

Entrepreneurial intentions among university students: The moderating role of creativity¹

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Abstract

Many institutions have carried out different policies to promote entrepreneurship as a way to stimulate economic development. However, educational policies and stimulus for entrepreneurship do not produce the same effects on different people. This is a source of inefficiencies. The aim of this paper is to deepen into the analysis of the effects of one key personal characteristic on entrepreneurial behavior: creativity. We analyze the effects of creativity on the generation of entrepreneurial intentions. A moderation analysis was conducted on data obtained from a final sample of 502 undergraduate students. The results indicated that the creativity not only has direct influence on attitudes and perceived control but that it also has a positive moderating effect on the influence of attitudes on entrepreneurial intentions. These results highlight the relevance of the interactive effects of personal characteristics on entrepreneurial behaviors. Several implications for entrepreneurship education have been drawn from this study.

1. Introduction

The topic of entrepreneurial intentions is a well-established area of research in the field of entrepreneurship. Numerous works have highlighted the relevance of models based on intentions to explain entrepreneurial behavior (Krueger et al., 2000; Liñán and Chen, 2009).

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The models that have been extensively applied to the study of entrepreneurial intention are the Shapero and Sokol's Entrepreneurial Event model (SEE) (1982), and the Ajzen's Theory of Planned Behavior (TPB) (1991) (Hu et al., 2018, Nabi et al., 2016). In addition, more recently, works on motivation theory in the organizational behaviour literature have explored the close relationship between intention models and the Expectancy Theory (Fitzsimons and Douglas, 2011; Barba-Sánchez and Atienza-Sahuquillo, 2017). While these models overlap to a large extent, the TPB model is the predominant model (Fayolle and Liñán, 2014; Ramos Rodríguez et al., 2019); it has been used in a greater number of works across different disciplines (Pérez Macías et al., 2019; Padilla Angulo, 2019), allowing researchers to compare and validate the results (Armitage and Conner, 2001; Sheeran, 2002), and it has shown its relevance and robustness in predicting entrepreneurial intentions and behavior (Kautonen et al., 2013). According to this model, entrepreneurial intentions are determined by the attitude toward entrepreneurship, perceived behavioral control (PBC), and subjective norms.

However, these models are not able to explain a relevant part of the variance of the entrepreneurial intentions variable. In part, this may be because potential entrepreneurs do not follow a single pre-established path toward the decision to create a company (Lichtenstein et al., 2007). They face this complex decision (Alvarez and Barney, 2005; Busenitz and Barney, 1997; Stone and Brush, 1996) in different ways, depending on their different cognitive mechanisms, which are the key to the process of obtaining, storing, transforming, and interpreting information and finally making a decision (Baron, 2004).

Thus, researchers in this area have pointed to the need to use cognitive approaches, complementary to theories based on behavior, to advance the understanding of the determinants of entrepreneurial intentions (Fayolle and Liñán, 2014; Füller et al., 2018; Liguori et al., 2018). Hence, an interest in analyzing the influence of personal-level variables on the development of the cognitive processes that lead to the formation of intentions has recently been awakened

(Brandstatter, 2011; Esfandiar et al., 2019; Espiritu-Olmos and Sastre Castillo, 2015; Füller et al., 2018; Obschonka et al., 2017). Moreover, a focus on the personal level would be especially productive for inferring implications for practice in the improvement of entrepreneurship educational programs aimed at young people (Obschonka and Stuetzer, 2017).

One of the personal traits that can have the greatest effect on the entrepreneurial behavior generation process is creativity (Gielnik, Frese, Graf, and Kampschulte, 2012; Weinberger, Wach, Stephan, and Wegge, 2018). This variable is closely related to the cognitive processes linked to entrepreneurship, since it allows people to make new associations with existing information and generate new ideas (Pryor et al., 2016), which may be useful in the identification of new business opportunities (Gielnik et al., 2012; Shane, 2003). Thus, creativity has been considered to be central to the formation of entrepreneurial intentions (de Clerq, Honig, and Martin, 2013; Ho et al., 2011; Shane and Nicolau, 2015; Van Ness and Seifert, 2016).

Despite the recent interest in this subject, as far as we know, except for the work by De Clerq et al. (2013), which analyzed the moderating effects of the passion for work and the learning orientation, no other studies have analyzed the moderating influence of personal-level variables in the relationship between the direct antecedents of intentions and the intentions. Specifically, no work has studied the moderating influence of the variable creativity in that relationship.

The main objective of this paper, starting with the model of planned behavior by Ajzen (1991), is to analyze the role of creativity in the generation of entrepreneurial intentions. Within this framework, we propose more specific objectives that focus on answering the following research questions: (1) We investigate the role of subjective norms in the formation of entrepreneurial intentions. Are they direct antecedents of intentions (as stated in the original TPB model) or are their effects mediated by attitudes and PBC? (2) The original TPB model

also claims that the influence of personal traits, if any, occurs only indirectly through subjective norms, attitudes, and PBC (Ajzen, 1991; Bagozzi et al., 2002). However, additional research (e.g., Frank et al., 2007; Zhao et al., 2010) has found that the direct effects of these variables on intentions are also relevant. Do these effects exist in the case of creativity? (3) Sometimes people with positive attitudes toward entrepreneurship and high PBC do not have the intention to engage in entrepreneurial activities. Can creativity help in translating attitudes and PBC into entrepreneurial intentions? What are the moderating effects of creativity in the TPB model?

To answer these questions, we propose a moderated model that serves to acquire insights into key aspects of the process of generating entrepreneurial intentions. This model is tested using path analysis with bootstrapping procedures, which allows us to analyze mediation and moderation effects in an effective way. We focus on a subset of the population of potential entrepreneurs: university students. University students are a relevant group in the population of potential entrepreneurs. The knowledge and skills acquired at university may provide them with additional resources for (and interest in) developing a career as an entrepreneur. Along this line, the literature has usually shown a positive effect of educational levels on entrepreneurship rates (Bates, 1995; Jiménez et al., 2015; Reynolds, 1997). Moreover, a significant amount of the policies to promote entrepreneurship are aimed at university students (see, for example, the report of the US Department of Commerce, 2013, for a review of the policies and actions carried out in US colleges and universities to promote entrepreneurship). An analysis of the personal characteristics that favor the generation of entrepreneurial behaviors among these students takes on special significance.

The remainder of this article is structured as follows. First, we present an outline of the TPB model and its application to entrepreneurship. Then, we justify and propose several hypotheses regarding the direct and moderating effects of creativity on several variables and causal relationships in the TPB model. The research design and methodology are described in

the third section of the paper. Next, we detail our results, based on data collected from a sample of 502 university students. We conclude with a discussion of our findings and contributions and the implications for entrepreneurship theory, practice, and education.

2. Theoretical Framework

2.1. Theory of Planned Behavior

In the Theory of Planned Behavior (TPB) (Ajzen, 1991), behavioral intentions (the closest and most important predictor of behavior) are determined by three factors: attitudes, subjective norms, and perceived behavioral control (PBC). Attitudes toward behavior refer to the attractiveness of this behavior or to the degree to which the individual has a positive or negative evaluation of it. The second component is PBC, which is defined as the perceived ease or difficulty of performing such behavior. Finally, subjective norms refer to the perceptions that the individual has of the social pressure to perform the action (or not).

Following Ajzen and Fishbein (2004), the three mentioned elements are sufficient to explain the intentions, but their relative importance varies from one context to another. In some contexts (e.g., behaviors—such as voting—that are fully volitional), only two of the antecedents (e.g., attitudes and subjective norms) may be sufficient to explain intentions. In contrast, there are behaviors that are more difficult to execute, demanding resources, opportunities, and specialized skills. In those cases, the role of PBC is very relevant.

In the entrepreneurship area, the attitude toward behavior is a factor that affects the perception of desirability (Shook and Bratianu, 2010) and, in short, influences the intentions (Ajzen, 2002). Given the complexity of entrepreneurial behavior, an individual's perception of his/her ability to control behavior (i.e., the PBC) is also a key variable in the formation of intentions. The greater the individual's self-perception of behavioral control, the greater his/her intentions to carry out said behavior (Ajzen, 2002). Following this line of reasoning, several

empirical studies have confirmed the relationship between attitudes favorable to the creation of companies and entrepreneurial intentions as well as the relationship between PBC and entrepreneurial intentions (e.g., Esfandiar et al., 2019; Kautonen et al., 2013).

On the contrary, the relationship between subjective norms and entrepreneurial intentions is not so clear in the literature. Numerous works have found a non-significant direct relationship between subjective norms and entrepreneurial intentions (Autio et al., 2001; Esfandiar et al., 2019; Krueger et al., 2000). This may be due to the fact that subjective norms influence entrepreneurial intentions very weakly (Armitage and Conner, 2001) in individuals endowed with strong internal control (Ajzen, 2002), a trait that is widely attributed to entrepreneurs. Another reason for this may be that subjective norms exert their influence on intentions indirectly through their effect on attitudes and on PBC. When individuals feel that their reference persons would approve of their decision to become an entrepreneur, they will be more attracted to this option and feel more capable (e.g., because they feel more supported) of carrying it out satisfactorily (Liñán and Santos, 2007). The empirical evidence has also pointed to this indirect effect (Entrialgo and Iglesias, 2016; Liñán and Chen, 2009; Liñán and Santos, 2007; Liñán et al., 2011; Santos et al., 2016).

For all these reasons, we propose the following hypothesis:

H1: Entrepreneurial intentions are directly influenced by attitudes toward the creation of companies (H1a) and by PBC (H1b), and they are indirectly influenced by subjective norms through their effects on attitudes (H1c) and PBC (H1d).

2.2. Effects of Creativity

Creativity is one of the characteristics that innovative minds usually possess (Poirier et al., 2017). Being creative is essential for innovation and entrepreneurship. Although there are other traits (passion, persistence, curiosity, abstract thinking....) that are key characteristics

among innovators, in this work we focus on creativity.

There are different approaches to the concept of creativity in the management literature (see Slavich and Svejnova, 2016, for a review), Csikszentmihalyi (1996) maintains that although creativity can be facilitated by a genetic predisposition or certain talent for a given domain, it can be taught and learnt. Developing a creative competence may be influenced by both traits and cognition (Edwards-Schachter et al., 2015). At the same time, creativity can emerge from an interaction between the individual and the environment (Hunter et al., 2007; Biragila and Kadile, 2017). From these interactions people develop beliefs by which they can perceive themselves as creative or not, and these perceptions guide their thinking, feeling and acting (Tierney and Farner, 2002; Gibbs, 2009).

For the purpose of this investigation, we define creativity as the perceived competence of an individual to generate ideas about products, services, processes, procedures, or solutions that are novel and useful (Amabile, 1983; Perry-Smith, 2006).

Through creativity, individuals imagine situations in which they can develop and test new ideas, conceive new markets, products, and services, and consider alternative courses of action (Wood and McKinley, 2010). Moreover, creative people perceive new associations within the existing information and seek to form an image of what the future might be like (Gaglio and Katz, 2001; Prior et al., 2018). In sum, creativity is a powerful resource for entrepreneurs. In the next sections, we will show the different ways in which this variable can affect entrepreneurial behavior.

2.2.1. Direct Effects of Creativity on Attitudes toward Entrepreneurship and PBC

On the one hand, creativity is a skill for creation (Amabile, 1983). On the other hand, entrepreneurship is, in itself, a creative activity (see, for example, Schumpeter's [1934] classical approach to entrepreneurship using the concept of "creative destruction"). Frank et al. (2007)

showed that personal characteristics (such as creativity) are the key to the origins of entrepreneurship behavior. The theories of cognitive consistency suggest that inconsistency among beliefs (including beliefs about personal attributes) and attitudinal elements generates tension, which, in turn, represents a motivational force for attitude change (Eagly and Chaiken, 1993). People who have (or perceive in themselves) a certain attribute will probably feel more comfortable carrying out activities for which this attribute is important or imagining themselves conducting these activities. Thus, it seems likely that those more creative individuals (more prone to creation) develop more favorable attitudes toward creative activities such as entrepreneurship. Therefore,

H2: Individuals' creativity will have a positive effect on their attitudes toward entrepreneurship.

We have seen that entrepreneurship is not a simple behavior. It requires multiple resources and skills as well as decision making in complex environments. Creativity, as a self-perceived skill, can be an important factor in the generation of perceived behavioral control (PBC). Creativity is related to the generation of new ideas to solve problems (Hansen, Shrader, and Monllor, 2011) and may offer alternative means to resolve problems and challenges (Zhou, Hirst, and Shipton, 2012). Thus, self-perception creativity skills can help an individual to perceive him- or herself as more able to control the entrepreneurial behavior.

H3: Individuals' creativity will have a positive effect on their PBC.

Finally, it is also possible that there is a direct effect of creativity on entrepreneurial intention. The returns from creativity are expected to be higher when individuals are dedicated to entrepreneurial activities than when they work for others (Audretsch and Belitski, 2013). Even though creativity does not exert effects through attitudes and PBC, creative individuals could have greater entrepreneurial intentions than uncreative individuals. Creative persons could feel that, in the field of entrepreneurship, they can obtain the best performance from their

creative abilities. On the other hand, working as an employee would involve submitting to the orders and instructions of other people, and the possibilities of applying their ideas would be more limited. Creativity could thus have an effect on the behavioral intention, which would work not only through the entrepreneurial attitudes or PBC but also through the generation of greater outcome expectancies (Bagozzi et al., 2002).

H4: Individuals' creativity will have a positive effect on their entrepreneurial intentions.

2.2.2. Moderating Effect of Creativity on the Relationship between Attitudes toward Entrepreneurship and Intentions

Beyond the direct effects of creativity, the current study examines the potential moderating effects of creativity on the causal relationships (1) between attitudes toward entrepreneurship and entrepreneurial intentions and (2) between perceived behavioral control and entrepreneurial intentions.

First, in relation to the relationship between attitudes and intentions, this effect may be moderated by creativity, even when the attitudes have already been generated. There may be individuals who have a positive attitude toward entrepreneurship but no intention to create a new venture. There can be two main reasons for this: (1) a lack of ideas for a start-up or (2) perceptions that the present circumstances are not favorable (Townsend, Busenitz, and Arthurs, 2010). Creativity may reduce the presence or relevance of these factors. Accordingly, in the case of low-creativity individuals, the effect of attitudes toward entrepreneurship on intentions would be lower than in the case of highly creative individuals.

On the one hand, concerning the first factor, the lack of ideas for a start-up, creativity may provide young people with business ideas that activate their attitudes toward starting a new venture (Edelman and Yli-Renko, 2010). On the other hand, the barrier linked to the perception that the environmental circumstances are not favorable might be undermined by creativity. It

may promote the identification of new opportunities even in adverse scenarios (Corbett, 2005), which may also help in the generation of intentions from attitudes.

H5: Creativity moderates the relationship between entrepreneurial attitudes and entrepreneurial intentions. The more creative the individual, the greater the influence of attitudes on entrepreneurial intentions.

2.2.3. Moderating Effect of Creativity on the Relationship between Perceived Behavioral Control (PBC) and Intentions

The relationship between perceived behavioral control (PBC) and intentions may also be moderated by creativity. There may be individuals who perceive that they have high control over entrepreneurial behavior but no intention to create a new company. This may be due to several reasons.

The perception of control over behavior is specific to each field (Ford, 1996; Wilson et al., 2007). For example, in the entrepreneurial field, when we are talking about PBC, we are referring to the perception of control over the specific tasks and roles of the entrepreneurial activity (Chen et al., 1998). Even though they have not yet generated a business idea, individuals can perceive themselves to be able to carry out the activities of an entrepreneur and believe that they control this area. Individuals may feel that they have entrepreneurial skills but not perceive opportunities and lack new ideas to consider creating a company, which will prevent them from forming entrepreneurial intentions.

However, if individuals perceive themselves to be creative, this problem of a lack of business ideas will be considered to be circumstantial and will not prevent them from developing an entrepreneurial intention that will be transformed into entrepreneurial behavior as soon as the idea is generated and the environmental circumstances are favorable. In this sense, the literature (e.g., Füller et al., 2018) has shown that, if individuals perceive control over

entrepreneurial behavior, they will tend to explore cognitively what it would be like to become an entrepreneur, simulating different aspects of running a business and trying to discover potential impediments to creating a company. If they also feel creative, they will mentally explore ways to overcome obstacles and will seek, value, and cognitively construct entrepreneurial opportunities (Ahlin et al., 2014; Krueger et al., 2000). In short, if individuals, in addition to perceiving that they have control over entrepreneurial behavior, are perceived as creative, they will anticipate more thoughts about what it is to be an entrepreneur and open a company, which will allow them to mobilize their resources and reinforce their entrepreneurial intentions. For these reasons, the influence of PBC on intentions will be greater among individuals who perceive themselves to be creative.

Thus:

H6: Creativity moderates the relationship between perceived behavioral control (PBC) and entrepreneurial intentions. The more creative the individual, the greater the influence of PBC on entrepreneurial intentions.

In sum, our causal model (shown in Figure 1) tries to enrich the theory of planned behavior (Ajzen, 1991) applied to entrepreneurship by analyzing the effects of creativity. We propose not only the direct effects of creativity on attitudes, PBC, and intentions (H2 to H4) but also two moderation effects: a moderation effect of creativity on the influence of attitudes on intentions (as predicted in H5) and a moderating effect of creativity on the relationship between PBC and attitudes (as predicted in H6).

In the original model of Ajzen (1991), subjective norms have a direct influence on intentions; however, there is further empirical evidence applied to entrepreneurship that points to an indirect effect through attitudes and PBC (e.g., Entrialgo and Iglesias, 2016; Liñán and Chen, 2009). In our model, we also include the possibility not only of the indirect effects (foreseen

in H1c and H1d) but also of the direct effect. This direct relationship must be released in the model to test the hypothesized mediating effects (Hayes, 2009).

Figure 1

3. Research Design and Methodology

3.1. Research Design

The proposed model was tested through a personal survey directed to final-year university students at a Spanish university during the academic year 2015–2016. The questionnaire was pretested with a sample of 40 undergraduate students; this helped to improve some aspects of it. Once the final questionnaire had been designed, the fieldwork was conducted between January and March 2016. The sample included students enrolled in several degrees related to management or engineering (Business Administration, Finance and Accounting, Labor Relations, Marketing, Tourism, and Industrial Engineering) at a public university in northern Spain. After discarding 7 questionnaires because they were improperly completed, the final sample consisted of 502 students. Table 1 summarizes the characteristics of this sample.

Table 1

3.2. Measures

Attitudes toward start-up were measured through the reflective scale used by Liñán and Chen (2009). The items of the scales are shown in Table 2. *Entrepreneurial intentions* were measured using a Likert-type scale containing six items. This procedure has already been used by Liñán and Chen (2009) and Zhao, Seibert, and Lumpkin (2010). As in previous studies (Biraglia and Kadile, 2017), we measured *creativity* with six items. We adopted the scale used

by Kolvereid (1996) to measure *perceived behavioral control*. This reflective six-item scale has also been used by Liñán and Chen (2009).

Table 2

We used the scale proposed by Kolvereid (1996) to measure *subjective norms*. The respondents had to answer three items linked to the following question: “If you were to decide to start a business, would the people around you approve? Rate your response on a scale from 1 = total disapproval to 7 = total approval.” The three items were related to family approval, closest friend approval, and other relevant people approval.

Several control variables are also included in the model to avoid spurious conclusions. Literature exists about the effects of gender and age on the generation of entrepreneurial behavior (Santos, Roomi, and Liñán, 2016; Wilson et al., 2007). The exposure of the individual to entrepreneurship is also a relevant variable (Zapkau, Schwens, Steinmetz, and Kabst, 2015). Previous work experience and the presence of role models (which might be very influential for young people) are the two variables that are included concerning exposure. Therefore, we asked the participants whether they had previous *work experience* and whether any of their parents were entrepreneurs (*role models*). These were two dummy variables. Students were asked for their *age* in years. Finally, *gender* was also taken into account. The codes used were woman = 1 and man = 0.

To assess the reliability and validity of the scales, we adopted the two-step approach proposed by Anderson and Gerbing (1988). Following this approach, a confirmatory factor analysis with all the reflective constructs was performed before the estimation of the causal model. We excluded the gender, work experience, and role model measures due to their qualitative nature, age due to its objective measurement unit, and the subjective norms’

construct due to its formative nature. The first step for assessing the construct validity is to analyze the unidimensionality of the scales. The overall fit indexes (Table 2) show that the model is consistent with the data and point to the unidimensionality of the scales. The reliability analysis was carried out by calculating the composite reliability coefficient (CR) for each factor. After deleting one item from the perceived behavioral control scale due to its low individual reliability (Table 2), the results indicate that all the values are larger than the threshold value of 0.7. Moreover, the average variance extracted (AVE) of each factor was also calculated, and the values obtained are greater than the threshold value of 0.5 (Bagozzi and Yi, 1988). Regarding convergent validity, the standardized factor loadings are significant and larger than 0.5. Finally, the correlations among all the factors do not contain the unit value in their respective confidence intervals. Moreover, the AVEs of the latent variables are always greater than the square of the correlations between them. This provides evidence of discriminant validity between the scales (Fornell and Larcker, 1981).

4. Results

Since our hypotheses predict an indirect effect of passion for work on intentions and this indirect effect might be conditioned by another variable (creativity), a moderation analysis was performed. The items of each scale were averaged for this analysis. Instead of traditional regression analysis, a series of path analyses using structural equation modeling procedures was used to estimate the causal effects on the mediators and on the dependent variables simultaneously. The variance inflation factor (VIF) estimates showed that there were no problems concerning multicollinearity (VIF estimates from 1.04 to 1.40).

Hypothesis 1 predicts that the effects of subjective norms on entrepreneurial intentions will be mediated by attitudes and PBC. The procedure proposed by Baron and Kenny (1986) has been widely used as a test for mediation. Following these authors, mediation exists when

the following conditions are met: (1) the independent variable has significant effects on both the mediator variable and the dependent variable; (2) the mediator variable has a significant influence on the dependent variable; and (3) the coefficient that shows the influence of the independent variable on the dependent variable is smaller when the mediator is included in the equation. However, this procedure was criticized by Hayes (2009). This author pointed to the weaknesses of the Baron and Kenny approach (the lack of power, the lack of focus on the effect that it is attempting to test, and the multiple possibilities for decision error) and recommended the use of structural equation modeling (SEM) techniques with a bootstrapping resampling procedure. Following this suggestion, we carried out a series of analyses using path analysis, which is the application of structural equation modeling in models without latent variables (see Goethner et al. [2012] as an example of application of path analysis in the entrepreneurship area of research). To facilitate the estimation of the interaction effects (predicted in H5 and H6), we used a single estimator for each construct—the average of the items of the corresponding scale—instead of the latent variables. Bootstrapping with 5000 replications was performed in all the analyses.

Table 3 shows the results of the different models for the analysis. The first model is a basic reference model that excludes any effect of creativity. The second model incorporates the direct effects of creativity on attitudes, PBC, and intentions predicted in H2, H3, and H4. Finally, the full model (Model 3) adds the moderating effects of creativity predicted in H5 and H6.

Table 3

The overall goodness-of-fit indices of the models indicate that Model 2 has a significantly better fit than Model 1 (a model that has the constraints of no effects of creativity on other variables). The chi-square difference test shows a significant reduction in the chi-square of

Model 2 with respect to Model 1 (chi-square diff. = 69.27, $df = 3$, $p < .001$). This result indicates a relevant influence of creativity on the generation of entrepreneurial intentions. The overall fit indices of Model 2 point to a good fit of the model to the data: Tucker–Lewis Fit Index (TLI = 0.98), comparative fit index (CFI = 0.98), and root mean square of approximation (RMSEA = 0.034). This model is useful for testing the mediation effects predicted in H1 as well the direct effects of creativity predicted in H2, H3, and H4.

As shown in Table 3 (Model 2), the effects of attitudes and perceived behavioral control on entrepreneurial intentions are positive and significant ($\beta = .66$, $p < .01$ and $\beta = .25$, $p < .01$), as predicted in H1a and H1b. Subjective norms (the independent variable) have significant effects on the mediators (attitudes and PBC) ($\gamma = .26$, $p < .01$ and $\gamma = .17$, $p < .01$). H1c and H1d are supported. However, there is no significant direct effect on the dependent variable (intentions) ($\gamma = -.02$, $p > .10$).

Regarding the effects of creativity, in Model 2, we can see that the coefficients corresponding to the direct effects of creativity on attitudes, PBC, and intentions are also positive and significant ($\gamma = .33$, $p < .01$, $\gamma = .18$, $p < .01$, and $\gamma = .07$, $p < .05$), providing support for hypotheses H2, H3, and H4. In the third column of Table 3 (Model 3), we can analyze the moderating effects of creativity. The indices show that the overall fit of the model is good (TLI = 1.00, CFI = 1.00, and RMSEA = 0.005), and the chi-square difference test indicates a significant improvement of Model 3 with respect to Model 2 (chi-square diff. = 13.31, $df = 2$, $p < .01$). Creativity shows a significant moderating effect on the relationship between attitudes and intentions ($\gamma = .08$, $p < .05$). In contrast, the effect on the relationship between PBC and intentions does not reach significant levels ($\gamma = .03$, $p > .10$). Thus, H5 is supported; however, H6 must be rejected. The final model is shown graphically in Figure 2.

Figure 2

Once we had tested the existence of a moderating effect of creativity, to deepen the analysis of the size of the effects of attitudes, PBC, and subjective norms on intentions, we estimated the coefficients of these effects at different levels of creativity. Since the distribution of conditional indirect effects is known to be non-normal, we used a bootstrapping procedure with 5000 replications (Hayes, 2009). The standardized coefficients of the effects of attitudes and PBC on intentions at different levels of creativity are shown in Table 4. The last column shows the total indirect effects (adding the effects through attitudes and PBC) of subjective norms on intentions. Even at low levels of creativity, all the effects are significant. The significant coefficient of the interaction term between attitudes and intentions indicates that, in the case of the influence of attitudes on intentions, the magnitude of the effect increases significantly when the level of creativity is higher.

Table 4

5. Discussion and Conclusions

According to the recent literature, personal-level variables have a relevant role to play in developing new models to understand the process leading to the start-up decision (Liñán and Fayolle, 2015). Recent research has shown that even well-known and well-settled models, such as the Theory of Planned Behavior, can be enriched by adding this type of variables (Fayolle and Liñán, 2014; Fuller et al., 2018). This study contributes to this line of research by proposing and testing a moderated model examining the effects of a relevant personal-level variable (creativity) on entrepreneurial intent.

Our specific contributions are as follows. First, some controversy exists about the effects of subjective norms on intentions. In the Ajzen model (1991), this effect is direct, but several

studies in the entrepreneurship area have found indirect effects via attitudes and/or perceived behavioral control (Liñán et al., 2011a,b; Santos et al., 2016). In this study, we explicitly tested direct and indirect effects using path analysis with bootstrapping procedures. We found that only the indirect effects are significant. In the generation of entrepreneurship intentions, the influence of the social environment is relevant, but it is effective as long as it affects the individuals' attitudes and their perceptions of behavioral control (i.e., their self-perceptions about their capability to control and perform entrepreneurial actions).

We contribute to the literature about entrepreneurial culture. According to this field there is a regional entrepreneurship culture that influences people's attitudes toward entrepreneurship (Baugelsdijk, 2007) and intentions to become an entrepreneur (Nicotra et al., 2018; Corrente et al., 2019). But this hypothesis has been tested only indirectly via inferences from macro-level data on outcomes (Fritsch and Wyrwich, 2014). The research into the effect of culture of entrepreneurship commonly uses the Hofstede dimensions of national culture (Hayton et al., 2002). The level of geographic resolution at which Hofstede dimensions are typically presented is the country, which is too coarse for some studies. This approach overlooks the possibility of a meso-level relationship that runs from regional context to individual level attitudes and behavior. It also artificially treats entrepreneurs as a homogeneous group and thus fails to account for the effect of substantial individual differences (Parker, 2004).

We enhance and expand the emerging literature in entrepreneurial culture by examining the role of social norms explaining entrepreneurial intentions through their impact on attitudes. According to our results, cultural context represented by social norms is a key factor to enhance entrepreneurial intentions. In line with the findings of Liñán and Chen (2009), this study offers another example of the power that social norms have to influence indirectly entrepreneurial intentions.

Second, we proposed and tested a model in which a personal-level variable acts and interacts in shaping intentions. It is not unusual in the entrepreneurship literature for personal characteristics to be taken into account as factors that potentially affect the entrepreneurial process (Zhao, Seibert, and Lumpkin, 2010). However, only their main effects as exogenous variables have usually been considered in causal models (see de Clerq et al., 2013, for an exception). Our results provide support for the existence of personal-level variables that have not only effects on the antecedents of entrepreneurial behavior, as supposed in the original TPB model, but also the power to condition the effects of other variables.

Third, our results support the major role of creativity in entrepreneurial processes. Although the effects of creativity on attitudes and intentions have already been studied in the literature (Zampetakis, Gotsi, Andriopoulos, and Moustakis, 2011), in this study, we found that the effects of this variable are threefold: (1) creativity has significant effects on the generation of perceived behavioral control and attitudes, (2) it also has a direct effect on entrepreneurial intentions, and (3) it significantly boosts the translation of attitudes into intentions. The overall influence is remarkable, as indicated by the improvement in the fit indices of the models that include these effects.

We predicted two moderating effects of creativity: (1) on the relationship between attitudes and intention and (2) on the relationship between PBC and intention. In this respect, we obtained mixed results; the former moderating effect was supported but the latter was not supported by the data. Nevertheless, the effects of creativity should not be underestimated. Our results show that creativity has a strong direct effect on attitudes and intentions and a significant moderating effect on the attitudes–intentions causal relationship.

Beyond its relevance due to its direct effects, creativity seems to be effective in boosting the influence of attitudes on intentions. This moderating effect may arise from lessening the effects of those barriers that hamper the translation of positive attitudes into entrepreneurial

intentions. Barriers such as a lack of business ideas and an inability to detect business opportunities can be overcome substantively using creativity.

In contrast, creativity is not so effective in boosting the effect of PBC on intentions. Creativity acts as a relevant antecedent of PBC, but it does not interact with this variable. This may be due to the fact that PBC arises, in part, from the belief that one has the capacity to produce creative results (Tierne and Farmer, 2002). People who perceive themselves as creative will be more likely to perceive control over entrepreneurial behavior, because they will perceive themselves as more able to solve problems creatively or to recognize opportunities, a key element of entrepreneurial behavior (Ko and Butler, 2007). However, the effect of creativity (in relation to the PBC route) ends here; there is no additional interactive effect with PBC. The effect of PBC on intentions is constant regardless of the level of creativity.

Creativity interacts with attitudes (and not with PBC), perhaps because it has a more differentiated nature. Creativity complements attitudes by bringing something of a different nature, something that cannot be compensated for with a very positive attitude. The absence of creativity is more evident when the foundation of entrepreneurial intention is based more on attitudes than on PBC. In this way, given that the main antecedents of intentions are attitudes, creativity also acquires an essential role in the formation of intentions, not only as a common antecedent of those factors (attitudes and PBC) but also as a reinforcer of the effect of attitudes on intentions.

Following the balanced skills approach (Lazear, 2005; Stuetzer, Obschonka, and Schmitt-Rodermund, 2013) to analyzing entrepreneurship processes, individuals require a diverse and balanced set of entrepreneurial competences in the generation of entrepreneurship behaviors. Even though our study focused only on the effects of one specific personal-level variable (creativity) on attitudes and intentions, our results support the aforementioned balance approach. The existence of positive moderating effects between variables points to the necessity

of using a more comprehensive approach (for example, including interactions between variables) instead of simpler compensatory linear models.

This research has several limitations that suggest areas for future research. First, the hypotheses were tested using a sample of university students (with an average age of 23 years), which is only one part of the population of potential entrepreneurs. This is a common practice in entrepreneurship research (Fayolle and Gailly, 2015; Kwong and Thompson, 2016); however, it would be interesting to investigate whether the hypothesized causal relationships are different in other groups of potential entrepreneurs.

Second, we focused on entrepreneurial intentions rather than actual behaviors. The ways in which our focal individual characteristic (creativity) affects the transition of intentions into actions (Ajzen, 1991) need additional research.

Third, our study focuses on the effects of a personal-level variable: creativity. The results obtained in this research deepen the knowledge of the internal mechanisms of the combination of skills by analyzing the interactions between personal-level variables and attitudes and PBC. However, there are other dimensions related to innovative and entrepreneurial behavior apart from creativity (passion, curiosity, etc) that may interact with them and that should be explored (de Clerq et al., 2013).

This study offers several practical implications regarding entrepreneurial policies. Educational programs aimed at promoting entrepreneurial attitudes among university students and young people have been receiving increasing attention (Peterman and Kennedy, 2003; Souitaris, Zerbinati, and Al-Laham, 2007). However, these policies are not always effective enough (Oosterbeek, Van Praag, and Ijsselstein, 2010). Entrepreneurial education does not have the same level of effect on all students, since individuals demonstrate unique personal characteristics. In this sense, the findings from this research show that entrepreneurship programs would be more effective for creative individuals.

Here the question arises of whether we should consider creativity as an exogenous variable or whether it is possible to influence its level to promote entrepreneurial behaviors. Although creativity is frequently perceived and considered in the education field as a trait, Weinberger et al. (2018) indicated that creativity should not be considered as a stable trait of the individual but as a state that can be influenced on a daily basis by external factors, such as education. In the same line, Schoen et al. (2018), say that creative people stem from a development process that likely begin at a young age and continue into early adulthood (Feist and Baron, 2003). Thus, education programs may be a key factor in order to develop the creativity of students (Baker and Baker, 2012). In this sense, McWilliam and Dawson (2008) assemble some principles in order to teaching for creativity effectively.

The results indicate that the role of creativity seems to be critical, so entrepreneurship programs that stimulate students' creativity, allowing them to be more aware of their creative resources and abilities, might yield good results in terms of awakening entrepreneurship vocations. Thus, teaching for creativity must be a key practice within the broadest method of teaching innovation for the sake of improving the ability of individuals to utilize their innovative traits (Poirier et al., 2017). On the whole, our results point to the desirability of actions aimed at the promotion and rewarding of creativity among potential entrepreneurs.

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References

Ahlin, B., M. Drnovšek and R. D. Hisrich, 2014. "Entrepreneurs' creativity and firm innovation: the moderating role of entrepreneurial self-efficacy". *Small Business Economics*, 43(1): 101-117.

Ajzen, I. and M. Fishbein, 2004, "Questions raised by a reasoned action approach: Comment on Ogden" (2003).

- Ajzen, I., 1991, "The Theory of Planned Behavior." *Organizational Behavior and Human Decision Processes*, 50: 179-211.
- Ajzen, I., 2002, "Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior" *Journal of Applied Social Psychology*, 32(4): 665-683.
- Alvarez, S. A. and J B. Barney, 2005, "How do entrepreneurs organize firms under conditions of uncertainty?" *Journal of Management*, 31(5): 776-793.
- Amabile, T M., 1983, "The Social Psychology of Creativity: A Componential Conceptualization." *Journal of Personality and Social Psychology*, 45: 357-376.
- Anderson, J. C. and D. W. Gerbing, 1988, "Structural equation modeling in practice: A review and recommended two-step approach". *Psychological bulletin*, 103(3), 411.
- Armitage, C. J. and M. Conner, 2001, "Efficacy of the theory of planned behaviour: A meta-analytic review". *British Journal of Social Psychology*, 40(4): 471-499.
- Audretsch, D. B. and M. Belitski, 2013, "The Missing Pillar: The Creativity Theory of Knowledge Spillover Entrepreneurship." *Small Business Economics*, 41: 819-836.
- Autio, E., H. R. Keeley, M. Klofsten, G. GC Parker and M. Hay, 2001, "Entrepreneurial intent among students in Scandinavia and in the USA". *Enterprise and Innovation Management Studies*, 2(2); 145-160.
- Bagozzi, R P., Z. Gürhan-Canli and J. Priester, 2002, *The social psychology of consumer behaviour*. Open University Press. Buckingham. UK.
- Bagozzi, R. P. and Y. Yi, 1988, "On the Evaluation of Structural Equation Models." *Journal of the Academy of Marketing Science*, 16: 74-94.
- Baker, D. F., and S. J. Baker, 2012, "To "Catch the Sparkling Glow": A Canvas for Creativity in the Management Classroom." *Academy of Management Learning and Education*, 11: 704-721.
- Barba-Sánchez, V., and C. Atienza-Sahuquillo, 2017, "Entrepreneurial motivation and self-employment: evidence from expectancy theory". *International Entrepreneurship and Management Journal*, 13(4): 1097-1115.

- Baron, R. M., and D. A. Kenny, 1986, "The Moderator–Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations". *Journal of Personality and Social Psychology*, 51: 1173-1182.
- Baron, R. A., 2004, "The cognitive perspective: a valuable tool for answering entrepreneurship's basic "why" questions". *Journal of business venturing*, 19(2): 221-239.
- Bates, T., 1995, "Self-employment entry across industry groups". *Journal of Business Venturing* 10: 143-156.
- Beugelsdijk, S., 2007, "Entrepreneurial culture, regional innovativeness and economic growth". *Journal of Evolutionary Economics*, 17(2): 187-210.
- Biraglia, A. and V. Kadile, 2017, "The Role of Entrepreneurial Passion and Creativity in Developing Entrepreneurial Intentions: Insights from American Homebrewers". *Journal of Small Business Management*, 55: 170-188.
- Brandstätter, H., 2011, "Personality aspects of entrepreneurship: A look at five meta-analyses". *Personality and Individual Differences*, 51(3): 222-230.
- Busenitz, L.W. and J. Barney, 1997, "Differences Between Entrepreneurs and Managers in Large Organizations: Biases and Heuristics in Strategic Decision-making". *Journal of Business Venturing*, 12: 9-30.
- Carter, N. M., W. B. Gartner and P. D. Reynolds, 1996, "Exploring Start-up Event Sequences". *Journal of Business Venturing*, 11: 151-166.
- Chen, C. C., Greene, P. G. and Crick, A. ,1998, "Does entrepreneurial self-efficacy distinguish entrepreneurs from managers?." *Journal of Business Venturing*, 13(4), 295-316.
- Cohen, J. D., 2005, "The Vulcanization of the Human Brain: A Neural Perspective on Interactions Between Cognition and Emotion". *The Journal of Economic Perspectives*, 19: 3-24.
- Corbett, A. C , 2005, "Experiential Learning within the Process of Opportunity Identification and exploitation". *Entrepreneurship Theory and Practice*, 29: 473-491.
- Corrente, S., S. Greco, M. Nicotra, M. Romano, and C. E. Schillaci, 2019, "Evaluating and comparing entrepreneurial ecosystems using SMAA and SMAA-S". *The Journal of Technology Transfer*: 44(2): 485-519.

- Csikszentmihalyi, M., 1996, *Creativity: The work and lives of 91 eminent people*. Harper Collins.
- Dawson, C. and A. Henley, 2015, "Gender, Risk, and Venture Creation Intentions". *Journal of Small Business Management*, 53: 501-515.
- Dayan, M., R. Zacca, and A. Di Benedetto, 2013, "An exploratory study of entrepreneurial creativity: its antecedents and mediators in the context of UAE firms". *Creativity and Innovation Management*, 22: 223-240.
- De Clercq, D., B. Honig and B. Martin, 2013, "The Roles of Learning Orientation and Passion for Work in the Formation of Entrepreneurial Intention". *International Small Business Journal*, 31: 652-676.
- Douglas, E. J. and D. A. Shepherd, 2000, "Entrepreneurship as a Utility Maximizing Response". *Journal of Business Venturing*, 15: 231-251.
- Dweck, C. S. and E. L. Leggett, 1988, "A Social-Cognitive Approach to Motivation and Personality". *Psychological Review*, 95: 256-273.
- Eagly, A. H. and S. Chaiken, 1993, *The Psychology of Attitudes*. Harcourt Brace Jovanovich College Publishers.
- Edelman, L., and H. Yli-Renko, 2010, "The Impact of Environment and Entrepreneurial Perceptions on Venture-Creation Efforts: Bridging the Discovery and Creation Views of Entrepreneurship". *Entrepreneurship Theory and Practice*, 34: 833-856.
- Edwards-Schachter, M., A. García-Granero, M. Sánchez-Barrioluengo, H. Quesada-Pineda, and N. Amara, 2015, "Disentangling competences: Interrelationships on creativity, innovation and entrepreneurship". *Thinking Skills and Creativity*, 16: 27-39.
- Entrialgo, M. and V. Iglesias, 2016, "The Moderating Role of Entrepreneurship Education on the Antecedents of Entrepreneurial Intention". *International Entrepreneurship and Management Journal*, 12, 1209-1232.
- Esfandiari, K., M. Sharifi-Tehrani, S. Pratt and L. Altinay, 2019, "Understanding entrepreneurial intentions: A developed integrated structural model approach". *Journal of Business Research*, 94: 172-182.

- Espíritu-Olmos, R. and M. A. Sastre-Castillo, 2015, "Personality traits versus work values: Comparing psychological theories on entrepreneurial intention". *Journal of Business Research*, 68(7): 1595-1598.
- Fayolle, A. and B. Gailly, 2015, "The Impact of Entrepreneurship Education on Entrepreneurial Attitudes and Intention Hysteresis and Persistence". *Journal of Small Business Management*, 53: 75-93.
- Fayolle, A. and F. Liñán, 2014, "The future of research on entrepreneurial intentions". *Journal of Business Research*, 67(5): 663-666.
- Feist, G. J., and F. X. Barron, 2003, "Predicting creativity from early to late adulthood: Intellect, potential, and personality". *Journal of research in personality*, 37(2): 62-88.
- Fitzsimmons, J. R. and E. J. Douglas, 2011, "Interaction between feasibility and desirability in the formation of entrepreneurial intentions". *Journal of Business Venturing*, 26(4): 431-440.
- Ford, C. M., 1996, "A theory of individual creative action in multiple social domains." *Academy of Management review*, 21(4), 1112-1142.
- Fornell, C. and D. F. Larcker, 1981, "Evaluating Structural Equation Models with Unobservable Variables and Measurement Error". *Journal of Marketing Research*, 18: 39-50.
- Frank, H., Lueger, M. and Korunka, C. ,2007, "The significance of personality in business start-up intentions, start-up realization and business success." *Entrepreneurship & Regional Development*, 19(3), 227-251.
- Fritsch, M., and M. Wyrwich, 2014, "The long persistence of regional levels of entrepreneurship: Germany, 1925–2005". *Regional Studies*, 48(6): 955-973.
- Fuller, B., Y. Liu, S. Bajaba, L. E. Marler and J. Pratt, 2018, "Examining how the personality, self-efficacy, and anticipatory cognitions of potential entrepreneurs shape their entrepreneurial intentions". *Personality and Individual Differences*, 125: 120-125.
- Gaglio, C. M. and J. A. Katz. 2001, "The psychological basis of opportunity identification: Entrepreneurial alertness." *Small Business Economics*, 16.2: 95-111.
- Gibbs, S. R., 2009, "Exploring the influence of task-specific self-efficacy on opportunity recognition perceptions and behaviors". *Frontiers of entrepreneurship research*, 29(6): 1.

- Gielnik, M. M., M Frese, J. M Graf and A. Kampschulte, 2012, "Creativity in the Opportunity Identification Process and the Moderating Effect of Diversity of Information". *Journal of Business Venturing*, 27: 59-576.
- Goethner, M., Obschonka, M., Silbereisen, R. K., and Cantner, U., 2012, "Scientists' transition to academic entrepreneurship: Economic and psychological determinants." *Journal of Economic Psychology*, 33(3): 628-641.
- Hansen, D.J., R. Shrader and J. Monllor, 2011, "Defragmenting Definitions of Entrepreneurial Opportunity". *Journal of Small Business Management*, 49: 283-304.
- Hayes, A.F., 2009, "Beyond Baron and Kenny: Statistical Mediation Analysis in the New Millennium", *Communication Monographs*, 76(4): 408-420
- Hayton, J. C., G. George, G., and S. A. Zahra, 2002, "National culture and entrepreneurship: A review of behavioral research". *Entrepreneurship theory and practice*, 26(4): 33-52.
- Ho, V.T., S. S. Wong, and C. H. Lee, 2011, "A Tale of Passion: Linking Job Passion and Cognitive Engagement to Employee Work Performance". *Journal of Management Studies*, 48: 26-47.
- Hoff, K., and J. E. Stiglitz, 2016, *Striving for balance in economics: Towards a theory of the social determination of behavior*. The World Bank.
- Hu, R., L. Wang, W. Zhang, and P. Bin, 2018, "Creativity, proactive personality, and entrepreneurial intention: the role of entrepreneurial alertness". *Frontiers in psychology*, 9.
- Hunter, S. T., K. E. Bedell, and M. D. Mumford, 2007, "Climate for creativity: A quantitative review". *Creativity research journal*, 19(1): 69-90.
- Jiménez, A., C. Palmero-Cámara, M.J. González-Santos, J. González-Bernal and J. A. Jiménez-Eguizábal, 2015, "The impact of educational levels on formal and informal entrepreneurship." *BRQ Business Research Quarterly*, 18: 204-212.
- Kautonen, T., M. Van Gelderen and E. T. Tornikoski, 2013, "Predicting entrepreneurial behaviour: a test of the theory of planned behaviour". *Applied Economics*, 45.6: 697-707.
- Ko, S. and J. E. Butler, 2007, "Creativity: A key link to entrepreneurial behavior", *Business Horizons*, 50(5): 365-372.

- Kolvereid, L., 1996, "Prediction of Employment Status Choice Intentions". *Entrepreneurship: Theory and Practice*: 21, 47-58.
- Krueger Jr, N. F., M. D. Reilly and A. L. Carsrud, 2000, "Competing models of entrepreneurial intentions". *Journal of Business Venturing*, 15(5-6): 411-432.
- Kuratko, D. F., J. S. Hornsby and D.W. Naffziger, 1997, "An Examination of Owner's Goals in Sustaining Entrepreneurship". *Journal of Small Business Management*, 35: 24-33.
- Kwong, C. and P. Thompson, 2016, "The When and Why: Student Entrepreneurial Aspirations". *Journal of Small Business Management*, 54: 299-318.
- Lazear, E. P., 2005, "Entrepreneurship". *Journal of Labor Economics*, 23: 649-680.
- Lichtenstein, B. B., N. M. Carter, K. J. Dooley and W.B. Gartner, 2007, "Complexity dynamics of nascent entrepreneurship". *Journal of Business Venturing*, 22(2); 236-261.
- Liguori, E. W., J. S. Bendickson and W. C. McDowell, 2018, "Revisiting entrepreneurial intentions: a social cognitive career theory approach". *International Entrepreneurship and Management Journal*.14(1): 67-78.
- Liñán, F. and Y. W. Chen, 2009, "Development and Cross-Cultural Application of a Specific Instrument to Measure Entrepreneurial Intentions". *Entrepreneurship Theory and Practice*, 33: 593-617.
- Liñán, F., and A. Fayolle, 2015, "A Systematic Literature Review on Entrepreneurial Intentions: Citation, Thematic Analyses, and Research Agenda". *International Entrepreneurship and Management Journal*, 11: 907-933.
- Liñán, F. and F. J. Santos, 2007, "Does social capital affect entrepreneurial intentions?" *International Advances in Economic Research*,13(4): 443-453.
- Liñán, F., J. C. Rodríguez-Cohard and J. M. Rueda-Cantuche, 2011, "Factors affecting entrepreneurial intention levels: a role for education". *International Entrepreneurship and Management Journal*, 7(2): 195-218.
- Liñán, F, F.J. Santos and J. Fernández, 2011, "The influence of perceptions on potential entrepreneurs". *International Entrepreneurship and Management Journal*, 7(3): 373.
- Locke, E. A., and G. P. Latham, 2002, "Building a Practically Useful Theory of Goal Setting and Task Motivation: A 35-Year Odyssey". *American Psychologist*, 57: 705-717.

- McWilliam, E., and S. Dawson, 2008. "Teaching for creativity: Towards sustainable and replicable pedagogical practice". *Higher education*, 56(6), 633-643.
- Nabi, G., A. Walmsley, F. Liñán, L. Akhtar, I., and C. Neame, 2018. Does entrepreneurship education in the first year of higher education develop entrepreneurial intentions? The role of learning and inspiration. *Studies in Higher Education*, 43(3): 452-467.
- Nicotra, M., M. Romano, M. Del Giudice, M. and C. E. Schillaci, C. E. 2018: "The causal relation between entrepreneurial ecosystem and productive entrepreneurship: A measurement framework". *The Journal of Technology Transfer*, 43(3): 640-673.
- Obschonka, M. and M. Stuetzer, 2017, "Integrating psychological approaches to entrepreneurship: the Entrepreneurial Personality System (EPS)", *Small Business Economics*, 49(1): 203-231.
- Oosterbeek, H., M. Van Praag and A. Ijsselstein, 2010, "The Impact of Entrepreneurship Education on Entrepreneurship Skills and Motivation". *European Economic Review*, 54: 442-454.
- Padilla-Angulo, L. 2019. "Student associations and entrepreneurial intentions". *Studies in Higher Education*, 44(1): 45-58.
- Parker, S. C. 2004. *The economics of self-employment and entrepreneurship*. Cambridge University Press.
- Pérez-Macías, N., J. L. Fernández-Fernández, and A. Rúa Vieites 2019. "Entrepreneurial intentions: trust and network ties in online and face-to-face students". *Education+ Training*.
- Perry-Smith, J. E., 2006, "Social Yet Creative: The Role of Social Relationships in Facilitating Individual Creativity". *Academy of Management journal*, 49: 85-101.
- Peterman, N. E. and J. Kennedy, 2003, "Enterprise Education: Influencing Students' Perceptions of Entrepreneurship". *Entrepreneurship Theory and Practice*, 28: 129-144.
- Poirier, V., L.H. Schwartz, D. Eddy, R. Berman, R., S. Chacour, J.J. Wynne, and P.R. Sanberg, 2017. "Thoughts on Improving Innovation: What Are the Characteristics of Innovation and How Do We Cultivate Them?." *Technology & Innovation*, 18(4), 319-330.
- Pryor, C., J. W. Webb, R. D. Ireland and D. J. Ketchen, Jr, 2016, "Toward an integration of the behavioral and cognitive influences on the entrepreneurship process". *Strategic Entrepreneurship Journal*, 10(1): 21-42.

- Ramos-Rodríguez, A. R., J. A. Medina-Garrido, and J. Ruiz-Navarro, 2019, "Why not now? Intended timing in entrepreneurial intentions". *International Entrepreneurship and Management Journal*, 1-26.
- Reynolds, P. D., 1997, "Who starts new firms?—Preliminary explorations of firms-in-gestation." *Small Business Economics*, 9(5), 449-462.
- Santos, F. J., M. A. Roomi and F. Liñán, 2016, "About Gender Differences and the Social Environment in the Development of Entrepreneurial Intentions". *Journal of Small Business Management*, 54: 49-66.
- Schoen, J. L., J. L. Bowler, and M. C. Schilpzand, 2018, "Conditional reasoning test for creative personality: Rationale, theoretical development, and validation". *Journal of Management*, 44(4): 1651-1677.
- Schumpeter, J. A., 1934, *Theory of economic development: An enquire into profits, capital, credit, interest, and the business cycle*. New York: Oxford University Press.
- Shane, S. A., 2003, *A general theory of entrepreneurship: The individual-opportunity nexus*. Edward Elgar Publishing.
- Shane, S. and N. Nicolaou, 2015, "Creative Personality, Opportunity Recognition and the Tendency to Start Businesses: A Study of Their Genetic Predispositions". *Journal of Business Venturing*, 30: 407-419.
- Shapero, A. and L. Sokol, 1982, "The social dimensions of entrepreneurship". *Encyclopedia of Entrepreneurship*: 72-90.
- Sheeran, P., 2002, "Intention—behavior relations: a conceptual and empirical review". *European Review of Social Psychology*, 12(1): 1-36.
- Shook, C. L. and C. Bratianu, 2010, "Entrepreneurial intent in a transitional economy: an application of the theory of planned behavior to Romanian students". *International Entrepreneurship and Management Journal*, 6(3): 231-247.
- Slavich, B. and S. Svejenova, 2016, Managing creativity: A critical examination, synthesis, and new frontiers. *European Management Review*, 13: 237-250.

- Souitaris, V., S. Zerbinati and A. Al-Laham, 2007, "Do Entrepreneurship Programmes Raise Entrepreneurial Intention of Science and Engineering Students? The Effect of Learning, Inspiration and Resources". *Journal of Business Venturing*, 22: 566-591.
- Stone, M. M. and C. G. Brush, 1996, "Planning in ambiguous contexts: The dilemma of meeting needs for commitment and demands for legitimacy". *Strategic Management Journal*, 17(8): 633-652.
- Stuetzer, M., M. Obschonka and E. Schmitt-Rodermund, 2013, "Balanced Skills Among Nascent Entrepreneurs". *Small Business Economics*, 41: 93-114.
- Tierney, P., and S. M. Farmer, 2002, "Creative self-efficacy: Its potential antecedents and relationship to creative performance." *Academy of Management journal*, 45(6): 1137-1148.
- Townsend, D. M., L. W. Busenitz and J. D. Arthurs, 2010, "To Start or not to Start: Outcome and Ability Expectations in the Decision to Start a New Venture". *Journal of Business Venturing*, 25: 192-202.
- US Department of Commerce, 2013, *The Innovative and Entrepreneurial University: Higher Education, Innovation and Entrepreneurship in Focus*. U.S. Department of Commerce. The Office of Innovation and Entrepreneurship at the Economic Development Administration.
- Van Ness, R. K., and Ch. F. Seifert, 2016, "A Theoretical Analysis of the Role of Characteristics in Entrepreneurial Propensity". *Strategic Entrepreneurship Journal*, 10: 89-96.
- Weinberger, E., D. Wach, U. Stephan and J. Wegge, 2018, "Having a Creative Day: Understanding Entrepreneurs' Daily Idea Generation Through a Recovery Lens". *Journal of Business Venturing*, 33: 1-19.
- Wilson, F., J. Kickul and D. Marlino, 2007, "Gender, Entrepreneurial Self-Efficacy, and Entrepreneurial Career Intentions: Implications for Entrepreneurship Education" *Entrepreneurship Theory and Practice*, 31(3): 387-406.
- Wood, M. S. and W. McKinley, 2010, "The production of entrepreneurial opportunity: a constructivist perspective". *Strategic Entrepreneurship Journal*, 4(1): 66-84.
- Zampetakis, L. A., M. Gotsi, C. Andriopoulos and V. Moustakis, 2011, "Creativity and Entrepreneurial Intention in Young People: Empirical Insights from Business School Students". *The International Journal of Entrepreneurship and Innovation*, 12: 189-199.

- Zapkau, F. B., Ch. Schwens, H. Steinmetz and R. Kabst, 2015, "Disentangling the Effect of Prior Entrepreneurial Exposure on Entrepreneurial Intention". *Journal of Business Research*, 68: 639-653.
- Zhao, H, S. E. Seibert and G. T. Lumpkin, 2010, "The Relationship of Personality to Entrepreneurial Intentions and Performance: A Meta-Analytic Review". *Journal of Management*, 36: 381-404.
- Zhou, Q., G. Hirst and H. Shipton, 2012, "Promoting Creativity at Work: The Role of Problem-Solving Demand". *Applied Psychology*, 61: 56-80.

Table 1
Descriptive Statistics

Variable	Observations	Mean	Std. Dev.	Min	Max
Age	502	22.70	2.90	19	47
Gender	502	0.46	0.50	0	1
Role Models	502	0.30	0.50	0	1
Work Experience	502	0.28	0.45	0	1
Subjective norms	502	5.40	1.14	1.67	7
PBC	502	3.16	1.31	1	7
Creativity	502	4.49	1.32	1	7
Attitude	502	4.42	1.38	1	7
Intention	502	3.28	1.58	1	7

Table 2
Measurement Scales Used and Properties

CONSTRUCTS	Standardized loadings (λ)*
Indicate your level of agreement with the following statements (Likert: 1=total disagreement, 7=total agreement)	
Attitude toward start-up (AVE=0.761; CR=0.941)	
Being an entrepreneur implies more advantages than disadvantages to me.	0.82
A career as entrepreneur is attractive for me.	0.90
If I had the opportunity and resources, I would like to start a firm.	0.89
Being an entrepreneur would entail great satisfaction for me	0.88
Among various options, I would rather be an entrepreneur.	0.87
Entrepreneurial intention (AVE=0.801; CR=0.960)	
I am ready to do anything to be an entrepreneur.	0.78
My professional goal is to become an entrepreneur.	0.92
I will make every effort to start and run my own firm.	0.87
I am determined to create a firm in the future.	0.95
I have very seriously thought of starting a firm.	0.92
I have the firm intention to start a firm some day.	0.92
Creativity (AVE=0.661; CR=0.921)	
I often come up with creative solutions to problems.	0.73
I am good at providing a fresh approach to problems.	0.78
I often come up with new and practical ideas.	0.81
I often have new and innovative ideas.	0.85
I am good at generating creative ideas.	0.82
I often promote and champion ideas to others.	0.88
PBC (AVE=0.650; CR=0.902)	
To start a firm and keep it working would be easy for me.	0.80
I am prepared to start a viable firm.	0.85
I can control the creation process of a new firm.	0.81
I know the necessary practical details to start a firm.	0.70
I know how to develop an entrepreneurial project.	0.86
If I tried to start a firm, I would have a high probability of succeeding.	<i>Dropped</i>
OVERALL GOODNESS OF FIT INDICES: Satorra–Bentler χ^2 (203)=715.6 $p<0.001$	
CFI=0.945 TLI=0.937 IFI=0.945 RMSEA=0.072 SRMR=0.059	

(*) All standardized coefficients are significant ($p < .01$)

Table 3
Results

	Model 1		Model 2		Model 3	
<i>Effects on attitudes</i>						
Age	.02	(.02)	.04	(.02)	.04	(.03)
Gender	.16	*** (.12)	.09	** (.11)	.09	** (.11)
Role models	.08	** (.13)	.07	* (.12)	.07	* (.12)
Work experience	.08	* (.13)	.06	(.13)	.06	(.14)
Subj norms	.30	*** (.05)	.26	*** (.05)	.25	*** (.06)
Creativity			.33	*** (.05)	.32	*** (.04)
<i>R</i> ² (attitudes)	.13		.23		.23	
<i>Effects on PBC</i>						
Age	.11	*** (.02)	.12	*** (.02)	.12	** (.03)
Gender	.12	*** (.11)	.09	** (.12)	.09	* (.13)
Role models	.14	*** (.12)	.13	*** (.12)	.13	*** (.12)
Work experience	.14	*** (.13)	.12	*** (.13)	.12	*** (.13)
Subj norms	.20	*** (.05)	.17	*** (.05)	.17	*** (.05)
Creativity			.18	*** (.05)	.17	*** (.05)
<i>R</i> ² (PBC)	.11		.14		.14	
<i>Effects on intentions</i>						
Age	-.02	(.02)	-.02	(.02)	-.01	(.04)
Gender	.06	** (.08)	.06	** (.08)	.06	** (.09)
Role models	.01	(.09)	.01	(.09)	.01	(.14)
Work experience	.03	(.10)	.02	(.10)	.02	(.15)
Subj norms	-.03	(.04)	-.02	(.04)	-.02	(.06)
Attitudes	.68	*** (.03)	.66	*** (.04)	.66	*** (.04)
PBC	.25	*** (.04)	.25	*** (.04)	.24	*** (.04)
Creativity			.07	** (.04)	.08	** (.05)
PBC*Creativity					.03	(.04)
Attitudes*Creativity					.08	** (.03)
<i>R</i> ² (intentions)	.64		.66		.67	
Overall Goodness of fit:						
<i>Chi square</i>	102.8	***	33.53	*	20.22	
<i>Degrees of freedom</i>	25		22		20	
<i>CFI</i>	0.90		0.98		1.00	
<i>TLI</i>	0.89		0.98		1.00	
<i>RMSEA</i>	0.082		0.034		0.005	
<i>AIC</i>	14793		14729		14719	

Note: Standardized coefficients are shown in the table with standard errors in parenthesis

* $p < .10$ ** $p < .05$ *** $p < .01$ (two-tailed)

CFI: Comparative fit index

TLI: Tucker-Lewis Fit Index

RMSEA: Root mean square of approximation

AIC: Akaike's information criterion

Table 4

Effects of the antecedents of Entrepreneurial Intentions at Different Levels of Creativity

	Effects of Attitudes on Intentions	Effects of PBC on Intentions	Indirect effects of Subjective Norms on Intentions ^a
Low level of creativity (- 1 Sd)	.580 (.049) ***	.207 (.056) ***	.186 (.044) ***
Medium level of creativity (mean)	.659 (.037) ***	.239 (.039) ***	.213 (.049) ***
High level of creativity (+ 1 Sd)	.738 (.056) ***	.272 (.063) ***	.239 (.055) ***

Standardized Coefficients with Bootstrapping Standard Errors in parentheses

^a Include effects through attitudes and through PBC. Direct effects are not significant

* $p < .10$ ** $p < .05$ *** $p < .01$ (two-tailed)

Figure 1
Proposed Model

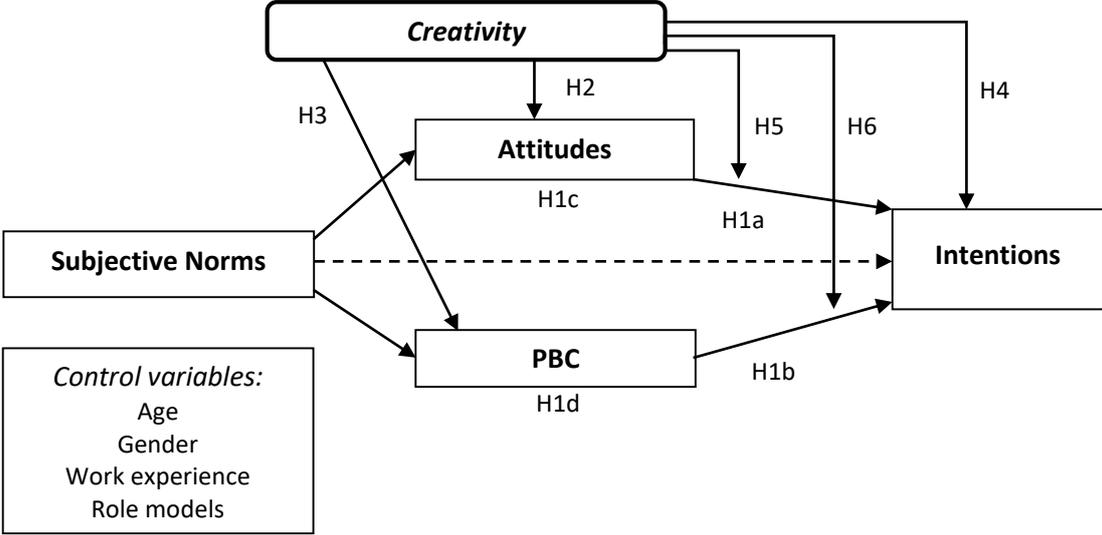


Figure 2
The moderating effects of creativity

