

**COMPETING MODELS OF  
ENTREPRENEURIAL INTENTIONS: THE  
INFLUENCE OF ENTREPRENEURIAL  
SELF-EFFICACY AND ATTITUDES**

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**Abstract<sup>1</sup>**

The present study tested two models explaining how entrepreneurship education can have an effect of entrepreneurial intentions through its impact on attitudes and self-efficacy. Data were collected from 236 students who were exposed to an entrepreneurship course. While in model 1 attitudes and self-efficacy are positively related to intentions to new venture creation, in model 2 attitudes mediate between self-efficacy and intentions. Results indicate that attitudes have a stronger relationship with intentions in model 2. Discussion and implications for future research are presented.

**Keywords:** Education, Entrepreneurship, Self-efficacy, Attitudes, Intentions.

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# **Competing Models of Entrepreneurial Intentions: The Influence of Entrepreneurial Self-efficacy and Attitudes**

## **Introduction**

The extant literature has shown that predicting entrepreneurial behavior by modeling personality or demographic characteristics has resulted in small explanatory power. The rationale behind the use of these characteristics relied on the assumption that individuals who have similar characteristics to a typical entrepreneur would behave entrepreneurially. Intentional models, on the other hand, have been suggested as a better alternative to predict entrepreneurial activity (Krueger and Carsrud, 1993). Intentions are conceived as immediate antecedents of actual behavior (Ajzen, 1991). Intention-based models have attracted considerable attention of researchers as they offer a great opportunity to increase our understanding and predictive ability for entrepreneurship (Krueger, Reilly, and Carsrud, 2000).

The study proposes and analyses two models in order to compare their ability to predict entrepreneurial intentions. Grounded on Ajzen's theory of planned behavior, the first model derives from the model initially proposed by Bird (1988) and further developed by Boyd and Vozikis (1994) in which attitudes and self-efficacy influence entrepreneurial intentions. In this direction, the model is intended to investigate the extent to which attitudes of university students toward entrepreneurial acts influence their entrepreneurial intentions. This model also proposes that entrepreneurial self-efficacy exerts a mediating role between self-perceived competencies and intentions

to create a new venture. The second model has as a starting point the core self-evaluation model proposed by Judge, Locke, Durham, and Kluger (1998), in which general self-efficacy is one of the main predictors of job satisfaction. Job satisfaction, in turn, is considered as an attitude toward one's job (Brief, 1998; Weiss, 2002). In the case of entrepreneurs, they do not have jobs in the traditional sense. Nevertheless, they indeed have jobs or tasks when they start and run a new business (Bird, 2002). Thus, the second model examined in the present study proposes that attitudes toward entrepreneurial acts mediate the relationship between entrepreneurial self-efficacy and intentions to new venture creation.

In sum, the overall purpose of this research was to test two theoretical models of entrepreneurial intentions by using the structural equation modeling technique. The study contributes to explain the extent to which entrepreneurship education can affect entrepreneurial intentions through its impact on self-efficacy and attitudes. The paper is organized as follows. In the next section, we briefly discuss about the intentions models that have been tested in previous studies (see Section "Entrepreneurial intention models"). Then, the two models that are the focus of the study are introduced, in which we suggest that entrepreneurship education affect intentions through its impact on attitudes and self-efficacy (see Section "Two models of entrepreneurial intentions"). Next, we describe the method and results (see Sections "Method" and "Results"). Finally, we discuss the findings of the study followed by the limitations and implications (see Section "Discussion and Implications").

## **Entrepreneurial Intention Models**

Previous studies have contributed to the entrepreneurship literature by using intentional models in trying to explain the entrepreneurship phenomenon. One of these models is the Shapero's entrepreneurial event model (SEE) in which entrepreneurial intentions depend on three elements: a) the perception of the desirability; b) the propensity to act; and c) the perception of feasibility (Shapero, 1982). Another well recognized model is based on Ajzen's theory of planned behavior (Ajzen, 1991). According to Ajzen, intentions are explained by: a) subject's attitudes toward the behavior; b) subjective norms; and c) the subject's perception of behavioral control. Another model of intentions was developed by Bird (1988) which considers that entrepreneurial intentions are based on a combination of both personal and contextual factors. Further development of the Bird's model was made by Boyd and Vozikis (1994) to include the concept of self-efficacy taken from the social learning theory. Another model was proposed by Davidsson (1995), which suggested that entrepreneurial intentions can be influenced by: a) conviction, defined by general attitudes (change, compete, money, achievement, and autonomy) and domain attitudes (payoff, societal contribution and know how); conviction, in turn, is related to personal variables including age, gender, education, vicarious experience and radical change experience.

Different studies have been conducted around the models described above (see e.g. Audet, 2002); Autio, Keeley, Klofsten, and Ulfstedt, 1997; Boyd and Vozikis, 1994;

Davidsson, 1995; Krueger et al., 2000; Peterman and Kennedy, 2003; Souitaris, Zerbinati, and Al-Laham, 2007). To our knowledge, few empirical evidences have been reported regarding the effect of exposing students to entrepreneurship education on the entrepreneurial intentions. Previous studies have suggested that entrepreneurship education should improve the perceived feasibility for entrepreneurship by promoting self-efficacy and perceived desirability for an entrepreneurial career (Krueger and Brazeal, 1994). One study is of Peterman and Kennedy (2003) in which it was found that exposure to enterprise education affects intention. However, the sample was taken at high school rather than at the university level. Hence, more research is needed to investigate the claims discussed above.

### **Two Models of Entrepreneurial Intentions**

The extent to which entrepreneurship education can have an indirect effect on students' intentions to start a new business is a topic of great relevance among scholars. Previous research has found that, among other variables, perceptions of formal learning from entrepreneurship-related courses had the strongest positive relationship with intentions through the mediation of entrepreneurial self-efficacy (ESE) (Zhao, Seibert, and Hills, 2005). ESE was defined as the students' confidence in successfully performing certain tasks such as identifying new business opportunities, creating new products, thinking creatively, and commercializing an idea or new development. Zhao et al. (2005) argue that current practices in entrepreneurship education are in the direction to enhance the students' confidence by having a positive impact on the mechanisms associated to self-efficacy. For example, the use of simulated exercises and best business case competition can promote

mastery experiences. Inviting local entrepreneurs to give lectures or using cases of prestigious entrepreneurs can provide the opportunity for role modeling or vicarious experience. By evaluating students' course projects or mentoring students in regard to their career goals can serve as kinds of social persuasion.

We contend that encouraging students to become active in their learning and giving them the opportunity to have hand-on experiences in realistic situations will enable them to learn for competency building. As we offer them substantial amount of practice, they are expected to get confidence in using the acquired competencies in different situations. Current research suggests the use of a variety of learning experiences to expose students to real-world situations (Edelman and Manolova, 2008). By doing so, we can expect that the students' self-efficacy can gradually increase, which is possible as students gain experience by developing complex skills (Bandura, 1982; Gist, 1987). However, while possessing the necessary skills for performing a certain task is essential, people also need to have a resilient self-belief in their capabilities in order to succeed in accomplishing certain goals (Wood and Bandura, 1989). Enhancement of self-efficacy, in turn, can result in increased intentions toward a target goal. As Boyd and Vozikis (1994) argue, a person' intentions to create a new business will be strongest when he or she has a high degree of self-efficacy resulting from mastery experience, entrepreneurial role model, social persuasion, and a high degree of goal setting. Based on the above discussion, we formulate the following hypotheses:

*Hypothesis 1:* There will be a positive relationship between perceived competencies and entrepreneurial self-efficacy.

*Hypothesis 2:* There will be a positive relationship between entrepreneurial self-efficacy and intentions to start a new business.

It has been stressed that the study of attitudes is helpful in explaining the entrepreneurship phenomenon (Drucker, 1970; Olson and Bosserman, 1984; Phan, Wong and Wang, 2002; Robinson, Stimpson, Huefner, and Hunt, 1991) because attitudes are relevant in influencing innovative and entrepreneurial behavior (Garavan and O’Cinneide, 1994). That is, attitudes are an important explanatory variable of entrepreneurial actions through its influence on intentions. To form attitudes toward performing a certain behavior, there must be a belief that performing the behavior will result in certain consequences (Boyd and Vozikis, 1994; Fishbein and Ajzen, 1975). That is why research has been addressed to examine the effect of entrepreneurship education on intentions to become self-employed through its influence on the students’ attitudes. Souitaris et al. (2007) found that some attitudes accounted for the increase in the students’ intentions as a result of participation in entrepreneurship programs. Also, Peterman and Kennedy (2003) found that enterprise education accounted for an increased in the students’ desirability to start a business. Thus, exposing students to entrepreneurship training is expected to mobilize their attitudes which, in turn, can have a positive effect on intentions to start a new business. Accordingly, we formulate the following hypothesis:



*Hypothesis 3:* There will be a positive relationship between attitudes toward entrepreneurial acts and intentions to start a new business.

By linking the variables involved in the previous hypotheses, we propose the hypothesized model 1. According to this model, entrepreneurship education – considered here as an exogenous influence – is expected to have a positive effect on the students' attitudes and self-efficacy which, in turn, will affect the students' intentions toward creating a new business (see Figure 1).

Insert Figure 1 around here

The second model tested in this study considers that attitudes can have a mediating role in the relationship between self-efficacy and intentions. Having strong self-efficacy beliefs will stimulate people's motivation to succeed in a given task which, in turn, can have an effect in their attitudes toward a given object. As Boyd and Vozikis (1994) state, "people who have strong beliefs regarding their capabilities will be more persistent in their efforts and will exert greater effort to master a challenge (p. 73)." Embedded in the core self-evaluation construct, Judge, Locke, Durham, and Kluger (1998) has found that general self-efficacy is one of the main predictors of job satisfaction. A well recognized definition of Job satisfaction is of Locke (1976) who defines it as "a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences" (p. 1300). Thus, job satisfaction can be considered as an attitude that involves an affective reaction to one's job (Brief, 1998; Weiss, 2002) as well as a cognitive dimension. Although entrepreneurs do not have jobs in the traditional sense; nevertheless, they indeed have jobs or tasks when pursuing the

creation of a new business (Bird, 2002). From the above discussion, the following hypothesis is formulated:

*Hypothesis 4:* There will be a positive relationship between self-efficacy and attitudes toward entrepreneurial acts.

Thus, the second model proposes that attitudes toward entrepreneurial acts mediate the relationship between entrepreneurial self-efficacy and intentions to new venture creation (see Figure 2). For this model, we also considered the variables involved in the hypotheses 1 and 3 mentioned above.

Insert Figure 2 around here.

The following section will described how these models were tested and the operationalization of each of the variables involved.

## **Method**

The two models considered in this paper were tested by performing the structural equation modeling (SEM) technique (LISREL 8.8 software package) on the data gathered among university students at the undergraduate level. Data were collected from students who were exposed to an entrepreneurship course that served as the educational intervention. Research on this study was conducted as a pretest-posttest quasi-experimental design. Drawn from a population of 470 undergraduate students enrolled in the course, the sample consisted of 236 students.

The variables of interest included: 1) perceived competencies for entrepreneurship at T2 (time at post-test); 2) Four attitude subscales at T2; 3) Measures of entrepreneurial self-efficacy at T2; 4) Entrepreneurial intentions at T2; and 5) The students' antecedents and entrepreneurial intention measures at T1 (time at pre-test) that served as control latent variables. In this study, antecedents of students referred to any exposure to entrepreneurial role models before the start of the entrepreneurship training. As the students' antecedents, we included four indicators: knowing an entrepreneur, father or mother is an entrepreneur or self-employed, and one of the students' relatives is an entrepreneur. By controlling for these variables, we wanted to prevent the criterion latent variable from being biased by external influences other than those that were expected to change due to the intervention.

### *Measures*

*Perceived competencies.* The measurement of the students' perceived competencies was carried out by the use of a self-reported measurement scale as suggested by Chandler and Jansen (1992) and Chandler and Hanks (1994). Self-reported measures were performed since evidences indicate that self-perceived competencies are considered as appropriate measures of actual competencies (Gist, 1987; Chandler and Jansen, 1992). A potential problem, however, is social desirability biases. Social desirability refers to the inclination of presenting oneself in a manner that is viewed favorably by others (Fisher, 1993; Nancarrow, 2007). That is, instead of describing what one actually thinks, believes or does, he/she is tempted to give social desirable responses. To diminish this inconvenience, the instructions on this questionnaire emphasized the importance of honesty on the self-assessment as recommended by

Chen, Greene, and Crick (1998). Also, confidentiality and presentation of results on aggregate figures of the complete sample were promised.

The items were gauged by the use of a seven-point Likert scale, being 1 “Strongly disagree” and 7 “Strongly agree.” A total of 14 items were used to collect data in regard to the students’ perceived competencies, including the identification and evaluation of business opportunities, networking and communication. An example of these items is “One of my strengths is the ability to perceive unresolved problems that lead me to formulate a business idea.” The content validity of the questionnaire was performed by local experts in the field of entrepreneurship. Once the first Spanish version of the questionnaire was available, a pre-test was conducted among 135 students enrolled in a previous version of the entrepreneurship course. The factor analysis performed on the 14 items grouped them in four factors.

*Entrepreneurial Self-efficacy.* To measure entrepreneurial self-efficacy (ESE), we used the instrument developed by De Noble, Jung, and Ehrlich (1999), which consists of a set of items that asks the respondent to self-assess his or her capability to perform the required tasks for a target behavior. In this case, the target behavior is creating a new business. The questionnaire is divided into six constructs that include the following: 1) Developing new product and market opportunities; 2) Building an innovative environment; 3) Initiating investor relationships; 4) Defining core purpose; 5) Coping with unexpected challenges; and 6) Developing critical human resources. The variables were measured by using a seven-point Likert scale, being 1 “Strongly disagree” and 7 “Strongly agree.” Sample items include “I can discover new ways to

improve existing products” and “I can develop a working environment that encourages people to try out something new.” The questionnaire items were translated from English to Spanish and back-translated for accuracy reasons as recommended by Behling and Law (2000). The study conducted by De Noble, et al. (1999) reported that the internal consistency reliability coefficients of this instrument were close to the cut-off point of 0.7 for all the six subscales of the measurement; four of them exceeded this cut-off point.

*Attitudes toward entrepreneurial acts.* To measure the students’ attitudes toward entrepreneurial acts, the instrument developed by Robinson et al. (1991) was followed and adapted. It is commonly accepted that an attitude scale that takes into account the affective, cognitive, and behavioral components – known as the tripartite model -- is a better approach than the unidimensional construct based on affective reaction alone (Kamradt and Kamradt, 1999; Robinson et al., 1991). By definition, every attitude has an object that could be a person, thing, place, event, life style and so on (Robinson et al., 1991). For the present study, the objects of the attitudes are the four entrepreneurial acts introduced in earlier sections, which include: identification and evaluation of business opportunities, networking and communication abilities. Following the approach of Robinson et al. (1991), these domains become the attitude subscales on the proposed multidimensional instrument and represent either an affective, cognitive, or behavioral reaction. The items in this instrument were screened and edited by the researchers and two professors, one expert in the field of entrepreneurship and the other in education based on content relevance for both the four subscales and the three attitude components. This process resulted in a total of 36

items; three for each subscale and within each component. Sample items include “I usually do my best effort when I have to make a deep evaluation of a business idea” (Behavior – evaluation) and “I know that having a network of personal contacts is of great relevance for success in businesses” (Cognitive – networking). The variables were measured by a seven-point Likert type scale, being 1 “Strongly disagree” and 7 “Strongly agree.” The pre-test of the Spanish version of the instrument was carried out on a sample of 135 students.

*Entrepreneurial intentions.* For measuring the students’ intentions to new venture creation, this dissertation we adopted the set of questions proposed by Liñan (2005). This instrument consists of six items aimed at unveiling the respondents’ intentions to start their own businesses in the future. The items were built as seven-point Likert-type scale, being 1 “Strongly disagree” and 7 “Strongly agree.” Sample items include “I am ready to make anything to be an entrepreneur” and I have the firm intention to start a company within five years after graduating from the university.” Similar to the other instruments used in this study, 135 students were selected for the pre-test of the Spanish version. By doing so, the internal consistency of the instrument was well above the cut-off point of 0.7 (Cronbach’s Alpha = 0.88).

## **Results**

Table 1 presents the means, standard deviations, Cronbach’s alpha coefficients and intercorrelations among the study variables of interest for the pre-test.

Insert Table 1 around here

The hypothesized model 1 proposed that entrepreneurial intentions are influenced by the students' perceived competencies through the mediating role of entrepreneurial self-efficacy. It was also proposed that the students' attitudes toward entrepreneurial acts influence their intentions to new venture creation. By using the structural equation modeling technique, six latent variables were included: self-perceived competencies at T2 (time at post-test); entrepreneurial intentions at T2 representing the dependent variable; entrepreneurial self-efficacy at T2 that mediates the relationship between self-perceived competencies and intentions; and attitudes toward entrepreneurial acts at T2, which has a relationship with intentions. We considered two other constructs as control variables, which are: entrepreneurial intention at T1 (time at pre-test) and students' antecedents at T1.

For the hypothesized model 2, perceived competencies influence entrepreneurial self-efficacy which, in turn, has a positive relationship with intentions through the mediating role of attitudes toward entrepreneurial acts. The same six latent variables considered in the test of the hypothesized model 1 were included for the structural equation modeling analysis. Table 2 presents a summary of the fit indexes for each model.

Insert Table 2 around here

As noted in Table 2, results of this analysis indicate that the indexes are to some extent below the requirements to assure that the model represents a good

approximation of the data (Hu and Bentler, 1999). It is important to remark, however, that there are not strict norms for these indexes below which a model cannot be regarded as a reasonable description of the analyzed data and vice versa (Raykov and Marcoulides, 2000). As a rough guide it has been suggested that AGFI index in the middle of 0.9 or above and the RMSEA below 0.05 provide a good approximation of the data (Hu and Bentler, 1999). Thus, the model fit indexes presented in Table 2 provide initial evidence that the self-efficacy variable mediates between the students' competencies for entrepreneurship and their intentions to new venture creation. Figure 3 shows the standardized path estimates of the hypothesized model 1.

Insert Figure 3 around here

In this model, the link between perceived competencies and entrepreneurial self-efficacy was significant ( $\gamma = .77$ ,  $p < 0.01$ ), supporting hypothesis 1. In addition, the link between entrepreneurial self-efficacy and entrepreneurial intentions was also significant ( $\beta = 0.12$ ,  $p < 0.05$ ), which supports hypothesis 2. We should notice, however, that the ultimate relationship was small. In the hypothesized model 1, we also tested the link between attitudes toward entrepreneurial acts and entrepreneurial intentions. As we expected, we found that a positive relationship existed ( $\zeta = 0.37$ ,  $p < 0.01$ ), supporting hypothesis 3. The hypothesized model 1 explained 60% of the variance in the entrepreneurial self-efficacy and 42% in the entrepreneurial intentions. We should notice in Fig. 3 that the higher the students' intentions to create a new venture when they enter the entrepreneurship training, the greater their intentions at the end of the course. That is, a significant positive relationship ( $\lambda = 0.34$ ,  $p < 0.01$ ) is



observed between students' intentions at T1 (time at pre-test) and those at T2 (time at post-test). In contrast, we can see that the students' antecedents are not significantly related to entrepreneurial intentions; therefore, the students' intentions are not influenced by their demographics characteristics. This is consistent with previous studies in the sense that demographic characteristics are deficient in predicting entrepreneurship (Robinson et al., 1991). As these authors explain, what determines an individual to become an entrepreneur is the specific reaction to circumstance and no necessarily a given set of demographic characteristics.

As already mentioned, we were interested in testing an alternative model in which attitudes toward entrepreneurial acts mediate between entrepreneurial self-efficacy and intentions to start a new business. This second model, testing hypotheses 1, 3, and 4 is presented in figure 4. The perceived competencies latent factor was significantly related to entrepreneurial self-efficacy ( $\gamma = .75$ ,  $p < 0.01$ ), supporting hypothesis 1. We also found a positive relationship between entrepreneurial self-efficacy and attitudes toward entrepreneurial acts ( $\beta = 0.60$ ,  $p < 0.05$ ), which gives support to hypothesis 4. In addition, the link between attitudes and entrepreneurial intentions was also significant ( $\zeta = 0.44$ ,  $p < 0.01$ ), which supports hypothesis 3. The hypothesized model 2 explained 57% of the variance in the entrepreneurial self-efficacy, 36% in the attitudes latent factor, and 59% in the entrepreneurial intentions. As in the hypothesized model 1, students' intentions to create a new venture at T1 (time at pre-test) and at T2 (time at post-test) showed a positive relationship ( $\lambda = 0.37$ ,  $p < 0.01$ ). The students' antecedents were not significantly related to entrepreneurial intentions,

again meaning that demographic characteristics are not good predictors of students' intentions to start a new business.

Summarizing, the results from the structural equation modeling analysis provided some support for the two models suggested in this paper. Important to remark, however, is that a better explanatory power is reached when attitudes mediates the relationship between entrepreneurial self-efficacy and intentions to start a new business than a direct link. That is, the hypothesized model 2 offers a better explanation to predict intentions than model 1.

### **Discussion and Implications**

By analyzing the first model, we found initial evidence that entrepreneurial self-efficacy mediates the relationship between the students' perceived competencies for entrepreneurship and their intentions to new venture creation. Also, we found that students' attitudes toward entrepreneurial acts positively influence their intentions to create a new venture although not very strong relationship. Thus, these results indicate that individuals who self-reported higher on competencies for entrepreneurship each reported higher levels of entrepreneurial self-efficacy and, in turn, more entrepreneurial intentions. Likewise, students who exhibited higher attitudes toward entrepreneurial acts each reported higher intentions to start a new business.

When analyzing the second model, we found that attitudes toward entrepreneurial acts mediate the relationship between entrepreneurial self-efficacy and intentions. Results

showed that a stronger relationship existed between attitudes and intentions than it was in the first model. Thus, this result suggests that students who exhibited higher entrepreneurial self-efficacy beliefs after the educational intervention increased their attitudes toward entrepreneurial acts which, in turn, resulted in higher intentions to new venture creation. In sum, the findings of this study are consistent with previous research in that self-efficacy and attitudes are important predictors of intentions (Boyd and Vozikis, 1994). Although the two models are useful in predicting entrepreneurial intentions, a better explanatory power has been reached when attitudes mediates the relationship between self-efficacy and intentions.

### *Implications*

Although several studies have been conducted to test intention models, the effect of entrepreneurship education on attitudes and intentions to start a new business has not been widely investigated (Souitaris et al., 2007), nor the mediating role of self-efficacy on intentions by making an integrative analysis. The finding that entrepreneurship education can have an ultimate impact on intentions has some important implications.

On the one hand, the study confirms that attitudes toward entrepreneurial acts positively affect intentions to new venture creation, thus contributing to the theory of planned behavior. We also found that attitudes mediate the relationship between entrepreneurial self-efficacy and intentions. According to these results, attitudes toward entrepreneurial acts positively affect intentions regardless of how this

influence is exerted. These findings seem to suggest that the more confident students become in their capabilities for entrepreneurship, the better their attitudes toward entrepreneurial activity. Therefore, a practical implication is that an attitude change should be considered as a crucial part of entrepreneurship education. In this regard, the extant literature emphasizes that attitudes toward entrepreneurship are central to explaining new business startups (Phan et al., 2002) as they are an important impetus to influence innovative and entrepreneurial behavior patterns (Garavan and O’Cinneide, 1994). Thus, introducing students to entrepreneurship at early stage in the entrepreneurial process can be beneficial as they develop positive attitude toward starting new businesses (Phan et al, 2002) as well as initiating and implementing new ideas within existing organizations. However, attitude development or change is usually not paid enough attention, which is especially true in the context of entrepreneurship education (Garavan & O’Cinneide, 1994).

Also, the study provides initial evidence that perceptions of the derived effect of entrepreneurship education are positively related to entrepreneurial self-efficacy. That is, perceived competencies indirectly influence intentions to start a new business through the mediating role of entrepreneurial self-efficacy, which is consistent with previous research (Zhao et al., 2005). Important to emphasize is that the pedagogical approach to which students were exposed encourages students to become active and to learn by doing through relevant learning experiences as suggested by Fiet (2000). This implies that the perceived benefits of the instructional approach can be attributed to the amount of practice and the inclusion of real-world experiences offered to students. Current trends in business education are going in this direction as real-world

experiences are more than before becoming part of the curricula (Clinebell and Clinebell, 2008).

On the other hand, fostering self-efficacy beliefs goes beyond teaching competencies because students and trainees must fully internalize those competencies through perceived mastery (Krueger and Brazeal, 1994). Accordingly, we think that individuals may possess certain competencies; nevertheless, they may not deliberately exploit them unless these competencies are internalized as to become part of their behavior or thinking. Therefore, entrepreneurship education has to take into account the relevance of strengthening students' confidence in their capabilities to entrepreneurial actions by self-efficacy enhancement. In this regard, we maintain that the pedagogical approach suggested in this paper provides the learning environment that can promote an increase of entrepreneurial self-efficacy. That is, students are exposed to a variety of learning opportunities that enable them to be active individuals that gain experience from the exercised activities.

#### *Limitations of the Study*

Some limitations were identified due to methodological choices. Our first limitation is related to the fact that students were not selected at random, which happened because of the common practical difficulties in conducting research in an educational context. Trying to carry out experimental research, for example, may pose a problem of ending up with two few students that answer the questionnaires at the outset and at the end of the intervention. We overcome this difficulty by selecting all the available students

enrolled in the entrepreneurship course. Following this approach, we were able to collect a considerable amount of students (N=236). Hence, the design of the study was quasi-experimental rather than a true experiment.

The next limitation is associated to subjectivity because all the instruments were only based on perceptual measures. This choice can be subject to criticism in that perceptions are likely to differ from what is to be in reality. It can also be criticized because the use of self-reported measures can be a source of common method variance and the tendency to agree with items independent of content (Spector, 2006). A second source of data is desirable for the variables defined in this study with the exception of the self-efficacy construct because it is conceptualized as a self-reported measure. A method, for example based on observations can provide more objective data on different competencies exhibited by students. In doing so, more accurate and better interpretations of the findings can be achieved.

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TABLE 1 Descriptive Statistics, Scale Reliabilities and Zero-Order Correlations for the Study Variables of Interest

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Age	23.2	4.82															
<b>1. POIC</b>	4.7	.72	<b>.73</b>														
<b>2. POEC</b>	4.8	.66	.53	<b>.67</b>													
<b>3. PNWC</b>	5.1	.80	.48	.42	<b>.76</b>												
<b>4. PCMC</b>	4.9	.79	.37	.40	.38	<b>.66</b>											
<b>5. ATOI</b>	5.1	.64	.35	.27	.33	.24	<b>.73</b>										
<b>6. ATOE</b>	5.8	.65	.34	.31	.29	.22	.66	<b>.75</b>									
<b>7. ATNW</b>	5.7	.69	.38	.21	.37	.22	.63	.56	<b>.70</b>								
<b>8. ATCM</b>	5.2	.61	.15	.16	.22	.20	.66	.60	.65	<b>.71</b>							
<b>9. ESE1</b>	4.8	.81	.47	.40	.49	.40	.45	.34	.32	.22	<b>.86</b>						
<b>10. ESE2</b>	5.1	.71	.31	.23	.39	.39	.40	.34	.23	.27	.47	<b>.78</b>					
<b>11. ESE3</b>	5.0	.85	.30	.27	.42	.37	.38	.31	.25	.23	.49	.57	<b>.86</b>				
<b>12. ESE4</b>	4.9	.83	.28	.26	.32	.33	.38	.31	.21	.20	.45	.53	.56	<b>.81</b>			
<b>13. ESE5</b>	5.0	.91	.16	.17	.25	.23	.22	.21	.13	.14	.39	.30	.43	.39	<b>.78</b>		
<b>14. ESE6</b>	5.0	.79	.29	.21	.35	.20	.37	.36	.22	.16	.37	.49	.52	.55	.41	<b>.83</b>	
<b>15. EINT</b>	6.0	.91	.35	.27	.24	.34	.43	.38	.45	.29	.41	.31	.37	.28	.21	.26	<b>.88</b>

N = 236; Scale reliabilities (Cronbach's alpha) are on the diagonal in bold; Correlations greater than .13 are significant at  $p < .05$ . Correlations greater than .16 are significant at  $p < .01$ . POIC: Perceived Opportunity Identification Competency; POEC: Perceived Opportunity Evaluation Competency; PNWC: Perceived Networking Competency; PCMC: Perceived Communication Competency; ATOI: Attitude toward Opportunity Identification; ATOE: Attitude toward Opportunity Evaluation; ATNW: Attitude toward Networking; ATCM: Attitude toward Communication; ESE1, ESE2, ESE3, ESE4, ESE5, ESE6: Each of the sub-constructs of Entrepreneurial Self-efficacy; EINT: Entrepreneurial Intentions

Table 2. Goodness-of-Fit Indexes for the Structural Equation Models

	$\chi^2$	df	RMSEA	SRMSR	NFI	CFI	AGFI
Hypothesized model 1	703.2 **	394	0.058	0.058	0.93	0.97	0.80
Hypothesized model 2	677.7 **	397	0.056	0.056	0.93	0.97	0.81

N= 236; \*\* p < 0.01; SRMSR: standardized root-mean-squared residual; NFI: norm fit index; CFI: comparative fit index; AGFI: adjusted goodness-of-fit index

Figure 1. Hypothesized Model 1 showing the mediating role of entrepreneurial self-efficacy and the direct effect of attitudes on intentions

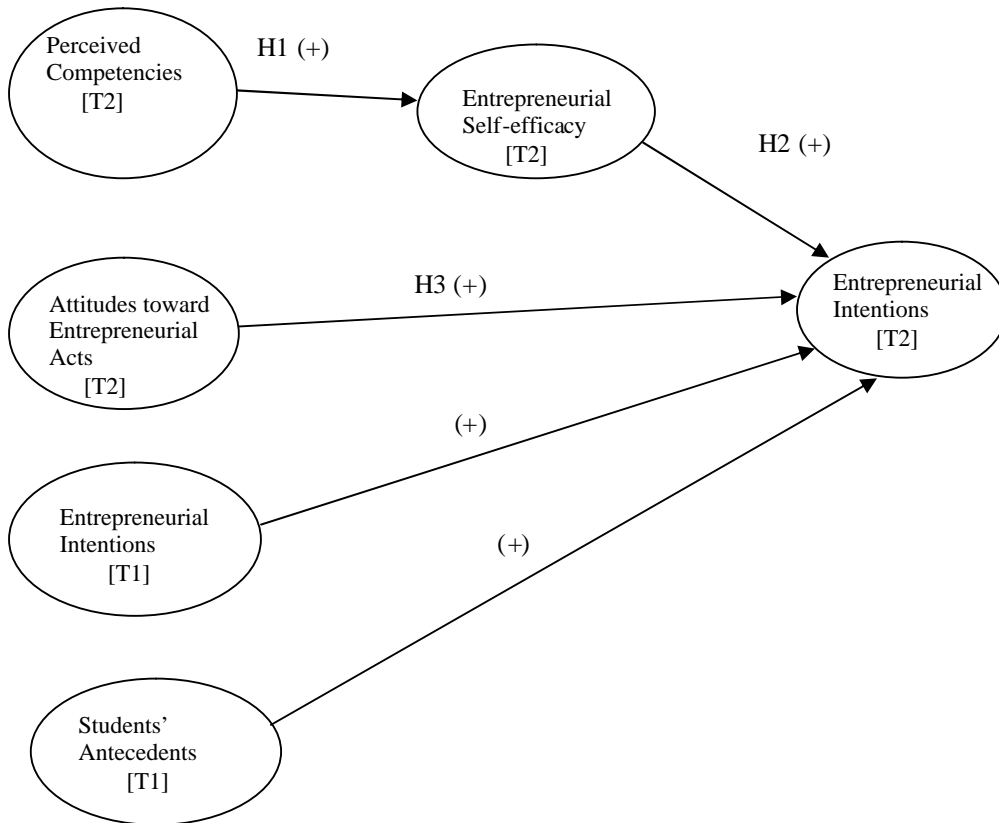


Figure 2. Hypothesized Model 2 showing the mediating role of attitudes in relationship between entrepreneurial self-efficacy and students' intentions

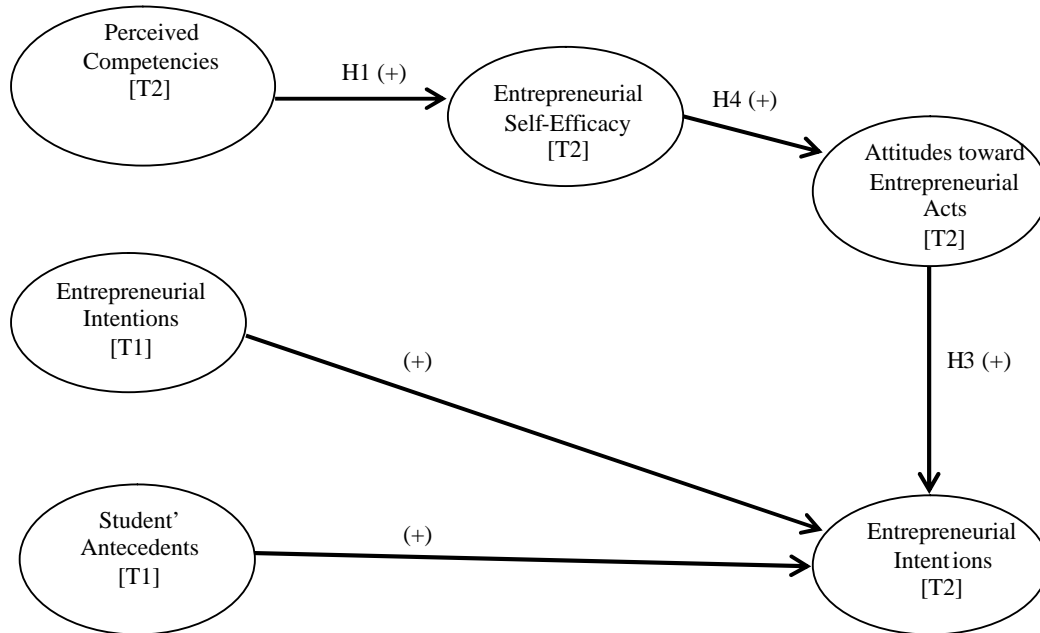
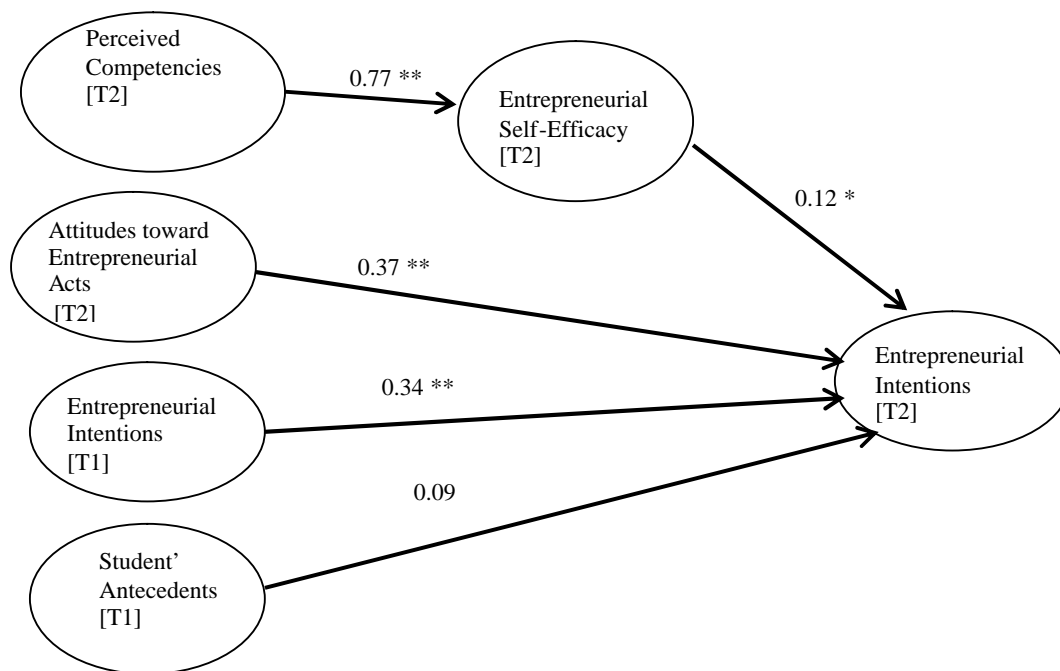
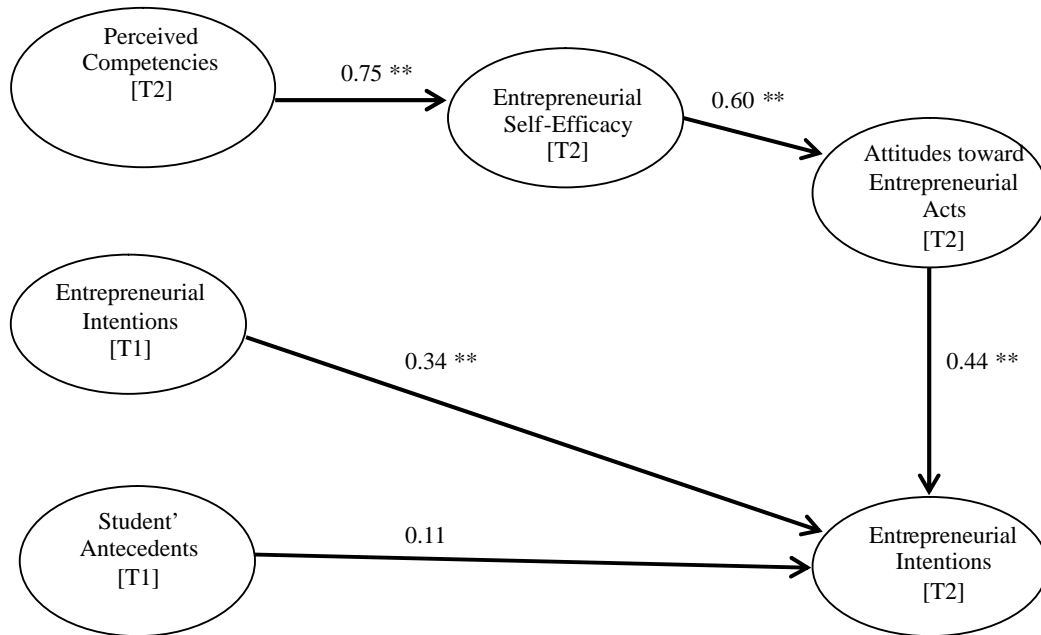


Figure 3. Model 1: testing the mediating role of entrepreneurial self-efficacy in relationship between perceived competencies and students' intentions



N = 236; \* p < 0.05; \*\* p < 0.01; T1: Time at pre-test; T2: Time at post-test

Figure 4 Model 2: testing the mediating role of attitudes in relationship between entrepreneurial self-efficacy and intentions



N = 236; \*\* p < 0.01; T1: Time at pre-test; T2: Time at post-test