

**Entrepreneurial attitude in female Latin American university students:
Internal and external influences**

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Entrepreneurial attitude in female Latin American university students: Internal and external influences

Abstract

Purpose – The aim of this study is to examine the influence of locus of control, the university environment, and the social environment on the entrepreneurial attitude of female Latin American university students.

Design/methodology/approach – The study applies a Quan-qual design. The Quan section analyses the data of 10,781 female university students from eleven Latin American countries included in the GUESSS Survey, 2018. A hierarchical multiple regression analysis was applied. The qual section applies in-depth interviews for sequential methodological triangulation analysis.

Findings – The evidence indicates that locus of control, the university environment, and the social environment positively impact the entrepreneurial attitude of female Latin American university students. The most influential factor was locus of control.

Originality/value – This empirical study focuses on female university students and their propensity for business venturing and determines the main influences on their entrepreneurial attitudes.

Keywords: Entrepreneurial attitude, locus of control, university environment, social environment, female university students, GUESSS.

Paper type– Research paper

Actitud emprendedora en mujeres universitarias latinoamericanas: influencias internas y externas

Resumen

Objetivo – Este estudio tiene como objetivo examinar la influencia del locus de control, el entorno universitario y el entorno social en la actitud emprendedora de las estudiantes universitarias latinoamericanas.

Diseño/metodología/enfoque – El estudio aplica un diseño Quan-qual. La sección Quan analiza los datos de 10.781 estudiantes universitarias latinoamericanas de once países, incluidas en la Encuesta GUESSS, 2018. Se aplicó un análisis de regresión jerárquica múltiple. La sección cualitativa aplica entrevistas en profundidad para un análisis de triangulación metodológica secuencial.

Resultados – La evidencia indica que el locus de control, el entorno universitario y el entorno social impactan positivamente en la actitud emprendedora de las estudiantes universitarias latinoamericanas. El factor más influyente fue el locus de control.

Originalidad/valor – Este estudio empírico se centra en las estudiantes universitarias y su propensión a emprender y determina las principales influencias de su actitud emprendedora.

Palabras clave: actitud emprendedora, locus de control, entorno universitario, entorno social, universitarias, GUESSS.

Atitude empreendedora em universitárias latino-americanas: influências internas e externas

Resumo

Objetivo – Este estudo tem como objetivo examinar a influência do locus de controle, ambiente universitário e ambiente social na atitude empreendedora de estudantes universitárias latino-americanas.

Desenho/metodologia/abordagem – O estudo aplica um desenho Quan-qual. A seção Quan analisa os dados de 10.781 universitárias latino-americanas de onze países, incluídas na Pesquisa GUESSSS, 2018. Foi aplicada uma análise de regressão múltipla hierárquica. A seção qual aplica entrevistas em profundidade para uma análise de triangulação metodológica sequencial.

Resultados – As evidências indicam que o locus de controle, o ambiente universitário e o ambiente social impactam positivamente a atitude empreendedora das universitárias latino-americanas. O fator mais influente foi um locus de controle.

Originalidade/valor – Este estudo empírico centra-se nas estudantes universitárias e na sua propensão para um empreendimento empresarial e determina as principais influências da sua atitude empreendedora.

Palavras-chave: atitude empreendedora, locus de controle, ambiente universitário, ambiente social, universitárias, GUESSSS.

1. Introduction

Research on the gender perspective in the entrepreneurial attitude and its determinants is key to delving into female university entrepreneurship's internal and external inducers. Bircher et al. (2020) mention as women entrepreneurs play a predominant but unrecognized role in the growth of economies. A McKinsey Global Institute report found that \$12 trillion could be added to global GDP by 2025 by promoting equality for women (McKinsey, 2015).

Studies on the factors that promote female university entrepreneurship have been scarce (Bonneville-Roussy *et al.*, 2019; Cadenas *et al.*, 2020; Di Paola, 2020), hence the importance of studying the role of female entrepreneurial attitudes in fostering entrepreneurship (Belas *et al.*, 2019; Laudano *et al.*, 2019). Studies on the determinants of entrepreneurship among women have highlighted such attitudes as their autonomy and their propensity to take risks when business venturing (Belas *et al.*, 2019; Laudano *et al.*, 2019).

Previous studies on the impact of gender and entrepreneurship indicate that, although female participation varies by country, women generally report less entrepreneurial intention (Smith et al., 2020), which is expressed through the entrepreneurial attitude as a predictor variable (Ayalew and Zeleke, 2018). In this regard, studies have even shown that social norms lead women to believe that entrepreneurship is more suitable for men (Rodriguez-Gutierrez et al., 2020), specifically highlighting that entrepreneurial intention is more affected by the personal attitude of women (Feder & Nițu-Antonie, 2017). On the other hand,

studies have highlighted that woman's perceptions of themselves and their environment play a more critical role in their entrepreneurial behavior (Langowitz & Minniti, 2007).

The influence of entrepreneurial attitude on student entrepreneurship has been studied along with other concepts such as family role models, age, type of degree, individual values, and university ecosystems (Bergmann *et al.*, 2016; Diaz Bretones & Radrigán, 2018; Morris *et al.*, 2017). Other authors recognize the influence of social structures, individual elements, and university courses on female entrepreneurship (Abalala, 2018).

Concretely, the literature has addressed internal influences associated with the generation of ideas, risk-taking, and proactiveness (Birkinshaw, 1999; Seborá & Theerapatvong, 2010). External influences, on the other hand, are tangible and intangible resources in the external environment (Menguc *et al.*, 2010) that have an impact on entrepreneurship (Seborá & Theerapatvong, 2010) and which the entrepreneur can perceive as barriers or support (Karimi *et al.*, 2017).

Authors like Karimi *et al.* (2017) validate the importance of studying personality and context in order to understand entrepreneurship. Likewise, the literature mentions that entrepreneurial attitudes are determined by different constructs, some of which are related to cognition and personality, while others are focused on contextual aspects (Suárez-Álvarez *et al.*, 2014).

These studies make no significant gender distinctions when analyzing the influence of internal and external environmental factors, such as locus of control (Asante & Affum-Osei, 2019; Caro-González *et al.*, 2017; Laudano *et al.*, 2019; Palmer *et al.*, 2019; Vamvaka *et al.*, 2020); the university environment (Zollo *et al.*, 2017; Meoli *et al.*, 2019; Pauceanu *et al.*, 2018); and the social environment (Ali *et al.*, 2019; Bergmann *et al.*, 2016; Diaz Bretones & Radrigán, 2018).

Context and gender issues (like lack of confidence and experience) could assist in overcoming barriers to venture creation and may help correct subjective male norms rampant in the field of entrepreneurship (Smith *et al.*, 2020). For Echchabi *et al.* (2020) to know the contexts in different countries and the focus on university women since these topics have not been studied and that if studied, it would allow knowing and improving the visibility of opportunities and programs to support them since these issues focus on the importance of women's entrepreneurship for economies, which opens up possibilities and interests in this regard (Bhatti *et al.*, 2021).

However, it is still important to explore the individual and contextual determinants (Bergmann *et al.*, 2016) of the entrepreneurial attitude of university students (Belas *et al.*, 2019), and especially in the Latin American context (López & Alvarez, 2018; Cancino *et al.*, 2020), where university entrepreneurship has been little studied (Herrera *et al.*, 2020; Leiva *et al.*, 2021; Lopez & Alvarez, 2018, 2019).

To examine the internal and external factors (Berger & Kuckertz, 2016) of entrepreneurial attitude (Muldoon *et al.*, 2019; Păunescu *et al.*, 2018; Chandra, 2018), the present study evaluates the influence of locus of control, the university environment, and the social environment on the entrepreneurial attitude of female university students in Latin America.

Women entrepreneurs represent approximately one in three growth-oriented active entrepreneurs today (GEM, 2020), and Latin America is no exception to these low rates of female entrepreneurship. This situation makes it relevant to study the effect of "gender" on the intention to undertake venture initiatives (Mehtap et al., 2017), particularly in the university environment. The literature has pointed to the less likeliness of university women students to start business activities and that the fear of failure is a significant obstacle for them creating a company. For Gupta et al. (2009), an essential factor in explaining the differences in the rate of entrepreneurship between men and women are gender stereotypes. The attributes associated with gender are the ones that, in many cases, set the tone for the probability of starting a business in the future (Sánchez Cañizares & Fuentes García, 2010). For De la O & Pulido (2020), recognizing female entrepreneurial activity's contributing factors could help improve Latin American public policies.

This subject is particularly relevant for university and academic sector actors that promote entrepreneurship and the related attitudes that should be fostered, especially from a gender perspective.

The paper is structured as follows. Section 2 presents the arguments that support the study hypotheses. Section 3 contains a description of the empirical method from a Quan-qual methodology. Section 4 presents the results, and the final section synthesizes and discusses the main findings and describes their practical implications and future lines of research.

2. Theoretical background and hypotheses

Jennings & Brush (2013) show that entrepreneurship is a gendered phenomenon, and that business activity is embedded in families as a result of a need or opportunity that entrepreneurs often pursue beyond economic profitability. For these authors, women are less likely to be entrepreneurs or self-employed than men. Additionally, DeTienne & Chandler (2007) found that men and women do not use human capital to identify business opportunities in the same way.

Nikou et al. (2019) assert that the existing theory suggests that entrepreneurship in women can be influenced by different factors when compared to men. Specifically, these authors found that conditions driving entrepreneurship are complex since there are multiple significant pathways (in terms of equifinality) that predict entrepreneurial intentions, with significant gender differences.

Brush et al. (2019) mention that, when it comes to entrepreneurship, women are at a disadvantage due to many aspects of the entrepreneurship ecosystem and have recommended in-depth study of the influences of these on female entrepreneurship.

This study explores an internal influence (locus of control) and two external influences (university and social environment) on entrepreneurial attitude. These topics are introduced below.

2.1. Locus of control and entrepreneurial attitude

Locus of control is the behavior that subjects perceive with regard to generalized expectations for control (Levenson, 1973). On the one hand, there is the internal locus of control that is associated with individuals who have control over the results of their achievements, the protection of their interests, and the implementation of plans with determination (Kroeck et al., 2010). On the other hand, there is the external locus of control, which is associated with

individuals who consider that situations are beyond their immediate control and, therefore, are more influenced by external factors (Anwar&Saleem, 2019; Kroeck et al., 2010; Rotter, 1966). For example, individuals will persist in an activity if they attribute their success to internal, stable, and intentional factors while attributing their failures to external, variable, or accidental factors (Gatewood et al., 1995).

Specifically, an individual's behavior depends on whether they receive a reward that is contingent on their behavior or independent of it (Rotter, 1966). More recently, research has shown that locus of control determines how individuals perceive the environment and reinforces their motivations with regard to their behaviors (Zigarmi *et al.*, 2018).

In management, locus of control has been studied from various perspectives, such as management styles (Runyon, 1973) and business behaviors (Asante & Affum-Osei, 2019). According to these perspectives, it influences people who aspire to business venturing. The results of Do & Dadvari (2017) suggest that people with a high locus of control are destined to venture and be good business decision-makers. The literature has also shown that the internal locus of control influences entrepreneurship through the mediating effect of human capital, whereby entrepreneurs can mitigate their weaknesses using social and human capital (Hsiao et al., 2016). Additionally, the specificity of resources and information is better as the start-up process of an enterprise progresses (Davidsson & Honig, 2003).

The theory of planned behavior posits that behavior is preceded by one's predisposition to carry out such behavior (Ajzen, 1991). This theory defines entrepreneurial attitude as a positive or negative personal assessment of a person's capacity to become an entrepreneur (Liñán & Chen, 2009). Entrepreneurial attitude determines how people react to certain situations and environmental influences (Krueger & Kickul, 2006). Empirical evidence associates entrepreneurial attitude with the way people perceive fear of failure, opportunities, skills, and knowledge (Bosma & Schutjens, 2011).

Specifically, the literature has emphasized that the elements that influence young university entrepreneurs' entrepreneurial attitudes and culture and their perception of entrepreneurship are different according to gender (Sánchez Cañizares & Fuentes García, 2010). For example, Gimenez-Jimenez et al. (2022) have recently highlighted that the importance of country-level contextual variables in entrepreneurship and the need to employ a gender perspective are critical aspects in supportive contexts such as access to networks and resources that drive entrepreneurship when studying nascent entrepreneurship, this study also finds gender as a mediating variable between environment and attitudes.

People with entrepreneurial attitudes tend to prefer self-employment (Segal *et al.*, 2005), have a positive view of their business ideas (Dohse & Walter, 2012; Palmer *et al.*, 2019), and have an innovative attitude towards entrepreneurship (Durán-Aponte & Arias-Gómez, 2015). Entrepreneurial attitude influences people's abilities to take advantage of opportunities and positively self-assess their capacities to create a company (Bosma & Schutjens, 2011) and influences other attitudinal variables (Muldoon *et al.*, 2019). Additionally, Kundu and Rani (2008) claim that gender factors significantly interact in determining entrepreneurial attitudes.

Zollo *et al.* (2017) show that entrepreneurial attitude is influenced by personality traits related to the propensity to take risks and locus of control; the latter is particularly important if there is an ambition to fulfill objectives or aspire to personal goals that would strengthen or increase entrepreneurial attitudes. Likewise, Laudano *et al.* (2019) find that locus of control positively impacts entrepreneurial attitude in Italian university students, who are often driven by the need for independence.

For Asante & Affum-Osei (2019), there is a direct and positive relationship between the locus of control and empowerment and capacity building of nascent entrepreneurs, which directly influences their entrepreneurial attitude. In particular, the literature has mentioned how a moderate locus of control can influence a high entrepreneurial attitude, which favors the acceptance of responsibilities and willingness to take risks to start and run businesses (Kundu and Rani, 2008). The literature also mentions how young women in Poland hold the idea of becoming entrepreneurs in high esteem when they have a medium-level entrepreneurial attitude (Packham *et al.*, 2010).

From all the previous arguments, the following hypothesis is postulated:

H1: Locus of control positively affects the entrepreneurial attitude of female Latin American university students.

2.2. University environment and entrepreneurial attitude

Gnyawali & Fogel (1994) develop an integrated framework for studying environmental conditions conducive to entrepreneurship. It consists of five dimensions of business environments and links these dimensions to core elements of the new business creation process. In these dimensions, a core focus has been how students' perceptions of their university context and entrepreneurial programs at the university impact their entrepreneurial intentions (Gieure *et al.*, 2019). Further, the university environment determines student interactions based on its practices, policies, and behaviors (Castillo *et al.*, 2006).

The literature has pointed to various factors contributing to the entrepreneurship of university students. For instance, empowering the role of university graduates as founders of innovative companies (Franke & Lüthje, 2004), and the intensity of entrepreneurial education, studying in a business-related field, and having entrepreneurial parents. (Holienska *et al.*, 2017). Furthermore, social attributes (Spigel, 2017), contextual factors that are individual characteristics (family business background, age, gender), and environmental factors such as university (Shirokova *et al.*, 2016). Finally, the strategic alignment of universities promotes an entrepreneurial culture (Herrera *et al.*, 2020) and enhances students' knowledge and skills (Robinson & Sexton, 1994; Orobia *et al.*, 2020).

University support is relevant (Dabic *et al.*, 2015) for significantly impacting entrepreneurial attitude through quality education, knowledge transfer, and the development of skills and competencies (Meoli *et al.*, 2019; Pauceanu *et al.*, 2018). Studies have shown how inducers such as the university context, the development of behaviors, and decision-making for establishing one's own business can encourage entrepreneurship. (Bergmann *et al.*, 2016a; Holienska *et al.*, 2017).

For Kisubi (2020), education has a positive and significant impact on entrepreneurial attitude, and his results suggest that the latter partially mediates the relationship between entrepreneurship education and entrepreneurial intentions, whereby the former is more effective for determining the latter via entrepreneurial attitude. Additionally, attitude generates changes in personality, skills, knowledge, perception, and experience, among others (Agarwal *et al.*, 2020), and attitude is highly relevant since it expresses the intention of an individual when undertaking venture initiatives (Ayalew and Zeleke, 2018).

University environment studies from a gender perspective demonstrate the greater value that female students attach to the university context (Wilson *et al.*, 2007; Diaz Bretones &

Radrigán, 2018), and how it significantly increases their perceived influence when compared to men, especially when entrepreneurship is promoted.

It should also be noted that while the university environment encourages entrepreneurship, and hence has a direct impact on entrepreneurial attitude, entrepreneurship is also enhanced by students' intentions to work on their own after graduating, their sense of autonomy, and their ambition to start their own businesses (Zollo *et al.*, 2017).

From all the above, the following hypothesis is postulated:

H2: The university environment positively impacts the entrepreneurial attitude of female Latin American university students.

2.3. Social environment and entrepreneurial attitude

The social environment is determined by the relationships between physical, natural, social, and cultural aspects that surround an individual and determine their interaction with others (Barnett & Casper, 2001).

The social environment refers to social groups and their influence on people's propensity to create a company (Autio & Wennberg, 2010), whose approval entrepreneurs generally seek in order to venture and to promote entrepreneurial ideals (Do & Dadvari, 2017; Holienka *et al.*, 2017). Liñán & Chen (2009) have stated that entrepreneurship is conditioned and favored by the social environment; the more this happens, the better it is carried out.

Therefore, the approval and influence of the social environment impact entrepreneurship and perceived motivation (Caro-González *et al.*, 2017; Abbasianchavari & Moritz, 2020). An entrepreneurial attitude helps make people able to run a business more efficiently (Păunescu *et al.*, 2018). Also, entrepreneurs who developed their ideas at university (Bergmann *et al.*, 2016; Ali *et al.*, 2019) help build the entrepreneurial ecosystem and keep it healthy. Moreover, positive support from society, family and friends configures entrepreneurial attitude (Gubik & Farkas, 2019).

Additionally, feeling integrated in the social context and building strong relationships help women to deal with gender structures, entrepreneurship, and challenges (Roos, 2019). Women perceive that it is more appealing to create their own company if they believe that their immediate environment favors entrepreneurship; they feel more empowered and encouraged to take risks (Caro-González *et al.*, 2017; Molino *et al.* al., 2018).

Thus, the following hypothesis is proposed:

H3: The social environment positively affects the entrepreneurial attitude of female Latin American university students.

Figure I

Proposed theoretical research model Internal and external influences of the entrepreneurial attitude in Latin American university women

<insert Figure I here>

3. Sample, definition of variables and method

3.1. Sample

The quantitative design of the study uses data from the 2018 Global University Entrepreneurial Spirit Students Survey (GUESSS), which is part of an international research project on the entrepreneurial intentions and activities of university students (Bergmann *et al.*, 2016; Brändle *et al.*, 2018; Lechuga Sancho *et al.*, 2020; Palmer *et al.*, 2021; Ramos-Rodríguez *et al.*, 2019). 208,636 students from 3,000 universities in 54 countries participated, including 67,938 (32.5%) from 433 universities in 11 Latin American countries. The sample for this study includes 10,781 female students from Latin America (Table I).

Table I

Detail of the study sub-sample taken from GUESSS 2018

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The female university students that made up the sample were of an average age of 25.5 years (SD = 5.9 years), specifically, 66.9% were aged between 19 and 25 years, 21% between 26 and 31 years, and 12.1% over 31 years. 89.3% were taking a bachelor's degree, 4.3% a master's, and 1% were taking doctorates; 5.5% were on other programs.

3.2. Variables

3.2.1. Dependent variable

The Liñán & Chen (2009) scale used by GUESSS was followed, which measures entrepreneurial attitude through five items on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree): being an entrepreneur implies more advantages than disadvantages to me; a career as an entrepreneur is attractive for me; if I had the opportunity and resources, I would become an entrepreneur; being an entrepreneur would entail great satisfaction for me; among various options, I would rather become an entrepreneur.

3.2.2. Independent variables

The independent variable locus of control is measured with Levenson's scale (1973), as used by the GUESSS study, through three items on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree): I am usually able to protect my interests; when I make plans, I am almost certain to make them work; I can pretty much determine what will happen in my life.

As in the GUESSS study, Franke & Lüthje's (2004) and Geißler's scale (2013) was used to measure the university environment through three items on a 7-point Likert scale (1 = not at all, 7 = very much): the atmosphere at my university inspires me to develop ideas for new businesses; there is a favorable climate for becoming an entrepreneur at my university; at my university, students are encouraged to engage in entrepreneurial activities.

To measure the social environment variable, House *et al.*'s scale (2004) is used following the GUESSS study. This consists of three items with opposing responses to choose from: In my social environment, a person's influence is based primarily on: ability and contribution to the social environment or authority of one's position; in my social environment, followers are expected to: question leaders when in disagreement or obey leaders without question; in

my social environment, power is: shared throughout the social environment or concentrated at the top.

3.2.3. Control variables

Regarding control variables, the family role model is used as a dichotomous variable where 1 = father, mother, or both are entrepreneurs, and 0 = are salaried. Olmos & Castillo (2007) asked students if they have business or professional relatives (father, mother, siblings, or other direct relatives) to confirm whether the family role model theory is significant for entrepreneurs. Likewise, Criaco *et al.* (2017) show that entrepreneurial family role models (dependent variable) positively and significantly affect the perceived convenience of their offspring, and Diaz Bretones & Radrigán (2018) show how family role models are positively related to a greater intention to start a business. Finally, Palmer *et al.* (2019), found positive indirect effects of family role models on business intention through entrepreneurial attitude.

Type of degree is used as a dichotomous control variable where 1 = Business degree and 0 = Engineering degree. Previous studies (Diaz Bretones & Radrigán, 2018) have found that business students show a positive and significant correlation with a family role model, but students on other university programs do not. Likewise, Criaco *et al.* (2017) found that economics, business administration, and engineering degrees can have a positive impact when starting a business.

The selection of control variables responds to the relevant relationships between independent and dependent variables as described in the literature on entrepreneurship.

3.3. Quantitative Methodological Design

For statistical analysis, and following other studies (Lafuente *et al.*, 2010), confirmatory factor analysis was used to show the model's reliability and to identify convergent variables with regard to the different countries.

Given the nature of the data (samples by country), the possibility of applying a multilevel analysis was considered in order to visualize differences by country. The intraclass correlation coefficient was calculated to determine the proportion of the total variability of the dependent variable due to variability between groups (countries, in this study). The value obtained from this coefficient was 0.04, which is lower than the commonly accepted value of 0.15 (Hox, 2010). This suggests that there is not enough variability between groups to run a multilevel model.

Once the factorial structure of the constructs and the previous Hox (2010) test had been confirmed, a hierarchical sequential regression model was performed (Acock, 2014), according to the following equation (Greene, 2018):

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_k x_k + \epsilon_i; i = 1, 2, \dots, N, k = 4, 5 \quad (1)$$

where β_0 is the intercept; β_1 , β_2 , and β_3 are the estimated coefficients associated with the independent variables of the model (x_1 : Locus of control, x_2 : university environment, x_3 : social environment); β_k is the estimated coefficient for each control variable (Family role model and type of degree); ϵ_i is the error term in the model, and y corresponds to the dependent variable in the model (entrepreneurial attitude).

A hierarchical multiple regression analysis was applied (Morris *et al.*, 2017; Brändle *et al.*, 2018) to verify the individual contribution of each predictor to the dependent variable

due to its significance. The model was applied using the STATA statistical package, version 12.

3.4. Qualitative Methodological Design

The present study complements its analysis with a methodological triangulation (Greene *et al.*, 1989). Specifically, sequential methodological triangulation was used (Morse, 1991) to establish a more exhaustive analysis of the determinants that influence the entrepreneurial attitude of female university students and ensure more precise information (Bell *et al.*, 2018).

Nine university students from Latin American countries—Argentina, Chile, Colombia, Costa Rica (2), Ecuador, Peru, Uruguay, and Mexico—who participated in GUESSS 2018 were contacted. Rather than randomly, these were selected based on the purpose of the study (Greene *et al.*, 1989), namely the influence or not of the determinants on their level of entrepreneurial attitude.

The interviews were conducted between January 4 and April 16, 2021. They lasted an average of 25 minutes, and were recorded and fully transcribed. From an analysis of the responses, the behavior of the study variables was broken down into subsections.

4. Results

4.1. Quantitative analysis

Table II shows the correlations between variables. The results of the hierarchical regression models are detailed in Table III. Model 1 considers only the control variables; independent variables were added one by one in the following models.

The control variables have a significant influence on the entrepreneurial attitude of female university students in Latin America. For both family role models and type of degree, the model fits ($F(4.10781) = 60.64$, $p < 0.001$). The control variables in the model (Table III, model 1) explain 1.1% of the variability of entrepreneurial attitude.

Model 2, which includes locus of control, adjusts ($F(2.10777) = 485.63$, $p < 0.001$) and explains 14.1% of entrepreneurial attitude. In this model, 13% more variance of the dependent variable is explained than in Model 1. In this case, there is a statistically significant positive effect of locus of control on entrepreneurial attitude ($\beta_1 = 0.358$, $p < 0.001$). Research hypothesis *H1* is thus confirmed.

In Model 3, the university environment variable is added; this model adjusts ($F(3.10776) = 429.01$, $p < 0.001$) and explains 15.9% of entrepreneurial attitude. In this model, 1.7% more variance of the dependent variable is explained than in the previous model. In this case, there is a statistically significant positive effect of university environment on entrepreneurial attitude ($\beta_2 = 0.138$, $p < 0.001$). Research hypothesis *H2* is thus confirmed.

Finally, Model 4 includes the social environment variable. It adjusts ($F(4.10775) = 542.53$, $p < 0.001$), and explains 21.5% of the variability of entrepreneurial attitude. In this model, 5.5% more variance of the dependent variable is explained than in Model 3. In this case, there is a statistically significant positive effect of social environment on entrepreneurial attitude ($\beta_3 = 0.238$, $p < 0.001$), thus confirming *H3*.

Additionally, the effect of each independent variable on the dependent variable (Acock, 2014) is determined through the standardized beta coefficient. Locus of control has a

moderate effect ($\beta = 0.27$, $p < 0.001$), university environment has a weak effect ($\beta = 0.10$, $p < 0.001$) and social environment has a moderate effect ($\beta = 0.25$, $p < 0.001$).

Table II

Correlations between variables, N = 10781

<insert here>

Table III

Results of hierarchical regression models, N = 10781

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4.2. Qualitative analysis

The qualitative analysis was based on in-depth interviews with nine female university students whose entrepreneurial attitude was measured between medium to high according to the scale proposed by Liñán & Chen (2009). Conversations were guided to determine the influence of the determinants studied and their association with an entrepreneurial attitude. The respondents' details are presented in Table IV; Table V shows a summary of the influence of the determinants on the interviewees' entrepreneurial attitudes.

Table IV

Qualitative Analysis: Characteristics of the Students, N = 9

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Table V

Qualitative Analysis: Influence of determinants on Entrepreneurial Attitude, N = 9

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The interviewees verified that locus of control, the university environment, and the social environment are perceived to influence their entrepreneurial attitude. Even though the level of influence of each determinant may vary in each case, all interviewees agree that all determinants influence their entrepreneurial attitude.

The most influential factor was the locus of control. For example, one of the interviewees said, *"I feel that your capacity and personality influence how you deal with your goals, especially those related to entrepreneurship since you accept the challenge of making what you want to achieve come true"* (A1). University women with a high entrepreneurial attitude indicated that locus of control influences them the most, as the following interviewee illustrates well: *"My personality drives me to do things, achieve goals ... I'm not afraid of*

exploring options...” (A8). This is especially so when planning and prioritizing opportunities: *“Being very organized, and planning well... especially when it comes to my interests, are very important for me when meeting my objectives”* (F5). This supports Model 2 (Table III), by showing that the locus of control positively affects the entrepreneurial attitude of female university students.

The students feel that the university environment drives their entrepreneurial attitude, which is consistent with Model 3 (Table III). Most of them value entrepreneurship courses, teacher motivation, a direct invitation to entrepreneurship, and becoming independent, as exemplified by the following statement: *“There are also teachers who motivate you to become independent... they tell you not to depend on an employer”* (A5). The students also emphasize the need to strengthen the university environment in different ways in order to foster an entrepreneurial attitude, which includes the need to understand students better, make entrepreneurship more experiential at university, and provide clear pathways for those who want to venture and for those who do not.

Regarding the social environment, Model 4 (Table III) is also confirmed, since this variable positively affects entrepreneurial attitude by making students confident and inspiring them, as illustrated by the following statement: *“For me, there is a very close relationship; if my family, my boyfriend, my friends support me, I feel better, it gives me more strength, I forget a little about my fear of being wrong and instead think that I have the full capacity to do things the best way and strengthen my attitude”* (A6).

5. Discussion and conclusions

This study evaluates the influence of locus of control, the university environment, and the social environment on the entrepreneurial attitude of female Latin American university students. In general, the empirical results show that the determinants are directly related to entrepreneurial attitude. A significant influence of locus of control was established, in line with Zigarmi *et al.* (2018). The results show how a high locus of control favors individuals’ capacities and attitudes towards entrepreneurship, as similar studies have shown (Do & Dadvari, 2017; Asante & Affum-Osei, 2019). Moreover, aspects related to personality, such as locus of control, represent better attitudes, as stated by Muldoon *et al.* (2019), or affects planning that impacts entrepreneurship, as mentioned by Contin-Pilart *et al.* (2020), and have a positive effect on the performance of entrepreneurial initiatives.

This study reveals the impact of this relationship on the female university population in Latin America, which is also consistent with previous studies (Laudano *et al.*, 2019; Vamvaka *et al.*, 2020). Evidence indicates that university students tend to show behavioral traits towards expectations and opportunities (locus of control) that would positively reinforce their motivations and entrepreneurial attitude.

Regarding the university environment, the results of this study are consistent with previous studies (Spigel, 2017; Bergmann *et al.*, 2016; Holienka *et al.*, 2017) since this important ecosystem encourages an entrepreneurial attitude. We can therefore claim that the support given by the university is relevant, as stated by Dabic *et al.* (2015). From a gender perspective, the university environment fosters the desire among women to learn about

entrepreneurship, which they view as supportive and value very highly (Barral *et al.*, 2018; Diaz Bretones & Radrigán, 2018).

Finally, the social environment is decisive for the entrepreneurial attitude of female students; they react to the support of their close family, friends, and fellow students. These results are consistent with the existing literature (Caro-González *et al.*, 2017; Diaz Bretones & Radrigán, 2018; Molino *et al.*, 2018; Pauceanu *et al.*, 2018; Gubik and Farkas, 2019; Abbasianchavari & Moritz, 2020), mainly on how the approval of the social environment can influence the entrepreneurial attitude of female university students.

This study has practical implications for Latin American universities. In the first instance, and concerning the variable locus of control, entrepreneurial offices/programs or faculty members may diagnose female student entrepreneurship capabilities and their expectations on entrepreneurship, their inclination towards entrepreneurship, and their business creation expectations. As a result, the faculty members and people in charge of entrepreneurial offices/programs could have a personality factor profile of their female students that may set the tone for and further develop the entrepreneurial initiative. The preceding is reinforced with mentions that the theory has already made, that individuals will continue an activity if they attribute the reasons for their success to internal, stable, and intentional factors (Gatewood *et al.*, 1995).

In second place and considering the influence of the university environment, the implementation of exercises aim to perform or recreate business ventures in real contexts close to the female students may foster relationships and knowledge exchange between university and active female entrepreneurs, which could promote an entrepreneurial culture as mentioned (Herrera *et al.*, 2020), with a focus on real situations and examples promoted by the mentors and enhances the knowledge and skills of the students (Robinson & Sexton, 1994; Orobia *et al.*, 2020).

As a third implication, universities may consider supporting a more dynamic and practical learning program environment. For example, methodologies could consider the exchange of experiences with active entrepreneurs and case studies of real enterprises to achieve a better balance between theory and practice and to mediate between entrepreneurial education and entrepreneurial intentions, as Kisubi (2020) has pointed out.

Furthermore, in fourth instance, we therefore suggest that the social environment should directly influence women's entrepreneurial attitudes through support programs that should include female mentors that have embarked on entrepreneurial careers and can serve as examples for female students, because support and motivation are essential for entrepreneurship (Caro-González *et al.*, 2017; Abbasianchavari & Moritz, 2020). Particularly for women entrepreneurs, access to mentors may be an essential support factor in creating successful companies. For example, it has been shown that 79% of female STEMpreneurs with mentors accessed formal capital (IDB Lab, 2020).

Finally, it is vital for academia, in coordination with developmental actors, to measure the determinants that influence the entrepreneurial attitude of female university students through experimental research. Such approaches might include tests of workload under pressure, organizational skills, decision-making management, teamwork, work diligence, and changes

in the environment, as proposed by Brush et al. (2019) regarding the need to study the influences of female entrepreneurship in depth.

A limitation of this study is that it only focuses on three determinants and their influence on entrepreneurial attitude; future studies could emphasize other determinants such as networks, subjective vitality, and affective commitment. Additionally, it is advisable to study the perception of female university graduates who have gone on to start their own businesses in order to shed light on the main determinants of entrepreneurial attitudes among women. The qualitative design of this study only considered female students on business degrees, so it would be useful to include female students from other university programs.

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Figure I

Proposed theoretical research model Internal and external influences of the entrepreneurial attitude in Latin American university women

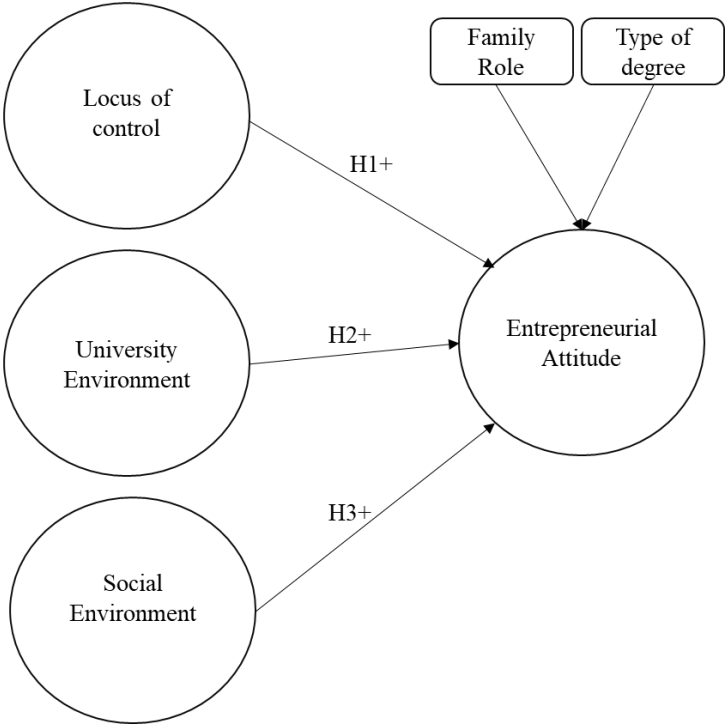


Table I*Descriptives of the study sample from GUESSS 2018*

Country	Number of Universities	Number of Answers	Percentage	Sample	Total Answer Percentage
Argentina	26	2691	1,29	332	2%
Brazil	143	20623	9,88	3623	26%
Chile	30	7704	3,69	2163	16%
Colombia	65	15851	7,6	4275	25%
Costa Rica	85	7359	3,53	1820	13%
Ecuador	8	3702	1,77	825	5%
El Salvador	11	641	0,31	95	1%
Mexico	53	5173	2,48	1095	6%
Panama	8	3564	1,71	780	4%
Peru	1	121	0,06	21	0%
Uruguay	3	509	0,24	138	1%
Total	433	67938	32,56	10781	100%

Note: Sample distribution by country; it shows the number of universities, the number of answers, the answer percentage value, sample by country, and total percentage of answers.

Source: Based on Sieger *et al.* (2018)

Table II*Correlations between variables, N = 10781*

Variables	(1)	(2)	(3)	(4)	(5)	(6)
(1) Family Role Model	1.000					
(2) Type of career	-0.020*	1.000				
(3) Locus of control	0.055***	0.098***	1.000			
(4) University environment	0.045***	0.103***	0.273***	1.000		
(5) Social environment	0.035***	0.020*	0.286***	0.225***	1.000	
(6) Entrepreneurial Attitude	0.083***	0.062***	0.370***	0.233***	0.349***	1.000

Note: Results of variable correlations.

Variables are moderately associated with each other and with the dependent variable. They are statistically significant. Level of significance *p<0.05, **p<0.01, ***p<0.001

Table III*Results of hierarchical regression models, N = 10781*

Variable	Model1	Model 2	Model 3	Model 4
Family role model	0.167***	0.126***	0.117***	0.11***
Type of career	0.129***	0.056***	0.034***	0.044***
Locus of control		0.358***	0.322***	0.262***
University environment			0.138***	0.099***
Social environment				0.2384***
F-test	60.64***	485.63***	429.01***	542.53***
R2 (adjusted)	0.011	0.141	0.159	0.215
ΔR2 and F Test		0.130	0.017	0.055
		1304.15***	169.75***	528.71***
Observations	10781	10781	10781	10781

Note: Results of hierarchical regression models according to variables and determination coefficients show that the models are statistically significant. The individual weight of each predictor on the dependent variable is also verified according to their significance. Level of significance * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table IV*Qualitative Analysis: Characteristics of the Students, N = 9*

Student	Country	Age	Type of University	Career	Years in Career	Entrepreneurial attitude Level
A1	Argentina	25	Public	Public accounting	6	High
A2	Chile	24	Public	Commercial Engineering	4	High
A3	Colombia	23	Public	Business Administration	4	High
A4	Costa Rica	22	Public	Business Administration	4	High
A5	Costa Rica	24	Public	Business Administration	4	High
A6	Ecuador	21	Public	International Business	3	High
A7	Mexico	23	Public	Economy Business Administration and	5	Medium
A8	Peru	21	Private	Finance	5	High
A9	Uruguay	21	Private	International Business	4	Medium

Note: Profile of students in qual section.

Table V*Qualitative Analysis: Influence of determinants on Entrepreneurial Attitude, N = 9*

Student	Locus of control Level	Locus of control → Entrepreneurial Attitude	University Environment → Entrepreneurial Attitude	Social environment → Entrepreneurial Attitude
A1	High	Pr→ For Independence	Pr→ I am empowered and motivated as a student in terms of the entrepreneurial attitude	Af→ The social environment motivates me, supports me, and serves as an example
A2	High	Pr→ Play on strengths and have independence	Pr→ I am empowered and motivated as a student in terms of the entrepreneurial attitude	Af→ The social environment motivates me and gives me confidence
A3	Medium	Pr→ Challenges and a chance to be better	Pr→ I am empowered, challenged, and motivated as a student in terms of entrepreneurial attitude	Af→ The social environment motivates me, supports me, and gives me confidence
A4	Medium	Pr→ There are fears	Pr→ I am empowered as a student in terms of entrepreneurial attitude	Af→ The social environment serves as an example
A5	High	Pr→ Take advantage of capabilities and strengths	Pr→ I am empowered, challenged, and motivated as a student in terms of entrepreneurial attitude	Af→ The social environment motivates me, supports me, and gives me confidence
A6	High	Pr→ Take advantage of capabilities and strengths	Pr→ I am empowered, challenged, and motivated as a student in terms of entrepreneurial attitude	Af→ The social environment motivates me, supports me, and gives me confidence
A7	High	Pr→ Play on strengths and have independence	Ih→ My entrepreneurial attitude is limited and partially promoted	Af→ The social environment motivates and inspires me
A8	High	Pr→ Take advantage of capabilities and strengths	Ih→ My entrepreneurial attitude is limited and partially promoted	DAf→ Rather, I am driven into dependency relationships
A9	Medium	Ih→ There are fears and personality limitations	Pr→ I am empowered as a student in terms of entrepreneurial attitude	DAf→ In my environment, there is skepticism towards entrepreneurship.

Notes: Summary of the influence of determinants (locus of control, university environment, and social environment) on the entrepreneurial attitude of Latin American female university students. * Locus of control Level: Level of the determination capacity that defines your locus of control, Pr: Promotes, Ih: Inhibits, Af: Affects, DAf: Does not affect

