

TESTING AN INTEGRATED MODEL OF EDUCATION, INDIVIDUAL ENTREPRENEURIAL ORIENTATION AND ENTREPRENEURIAL INTENTION: A PRE- AND POST-COURSE ANALYSIS

ABSTRACT

This paper investigates the role of entrepreneurship education programs in the development of the entrepreneurial orientation at individual-level (IEO) using a sample of 1723 Colombian and Ecuadorian undergraduate students. The study also develops and test a model that considered the IEO as an antecedent of the attitudes and entrepreneurial intention (EI) through the dimensions of Theory of planned behavior (TBP). Repeated measures analysis of variance (one-way ANOVA) confirmed the impact of entrepreneurship education programs on IEO. Moreover, structural equation modelling was used to validate the theoretical model and test hypotheses between IEO, TBP and EI.

Keywords: Entrepreneurship education, Entrepreneurial intention, Individual entrepreneurial orientation.

INTRODUCTION

The impact of entrepreneurship education on the development of entrepreneurial competences not only regarding to venture creation, but also to improve opportunities recognition and abilities to cope with a globalized world with changing economies has been a major subject of academic studies over the past two decades (Fayolle et al., 2006; Greene et al., 2004; Kuratko, 2005; Liñán et al., 2011; Nabi et al., 2018; Sherkat & Chenari, 2020; Souitaris et al., 2007; Zhang et al., 2014). This has allowed the development of a wide body of knowledge on this issue; however, certain results are not consistent, some lack broad samples, different methodologies or variables, and constructs that complement existing relationships and the effectiveness of entrepreneurship education (Bae et al., 2014; Matlay et al., 2014; Nabi et al., 2017).

In turn, the Theory of Planned Behavior (TPB) has been established as the main framework for explaining entrepreneurial intention (EI) and its three dimensions (attitude toward behavior - ATB, subjective norms – SN, and perceived behavior control - PBC) are crucial to understand the antecedents of entrepreneurial behavior (Kautonen et al., 2013). However, the drivers of ATB, SN and PBC are still underexplored and, therefore, the discussion on

motivators and obstacles to EI is still an issue that is not exhausted and that remains on the research agenda in the discipline of entrepreneurship. According to the above, the individual entrepreneurial orientation (IEO) emerges as a construct that captures cognitive aspects of the individual that are related to motivation towards entrepreneurial behavior (Bolton & Lane, 2012; Martins & Perez, 2020).

This study addresses the impact of entrepreneurship education on IEO development of undergraduate students, and how IEO construct can impact EI through the TPB. It is thereby filled a significant gap, namely, this study contains three important novelties regarding previous research. First, the main contribution is providing evidences about the impact of entrepreneurship courses on the development of key competences for entrepreneurial activity in two developing economies in Latin America. In other words, if on the one hand there are empirical evidence of the impact of entrepreneurship education on the entrepreneurial intent (Fayolle & Gailly, 2015; Nabi et al., 2018; Souitaris et al., 2007), on the other hand, at date little or almost nothing is known about the impact of entrepreneurship education on IEO. Second, findings may shed light on the discussion about the role of the IEO in the development of the intention of launching a business. Third, the study offers new evidence that oxygenates the explanation of the EI phenomenon seen as the result of individual behavior through the TPB framework.

The reminder of this paper is structured as follows: Next section presents a theoretical framework and previous studies supporting the hypotheses. Section 3 describes the research design and data. Section 4 provides the results, and Section 5 provides a discussion of the findings and offers theoretical and practical implications.

THEORETICAL FRAMEWORK, PREVIOUS STUDIES AND HYPOTHESES

Entrepreneurship education and IEO development

The role of entrepreneurship education is increasingly emphasized in higher education from the belief that individuals' entrepreneurial mindset and skills can be developed (Fayolle, 2013; Fayolle et al., 2006). Thus, entrepreneurship education is currently a fruitful field of entrepreneurship research, and the results underscore the crucial role of entrepreneurial courses on the development of certain entrepreneurial competences and aptitudes (Karlsson & Moberg, 2013). Moreover, previous studies pointed out that an orientation towards entrepreneurship can be motivated inside the classroom by considering empirical evidences

in both context: secondary school students (Frank et al., 2005; Rodrigues et al., 2012), and undergraduate students (Levenburg & Schwarz, 2008; Martins et al., 2018). Thus, the incorporation of entrepreneurship in planning curricula have sought to stimulate both cognitive and non-cognitive factors such as managerial knowledge, communication and problem-solving ability, creativity, leadership, self-efficiency, and the willingness to take risks (Frank, 2007). Therefore, the impact of entrepreneurship courses on IEO dimensions can be significant and increase meaningfully the innovativeness, proactiveness and risk-taking (Robinson & Stubberud, 2014).

In view of aforementioned, the following hypotheses is addressed:

H1: Entrepreneurship course increases students' IEO.

H1a: At the end of an entrepreneurship course, the greater students' innovativeness.

H1b: At the end of an entrepreneurship course, the greater students' proactiveness.

H1c: At the end of an entrepreneurship course, the greater students' risk-taking.

Entrepreneurship education and the antecedents of entrepreneurial intention

The decision to pursue a career as an entrepreneur is a process of successive levels of engagement and the commitment to education is one of them, because better educated people move more easily through the process (Van der Zwan et al., 2010). Entrepreneurial education programs have been designed to develop the skills and attitudes necessary to manage an entrepreneurial initiative, and to stimulate intentions to start a business (Souitaris et al., 2007). The entrepreneurship education literature has empirically tested which of these factors have been promoted in the classroom, finding that entrepreneurship courses have had a positive impact on: the capacity for analysis, creativity, and the willingness to take risks (Huber et al., 2014); business plan preparation skills, self-efficacy and control over the results of the venture (Din et al., 2016); and self-confidence (Von Graevenitz et al., 2010).

Overall, the above connects the reasons why the dimensions of the TPB depend on the student's knowledge and entrepreneurial abilities (Liñán, 2008). Thus, previous studies have tested whether attitude towards self-employment, subjective norms and perceived behavioral control can be developed in the classroom. As might be expected, the results are as varied as possible around the world. For example, it has been found that a group of French students increased their attitude towards an entrepreneurial behavior, and their PBC, while there was no significant change concerning SN (Fayolle & Gailly, 2015). In the same way, a study with

a sample of Dutch students, highlighted a positive and significant effect of the entrepreneurship course on ATB and PBC; however, the impact on SN was not verified (Rauch & Hulsink, 2015).

In contrast, studies in emerging economies point to somewhat different results. Karimi et al. (2016), find that although entrepreneurship classes in Iran have positive effects on PBC and SN, otherwise, they have no effect on ATB. Recently, Lopez & Alvarez (2019), pointed out that entrepreneurship courses and the favorable perception of an entrepreneurial university environment were positively related to students' entrepreneurial intention in Latin America countries, but the attendance to an entrepreneurial course does not impact SN. In turn, Ahmed et al. (2020), showed that entrepreneurship education programs benefits were positively related to PBC and SN; however, it doesn't impact ATB of graduating students in Pakistan. The previous discrepancies in the results could be due to the role of cultural differences that are reflected in the approach to entrepreneurial activity (Bae et al., 2014; Krueger et al., 2013). Thus, given the diversity of results just mentioned, it is important to offer new insights on the relations between entrepreneurship courses and the antecedents of the EI through the dimensions of theory of planned behavior. Therefore, the following hypotheses are presented:

H2: Entrepreneurship course increases the antecedents of entrepreneurial intention.

H2a: At the end of an entrepreneurship course, the greater students' attitude towards self-employment.

H2b: At the end of an entrepreneurship course, the greater students' subjective norms.

H2c: At the end of an entrepreneurship course, the greater students' perceived behavioral control.

Individual entrepreneurial orientation and the antecedents of entrepreneurial intention

Students proclivity into entrepreneurship tends to present values associated to innovativeness, proactiveness and risk-taking, simultaneously (Goktan & Gupta, 2015; Martins & Perez, 2020). In other words, cognitive aspects of the individual influence motivation towards behavior, as well as personal attributes such as willingness to innovate and propensity to risk exposure, make individuals more prone to entrepreneurial activities (Gupta et al., 2016; Marques et al., 2013; Martins & Perez, 2020), because individuals with this personality traits identify opportunities and act on them (Sánchez, 2013).

One of the very first study considering EO at the individual-level, observes whether the “entrepreneurial attitude orientation”, measured as the individual disposition toward entrepreneurship, is a predictor of entrepreneurial activity (Robinson et al., 1991). Nowadays, more scholars consider the construct taking into account the three dimensions: innovativeness, proactiveness, and risk-taking, reinforcing thus, the classical subscales and positioning the IEO as a theoretical and empirical well tested individual-level construct (Goktan & Gupta, 2015; Gupta et al., 2016; Kollmann et al., 2017; Martins et al., 2018; Martins & Perez, 2020). Thus, the relationship between IEO and EI has been analyzed in previous studies by considering these psychological and cognitive factors that impact individual’s desire to become self-employed; and it is recognized that creative and innovative individuals are always alert to entrepreneurial opportunities and are more prone to entrepreneurial intent (Gupta et al., 2016; Marques et al., 2013). Thus, the following hypotheses can be addressed:

H3: IEO is positively associated with the antecedents of entrepreneurial intention (TPB dimensions).

H3a: IEO is positively associated with attitude toward the behavior.

H3b: IEO is positively associated with subjective norms.

H3c: IEO is positively associated with perceived behavior control.

Theory of planned behavior and entrepreneurial intention

In the TPB, intention is the combination of three antecedents: a favorable or unfavorable attitude towards a behavior, perceived social support to perform or not perform the behavior, and the perceived behavioral control (Ajzen, 1991). In summary, the greater the intention to perform a behavior, the greater the probability of executing it, and therefore, through this it is possible to predict the behavior. Applied to the entrepreneurship, the more favorable attitudes concerning an entrepreneurial behavior, the more supportive the closer environment in terms of entrepreneurship and the more capable individuals felt to performing as an entrepreneur; would make more feasible individual’s intention of engage in an entrepreneurial career (Kautonen et al., 2013; Liñán et al., 2011).

Thus, the TPB approach has become the most widely framework to explain EI, given that the dimensions ATB, SN and PBC are antecedents that largely explain the variance in the models

of entrepreneurial intention (Kautonen et al., 2015; Rueda et al., 2015). Therefore, to replicate and confirm early findings, the following hypotheses suggest.

H4: The higher the antecedents (TPB dimensions), the higher is students’ entrepreneurial intention.

H4a: The higher the attitude toward the behavior, the higher is students’ entrepreneurial intention.

H4b: The higher the subjective norms, the higher is students’ entrepreneurial intention.

H4c: The higher the perceived behavior control, the higher is students’ entrepreneurial intention.

The paper’s theoretical model and proposed relationships can be viewed in Figure 1.

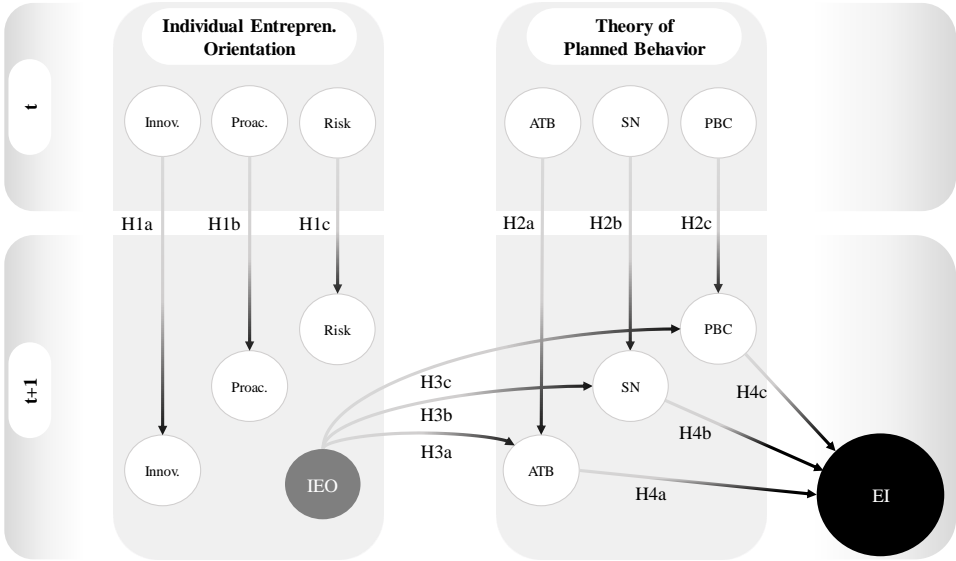


Figure 1. Proposed Model

METHODOLOGY

Data and sample

Data were collected in two well-established private university in the cities of Medellin (Colombia) and Loja (Ecuador). Such collection which is consistent with a convenience sampling technique, includes undergraduate students from different majors enrolled in entrepreneurship courses in 2018 and 2019.

The survey has two phases (t and $t+1$). During the first week of classes (t), students answer an online questionnaire to assess students’ prior knowledge about entrepreneurship, entrepreneurial experiences, orientation and intention towards entrepreneurship, among

others. The second phase is carried out at the end of the semester (t+1), during the last week of classes and aims to identify how the answers about knowledge and perceptions have changed. The questionnaire is presented using a seven-point Likert scale (1 being the minimum and 7 the maximum) and dichotomous questions. All the information necessary to IEO, TPB and EI constructs, is considered, as well as questions that reflect demographic variables such as age and gender.

The sample used in this research is composed by 1723 undergraduate students from different majors. Thus, 66,69% of the respondents are from the Colombian university, while 33,31% correspond to students of the Ecuadorian university. 52,87% of the sample is made up of the female gender, and the remaining percentage by the male gender (47,13%), in turn, 81,60% of the sample is between 18 and 24 years old.

Measures

Entrepreneurial intention (EI)

EI, as a predictor of the behavior to start a new business or firm, has occupied an important and frequent place in the entrepreneurial literature and is recognized as a cognitive state that captures the individual decision for creating and establishing a new business (Fayolle et al., 2014; Thompson, 2009). This study used a measure proposed by Liñán & Chen (2009), composed of 6 items and complemented with an item related to the availability and financial feasibility adapted from Thompson (2009), which are answered at a 7 point Likert type scale where 1 indicates strongly disagree and 7 strongly agree.

Individual entrepreneurial orientation (IEO)

IEO, as an individual approach has been conceptualized from three dimensions, namely, innovativeness (four items), proactiveness (three items) and risk-taking (three items) measured in 7-point Likert scale. Such dimensions allow to measure the characteristics, traits or personal attitudes that affect the propensity of individuals to engage in, and being successful at entrepreneurial activities and was used in previous researches (Bolton & Lane, 2012; Martins & Pérez, 2020).

Theory of Planned Behavior (TPB)

TPB as a theoretical development from which it is possible to understand intentionality in individual behavior, is structured on three determinants that are conceived as motivational

antecedents, namely, ATB (five items), SN (three items) and PBC (six items). All of the above measures were adopted from Liñán & Chen (2009).

Two-time and structural modeling equation analysis

Two-time analysis

For testing the effect that the entrepreneurship course generated on the IEO of the students, it was used the repeated measures analysis of variance (repeated measures one-way ANOVA). This analysis allows to identify if there are significant differences between the means from the levels of a factor, when both levels are not independent (Girden, 1992), and it is an extension of the paired-samples T-Test, that was also used for the analysis. To do this, they were constructed the factors from the average of the items of each dimension of the IEO an TPB in (t) and (t+1), and then statistically verified if there were significant changes in the mean from one point of time to the other one. To verify the changes visually at the two points in time, the boxplot is used. Such a technique allows obtaining an exploratory graphical representation of the location, dispersion, asymmetry and width of the tails of the data, using for this the division of the quartiles (Benjamini, 1988).

Structural Modeling Equation (SEM) analysis

In order to determine the effect that the IEO has on the dimensions of the TPB and the relationship of the latter with the EI, multigroup SEM is used. SEM is a technique that allows specifying, estimating, and evaluating linear relationship models between a set of observed variables in terms of unobserved variables (Shah & Goldstein, 2006). In this sense, SEM that carries out the estimation of a series of independent but simultaneous multiple regression equations (Hair et al., 2010) has broad advantages over traditional multivariate techniques in terms of the explicit evaluation of measurement error, the estimation of unobserved variables from variables observed, as well as the specification and tests associated with the model (Nunkoo & Ramkissoon, 2012). Thus, the specification and estimation of the model is made using the AMOS software under the stream of covariance. The recurrence to the covariance-based structural equation model is justified by the reflexive nature of the unobservable measures, the sample size and psychometric and theoretical approach of the proposed model (Davcik, 2014).

RESULTS

According to the results, entrepreneurship education can influence entrepreneurial orientation at the individual-level, as demonstrated by the results presented in Table 1. Particularly, the findings of repeated measures ANOVA and the paired-samples T-Test analysis indicate how entrepreneurship courses have a significant impact on the innovativeness, proactiveness and risk-taking of all the individuals in the sample. In turn, such change turns out to be positive as evidenced in Figure 2. Thus, the difference in average median values between (t) and (t+1) is noticeably perceived in proactiveness and risk-taking and is approximately half a unit, while in innovativeness such difference is close to a third of the unit. It is noteworthy that the interquartile range in which most of the data is concentrated presents an increase for both innovativeness and risk-taking, while the variance remains constant. Then, Hypothesis 1 is confirmed.

Regarding the dimensions of TPB, the results of repeated measures ANOVA and the paired-samples T-Test exhibit in Table 1 suggest that entrepreneurship courses generate a significant change on SN and PBC, while ATB does not present any significant variation in response to entrepreneurial education influence.

Table 1. ANOVA and T-Test

Variable	MS	F-Statistic	T-Test Statistic
Innovativeness	86,483	106,101***	10,301***
Proactiveness	14,155	19,467***	4,412***
Risk-taking	22,879	34,694***	5,890***
Attitudes Toward Behavior	1,442	2,294	1,514
Subjective Norms	17,433	25,222***	5,022***
Perceived Behavioral Control	342,103	441,558***	20,361***

*** p<0,01. MS indicates Mean Squares of the ANOVA analysis.

In this sense, such education generates a decrease in the social pressure perceived by the individual to carry out (or not) entrepreneurial behaviors as indicated by the median of the SN boxplot in Figure 2, whose change between (t) and (t+1) is also accompanied by an increase in variance and extreme average valuations. Thus, PBC shows a higher level of response to educational influence, from 4,3 in (t) to 5,1 in (t+1), which also implies an

increase in the interquartile range in one unit approximately. Then, Hypothesis 2a and Hypothesis 2b are rejected and Hypothesis 2c is accepted, therefore Hypothesis 2 is partially accepted.

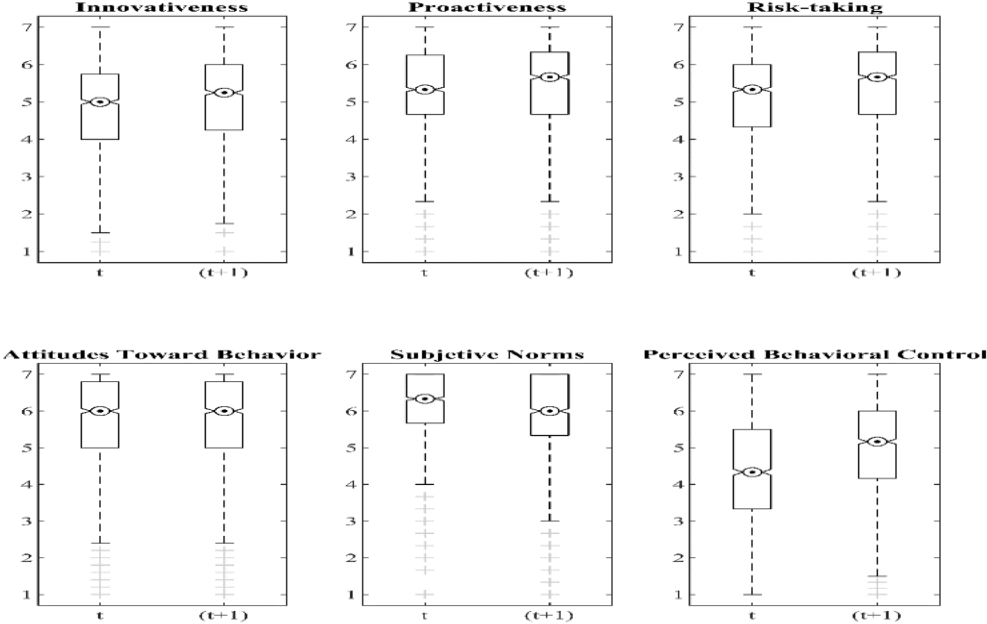


Figure 2. Boxplot on IEO and TPB dimensions at (t) and (t+1).

Regarding the multigroup SEM analysis, the goodness of fit statistics suggests an adequate specification of the model. Thus, in terms of global adjustment, the Root Mean Square Error of Approximation (RMSEA), that denotes the adjustment with respect to the population, corresponds to 0,054, which is aligned with a SRMR (Standardized Root Mean-Square) less than 0,08 (0,064) and a Comparative Fit Index (CFI) close to 1 (0,916) (Bentler & Bonett, 1980). The results of the estimated relationships between IEO construct and the dimensions of the TPB and the effects of these on EI are shown in Table 2.

According to the results, the IEO has a direct effect on ATB, SN and PBC, which is demonstrated by the estimated coefficients for both Colombia and Ecuador that turn out to be positive and significant at a confidence level above 99%. In disaggregated terms, the effect of IEO on SN is greater in the Ecuadorian context, while the effect on the other two dimensions for both countries remains at similar levels. In this sense, Hypothesis 3 is fully accepted.

Regarding the dimensions of the TPB and its effect on IE, the results partially support Hypothesis 4. Thus, ATB has a direct and significant relationship on IE, being slightly higher for the Colombian context ($\beta = 0,863, p < 0,01$) in contrast to the Ecuadorian context ($\beta = 0,6773, p < 0,01$), therefore Hypothesis 4a is accepted. For its part, the relationship between SN and IE presents varied results for the two groups, in the Colombian case such relationship, although significant and marginal, is inverse ($\beta = -0,099, p < 0,01$), while in the Ecuadorian case, it is not significant. ($\beta = 0,008, p = 0,738$), then Hypothesis 4b is rejected. Finally, PBC has a positive and significant effect on IE for both countries at similar levels and therefore Hypothesis 4C is accepted.

Table 2. Estimation of Relations

Relation	Colombia	Ecuador
Effect of IEO on ATB	0,859*** (0,041)	0,755*** (0,044)
Effect of IEO on SN	0,459*** (0,033)	0,701*** (0,054)
Effect of IEO on PBC	0,920*** (0,046)	0,934*** (0,054)
Effect of ATB on EI	0,863*** (0,030)	0,677*** (0,041)
Effect of SN on EI	-0,099*** (0,025)	0,008 (0,024)
Effect of PBC on EI	0,272*** (0,019)	0,324*** (0,028)

Individual Entrepreneurial Orientation (IEO), Attitudes Toward Behavior (ATB), Subjective Norms (SN), Perceived Behavioral Control (PBC), Entrepreneurial Intention (EI). The numbers in brackets () are the estimation standard error. *** Indicates significance at 0,01.

DISCUSSION AND CONCLUSIONS

This study had posed two main research question: Do entrepreneurship courses raise entrepreneurial orientation and the antecedents of students' entrepreneurial intention? And could the IEO helps to better explain the antecedents of EI through the dimensions of the TPB? To address these questions, the study considers a pre- and post-course analysis. The results showed that after the entrepreneurship course, the students increased the levels of innovativeness, proactiveness and risk-taking. These results are preserved for both the Ecuadorian and Colombian cultural context, demonstrating the potential of entrepreneurship programs on IEO, for which there is little evidence at present. These findings reinforce previous results by Marques et al. (2018) regarding the positive effect of entrepreneurship

education on innovativeness and proactiveness; however, it is contrary with their findings in terms of risk-taking.

A possible interpretation of the non-significant raise of attitude towards behavior after entrepreneurship courses is the following: Such result could be justified by the space of time required in the training process, because, although knowledge can be acquired quickly, the changes generated on knowledge structures and their effect on attitudes are not achieved in the short term (Heuer & Kolvereid, 2014). In turn, regarding subjective norms, the findings could be attributed to cultural factors. Particularly, after receiving the training, individuals perceive less social pressure to carry out an entrepreneurial behavior, which may be linked to the cultural components of the sample and that explain the differences regarding to previous results by Souitaris et al. (2007). Additionally, the above findings show how an external influence represented in entrepreneurial education stimulates the perceived behavioral control in the individual, whose foundation could be due to the incentive of entrepreneurship as a career option and the increase in confidence in the evaluation of the available options thanks to such education (Marques et al., 2018).

The study contributes at several levels of the emerging literature on entrepreneurship education and entrepreneurial intention. First, the findings offer new evidence on the role of entrepreneurial education in developing competencies at the cognitive level of students, such as innovativeness, proactiveness and risk-taking. Second, the study contributes to the theory of planned behavior by testing the impact of entrepreneurship education on the antecedents of intention using a pretest-post-test design. Third, findings provide a uniqueness in terms of the role of the entrepreneurial orientation at individual-level as an antecedent of attitudes towards self-employment, subjective norms and perceived behavioral control. Offering thus, a new insight relating individual competences for entrepreneurial activity and their impact on EI through the TPB dimensions. Finally, the findings also have implications for the emerging studies on IEO, because theoretically it provides evidence that allows this construct to be related to another widely studied and validated construct such as IE; and methodologically, a two-time analysis is introduced using a large sample in two countries, thus corroborating the consistency in the measurements of the construct.

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