

# Self-confidence and fear of failure among university students and their relationship with entrepreneurial orientation

Evidence from Colombia

Self-confidence and fear of failure

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Received 16 January 2018  
Revised 17 March 2018  
Accepted 7 May 2018

# La autoconfianza y el miedo al fracaso de los estudiantes universitarios y su relación con la orientación emprendedora

Evidencias desde Colombia

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## Abstract

**Purpose** – The purpose of this paper is to identify the impact of features of personality such as self-confidence and fear of failure on the entrepreneurial orientation (EO) of university students enrolled on entrepreneurial education courses.

**Design/methodology/approach** – Variables related to risk-taking, innovativeness, proactiveness, as well as those related to self-confidence and fear of failure, are taken into account. Using linear regression, the authors investigate how self-confidence and fear of failure affect the EO of university students.

**Findings** – As pointed out by results, both self-confidence and fear of failure are determinants of the EO of university students. Self-confidence has a positive and consistent effect on the three dimensions of EO, whereas fear of failure has a negative effect on EO.

**Research limitations/implications** – It is not possible to assure that, in the medium and long term, individuals more prone to taking risks, innovating and proactivity will in fact become entrepreneurs. Also, even though it does not affect the relevance of the findings, it must be highlighted that this study has been carried out with a specific sample of students and results may vary in different contexts.

**Originality/value** – This study offers a new insight relating individual's self-perceptions and their impact on EO. Equally important, the findings of this paper offer relevant information for the design of academic programs aimed at strengthening students' personal aspects to promote self-confidence and tolerance to fear of failure as predictors of the EO in this collective.

**Keywords** Entrepreneurship education, Entrepreneurial orientation, Self-confidence, Fear of failure

**Paper type** Research paper



Academia Revista  
Latinoamericana de  
Administración  
Vol. 31 No. 3, 2018  
pp. 471-485

© Emerald Publishing Limited  
1012-8255  
DOI 10.1108/ARLA-01-2018-0018

## Resumen

**Propósito** – Esta investigación tiene como objetivo identificar el impacto de las características propias de la personalidad tales como la autoconfianza y el miedo al fracaso en el constructo Orientación Emprendedora (OE) de los estudiantes universitarios matriculados en cursos de educación emprendedora.

**Diseño/metodología/enfoque** – A partir de la información obtenida a través de encuestas aplicadas en diferentes programas educativos en la ciudad de Medellín, se consideran variables relacionadas con la asunción al riesgo, la capacidad de innovación y la proactividad, así como variables relacionadas con la autoconfianza y el miedo al fracaso. Usando el modelo de regresión lineal, investigamos como la autoconfianza y el miedo al fracaso afectan la OE de los estudiantes universitarios.

**Hallazgos** – Tomando en consideración nuestras hipótesis de investigación, los resultados indican que tanto la autoconfianza como el miedo al fracaso son determinantes de la OE de los estudiantes universitarios. La autoconfianza tiene un efecto positivo y consistente en las tres dimensiones de la OE, mientras el miedo al fracaso tiene un efecto negativo sobre la OE.

**Limitaciones/implicaciones de la investigación** – Este trabajo es un estudio exploratorio que investiga la relación de ciertas características de la personalidad con el desarrollo de la OE de estudiantes universitarios en el presente. Por lo tanto, no es posible asegurar que, en el mediano y largo plazo, los individuos más propensos a asumir riesgos, a innovar y a ser proactivos, se conviertan en empresarios. Por otro lado, se debe resaltar que este estudio se realiza con una muestra específica de estudiantes y los resultados pueden variar en diferentes contextos.

**Originalidad/valor** – Este estudio ofrece una nueva visión que relaciona las autopercepciones individuales y su impacto en la OE. Por otro lado, destaca la necesidad de una mayor investigación que colabore en la comprensión del fenómeno emprendedor utilizando los hallazgos para crear un entorno que respalde la actividad emprendedora en las universidades. Adicionalmente, ofrece información relevante para el diseño de programas académicos orientados a fortalecer los aspectos personales de los estudiantes, con el objetivo de promover la autoconfianza y la tolerancia al miedo al fracaso como predictores de la OE de este colectivo.

**Palabras clave** Educación emprendedora, Orientación emprendedora, Autoconfianza, Miedo al Fracaso

**Tipo de papel** Trabajo de investigación

## Introduction

Since the 1990s, entrepreneurial activity has been perceived as a motor for economic and societal development around the world (Audretsch *et al.*, 2006). This has led to the promotion of entrepreneurship being considered a factor to take into account for the proposal of public policy (Acs *et al.*, 2016), and in general within such measures which aim to give rise to productive entrepreneurs and nourish the entrepreneurial spirit. It is in regard to this point that entrepreneurship education becomes relevant as one of the most efficient mechanisms with the greatest impact potential (Liñán, 2004).

Entrepreneurship education exists as a way to boost the entrepreneurial and innovative spirit under the premise that it is possible to acquire facets of entrepreneurship beyond being an inherent condition to each individual; that is, entrepreneurship like any other discipline can be assimilated (Drucker, 1985). Aware of this, the models of higher education around the world have incorporated entrepreneurship as a fundamental element of their academic programs (Lima *et al.*, 2015; Iglesias *et al.*, 2016), forging individuals capable of not only creating new companies (Elert *et al.*, 2015; Hasan *et al.*, 2017), but also with abilities to identify and generate opportunities in those already established (Gundry *et al.*, 2014), therefore developing skills toward entrepreneurial orientation (EO).

EO is defined as the behavior toward innovation, proactivity and risk assumption (Covin and Slevin, 1991) has been widely addressed in the entrepreneurial literature (Rauch *et al.*, 2009; Anderson *et al.*, 2015), and its focus has been destined mainly toward business management and strategic management (Semrau *et al.*, 2016; Linton and Kask, 2017; Yoon and Solomon, 2017). Within the context of entrepreneurship education, the use and analysis of the EO construct has been based on the effectiveness and efficiency of the different curricular programs aimed at promoting entrepreneurship, and how this is affected by regional and socio-cultural conditions (Frank and Korunka, 2005; Alvarez *et al.*, 2006). However, the study of features associated to the personality in the environment of entrepreneurship education and its link with the dimensions of EO, has not, to date, been exploited.

As such, this research aims to identify both the impact of features pertaining to the personality such as self-confidence and fear of failure in the EO construct of university students enrolled in entrepreneurship education courses. To do so, variables related to risk-taking, innovativeness, proactiveness, as well as those related to self-confidence and fear of failure, are taken into account, from the information obtained through surveys applied in different educational programs in the city of Medellín.

The second section presents the theoretical framework, previous studies and the proposed hypotheses. The third section describes the research design. The analysis and the results are presented in the fourth section and the conclusions, discussions and implications of the findings in the fifth section.

### **Theoretical framework, previous studies and hypotheses**

The entrepreneur is considered the most important actor in a modern economy (Lazear, 2006), and this has captured the interest and attention of academics and policy-makers with the intention of understanding the motivations of the individual and encouraging the entrepreneurial activity, respectively (Stamboulis and Barlas, 2014). Therefore, current theories about economic growth include entrepreneurial promotion as one of its most important instruments (Liñán and Rodríguez, 2004), with entrepreneurial education being one of the most efficient strategies with the most potential impact (Liñán, 2004).

The importance of entrepreneurial education lies in its capacity to provide individuals with a sense of independence and self-confidence, while granting knowledge to improve their capacity to perceive or develop new opportunities (Raposo and Do Paço, 2011; Sánchez, 2011). Thus, access to abilities and necessary knowledge is granted through entrepreneurial education to initiate and make a new businesses grow, which is the same as determining the EO, referring to the processes, practices and decision-making that lead to a new concept of entrepreneurship (Lumpkin and Dess, 1996).

EO refers to the tendency to support new ideas and to foster creative process aimed and developing new products or services (innovativeness), risk-taking propensity and proactive actions, anticipating and pursuing new business opportunities (Miller, 1983; Covin and Slevin, 1991; Wiklund and Shepherd, 2003; Riviezzo, 2014). Thus, innovativeness reflects the trend toward the support of new ideas, novelty, experimentation and creative processes in general, leaving those already established practices and technologies aside (Lumpkin and Dess, 1996). Meanwhile, risk-taking is represented in the willingness to assign financial resources to projects with an uncertain outcome, and is related with the permanent search for new opportunities (Riviezzo, 2014). In turn, proactiveness refers to the capacity to assume an anticipatory stance and respecting the future wishes and needs of the market, thus achieving a competitive advantage (Lumpkin and Dess, 1996).

Research regarding EO and its multidimensional conceptualization has occupied an important place in the context of research in recent years, and is a prominent field of analysis for academic researchers (Rauch *et al.*, 2009). Recently, studies validated EO construct with three classical dimensions (innovativeness, proactiveness and risk-taking) and proved that the EO has a positive effect on firms and economic growth (Martins, 2016; Mthanti and Ojah, 2017). Equally important, scholars pointed out that self-efficacy and EO are positively and directly associated with the performance of organizations, whereas creativity and organization performance are fully mediated by EO (Khedhaouria *et al.*, 2015). Therefore, the relationship between EO and firm performance has been broadly covered in the literature (e.g. Tang and Tang, 2012; Wales *et al.*, 2013a, b; Jiang *et al.*, 2016; Shirokova *et al.*, 2016). However, recent studies associate the construct of EO with individuals' cognitive characteristics (e.g. Goktan and Gupta, 2015; Ibrahim and Mas'ud, 2016; Mert *et al.*, 2017).

*Self-confidence and EO*

Self-confidence has been considered as individual's self-perception of their skills and aptitude (Wilson *et al.*, 2007), and affects the perception of the individual in the achievement of his objectives (Kasouf *et al.*, 2015). In this sense, people with high self-confidence are more likely to pursue and persist a certain task or goal, compared to those individuals who have low self-confidence (Alam *et al.*, 2015). Self-confidence in entrepreneurial contexts suggests that it can predict the ability of individuals to start new ventures, as it reflects their beliefs that it is possible to do so (Pittaway *et al.*, 2011; Piperopoulos and Dimov, 2015), even though the course of action may be risky for others (Baron *et al.*, 2016).

Thus, taking into consideration the general notion of an entrepreneur, who is regarded as a person who prefers to develop his/her own businesses, a self-confident entrepreneur is expected to be able to reach the objectives he/she establishes (Koh, 1996) and to set more challenging goals (Baron *et al.*, 2016). As such, self-confidence is a relevant condition among entrepreneurs, particularly the emerging ones, and thus is considered as one of the determinant conditions of EO (Koellinger *et al.*, 2004; Arenius and Minniti, 2005).

By considering the dimensions of EO, we are confident that a person's own abilities are positively related with his or her innovation processes, and excess confidence is particularly and directly associated with said component through the introduction of pioneer products (Simon and Houghton, 2003). Regarding risks, project managers with high levels of confidence show low levels of risk awareness, which they usually assess optimistically, and thus are more willing to assume higher risks (Bryde and Volm, 2009; Fabricius and Büttgen, 2015). Lastly, there is a positive relationship between proactiveness and aspects of the individual's personality, such as extroversion, conscience, need for achievement and self-confidence (Claes *et al.*, 2005; Alam *et al.*, 2015). In particular, a self-confident person with the ability to implement new methods and the conviction to do so, will probably pursue proactive objectives (Parker *et al.*, 2010; Lin *et al.*, 2014).

Taking into consideration the context exposed, the following hypotheses are proposed:

*H1.* Students' self-confidence is positively related with their EO.

*H1a.* Self-confidence is positively related with risk-taking.

*H1b.* Self-confidence is positively related with innovativeness.

*H1c.* Self-confidence is positively related with proactiveness.

*Fear of failure and EO*

Fear of failure was conceptualized as the focus on generic feelings of failure, anxiety and disposition to avoid failure, worried about shame and humiliation (Cacciotti and Hayton, 2015). In entrepreneurship research, fear of failure has been examined in terms of economics and psychology, highlighting a negative impact on entrepreneurial decisions (Bosma *et al.*, 2007; Cacciotti *et al.*, 2016). In this sense, given that risk aversion can dominate an individual's decisions and the perception to fear of failure is a determinant in relation to the risks involved in starting a new project (Popescu and Maxim, 2014; Nitu-Antonie and Feder, 2015), a lower risk perception will increase the probability to of starting a business (Arenius and Minniti, 2005; Cacciotti *et al.*, 2016; Morgan and Sisak, 2016). People who are not afraid of the possibility to fail are willing to carry out processes differently, and those who are more afraid of risks tend to perform and carry out processes in a conventional way (Farashah, 2015; Ostapenko, 2015).

Entrepreneurial activity could be influenced by fear of failure not only in the decision to create a business, but also in terms of the selection of projects and the decision to carry this out, whereby the stigma associated with failure becomes an important determinant of entrepreneurship (Landier, 2005). Thus, fear of failure is a reason to avoid disappointment

and the shame associated to project failure; the greater the shame, the greater the incentives to avoid the failure that might occur in the beginning of the new entrepreneurship (Carsrud *et al.*, 2009).

Taking into consideration the effect of fear of failure, the following hypotheses are proposed:

*H2.* Students' fear of failure is negatively related with their EO.

*H2a.* Fear of failure is negatively related with risk-taking.

*H2b.* Fear of failure is negatively related with innovativeness.

*H2c.* Fear of failure is negatively related with proactiveness.

The relationships proposed in *H1* and *H2* are presented in Figure 1.

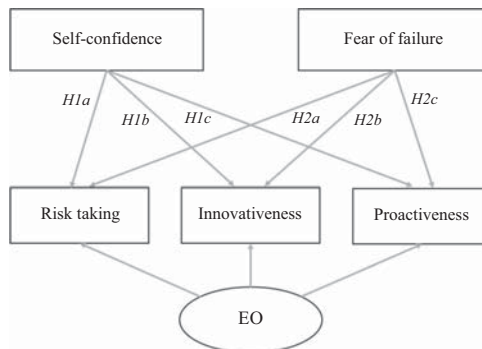
**Research design**

*Information collection*

The information used in the study is part of an annual survey implemented by EAFIT University in Medellin, to students who are enrolled on an entrepreneurship preparation course. EAFIT University has incorporated courses designed to promote entrepreneurial spirit in students on different programs. This is the case for the *Iniciativa y Cultura Empresarial* (Entrepreneurial Initiative and Culture) course, which is transversal to all the undergraduate programs offered by the university, and is part of the *Núcleo de Formación Institucional* (core institutional training program). Therefore, all the students at the university have to enroll in at least one subject that provides them with knowledge about entrepreneurial activity.

The survey is anonymous and students answer it online during the first two class sessions, minimizing biases that may affect the quality of the answers (such as inherent biases to the student's anonymity or answers influenced by the instruction they receive in subsequent sessions). Questions are closed, designed in a seven-point Likert scale (1 being the minimum point and 7, the maximum) and dichotomous questions (yes or no). The information identifies the position of the students regarding different aspects of entrepreneurship and is grouped into different sections. In this study, we consider the information for the construct of EO, which gathers the students' innovativeness, proactiveness and risk-taking behavior, as well as the questions that reflect their self-confidence and fear of failure, and demographic variables such as age and gender.

For this study, the information collected in 2016 is used, making up a sample of 688 observations, 656 of which were correctly submitted. From the surveyed population, 48 percent



**Figure 1.**  
Proposed model and  
relationship between  
self-confidence fear of  
failure and EO  
dimensions

are women and 52 percent are men, and 63 percent of the population was aged between 19 and 22. Furthermore, 61 percent of them were in their first three semesters of undergraduate studies. The school with the highest level of student participation was the school of management with 40.5 percent, followed by the school of engineering with 27.4 percent, the school of humanities with 12.2 percent, the school of economics and finance with 7.3 percent, the school of law with 6.9 percent and the school of sciences with 5.6 percent.

#### *Model variables*

*Age.* Age assumes the role of a control variable in the model to consider possible effects of the age difference between the students who answered the survey. This is a continuous variable with a mean of 20.21 years, and a standard deviation of 3.98. In the model, the logarithmic form is used ( $\ln\_age$ ) and this is justified in previous studies where the impact of age on individuals when deciding whether to start their own business or promoting intraentrepreneurship is stressed (Levesque and Minniti, 2006; Hatak *et al.*, 2015).

*Gender.* This is a control variable with dichotomous characteristics, which assumes the value of 1 when the subject is a man, and the value of 0 when the subject is a woman. The decision to consider gender a control variable in our regression model is justified given the different findings in previous studies, which show significant differences between men and women, taking into consideration aspects such as propensity toward innovation (Carter *et al.*, 2003), the disposition to assume more risks (Tan, 2008) and entrepreneurial intention (Crant, 1996).

*Self-confidence.* This research assumes self-confidence to be a human feeling of confidence in one's own qualities, skills and judgment (Gelaidan and Abdullateef, 2017). Within this context, the focus employed by Turker and Sonmez Selçuk (2009) has been used to measure self-confidence in students' actual level of self-confidence, and the possibility to successfully manage or carry out a future activity. Therefore, a dichotomous variable is proposed, which assumes the value of 1 when the student affirms he/she firmly believes in his/her own capacities and in the successful achievement of anything he/she sets out to do, and the value of 0 when otherwise affirmed.

*Fear of failure.* Fear of failure is constituted as a factor which inhibits behavior and acts as a barrier for entrepreneurial activity (Cacciotti *et al.*, 2016). Therefore, this research assumes the measurement of this variable based on the framework developed by Arenius and Minniti (2005), according to which the survey enquires into whether fear of failure would prevent individuals from starting a new business. Said measurement is framed within the context employed by the Global Entrepreneurship Monitor to identify the effect of fear of failure among the surveyed. Therefore, a dichotomous variable is propounded, which assumes the value of 1 when the student affirms that fear of failure would stop him/her from creating a business, and the value of 0 when otherwise affirmed.

*Entrepreneurial orientation.* Literature about EO validates and confirms that innovativeness, proactiveness and risk-taking are the most representative dimensions of this widely studied construct (Wiklund and Shepherd, 2005; Rauch *et al.*, 2009; Martins, 2016). However, the internal consistency of the survey is evaluated as a research method through the application of an exploratory factorial analysis to evaluate the factorial dimensionality and validity. Statistics such as a KMO of 0.638 (innovativeness), 0.680 (proactiveness) and 0.711 (risk-taking), as well as Bartlett's test of sphericity ( $p < 0.01$ ) support the idea of the validity of the application of a factorial analysis, and allows us to prove whether there are significant correlations among the variables.

Additionally, Cronbach's  $\alpha$  is applied to each set of questions that comprise the factors: innovativeness ( $\alpha = 0.700$ ), proactiveness ( $\alpha = 0.728$ ) and risk-taking ( $\alpha = 0.800$ ). Each one

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of the dimensions have been measured from three questions, and in all cases a coefficient  $\alpha$  equal or greater to 0.7 is observed, which indicates the internal consistency of said measures (Hair *et al.*, 2010).

### *Multivariate analysis*

The three dimensions of EO are the variables that depend on self-confidence and fear of failure in our model. These are independent variables and, according to the object of this study, have a direct influence on the levels of EO of the surveyed students. For this reason, we have opted for the multivariate analysis technique: linear regression. This type of analysis is adjusted to explain the effect that one or more independent variables may exercise over the dependent one (Hair *et al.*, 2010). The control variables (age and gender) are related with socio-demographic aspects and are constantly used in similar studies (Martins *et al.*, 2014; Iglesias *et al.*, 2016).

### *Techniques for the control of bias in the common method*

In studies that use information about individuals' organizations' behavior, different methods of bias that may influence the answering process have to be taken into account (Martins, 2016). There are two ways to control this influence: through research design, and by using statistical control techniques (Podsakoff *et al.*, 2003).

First, it is important to guarantee the anonymity of the individuals who take part in the survey to minimize common effects such as answer consistency (when the surveyed try to maintain a forced consistency in their answers), social convenience (the trend to answer aiming to obtain social acceptance over showing their real stance regarding the topic), mood (which may be emotionally positive or negative at the time of the survey), among others (Podsakoff *et al.*, 2003).

Second, at a statistical level, other control techniques have been used. One of the more broadly used techniques is the Harman factor test (Meade *et al.*, 2007; Martins, 2016). The basic hypothesis for this test is that if there is an important amount of common method variance, a single factor will emerge from the factorial analysis, or most of the covariance will focus on one of the factors (Podsakoff *et al.*, 2003). In our study, as expected, the results show three factors for the dependent variables, which show a total variance of 67 percent. Therefore, a single factor has not emerged from the Harman test, and also it has not been seen that a single factor has accumulated the totality of the variance. These results show the validity of the measures of the constructs used in the study.

## **Results**

Two variables were selected to explore the impact of the characteristics associated to personality regarding the development of the EO of university students: perceived self-confidence and fear of failure when undertaking entrepreneurial activities. From the surveyed population, 84.45 percent answered affirmatively to the question about self-confidence and the remaining 15.55 percent reflected low self-confidence when facing and dealing with new challenges. Regarding fear of failure, 39.79 percent of the students answered that they would not create a new business for fear of failure, whereas the remaining 60.21 percent said they would regardless of the possibility of failing.

Before the regression analysis, some possible correlations were observed between the variables. A coefficient of  $-0.133^{**}$  could be observed and, as expected, we found a negative and significant correlation between self-confidence and fear of failure. However, the magnitude of said correlation is marginal and does not represent problems of multicollinearity in the linear regression model (Hair *et al.*, 2010). On the other hand, a significant correlation was expected ( $p < 0.001$ ) between the dependent variables given that

they are validated in the literature as dimensions of the EO construct. Table I summarizes the main statistics (mean and standard deviation) and the matrix of correlation among the variables in the regression models.

To test *H1* and *H2* of the research, we resorted to multiple regression models, as shown in Table II. The analysis is structured in two steps. Step 1 is the base model, which contains only the demographic control variables (gender and age). Step 2 is the complete model, which contains the explicative variables (self-confidence and fear of failure).

Regarding the control variables, it was observed that gender (1 = man, 0 = woman) has a negative effect on risk-taking. However, this effect is positive in terms of the dimension of innovativeness, and not significant on proactiveness. Age had a positive relationship with innovativeness and student proactivity. There was no evidence of a significant relationship of age on risk-taking in the sample.

Regarding the hypotheses, the regression analysis shows that self-confidence exercises a positive and significant effect on the three dimensions of the EO, thus confirming *H1a*, *H1b* and *H1c*, for which we accept *H1*. Regarding fear of failure, it is observed that self-confidence has a negative and significant effect on all three dimensions of the EO supporting *H2a*, *H2b* and *H2c*, and therefore confirming *H2*.

This research allowed us to determine the impact of characteristics associated to personality over the constructs of EO, for university students enrolled on entrepreneurial education courses in the city of Medellin. That said, self-confidence has a direct effect on risk-taking, innovativeness and proactiveness, and therefore, those students with a higher degree of confidence in their skills and capacities have a higher disposition to carry out new ventures. On the other hand, fear of failure is a clear limitation to EO, which is explained by the inverse relationship between said cognitive aspect with the constructs risk-taking, innovativeness and proactiveness.

**Discussion and conclusions**

The purpose of this research was to inquire about the existence of a relationship between features of the personality and EO in university students. For this reason, particular emphasis was placed on two explicative variables: self-confidence and fear of failure. Furthermore, results show interesting relationships regarding the gender of the students in the sample.

According to the control variable, gender, our findings point to women being more willing to assume risk than men. This result reinforces the findings by Tan (2008), who highlights, from a study carried out in China, that women have a higher propensity to assume risks while undertaking bold actions in order to achieve higher profitability and future competitive advantage.

On the other hand, it is observed that men tend to be more prone to innovate than women. This is consistent with the results found by Carter *et al.* (2003), according to whom it

**Table I.**  
Summary of the statistics and correlation coefficients for the variables

Variables	Mean	SD	1	2	3	4	5	6	7
(1) Gender	-	-	1						
(2) Age	20.21	3.981	-0.023	1					
(3) Self-confidence	0.84	0.363	0.014	-0.005	1				
(4) Fear of failure	0.4	0.49	-0.093*	-0.042	-0.133**	1			
(5) Risk-taking	0	1	-0.111**	-0.026	0.159**	-0.196**	1		
(6) Innovativeness	0	1	0.081*	-0.064	0.162**	-0.166**	0.314**	1	
(7) Proactiveness	0	1	0.009	-0.066	0.176**	-0.146**	0.331**	0.532**	1

Notes: \**p* < 0.05; \*\**p* < 0.001



	Risk-taking		Innovativeness		Proactiveness	
	Control	Model	Control	Model	Control	Model
<i>Step 1: Control</i>						
Gender	-0.110*** (0.078)	-0.130*** (0.076)	0.081** (0.078)	0.066* (0.076)	0.009 (0.078)	-0.005 (0.077)
ln_age	-0.011 (0.302)	-0.009 (0.293)	0.076* (0.302)	0.078** (0.296)	0.075* (0.303)	0.077** (0.296)
<i>Step 2: Hypothesis</i>						
Self-confidence		0.136*** (0.105)		0.142*** (0.106)		0.160*** (0.106)
Fear of failure		-0.190*** (0.078)		-0.141*** (0.079)		-0.126*** (0.079)
R <sup>2</sup> model	0.012	0.073	0.012	0.058	0.006	0.052
R <sup>2</sup> adjusted	0.009	0.068	0.009	0.052	0.003	0.046
F value	4.079**	12.868***	4.072**	9.968***	1.869	8.959***

**Notes:** n: 656. The entries in the table belong to the standardized coefficients. The values in parentheses reflect the standard errors. \* $p < 0.10$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

**Table II.**  
Results of the  
regression analysis

is evidenced that men are more financially successful and have a higher level of innovation for the American environment than their female counterparts. Regarding the Colombian context, the differences found in terms of gender are coherent with previous studies which argued the existence of differences between men and women in what concerns entrepreneurial activity (Martins *et al.*, 2014). Besides, these differences are more disparate in Colombia than they are in average of Latin American and Caribbean countries (Pereira *et al.*, 2012).

Regarding the age variable, older university students seem to be more prone to innovation and proactivity, which would be justified given the likelihood that they have a higher degree of human capital from complimentary experiences and training, according to Bae *et al.* (2014), directly reflected in the attitudes and intentions of such individuals.

Considering the research hypotheses, we could observe that both self-confidence and fear of failure are determinants of the EO of university students. The effect of self-confidence has a positive and consistent effect on the three dimensions of EO, whereas fear of failure, as expected, has a negative effect on EO.

We observed higher levels of risk-taking, innovativeness and proactiveness in students who are confident. Self-confidence as a factor of risk-taking is explained by the optimism and positive expectation of achievements, which is considered a determinant personality characteristic for entrepreneurial activity. Regardless, it can induce the individual to evaluate risks in a biased way. In turn, their self-confidence and innovativeness is explained by the reduction of uncertainty carried by confidence itself; that is, the more confidence they have, the lower their perception of risk associated to a specific action, and, therefore, the more willing they are to test ideas, projects or processes. Equally important, a proactive individual aims to change their way of doing things, accepting conditionings but agreeing that their behavior can be more affirmative, with greater self-esteem, more security and self-confidence. Therefore, greater self-confidence allows the individual to express his or her thoughts in a coherent manner, and, therefore, create new alternatives, by adopting behaviors focused on new possibilities and options. Our findings are consistent and support previous studies (Simon and Houghton, 2003; Ares, 2004; Fabricius and Büttgen, 2015).

At the same time, a lower degree of risk-taking, innovativeness and proactiveness was observed in those students with high levels of fear of failure. The reverse relationship between fear of failure and risk-taking could be explained by the fact that those who are afraid of failure are less willing to assume risks. In the same way, the negative impact of fear of failure on innovativeness can be understood by considering that people more likely to innovate know that there is a chance of failing several times during the process, as doing things outside of the standard increase their chances of failing. It was also observed that the higher the fear of failure, the lower the level of proactivity. In this sense, proactivity is the need to get ahead of the consumer needs to obtain a competitive advantage over the competitors. Proactivity implies that errors and mistakes could be made during the process as it is a work of prospective, also involving a certain degree of uncertainty. Therefore, proactivity is a personality characteristic of those individuals with a certain degree of failure acceptance. Also, considering the fear of failure variable, our findings reinforce what has been highlighted in previous studies (e.g. Baregheh *et al.*, 2009; Popescu and Maxim, 2014; Riviezzo, 2014; Farashah, 2015; Nitu-Antonie and Feder, 2015; Ostapenko, 2015).

As mentioned above, this paper is an exploratory study that studies the relationship of certain personality characteristics with the development of the EO of university students in the present. Therefore, it is not possible to assure that in the medium and long term, individuals more prone to taking risks, innovating and being proactive, will in fact become entrepreneurs. Future longitudinal research with similar objectives to those posed in this study would lead to a greater understanding of important aspects of students' personality characteristics and emotions, and the development of their orientation towards entrepreneurship.

On the other hand, even though it does not take away relevance from the findings, it must be highlighted that this study has been carried with a specific sample of students in a particular university and results may vary in different contexts. Therefore, it would be interesting to replicate similar studies in different Colombian universities and, more importantly, cross-country comparisons with Latin American universities. Future research could use data from global surveys such as the Global University Entrepreneurial Spirit Students' Survey that has included nine Latin American countries in its last edition (Álvarez *et al.*, 2016); studies focusing on the theory of planned behavior; and, more specifically, on entrepreneurial intention.

Lastly, in this study only two aspects of the personality were considered as predictive variables of EO. We welcome studies that observe students' education in entrepreneurship by taking into account different cognitive characteristics such as emotion and the capacity to learn from failure, as well as other variables related to the influence of role models. By doing so, more explanatory variables are taken into account, which could increase the model's explanatory capacity and robustness.

#### *Implications for universities*

This study highlights, on the one hand, the need for further research that contributes to the understanding of the entrepreneurship phenomenon, using the findings to create an environment that supports the entrepreneurial activity in universities. On the other hand, it offers relevant information for the design of academic programs aimed at strengthening personal aspects of the students, to promote self-confidence and tolerance to fear of failure as predictors of the EO of this collective. This research has shown the importance of the stimulus of cognitive conditions regarding self-confidence and tolerance toward failure to foment the entrepreneurial spirit in formative university surroundings, given the possibility to educate students to become more confident and visualize a possible failure as part of the learning process for their futures as entrepreneurs.

Another important issue is that universities provide professors with the required training and suitable tools to motivate students and improve the levels of EO in young people (trainers training). As has been highlighted in previous studies (see Iglesias *et al.*, 2016), to achieve the above it is advisable to promote specific training programs which target professors, with a particular emphasis on entrepreneurship and intraentrepreneurship as a skill. Also, promoting the exchange of experience between higher education professors and different actors of the entrepreneurial ecosystem by participating in conferences, meetings and projects dedicated to entrepreneurship and small business (Lima *et al.*, 2015).

Decisions made in academia are precisely the ones that will allow progress, aiming to improve the quality of higher education, especially that which is oriented toward entrepreneurship training.

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