



# Impact of entrepreneurial educational training on entrepreneurial intention: A cognitive approach

## *Impacto de la formación educativa emprendedora en la intención emprendedora: un enfoque cognitivo*

Carlos Sandoval-Álvarez\* Gustavo Bado-Zúñiga

Universidad de Costa Rica, Costa Rica

Received March 18, 2021; accepted August 12, 2022  
Available online September 22, 2023

### Abstract

This article investigates the influence of entrepreneurial training on the development of entrepreneurial intentions of university business administration students. The authors applied structural equation modeling to a sample of students to empirically test a hypothetical model based on cognitive theoretical frameworks on intention. The results of our research provide evidence suggesting that entrepreneurial educational training positively impacts the entrepreneurial intentions of business administration students through an indirect mechanism, that is, by favorably influencing attitudes towards entrepreneurship and perceptions of entrepreneurial self-efficacy. In addition, this study offers conclusions and implications relevant to the academy and those educational programs that seek to boost entrepreneurship.

*JEL Code:* M10, I23, M13, D91

*Keywords:* entrepreneurial intention; business school; cognitive factors; structural equation modeling

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\* Corresponding author.

E-mail address: [carlos.sandovalalvarez@ucr.ac.cr](mailto:carlos.sandovalalvarez@ucr.ac.cr) (C. Sandoval-Álvarez).

Peer Review under the responsibility of Universidad Nacional Autónoma de México.

<http://dx.doi.org/10.22201/fca.24488410e.2022.3269>

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## Resumen

Este artículo investiga la influencia de la formación educativa emprendedora en el desarrollo de intenciones emprendedoras de los estudiantes de dirección de empresas. Los autores aplicaron modelación de ecuaciones estructurales a una muestra de estudiantes para probar empíricamente un modelo hipotético fundamentado en marcos teóricos cognitivos sobre la intención. Los resultados de nuestra investigación proveen evidencia que sugiere que la formación educativa emprendedora impacta positivamente en las intenciones emprendedoras de los estudiantes de dirección de empresas mediante un mecanismo indirecto, es decir, al influir favorablemente en las actitudes hacia el emprendimiento y en las percepciones de autoeficacia emprendedora. Asimismo, este estudio ofrece conclusiones e implicaciones relevantes para la academia y para aquellos programas educativos que procuran impulsar el espíritu emprendedor.

*Código JEL:* M10, I23, M13, D91

*Palabras clave:* intención emprendedora; escuela de negocios; factores cognitivos; modelación de ecuaciones estructurales

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## Introduction

Entrepreneurship plays an important role in economic and social progress as one of the main instruments for developing the world's economies (Peng, Lu, & Kang, 2013). In recent years, promoting entrepreneurship has become a priority public policy issue in most nations (Franke & Lüthje 2004). It is considered a vehicle for prosperity (Fatoki, 2014), economic growth, and innovation (Shane & Venkataraman, 2000). The current global socioeconomic environment provides fewer opportunities for continued employment. In this context, entrepreneurship is significant since it allows people to achieve economic independence and self-employment (Basu & Virick, 2008). The entrepreneurial spirit implies having the vision to recognize an opportunity where others only see chaos and confusion (Izedonmi, 2010).

Recent studies have focused on investigating why and how intentions to start a business arise, especially in young university students, citing some factors that positively impact their entrepreneurial intentions (i.e., Bergmann, Hundt, & Sternberg, 2016; Geldhof et al., 2014; Li, Wu, & Wu, 2008, Purwana, 2018). Nevertheless, one aspect that still generates debate among scholars is whether the entrepreneurial education offered by university degrees in business management truly contributes to forming entrepreneurial intentions. Entrepreneurial education refers to any pedagogical program or educational process aimed at creating entrepreneurial attitudes and skills (Fayolle, Gailly, & Lassas-Clerc, 2006), intended to foster the competencies required to generate business ideas and implement them (Rae & Carswell, 2001), and capable of developing skills to recognize business opportunities that others have overlooked, as well as the self-confidence to act where others hesitate to do so (Zhang, Duysters, & Cloudt,

2014). [For a compilation of definitions of entrepreneurial education, see Calzado-Barbero et al. (2019)]. Although the term has several meanings, they all have a core component: the development of entrepreneurship and character for entrepreneurship (Calzado-Barbero et al., 2019).

Although there is a widespread notion that exposure to entrepreneurial education tends to drive entrepreneurial behavior (e. g., O'Connor, 2013) or entrepreneurial intentions (e. g., Izedomni, 2010; Zhang et al., 2014), its true impact have been the subject of much discussion among the academic community (Franke & Lüthje, 2004) and previous research has yielded inconclusive results (e.g., Klapper & Leger-Jarniou, 2006; Oosterbeek, Van Praag, & Ijsselstein 2010). Others have even obtained negative results or concluded that it is unclear what impact such training might have on students (e.g., Oosterbeek et al., 2010; Sánchez, 2013). Bae, Qian, Miao, and Fiet (2014), in their meta-analysis of 73 empirical studies carried out between the years 1997 to 2012 and with a sample size of 37, 285 cases on the influence of entrepreneurial education programs on entrepreneurial intention, found only a small correlation between the two variables ( $r=0.143$ ). After controlling for pre-educational entrepreneurial intentions, they determined that the impact of entrepreneurial education on students' entrepreneurial intentions is not significant.

There is still little understanding of the factors that affect the entrepreneurial intentions of college students (Basu & Virick, 2008). According to Zhang et al. (2014), empirical studies on entrepreneurial education and its impact on entrepreneurial intention need to undergo further empirical testing. There is a relative paucity of research on entrepreneurial intention and education in contexts other than more developed nations, where most of the research comes from (Nabi, Liñán, Iakovleva, Kolvereid, & Stephan, 2011). The objective of this study is to determine to what extent the academic training offered by the business management program of the Business School of the University of Costa Rica contributes to the promotion of entrepreneurial intentions in students. Since 2016, this business school has embraced entrepreneurship as one of its core components. Nonetheless, no studies have been conducted that show a possible favorable impact of such academic training on students' entrepreneurial intentions. The questions specifically proposed to be answered are the following:

What factors are determinants of entrepreneurial intention among management students? Does the academic training offered by the university's business management program influence the entrepreneurial intentions of its students? And if so, according to what mechanism?

The University of Costa Rica is the country's largest and oldest institution of higher education dedicated to teaching, research, and social action. The mission of its business school (hereafter EAN) (in Spanish: Escuela de Administración de Negocios) is to train future professionals to promote social change with social responsibility and ethics in companies. It offers two majors: public accounting and management. The latter has made entrepreneurship one of its strategic values and a core component in its

curricula and teaching management (School of Business Administration [EAN], Strategic Framework, 2018). The main purpose of this initiative is to encourage the entrepreneurial spirit and foster entrepreneurial skills in its students. At the same time, it has consolidated the annual celebration of two large entrepreneurship fairs, which are supported by the external business sector. Students and teachers participate proactively in these activities. The best projects of new innovative products and services conceived by students are presented (cf. School of Business Administration [EAN], Exponinova, 2018).

While there may be several external factors that may favor (or impede) the emergence of a new company or business idea in the future (e.g., ease of financing, socioeconomic environment, etcetera), the premise is that entrepreneurship is, in essence, an intentional act (Hayton & Cholakova 2012). “Entrepreneurial intent” is limited to an individual’s intention to establish a business or company. Therefore, the definition of entrepreneurship proposed by Schoon and Duckworth (2012) is appropriate: “working on one’s account and owning one’s own company” (p 1719). The remainder of this article is organized as follows: the next section presents the research model; then, the hypotheses and the methodology employed are explained, and the results are presented. Finally, the study’s findings, implications, and limitations are discussed.

## **Research model**

The interest of this study is to determine how and to what extent the educational training received by students in the business management program at the University of Costa Rica influences their entrepreneurial intentions. In general, studies based on intentions have a great explanatory and predictive capacity for the future behavior of individuals (Ajzen, 2012). Meta-analytic evidence from other research domains supports the predictive power of intentions for a person’s a posteriori behavior (Kautonen, Van Gelderen, & Fink, 2015).

In order to carry out this purpose, a research model was developed based on cognitive theoretical frameworks that could be empirically tested. Cognitive theoretical frameworks seek an explanation of entrepreneurial intentions due to attitudes and perceptions toward entrepreneurship (Hayton & Cholakova 2012). It has been observed that research models studying the determinants of entrepreneurship based on demographic characteristics and personality traits are of low explanatory and even lower predictive validity (Gird & Bagraim, 2008). Studies based on cognitive elements are useful for understanding how business opportunities are perceived and how entrepreneurial competencies are evaluated (Barbosa, Gerhardt, & Kickul, 2007). Specifically, this model is based on the common cognitive elements of two recognized cognitive conceptual frameworks: Ajzen’s Theory of Planned Behavior and Shapero and

Sokol's Entrepreneurial Event Model, better known as TPB and EEM. These theoretical frameworks are the most renowned in studies on intentions (Iakovleva & Kolvereid, 2009).

According to the EEM, an individual's entrepreneurial intention stems from a propensity to act and perceptions of desirability and feasibility toward a given venture (Grari & Benachenhou, 2019). The latter represents cognitive factors. According to the TPB (a more generic theoretical framework on human intention), intention is a cognitive factor that precedes behavior. The stronger the intention to perform a particular action or behavior, the more likely it is to happen (Ajzen, 1991). In turn, intention depends on three elements: favorable or unfavorable attitudes or perceptions toward a task in question, the perception of perceived control toward the task in question (these factors being cognitive elements), and finally, the influence of significant others or relevant others (technically called "subjective social regulations"). It should be noted that for Ajzen (1991) himself, the concept of perceived control is not new and is related to Bandura's (1997) concept of perceived self-efficacy, that is, the perception of confidence in one's abilities to organize and carry out the courses of action necessary to produce certain results.

While some authors consider TPB and EEM as competing theoretical frameworks (e.g., Krueger, Reilly, & Carsrud, 2000; Schlaegel & Koenig, 2014), this study agrees more with Kuehn's (2008) judgment that they overlap to a large extent, especially concerning elements of a cognitive nature. For Kuehn (2008), the perceived viability of the EEM is related to self-efficacy (i.e., perceived behavior of Ajzen's model) since both factors in essence refer to a personal evaluation of the ability to control and manage an action or behavior successfully (in this particular case a venture). Similarly, the perceived desirability of EEM and TPB attitudes are closely related since both relate to a personal assessment of how attractive an object or behavior in question is (Ajzen & Fishbein, 1977; Kuehn, 2008). Finally, the model of this study is controlled by variables that, according to the existing literature, can influence it, which will be discussed below. Figure 1 shows this research model, a background model (i.e., the independent variables are constructs considered plausible antecedents of the dependent variable). According to comparative studies of formative, reflective, and background models in student evaluation of teacher service, background models are highly predictive and have better-fit indices than models based on reflective and formative approaches (cf. Taborga & Eduardo, 2013).

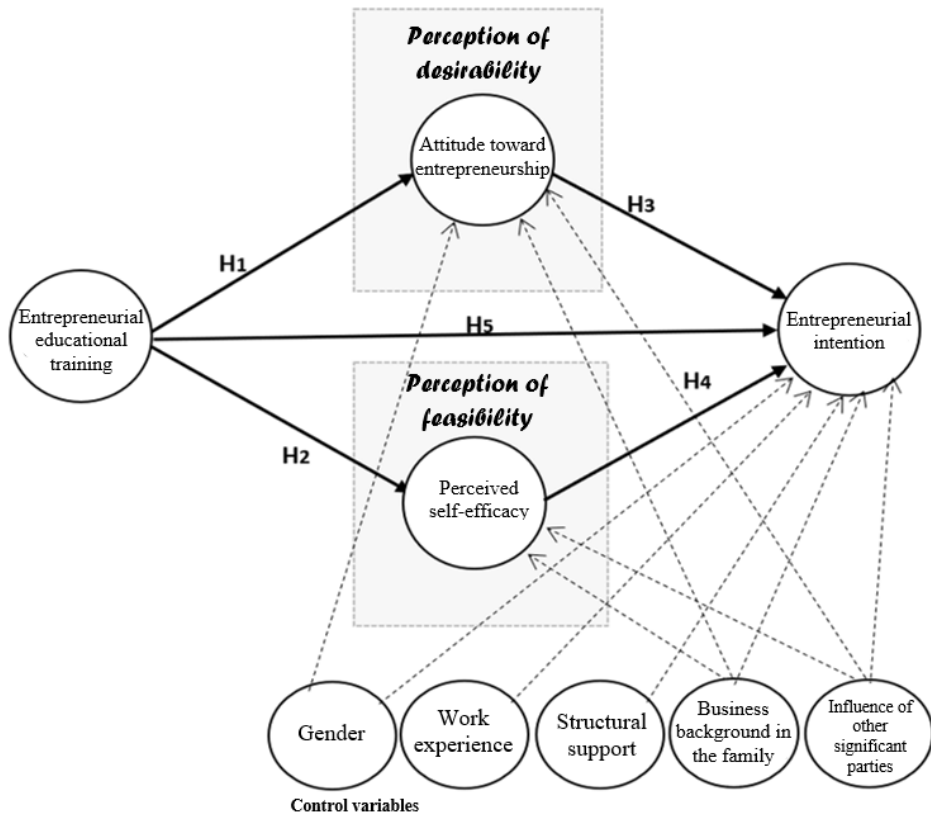


Figure 1. Hypothetical research model  
 Source: created by the authors

## Literature review and hypothesis

### *Entrepreneurial education and attitude toward entrepreneurship*

Attitude is understood as a person's inclination to judge the performance of an action or behavior as favorable or unfavorable (Ajzen, 1991). It is a mental evaluation that naturally takes on a negative or positive value (Fishbein & Ajzen, 2015). Attitudes arise from the expectations a person has about the possible outcomes they would obtain if they were to perform a particular behavior (Fishbein & Ajzen, 2015) and personal beliefs about the possible consequences of performing or not performing a behavior in question (Ajzen 2002). According to Ajzen (2006), attitudes follow a matching principle, i.e., the stronger the belief that exercising a particular behavior would produce certain outcomes (either positive

or negative), the greater the impact of such beliefs on attitudes. Consequently, people automatically assume a stance toward something according to the value of the perceived outcome (Ajzen, 1991).

Entrepreneurship education seeks the development of certain beliefs, values, and attitudes, with the objective that students consider entrepreneurship an attractive alternative to paid work (Raposo & Do Paço, 2011). According to Ayuo, Auka, and Kibas (2017), the exposure to entrepreneurship education experienced by students positively influences their attitudes toward entrepreneurship. Similarly, Veciana, Aponte, and Urbano (2005) researched university students in Spain and Puerto Rico and found that those students with entrepreneurial educational backgrounds exhibit a high degree of willingness and a more positive perception of the desirability of starting a company. Although it cannot be categorically stated that every entrepreneurship education program fosters entrepreneurship, it is to be expected (or at least assumed) that it has a favorable impact on their attitudes toward entrepreneurship. According to Fayolle and Liñan (2014), previous research results show significant differences in attitudes toward entrepreneurship between students who participate in entrepreneurship education programs and those who do not. Consequently, it is postulated that:

Hypothesis 1. The educational background offered by a degree in business management is positively associated with favorable attitudes toward entrepreneurship.

### *Entrepreneurial education and self-efficacy*

Education programs that foster entrepreneurship seek to develop competent entrepreneurs who can create new companies or ventures with growth potential (Rasmussen & Sørheim, 2006). For Mei, Lee, and Xiang (2020), successful entrepreneurial education involves improving entrepreneurial attitudes and skills (detecting business opportunities, organizing resources, and managing situations of risk). Entrepreneurial education can enhance entrepreneurial self-efficacy because it is associated with vicarious experience and verbal persuasion, which are determinants of an individual's self-efficacy (Bae, Qian, Miao, & Fiet, 2014). Launching a business idea is no easy task. Nevertheless, the perception of self-efficacy in a particular task positively influences the degree of perseverance and the performance of actions of extreme difficulty (Ajzen, 1991).

Several years ago, the School of Business Administration at the University of Costa Rica adopted "entrepreneurship" as one of its core components for the business management program. It is assumed that its curriculum and pedagogical strategies provide students with the skills and knowledge necessary to develop entrepreneurship and a conviction in their abilities to plan, organize, execute, and implement what is necessary to grow their businesses. Consequently, the following is assumed:

Hypothesis 2. The educational training offered by the business management degree positively influences the perception of entrepreneurial self-efficacy of its students.

### *Attitude toward entrepreneurship and entrepreneurial intention*

Intention is a person's willingness to perform a particular behavior (Ajzen 2011). It reflects the motivation required (Armitage & Christian 2004) and the persistence a person is willing to exert to perform a particular behavior (Ajzen, 1991). Intention precedes behavior. As for entrepreneurial intentions, these represent a person's inclination to start an entrepreneurial activity (Izedonmi, 2010). Although there is no single definition of entrepreneurial intention, the term has been used in previous studies to allude to the willingness to own and start one's own company (Bae, Qian, Miao, & Fiet, 2014), as well as to procure self-employment (Küttim, Kallaste, Venesaar, & Kiis, 2014).

According to Franke and Lüthje (2004), positive attitudes toward self-employment constitute relevant entrepreneurship backgrounds in an individual. Peng, Lu, and Kang (2013) cite the work of Ajzen (1991) and note that individuals' attitudes constitute important factors that influence their entrepreneurial intentions. The formation of intentions depends, to a large extent, on attitudes toward behavior or an object, which, in turn, reflect their beliefs and perceptions (Ajzen 1991). Consequently, a more favorable attitude toward a particular behavior would increase the intention to carry it out (Liñan, 2004). That being said, individuals with more favorable attitudes toward ventures are expected to be more predisposed to them since they consider that ventures entail more advantages or desirable outcomes than disadvantages or undesirable outcomes. Conversely, if individuals form unfavorable attitudes toward entrepreneurship, it is to be expected that they will be less willing to start their business activity. The perception of greater disadvantages (or the lack of advantages) represses the sense of desirability toward entrepreneurial activity. Consequently, the following is postulated:

Hypothesis 3. Favorable attitudes toward entrepreneurship are positively associated with students' entrepreneurial intention levels.

### *Self-efficacy and entrepreneurial intention*

Perceived behavioral control reflects an individual's self-perception of their ability to achieve and control a given behavior (Ajzen, 2002). For Ajzen himself, this concept is homologous to that of perceived self-efficacy created by Bandura (Fishbein & Ajzen, 2015), which is defined as "the belief in one's abilities to organize and carry out the courses of action necessary to produce certain achievements" (Bandura, 1997). The degree of self-efficacy affects the effort a person puts into their tasks (Bandura, 1997) and the time



they are willing to persevere in the face of obstacles and challenges (Bandura, 1994). Farhat (2016) notes that “the stimulus to act grows when entrepreneurs think their actions will have achievable results; self-efficacy becomes a predominant factor in successful entrepreneurial behaviors” (p 45).

Previous studies show that individuals with higher perceived self-efficacy exhibit greater intentions to become entrepreneurs than those with lower perceived self-efficacy (e.g., Zhao, Siebert, & Hills, 2005; Mei et al., 2020). Confidence in one’s abilities to start an entrepreneurial career does not ensure entrepreneurial success but encourages people to try (Kickul, Gundry, Barbosa, & Whitcanack, 2009). This study argues that individuals with high entrepreneurial self-efficacy have a greater conviction in their abilities to initiate and face possible challenges to grow their business idea. Apparently, in turn, the greater the perception of entrepreneurial self-efficacy, the greater the degree of perceived control over the tasks and challenges involved in implementing a business idea, which favors the perceived viability of the business idea. Therefore, it is assumed that:

Hypothesis 4. Perceived entrepreneurial self-efficacy is positively associated with students’ levels of entrepreneurial intention.

### *Entrepreneurship education and self-efficacy*

Entrepreneurship education seeks to develop multiple skills and capabilities in individuals. Educational programs designed to promote entrepreneurship offer courses on developing new business ideas, business planning and strategy, and business model innovation (Liñán, 2008). According to Sanchez (2013), educational training increases entrepreneurial skills and motivation for self-employment. Effective entrepreneurship training enables the individual to develop the skills and access the knowledge necessary to start and grow a new business. These include recognizing opportunities, generating new ideas, thinking creatively, and gathering the resources necessary for entrepreneurship (Sanchez, 2013). Some empirical research has shown that some business training programs have a favorable effect on entrepreneurial intention. Thus, graduates with a major in entrepreneurship have been found to have a greater tendency to start new businesses and stronger entrepreneurial intentions than other graduates without such training (Mamun et al., 2017). Entrepreneurial education is also intended to reduce the risk associated with entrepreneurship and is a guide for establishing a company from its initial stage to maturity (Izedonmi, 2010). Accordingly, the following is postulated:

Hypothesis 5. The educational training offered by the company management degree positively influences the levels of entrepreneurial intention exhibited by students.

## Methods

### *Data collection and sample*

The sample frame was taken as all advanced students enrolled in the business management program (584 students). Participation was limited to advanced students because these (as opposed to first year, and intermediate year students ) have completed most of the educational program or are about to complete it. From the total of 584 advanced students across 19 courses, 12 groups were randomly chosen (cf. Otzen & Manterola, 2017). The total number of students in the randomly selected courses (362 individuals) were sent the electronic questionnaire by e-mail and a brief invitation to participate, indicating the voluntary and anonymous nature of participation. In the end, 315 voluntary participations were collected (a number that represents 54% of the total number of advanced students enrolled and an 87% response rate for the questionnaire).

In addition, 32 cases were discarded: 6 had many unanswered questions, making analysis impossible. 11 turned out to be students from the economics faculty but not from the degree program in question, and 15 were outliers, i.e., cases in which the scores deviated markedly from all others in a given data set. The existence of outliers was examined with the computation of Mahalanobis coefficients and their corresponding p-value (cf. Byrne, 2016). Cases with outliers could distort the estimates, so it is recommended to remove them (Byrne, 2016). At the end of this sample filtering process, 283 usable cases were obtained (48% of the total number of advanced business management students).

Data collection was conducted between October and December 2019 (three months before the first case of Covid-19 in the country) through an electronic questionnaire. Emphasis was placed on anonymity and voluntariness to reduce possible response bias (cf. Chung & Monroe, 2003). The questionnaire consisted of two different sections: the first is composed of a series of 29 different items, to which each participant had to give a value according to different Likert scales from 1 to 7 points (for a detailed list of constructs and their items, please see appendix 2). The second section collects the informants' demographic aspects of interest.

Given that the sources of the constructs were originally in English, a process of reverse translation of the questionnaire was carried out. Two business management professors reviewed and tested the questionnaire on eleven students to detect and eliminate possible semantic confusion.

In addition, evidence of a possible nonresponse bias was sought using the "time trend extrapolation" technique, i.e., assuming that the latest respondents are more similar to nonrespondents (Armstrong & Overton, 1977). No significant differences were found between the two groups; consequently, nonresponse bias does not affect the study. In terms of demographic characteristics, the

sample comprises 154 women and 129 men; their ages range from 21 to 32 years, with the average age being 23.6 years and the statistical mode 22 years. 38.2% of the participants work and study at the same time. 47.7% of the students come from families where the parent has (or has had) their own business.

### *Variables and measurements*

Variables with multi-item scales were validated and used in previous research. The entrepreneurial intention was measured using the six-item scale of Liñan and Chen (2009). This construct seeks to determine to what extent an individual is determined to create a company in the future and how seriously they have thought about starting a company. The Cronbach's alpha value for this variable is 0.96, reflecting the construct's high reliability and internal consistency. Entrepreneurial educational training was quantified with the scale validated by Yurtkoru et al. (2014), which consists of a personal assessment, or perception of how favorable (or unfavorable) the educational training has been received to generate creative business ideas, develop skills, abilities, and the necessary disposition to start a business, and if it has provided sufficient knowledge to devise and organize a business of their own. Cronbach's alpha coefficient was 0.90, demonstrating high reliability and internal consistency. The variable attitude toward entrepreneurship was evaluated using the scale proposed by Liñan and Chen (2009). After a debugging analysis of this scale, one of the five items was discarded. The final four-item scale showed a Cronbach's alpha value of 0.85, demonstrating the construct's reliability and internal consistency. The ten-item scale of Kickul et al. (2009) was used to measure entrepreneurial self-efficacy. The Cronbach's alpha coefficient for this construct was 0.87. A seven-point Likert scale was used for all variables. Appendix 2 details the scales and constructs used.

### *Control variables*

Well-recognized factors that, according to much of the literature, can influence intentions, perceptions, and attitudes toward entrepreneurship were included as control variables: Several studies have shown a strong influence of entrepreneurial background and roles in the nuclear family on the entrepreneurial intention of their children (Fellnhöfer & Mueller, 2018; Lindquist, Sol, & Van Praag, 2015). Students with this type of background exhibit more favorable attitudes toward entrepreneurship and higher self-efficacy and entrepreneurial intention (e.g., Nowinski & Haddoud, 2019, Lavolette, Lefebvre, & Brunel, 2012).

Gender seems to influence entrepreneurial intention. (van Ewijk & Belghiti-Mahut, 2019). Entrepreneurship is associated with masculine characteristics, aggressiveness, and high risk-taking (Haus et al., 2013). The male construct of entrepreneurship may inhibit female entrepreneurial intention and

behavior (Elliot et al., 2021). In addition, it was controlled for work experience as it is suggested that students with previous work experience exhibit a higher level of entrepreneurial intention (e.g., Fatoki, 2014; Miralles, Giones, & Riverola, 2016). On the other hand, according to Ajzen (1991), the social pressures exerted by certain people who are significant to the individual influence their entrepreneurial impetus and the need to meet their expectations. These provide behavioral guidelines for desirable or expected behavior (Fishbein & Ajzen, 2015). The three-item scale developed by Iakovleva and Kolvereid (2009) was used to assess the possible influence of “significant others.” This scale examines whether close or significant people influence an individual’s entrepreneurial intentions—Cronbach’s alpha coefficient of 0.96 proves this variable’s acceptable reliability and internal consistency. Finally, structural support, i.e., the perception of the degree of goodness (or threat) of the social, economic, and political context of a country, can favor (or inhibit) entrepreneurial intentions (Yurtkoru et al., 2014). Previous studies have found evidence that the environment perceived by college students influences their inclinations and attitudes toward starting a business (Bazan et al., 2019; Yao, Wu, & Long, 2016). Perceived structural support was measured using the construct developed by Yurtkoru et al. (2014)—a Cronbach’s alpha value of 0.86 provides evidence of internal consistency.

## **Analysis and results**

### *Reliability and validity of constructs*

In order to verify the reliability of the scales of the constructs, Cronbach’s alpha coefficient was calculated, which measures the internal consistency among its items (Anselmi et al., 2019). It was previously shown that the alpha values obtained for the four main variables of this model range from 0.85 to 0.96, suggesting satisfactory levels of internal consistency in the items of each variable. Evidence of convergent validity, i.e., the degree to which items of a specific variable correlate with each other, was also sought (Hair et al., 2010; Byrne, 2016). For this purpose, it was investigated whether the loadings of the items were significant in their respective variable, defined a priori, using structural equation modeling (cf. Hair, 2010). To summarize, all variable item loadings were statistically significant ( $p < .001$ ) within the corresponding variable, suggesting a high proportion of variance in common between items, thus demonstrating the presence of convergent validity.

In addition, discriminant validity, i.e., the degree to which a variable in the model is different from other variables, was examined (Hair et al., 2010). For this purpose, the suggestions of Henseler, Ringle, and Sarstedt (2015) were followed, and the computation of HTMT (Heterotrait-Monotrait Ratio of Correlation Matrix) correlation coefficients, which represent the mean of the correlations between

indicators of different constructs concerning the mean of the correlations of the indicators belonging to the same construct, was used as a criterion. According to Gold et al. (2001) and Henseler et al. (2015), there is evidence of discriminant validity in a set of constructs when the HTMT coefficients are below the 0.90 threshold for each pair of constructs examined. All HTMT coefficient computations were lower than the respective threshold (coefficients: 0.28, 0.31, 0.44, 0.48, 0.52, 0.81), which demonstrates the existence of discriminant validity among the variables of the model.

### *Evaluation of model fit and parameter estimates*

The minimum discrepancy ( $\chi^2/d.f= 1.96$ ) was computed and was found to be below the threshold of 3, suggesting an acceptable level of model fit (Weiber & Mühlhaus, 2014). Nevertheless, since Chi-square ( $\chi^2$ ) values are susceptible to sample size and model complexity, it is prudent to examine other indices to make more reasonable judgments about model goodness of fit (Weiber & Mühlhaus, 2014). Therefore, a series of indices recommended by Weiber and Mühlhaus (2014) (RMSEA, SRMR, TLI, CFI, IFI) were also computed, whose obtained values were compared with the corresponding and permitted thresholds for each index (Table 1). In summary, the indices show the existence of a well-specified model with sufficient goodness of fit.

Table 1  
 Evaluation of goodness of fit statistics

Indices	Threshold	Value
Tucker- Lewis Index (TLI)	$\geq 0.90$	0.933
Incremental Index of Fit (IFI)	$\geq 0.90$	0.944
Comparative Fit Index (CFI)	$\geq 0.90$	0.943
Root Mean Square Error of Approximation (RMSEA)	$\leq 0.08$	0.058
Standardized Root Mean Residual (SRMR)	$\leq 0.10$	0.091

Source: created by the authors

Most commonly used thresholds for each index, according to Weiber and Mühlhaus (2014)

Structural equation modeling based on covariance structures (SEM-CB) is a rigorous and reliable methodology. However, its use requires that the sample data necessarily comply with the principle of multivariate normality (Byrne, 2016) since, in severe deviations from multivariate normality, SEM-CB tends to produce inflated estimates, even in correctly specified models, and attenuations of the standard errors of the parameters computed under the maximum likelihood estimation criterion (Nevitt & Ancock, 2016), an estimation criterion generally adopted when using structural equations based on a covariance matrix. Although it is known that the larger the sample, the greater the probability that the data comply with this principle, there is no guarantee that every “large” sample complies with the principle. Nor can it

be categorically stated that samples considered “small” or “medium” do not comply with the principle because of their size. Therefore, beyond relying on the sample size, the correct thing to do is verify whether the multivariate normality principle is fulfilled or violated in the sample data. For this purpose, the normalized Mardia coefficient ( $d^2$ ), provided by SEM-CB in Amos software, was computed.

Following the procedure proposed by Khine (2013), to determine whether or not there is a violation of the multivariate normality principle in the data, the Mardia coefficient should be calculated and compared with the value of the factor  $p(p+2)$ , where  $p$  is equal to the number of variables observed in the model in SEM. If Mardia’s coefficient is less than the value of the factor, the data are considered multivariate normal and vice versa. The  $d^2$  value is 19.7 points, while the factor is 575. Given the results, the evidence suggests no violation of the multivariate normality principle in the sample data. Therefore, the sample does not represent a limitation for SEM-CB analysis. Additionally, it should be noted that studies on the effect of different sample sizes and different  $d^2$  values on parameter estimation have shown that estimates under the maximum likelihood criterion are reliable “even under conditions of multivariate non-normality” as long as the  $d^2$  value does not exceed 70 points (Rodríguez & Ruiz, 2008).

Once the multivariate normality principle was verified, a bootstrapping procedure was performed to estimate the parameters and check the stability of the p-values. Nevitt and Hancock (2001) state that at least 1000 interactions are required to obtain high precision of parameter estimates, p-values, and confidence intervals. This procedure was performed with 2 000 interactions. Furthermore, its use is recommended when the multivariate normality assumption is met in the data (Byrne, 2016).

## *Results*

Table 2 summarizes the results after bootstrapping. Hypotheses H1 to H4 were supported, but not hypothesis H5. Regarding the control variables, the results suggest a positive and statistically significant relation between the influence of relevant others and entrepreneurial intention. This research model comprehensively explains 68% of the entrepreneurial intention of business administration students. Appendix 1 shows the results of the model graphically.

Table 2  
 Model results (bootstrap application with 2 000 interactions)

Relations		Coef. β	Confidence intervals		P- value
			inferior	superior	
Educational training	→ Attitude toward entrepreneurship	.187	.056	.325	.008 *
Educational training	→ Perceived self-efficacy	.412	.264	.554	.001 *
Attitude toward entrepreneurship	→ Entrepreneurial intention	.667	.558	.773	.001 *
Perceived self-efficacy	→ Entrepreneurial intention	.263	.145	.385	.001 *
Educational training	→ Entrepreneurial intention	-.013	-.117	.090	.775 +
Family business background	→ Attitude toward entrepreneurship	.059	-.056	.166	.314
Family business background	→ Perceived self-efficacy	.110	-.013	.231	.076
Family business background	→ Entrepreneurial intention	.051	-.028	.132	.185
Structural support	→ Entrepreneurial intention	-.026	-.122	.070	.600
Work experience	→ Perceived self-efficacy	.078	-.035	.198	.152
Work experience	→ Entrepreneurial intention	-.020	-.100	.061	.623
Influence of other relevant parties	→ Attitude toward entrepreneurship	.359	.216	.481	.001 *
Influence of other relevant parties	→ Entrepreneurial intention	.162	.050	.266	.006 *
Gender	→ Attitude toward entrepreneurship	-.060	-.171	.056	.316
Gender	→ Entrepreneurial intention	-.026	-.106	.052	.490

Notes: \*: Indicates supported hypotheses and relations, +: Indicates unsupported hypothesis

## Discussion and conclusions

This study deals with the determinants of entrepreneurial intention in business management students. Whether business schools really train professionals intending to become entrepreneurs has been questioned in many regions of the world. The findings of previous studies in this regard have been mixed. A hypothetical research model based on cognitive theories of human intention was conceptualized and empirically tested. Structural equation modeling was used for the analysis, revealing the relative strength and importance of each hypothesized relationship written in the established model.

The results have several implications and suggest some directions for future research. The first and main contribution of this study is that it provides empirical evidence suggesting that entrepreneurial educational training positively impacts entrepreneurial intention but does so through an indirect mechanism. More specifically, the educational training students receive positively influences the attitudes they exhibit toward entrepreneurship and their perceptions of self-efficacy, which, at the same time, positively impact students' intention to pursue a career as an entrepreneur. A favorable perception by

students of their abilities to devise, organize, and manage a business provides them with a sense of control over the key activities for the emergence of their venture. This sense of control over tasks reduces risk and fosters a favorable perception of business viability. This, together with favorable attitudes toward this task, encourages the individual to start a business or consider a career as an entrepreneur.

This finding empirically supports the study of Basu and Virick (2008), who conclude that exposure to entrepreneurship education positively influences entrepreneurial self-efficacy and attitudes toward entrepreneurship in students. On the other hand, the findings contrast with the results obtained by Crant (1996), who showed evidence of a direct effect of entrepreneurial education on entrepreneurial intention in a sample of 181 MBA students. A plausible explanation for this discrepancy may be, in part, the fact that the author examined the influence of entrepreneurial education on entrepreneurial intentions without basing his studies on conceptual or explanatory theoretical frameworks on intentions, nor did he use cognitive variables. The results, on the contrary, show that entrepreneurial educational training does not directly influence students' entrepreneurial intentions.

The second contribution of this study is that it shows the desirability of modeling research on entrepreneurship on cognitive foundations and theoretical bases that explain human intention, which sheds light on the emergence of entrepreneurial intentions. The content, strategies, and pedagogical objectives of business school programs worldwide can vary substantially from one program to another. Even assuming the programs' contents are similar, the activities and the emphasis these programs give to entrepreneurship may vary significantly between schools and universities. For example, studies suggest that the lower levels of entrepreneurial intentions among students at universities in Munich and Vienna than at universities in North America may be attributed to differences in entrepreneurial education programs (Franke & Lüthje, 2004). It may be difficult to compare business schools that claim to foster entrepreneurship by the content of their programs and, above all, to determine what elements of the academic programs foster entrepreneurship in students and in what way. Cognitive frameworks offer general but solid theoretical foundations for explaining entrepreneurial intentions due to individual perceptions and attitudes. Therefore, the effectiveness of educational training programs could be compared and even judged based on the degree to which they favorably affect perceptions of viability and desirability.

The third contribution is methodological: the convenience of opting for structural equation procedures and multifactorial models that can impact entrepreneurial intention. How and why entrepreneurial intentions arise is complex and often multifaceted. Many factors can affect entrepreneurial intentions in individuals, either for better or worse. According to Hair, Black, Babin, and Anderson (2010), structural equation techniques allow the strength of all hypothetical relations and interrelations represented in the model to be simultaneously estimated. This simultaneity property of the analysis enables the



competitive computation of the estimates making evident the relative importance of each relation embodied in the model while emulating reality, where several factors affect all of them simultaneously.

Regarding the control variables, evidence was found that suggests that people significant to the individual influence attitudes toward entrepreneurship ( $\beta = 0.36$ ) and entrepreneurial intention ( $\beta = 0.16$ ), which supports Ajzen's (1991) theoretical precept. Interestingly, no other control variables influence attitudes and intentions toward entrepreneurship.

On another note, it is important to point out some limitations of this study. First, it was based on self-reported data. While self-reports are still conventionally used in the study of attitudes and motivations and have proven to be reliable, it should be recognized that their use may carry the risk of response bias and common methods bias (see common methods bias, cf. Donaldson et al., 2002; Podsakoff et al., 2003). This type of bias cannot be eliminated. They can only be mitigated. Therefore, the necessary measures were taken to reduce the possible effect of these biases (measures detailed in the methods section). Nonetheless, it is important not to ignore this limitation in this study.

Second, this study is context-specific. A sample of business management students was used, all of them Costa Rican and from the University of Costa Rica, so it cannot be ruled out that the findings of this study could represent unique patterns of the sample of students, country, and university in question. Therefore, recognizing differences between educational contexts and nations, these results cannot be generalized to other students or universities.

Finally, although the model in this study explains 68% of entrepreneurial intention, it also partially explains the possible determinants of entrepreneurial intention in students. Future lines of research could develop other models with cognitive variables (i.e., affect states, risk perceptions) that could influence attitudes and perceptions toward entrepreneurship or replicate this research in other contexts and countries.

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## Annex

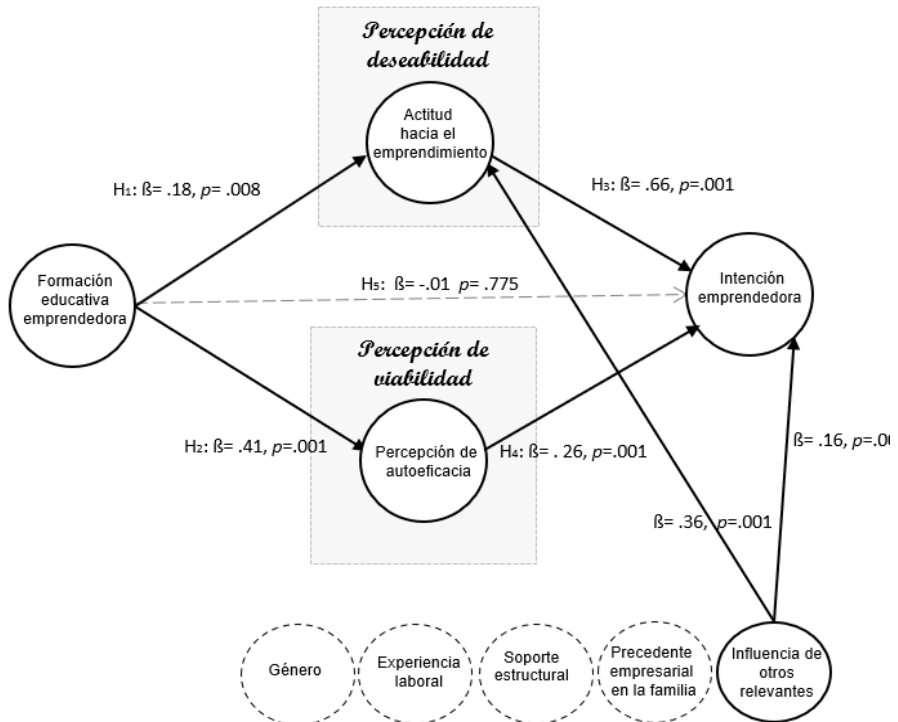


Figure A1. Research model and its supported relations  
Source: created by the authors

Table A1

Constructs and scales used	Cronbach's alpha
Entrepreneurial intention (source: Liñan and Chen, 2009)	.96
I have seriously thought about starting a company.	
I firmly intend to start a company someday.	
I will likely establish my own company in the future (in the next 15 years).	
I am ready to do anything to be an entrepreneur.	
I will do my best to start and run my own company.	
I am determined to start a company in the future.	
Attitude toward entrepreneurship (source: Liñan and Chen, 2009)	.85
Being an entrepreneur has more advantages than disadvantages.	
Being an entrepreneur would give me great satisfaction.	
Among several options, I would prefer to be an entrepreneur.	
If I had the opportunity and the resources, I would like to start a company.	
A career as an entrepreneur is attractive to me.	
Entrepreneurial self-efficacy (source: Kickul, Gundry, Barbosa, and Whitcanak, 2010)	.87
Identifying market opportunities for a venture	
Conceiving a unique idea for a business	
Formally writing a business plan	
Raising funds to start a business	
Convincing a bank to lend you money to start a business	
Convincing others to invest in your business	
Convincing others to work for you in your new business	
Devising a new business	
Running a small company	
Growing a company successfully	
Support from entrepreneurial educational training (source: Yurtkoru, 2014)	.96
My university education encourages me to develop creative ideas for entrepreneurship.	
My university education develops my entrepreneurial skills and abilities.	
My university education provides the necessary knowledge of entrepreneurship.	
Influence of "significant others" (source: Iakovleva and Kolvereid, 2009)	.86
My closest family members think I should pursue a career as an entrepreneur.	
My closest friends think that I could pursue a career as an entrepreneur	
The people who are most important to me think I should pursue a career as an entrepreneur	
Structural support (source: Yurtkoru, 2014).	.96
The structural system (in Costa Rica), including the private sector, encourages new entrepreneurs.	
In general, I believe the country's economy offers many opportunities for entrepreneurs.	