariance. A model was invariant if the difference was less than or equal to 0.01.

The configural model has the factor loadings, the intercept, the item residual variances, and the variance of latent variable freed whilst the means of latent variables are constrained. The metric model also constrains only the factor loadings. It examines whether the relationship between the latent and the measured variables in the groups is the same. From Table 5, the metric invariance model is not

<table>
<thead>
<tr>
<th>Table 4. Structural model results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construct</td>
</tr>
<tr>
<td>ATE -&gt; EI</td>
</tr>
<tr>
<td>EE -&gt; ATE</td>
</tr>
<tr>
<td>EE -&gt; PBC</td>
</tr>
<tr>
<td>PBC -&gt; EI</td>
</tr>
<tr>
<td>EE -&gt; EI</td>
</tr>
<tr>
<td>EE -&gt; ATE -&gt; EI</td>
</tr>
<tr>
<td>EE -&gt; PBC -&gt; EI</td>
</tr>
</tbody>
</table>

(O) – original sample; (M) – mean sample; STDEV – standard deviation; EE – entrepreneur-ship education; EI – entrepreneurial intention; ATE – attitude towards entrepreneurship; PBC – perceived behavioural control

Source: own elaboration based on survey results.
invariant since the difference in the CFIs between the configural and the metric models is more than 0.01.

Table 5. Measurement invariance tests

<table>
<thead>
<tr>
<th>MODEL</th>
<th>CFI</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configural invariance</td>
<td>0.922</td>
<td>0.042</td>
</tr>
<tr>
<td>Metric invariance</td>
<td>0.898</td>
<td>0.040</td>
</tr>
<tr>
<td>Scalar invariance</td>
<td>0.921</td>
<td>0.040</td>
</tr>
<tr>
<td>Strict (error) invariance</td>
<td>0.916</td>
<td>0.043</td>
</tr>
</tbody>
</table>

CFI – comparative fit index; RMSEA – root mean square error of approximation

Source: own elaboration based on survey results.

The scalar invariance model constrains only the intercept and frees the other parameters. This model also tests whether the intercepts are the same for each group. Table 5 shows that the scalar model is invariant (the difference in the CFIs between the configural and the scalar models is less than 0.01). This implies that items in each group start at the same point.

The strict (error) invariance model frees the means of latent variables and the variance of latent variables and constrains the factor loadings, the intercept, and the item residual variances. This invariance model assesses whether residuals for each item are the same across groups. That is, assessing whether there is more variability in one group than the other. It can be seen that the difference in the CFIs between the configural and the strict models is less than 0.01, hence the strict model is also invariant. This implies that the variability is the same across groups.

As shown in Table 6, male respondents in Spain and Poland have a significant and positive correlation between their ATE and their EI (p < 0.05). The standardised estimates are 0.622 for Spain and 0.396 for Poland, implying that a more favourable ATE leads to a higher EI among males in both countries.

The results showed no significant difference in how ATE influenced EI for females in Spain and Poland (p = 0.231). However, both countries had positive standardised estimates for ATE and EI (0.616 for Spain and 0.704 for Poland). Therefore, we accepted the hypothesis that ATE positively affects EI for both genders in Spain and Poland.

The hypothesis that entrepreneurial PBC positively influences EIs for both genders in Spain and Poland was supported by the data. The relationship between PBC and EI was positive and significant for males in both countries, but not for females. However, the relationship was still positive for females, indicating a positive impact of PBC on EI for both genders.

H6 examined how ATE and PBC mediate the effect of EE on EI. Table 4 shows that EE and EI have a strong positive direct effect (p < 0.001). It also shows that ATE and PBC have positive indirect effects on EI through EE (p < 0.001 for both).
However, neither ATE nor PBC fully mediates the EE-EI relationship, as the direct effect remains significant. Therefore, ATE and PBC are partial mediators of the EE-EI relationship.

H7 (Gender moderates the positive relationship between EE and the TPB antecedents) is supported by Table 6. It shows that gender and PBC have a significant negative interaction effect (–0.169) on EI at 5% level. This means that gender reduces the influence of PBC on EI in Spain and Poland. Figure 3 illustrates this moderation effect with slopes. Male and female are coded as zero and one respectively. The male slope is steeper than the female slope, indicating a stronger relationship between PBC and EI for men.
H8 tests how gender moderates the link between ATE and EI in Spain and Poland. The interaction effect of gender on ATE and EI is significant at 5% level and has an estimate of 0.165, indicating that gender strengthens the ATE-EI relationship. Therefore, gender enhances ATE and EI in both countries. The figure shows the gender moderation effect on ATE and EI. The plot reveals a higher slope for females than males. With regards to hypotheses 9 and 10, it can be noticed that the moderating effects of the country on the relations between PBC and EI, ATE, and EI were not statistically significant at 5% (Table 6).
DISCUSSION

This study revealed that attitude and behavioural control had a positive relationship with EI. Furthermore, attitude had the strongest relationship with intentions which is consistent with a study by Díaz-García and Jiménez-Moreno (2010). The findings about attitude have significant implications for promoting intentions among the respondents in Poland and Spain. This result is also consistent with a study by Gorgievski et al. (2018), who tested a mediation model using SEM on a sample of 823 students from four European nations (Dutch, German, Spanish, and Polish students). Gorgievski et al. (2018) found that, out of the TPB variables, ATE had the strongest relationship with EIs. Hoda et al. (2021) also concluded that attitude and behavioural control significantly impact intentions among Indian and Saudi Arabian students. Several studies have confirmed the positive and significant effect of attitude and behavioural control (Liñán, Chen, 2009; Koe, 2016; Leiva et al., 2021). However, attitude was significant in Naushad (2018) but not in Shah and Soomro (2017).

The study showed how EE and EI were related through attitude and self-efficacy. These factors affect one’s intention to become an entrepreneur. These findings are consistent with Anwar et al. (2022) on self-efficacy and EE-EI link, and Gorgievski et al. (2018) on values, attitudes, self-efficacy, and entrepreneurial career choice.

H7 showed that men’s EIs in Spain and Poland depended more on their PBC than women’s. H8 revealed that women in these countries had stronger EIs than men because of their ATE. However, other studies found different results. Gorgievski et al. (2018) reported lower EIs among Spanish students than among Dutch, German, and Polish students. Hoda et al. (2021) found similar EIs between Indian and Saudi Arabian students. Bouncken et al. (2009) observed different EIs between German and Polish students.

H9 and H10 revealed that residence did not affect how one’s perceived control over their behaviour or attitude influences their EIs. This is true for both Britain and Spain, where Santos et al. (2016) found that women had lower EI, control, and attitude than men. They also found that both control and attitude positively impact intention. Similarly, the Global Entrepreneurship Monitor showed that men were more entrepreneurial than women across 70 countries (Kwong et al., 2009).

CONCLUSIONS

The study provides valuable insights into the relationship between attitude, behavioural control, and EI among individuals in Poland and Spain. The findings suggest that attitude and behavioural control have a positive and significant impact on EI, with attitude being the strongest predictor of intention. These results are
consistent with previous studies by Díaz-García and Jiménez-Moreno (2010) and Gorgievski et al. (2018), which highlight the importance of attitude in shaping EI.

The study also explores the role of gender in EI and finds that men’s intentions are more influenced by PBC than women’s in both Poland and Spain. However, women’s ATE have a stronger impact on their EIs than men’s. These findings are in line with previous research by Anwar et al. (2022) and Gorgievski et al. (2018), which suggests that self-efficacy and values play a significant role in shaping EI.

Interestingly, the study finds that residence does not affect the relationship between PBC and EI, nor does it affect the relationship between attitude and EI. This suggests that individuals’ EIs are not influenced by their location, and that attitude and behavioural control are the key drivers of EI, regardless of where they live.

**Practical implications**

This study offers implications for interventions seeking to improve the EIs of students in both Spain and Poland. The analyses found a strong correlation between attitude, behavioural control, and EIs in both countries. In policy terms, education programmes should focus on enhancing students’ inclination towards entrepreneurial behaviour or activity and their PBC. These findings are further strengthened by the positive relationship between EE and attitude and behavioural control. The study found strong institutional support and programmes for students that promote behavioural control and ATE, including networking, mentorship and consulting, and infrastructure to support new startup enterprises.

**Limitations**

This study has some limitations. First, our analysis did not find any differences in PBC and ATE between Polish and Spanish students. This may be due to the small sample size. Future studies should use a larger and more diverse sample from both countries. Second, it used a quantitative design, which may not capture the richness of qualitative data. Third, it assumed that intention and behaviour were consistent, which may not be true. Fourth, it relied on convenience sampling, which may introduce bias and limit representativeness. Finally, it only included students from two institutions, which may affect the generalizability of the findings. Future research could examine the actual behaviour of the participants.

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**Declaration of competing interest**

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