Are the interactions between the need for achievement and the social networks the engine of entrepreneurial intention? A trait activation story

Abstract

Entrepreneurial intention plays a very relevant role in the decision to start a new firm. This intention has been widely studied using cognitive models or the personality traits approach. However, the majority of the previous studies have no considered the importance of social environment for entrepreneurship. Building on trait activation theory (Tett & Burnett, 2003), we explore how the combination of social environment and personality is very relevant for entrepreneurial intentions. In particular we analyze how social networks interact with need for achievement to promote entrepreneurial intention. Using partial least squares (PLS), we test the hypotheses for 597 university students from Spain. We confirm the impact of social networks size on entrepreneurial information of social networks, which in turn, influences positively entrepreneurial intentions. Furthermore, need for achievement enhance the influence of entrepreneurial information of social networks on entrepreneurial intention, but not intensify the influence of social networks size on this entrepreneurial information. Implications for research and practice are discussed.

Keywords: entrepreneurial intention; trait activation theory; social networks; need for achievement.

1. Introduction

Entrepreneurial intention, defined as the desire to own or to start a new business (Krueger, Reilly, & Carsrud, 2000), is essential to the understanding of entrepreneurship as it is the first step in the process of discovering, evaluating, and exploiting opportunities (Gartner, Shaver, Gatewood, & Katz, 1994). Traditionally, entrepreneurial intention has been studied with different cognitive models such as entrepreneurial event model (Shapero & Sokol, 1982) or theory of planned behavior (Ajzen, 1991). Furthermore, entrepreneurial intention has been also studied through the personality traits approach (Rauch & Frese, 2007). This approach considers that personality traits are good predictors of entrepreneurial behaviour (e.g. Rauch & Frese, 2000; Karabulut, 2016) and that some personality traits are unique to entrepreneurs (Koh, 1996). Among these unique personality traits, need for achievement has been strongly related to the domain of entrepreneurship (Rauch & Frese, 2007) because need for achievement implies that individuals have higher desires and ambitions to be successful, focusing on tasks of moderate difficulty that involves skills and effort, responsibility for results, and a clear performance feedback (McClelland, 1961).

Although very informative, studies focusing on both approaches are mainly based on individual characteristics alone, not usually taking into account that the individuals operate in and are influenced by their environment. In this regard, there is a growing awareness in entrepreneurship research that the
social environment interacts with individuals to boost the discovery, exploration and exploitation of opportunities (De Carolis & Saparito, 2006; Corbett, 2007). One key element of an individual’s social environment is his/her networks since individuals are linked through social relationships to wider networks of individuals (Hoang & Antoncic, 2003). While cognitive approaches have already shown that the simultaneous consideration of social environment and entrepreneurial cognition provides a fuller explanation than those that simply examine one or the other (De Carolis & Saparito, 2006; De Carolis, Litzky, & Eddleston, 2009), personality approaches still lack this integration about how the interaction of social environment and personality traits influence entrepreneurship. This integration is relevant since previous research in entrepreneurship has argued that behavior can only be described by the interaction of personal and situational factors (Hodgetts & Kuratko, 2001) because a theory which does not consider these factors simultaneously overly reduces the complexity of the self-employment process (Tett & Burnett, 2003).

In this paper we address this gap building on trait activation theory. Trait activation theory considers that individual factors considerably depend on the environment (Tett & Gutterman, 2000). This theory explains that personality traits are manifested when environment activate these particular traits (Tett & Burnett, 2003). Since previous research has scarcely explored how individual differences might affect social network usage and benefits (Emirbayer & Goodwin, 1994; Stevenson & Greenberg, 2000), we consider that social environment factors (e.g. social networks) are important as it is the environment that activates a person’s trait (e.g. need for achievement). Accordingly, the environment is studied in conjunction with individual factors to better predict entrepreneurial intentions (Venkataraman, Sarasvathy, Dew, & Forster, 2012; Rasmussen, Mosey, & Wright, 2014). In particular, we firstly hypothesize that social networks entrepreneurial information help to develop entrepreneurial intentions. Previously to that, we hypothesize that a higher social networks size allow individuals to obtain more entrepreneurial information of social networks. Therefore, we consider two different steps of social networks because it is different the social networks in terms of resources than the nature of the relationships that endow those resources (Gedajlovic et al., 2013). Finally, as the more interesting part, we hypothesize that need for achievement intensify both the relationships among social networks size and entrepreneurial information of social networks and, among this entrepreneurial information and entrepreneurial intentions. We test these hypotheses in a sample of 597 university students from two different universities in Spain.

This study makes four primary contributions. First, we advance research on entrepreneurial intention by analyzing how the combination of environment (social networks) and personality (need for achievement) are important for the development of entrepreneurial intention among individuals. Therefore, we follow the suggestion of Fayolle and Liñan’s (2014) about expanding the antecedents, moderators and mediators of entrepreneurial intention in order to increase our understanding of entrepreneurial intentions. Second, we explain how social networks promote entrepreneurship in two
steps. In particular, we consider that social networks size help to obtain social networks entrepreneurial information, which in turn, influence positively entrepreneurial intentions. In this sense, there is a lack of attention to the specific mechanisms through which social networks have their effects (Anderson, 2007). Third, we also contribute to the literature of need for achievement on entrepreneurship, analyzing the intensifying role of need for achievement on the first steps of entrepreneurship, which involves a different type of relationship among need for achievement and entrepreneurship than the direct relationships of previous research (Frank, Lueger, & Korunka, 2007; Hack, von Bieberstein, & Kraiczy, 2016). Finally, from a broader perspective, we also contribute to trait activation theory (Tett & Burnett, 2003). In our study, this theory represents an opportunity to link personality and social networks, which has been recognized as important (Emirbayer & Goodwin, 1994; Burt et al., 1998; Mehra, Kilduff, & Brass, 2001), but few studies have actually done so (Anderson, 2007). This link would have positive consequences for entrepreneurial intention.

The remainder of the paper is structured as follows. Section 2 explains our theoretical background. Section 3 corresponds to the formulation of our hypotheses. Section 4 explains the specific research sample and methodology, and Section 5 provides the results from our analysis. Finally, Section 6 offers the discussion, practical implications, future research lines, the study’s limitations and conclusion.

2. Theoretical background

The trait activation theory is a person–situation interaction model. Trait activation theory is based on the principles that personality traits are latent propensities to behave in certain ways and traits are expressed as responses to trait-relevant situational cues (Tett et al., 2013). The theory suggests that when there are situational cues that are relevant to the trait, the trait is activated and individuals will engage in behaviors according to what the trait predicts (Tett & Guterman, 2000; Tett & Guterman, 2008; Bercovitz & Feldman, 2008). There could be three different types of trait-relevant situational cues: task-level, social-level, and organizational-level cues (Tett & Burnett, 2003). Among them, social-level cues are related with social networks because social relationships offer ample opportunities to express the individuals’ traits (Tett et al., 2013). In other words, individuals depend on their personality traits when they are relating in the context of social networks (Asendorpf & Wilpers, 1998) because these situational factors allow the expression of individual’s dispositions (Hirst, Van Knippenberg, Chen, & Sacramento, 2011). Trait activation theory has received attention within entrepreneurship research where scholars have shown how individual factors matter mostly in environments that activate a person’s trait to influence entrepreneurship. For example, Foo, Knockaert, Chan, & Erikson (2016) show that high promotion focus matters in the context of work and family environments to influence entrepreneurial intentions. Similarly, Foo, Uy, & Baron (2009) prove that affective traits are important in the relationship among affective states and venture efforts. Therefore, this theory is appropriate to study...
different entrepreneurial processes. In particular, applying this theory on entrepreneurial intentions, a previous cognitive step than entrepreneurship (Mitchell et al., 2002).

Social contacts play an important role in the first steps for establishing a firm (Greve & Salaff, 2003). For instance, preexisting contacts can provide resources during the new venture process (Aldrich, Rosen, & Woodward, 1987, Johannisson, 1988). Therefore, social networks impact the different entrepreneurial processes and outcomes (Hoang & Antoncic, 2003), and thus, they are a key element of entrepreneurship (Jack, 2010). As we have previously commented, in social networks research, there are a differentiation among social networks in terms of resources and the nature of the relationships that endow those resources (Gedajlovic et al., 2013). Hoang & Antoncic (2003) also differentiate among network content and structure in their review among network-based research in entrepreneurship. Therefore, we first focus on social networks size, which represents the nature/structure of relationships and, later, entrepreneurial information obtained in social networks, which represents the resources/content obtained through these networks.

Related to this, previous researchers have long recognized the theoretical importance that personality likely plays in obtaining social network benefits (Burt, 1992), considering that individuals appear to differ in their ability to derive different outcomes from social ties (Riley & Eckenrode, 1986). Since previous research has considered that the effect of a particular social goal on an individual's motivation will depend on what type of achievement goal the individual pursues (Wentzel, 1989), it is important to attend to the role of achievement goals in social relationships (Urdan & Maehr, 1995; Dweck, 1996). Thus, the mechanism of trait activation theory is applied to show that need for achievement matters in the context of social networks in the process of development of entrepreneurial intentions.

As we have commented, high need for achievement individuals are more likely than low need for achievement people to engage in energetic and innovative activities that require planning for the future, offer high degrees of control over outcomes, personal responsibility and feedback on performance (McClelland, 1961). Therefore, previous research has found that need for achievement fits with entrepreneurial activity (Frank et al., 2007) and new venture creation (Hack et al., 2016). Building on trait activation theory (Tett & Burnett, 2003), the influence of need for achievement would be activated in the context of social networks, intensifying the effects social networks on entrepreneurial intention.

3. Hypotheses development

The most intuitive network variable is size, i.e., the number of direct links between a focal actor and other actors (Hoang & Antoncic, 2003). The entrepreneurial literature suggests that network size is positively associated with the founding of new firms (Burt 1992; DiMaggio 1992; Nohria 1992; Aldrich, Rosen, & Woodward, 1987). De Carolis & Saparito (2006) find that networks consisting of
many contacts reduce uncertainty in exchanges. The reason would be that the characteristics of the
social networks resulting from these relationships, such as the size of social networks, provide benefits
that can be mobilized to facilitate action (Adler & Kwon, 2002). Therefore, entrepreneurs can expand
their networks to obtain key resources (Greve & Salaff, 2003), which are necessary to develop their
activity (Dubini & Aldrich, 1991). Among these resources, network size affected individuals’ access to
information (Gabbay & Leenders, 2001; Greve & Salaff, 2003). Thus, network size is important because
each tie an actor has represents an information channel. When an individual needs information, a greater
number of contacts make it more likely that someone the individuals knows will have relevant
information (Burt, 1992). Indeed, network size emerged as a predictor of network information benefits
for managers (Anderson, 2007). For the previous arguments, we expect that this would be similar for
entrepreneurs. Thus, we propose:

**H1:** The greater the size of the networks is, the greater the entrepreneurial information obtained in
social networks will be.

One crucial activity in the start-up process is accessing different resources, including information and
knowledge (Baron, 2008). In this entrepreneurial process, a key benefit of social networks is the access
they provide to information and advice (Hoang & Antoncic, 2003). We consider the term information
in this context as actionable knowledge, which is the knowledge that leads to immediate progress on an
assignment or project (Cross and Sproull, 2004) – entrepreneurship, in our case –. In this sense,
individuals consistently use networks to get ideas and gather information that benefit them in the
recognition entrepreneurial opportunities (Birley, 1985; Hoang and Young, 2000). Since this
information may improve an individual’s belief concerning their ability to perform different tasks
related to entrepreneurship (Martin, McNally, & Kay, 2013), social networks allow individuals to
consider that they have a greater control relative to engaging in entrepreneurial behavior (De Carolis,
Litzky, & Eddleston, 2009). Therefore, information obtained in social networks increases individuals’
perceptions that they will achieve the expected outcomes, making the pursuit of a new entrepreneurial
opportunity more attractive (De Carolis & Saparito, 2006). Finally, prior information helps individuals
to identify entrepreneurial opportunities (Shane & Ventakaraman, 2000). For these arguments, we state:

**H2:** The greater the entrepreneurial information obtained in the social networks is, the greater the
entrepreneurial intention will be.

As we have explained, individuals high in need for achievement need to have tasks of moderate
difficulty, feel the responsibility for the results, and receive feedback on the outcomes, then they are
interested in them in order to perform well (McClelland, 1961). Thus, entrepreneurial behavior is
properly associated with this description (Aboal & Veneri, 2016). Traditionally, research on
achievement goals (Dweck, 1986; Senko et al., 2011) has divided achievement goals into mastery and
performance goals. Mastery goals correspond to the desire to learn and acquire new knowledge, namely, to gain competence. Performance goals correspond to the desire to perform better relative to others. Thus, social motives are related to achievement motives (e.g., McClelland, 1985; Veroff & Veroff, 1980). Since a better understanding of need for achievement can be gained by expanding achievement theory to include social processes, including social goals (Blumenfeld, 1992), we consider how need for achievement intervene in the context of social networks.

We have commented that network size helps determine individuals’ access to information channels (Anderson, 2007). However, Burt (1998) explained that social networks opportunities do not by themselves turn into realization, and some people are not comfortable pursuing the information benefits of social networks. Therefore, personality can play a significant role too. Following this, individuals can have larger social networks and if they have the social goal to obtain resources for its achievement, it is likely that they are motivated to obtain more resources from these networks (Wentzel, 1989). Indeed, for individuals with high need for achievement, when they have social networks to deal with, it is likely that this trait influence them in order to obtain as many social resources as they can, such as social network entrepreneurial information, because it likely that these resources allow them to get their achievements. The overall argument is that while social network structure provides the opportunity to gain the social capital benefits of access to information, personality (e.g., need for achievement) helps to determine whether individuals finally acquire more possible benefits (Anderson, 2007). Similarly, previous research has already found that need for cognition, a personality trait related to the extent to which individuals are inclined towards effortful cognitive activities, interacts with social network size in order to gathering more social networks information for managers (Anderson, 2007), also based on the trait activation theory perspective (Tett et al., 2013). Considering this and the importance of need for achievement for entrepreneurial individuals, we propose:

**H3:** *Need for achievement will positively moderate the relationship between social networks size and entrepreneurial information of social networks.*

Previous scholars have argued that explicitly considering personality as distinct from opportunity is important because both personality and opportunity are relevant in social networks to materialize more benefits for entrepreneurship (Adler & Kwon, 2002). Therefore, based on trait activation theory (Tett & Burnett, 2003), personality could help individuals to benefit of the entrepreneurial information that come from the social networks. Previous research has considered that personality could be a potential moderator to explain the information benefits of social networks as an underlying causal mechanism (Anderson, 2007). Following this and taking into account that entrepreneurship involves the nexus of two different phenomenon, which are the presence of lucrative opportunities and the presence of enterprising individuals (Venkataraman, 1997) and that need for achievement can select individuals for entry into entrepreneurship (Frank et al., 2007; Hack et al., 2016), individuals higher in need for
achievement would take more advantage of the entrepreneurial information of social networks since this information represents opportunities to accomplish their entrepreneurial achievements. Conversely, if individuals have large networks filled with social network information, they may benefit less from the opportunity inherent in such information if they do not have high need for achievement to actively take advantage of it (Burt, 1998). For these arguments, we propose:

\textit{H4: Need for achievement will positively moderate the relationship among entrepreneurial information of social networks and entrepreneurial intentions.}

Figure 1 shows the model used in our study.

\begin{figure}[h]
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\includegraphics[width=\textwidth]{model.png}
\caption{Model of the research framework.}
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4. Research Method

4.1 Sample and Data Collection

Our sample comprises undergraduate university students in their last two years of university from two universities in Spain that voluntarily responded to questionnaires after being informed about the goal of the research. They are studying degrees in business or related disciplines such as finance, accounting, marketing, trade or economics. We obtained 608 responses, discarding 11 responses due to missing data. Table 1 shows the characteristics of the final 597 university students in terms of age, gender, experience as self-employed and experience as employee.

[INSERT TABLE 1 ABOUT HERE]

Students in our sample have, on average, roughly one year to make a decision regarding their professional career (Fitzsimmons & Douglas 2011). This selection is in line with Krueger (1993) who argues that in analyses of entrepreneurial career choice researchers should use samples of individuals currently facing major career decisions. Given this relatively short period of time, the students’ entrepreneurial intentions are likely to remain stable after graduation (Audet, 2004). For these reasons, student samples are appropriate in studies on nascent entry into entrepreneurship (Hsu et al., 2017). Indeed, university student-based samples are very common in research into entrepreneurial intention.
(Kolvereid, 1996; Krueger et al., 2000; Veciana, Aponte, & Urbano, 2005; Fitzsimmons & Douglas, 2011). Even so, there is still an interest on the university students (e.g. Ilouga, Mouloungni, & Sahut, 2014; Rauch and Hulsink, 2015; Karimi, Biemans, Lans, Chizari, and Mulder, 2016; Hsu et al., 2019) as this part of the population has specific knowledge and competences that could be exploited by the means of new ventures (Galloway and Brown, 2002).

4.2 Measurement scales

Table 2 shows the operationalization of our measures. To validate the measurement items, we first confirm them with an expert in entrepreneurship. Then, following a pretest with a sample of 31 university students, we adjusted some items to facilitate understanding.

[INSERT TABLE 2 ABOUT HERE]

Entrepreneurial intention. We use five items based on Liñan and Chen’s (2009) Entrepreneurial Intent Questionnaire, which is based on previous literature (Kolvereid, 1996; Krueger et al., 2000; Veciana, Aponte, & Urbano, 2005) and extensively used in entrepreneurial intention research (e.g. Liñan, Urbano, & Guerrero, 2011; Ilouga et al., 2014; Karimi et al., 2016).

Social networks size. We use two items of Ellison et al., (2011): the total number of friends with whom an individual connects through networks and what proportion of these friends are friends with a frequent contact since both aspects are important in terms of networks (Ellison et al., 2011).

Entrepreneurial information of social networks. We adapt the three items of De Carolis et al., (2009) about the amount of information that individuals can obtain through social networks or if individuals can discuss new business ideas in these networks.

Need for achievement. We measure need for achievement with three-item adapted from Lee and Tsang (2001), related to how individuals have higher desires and ambitions about their results and career.

4.3 Control variables and common method bias

We use several control variables for the analysis of entrepreneurial intention. First, we include age because literature shows that age is negatively related with the desire to start a business (Curran and Blackburn, 2001). Additionally, previous findings consider that men have a higher orientation for entrepreneurial behaviour than women (Mathews and Moser, 1995), thus we include a dummy variable for gender, which equals 1 if the individual is female, and zero otherwise. Finally, prior research shows that (a) job experience is positively related to the probability of creating a new business (Mathews and Moser, 1995) and (b) entrepreneurial experience is related with the individuals’ belief in their entrepreneurial potential (Shepherd, 2003). Therefore, we operationalize work experience in two different dummy variables, which equal 1 if the respondents have previous experience being employed or self-employed, and zero otherwise.
On the other hand, common method bias is a serious concern when the dependent and independent variables refer to perceptual measures answered by the same individual (Podsakoff et al., 2003). To assess the severity of common method bias, we conduct a Harman one-factor test (Podsakoff & Organ, 1986) with our four main variables to check whether variance in the data is largely attributed to a single factor. We adopt the rule of an eigenvalue greater than 1 and find four factors; the highest covariance explained by one factor is only 31.3%. Therefore, we confirm that the common method bias is not a concern.

5. Analysis and Results

5.1 Measurement model

We use structural equation modelling for our statistical analysis. In particular, we employ the PLS approach to validate our research model (Ringle, Wende, & Will, 2005). Following PLS, the measurement and structural parameters are estimated via an iterative procedure that combines simple and multiple regressions by traditional ordinary least squares. This avoids any distributional assumption of the observed variables. Consequently, PLS does not require data normality and does not suffer from indeterminacy problems associated with other modelling techniques (Wittmann, Hunt, & Arnett, 2009).

We evaluate the measurement model of the reflective constructs by examining item reliability, internal consistency, and convergent and discriminant validity (Roldán & Leal, 2003). All item loadings are significant at p < 0.01 (see Table 2). We appraise the constructs’ internal consistency by observing Cronbach’s alpha and composite reliability. All Cronbach’s alphas are above 0.6, and composite reliability exceeds the boundary of 0.7 for all measurement items (see Table 3). Table 3 shows that the average variance extracted exceeds the recommended threshold of 0.5 for all constructs (Fornell & Larcker, 1981). Thus, we confirm the convergent validity of the constructs.

Additionally, we evaluate discriminant validity of the reflective scales by examining the extent to which (a) the root square of average variance extracted is larger than the interconstruct correlations and (b) each item loads more highly on its intended construct than on others (see Table 3). This confirm the discriminant validity of our constructs. (Fornell and Larcker, 1981). Furthermore, as recommended by Henseler Ringle, and Sarstedt (2015), we also examined heterotrait–monotrait (HTMT) ratios of correlations. Table 3 does not show HTMT ratios above the threshold of 0.85, and none of the corresponding confidence intervals included the value 1, which means that this study met the criteria for establishing adequate discriminant validity suggested by Henseler et al. (2015). In sum, we assert that all constructs possess good psychometric properties.
Finally, in order to measure the fit our models, we consider the standardized root mean square residual (SRMR), which is a goodness of fit measure for PLS that can be used to avoid model misspecification (Henseler et al., 2016). The SRMR is defined as the difference between the observed correlation and the model implied correlation matrix. Thus, it allows assessing the average magnitude of the discrepancies between observed and expected correlations as an absolute measure of (model) fit criterion. A value less than 0.08 is considered a good fit (Hu and Bentler, 1999). In our specific case, our three models have a SRMR of 0.033, 0.041, and 0.045 respectively. Therefore, our models are considered with a good fit.

5.2 Structural model

Hierarchical regression analysis is used for hypothesis testing. Different blocks of variables were sequentially introduced in PLS to check their respective explanatory power, facilitating the interpretation of coefficients concerning the main and interaction effects. In line with Chin (1998), bootstrapping (5000 subsamples) was used to generate the standard errors and t statistics. Table 4 shows the path coefficients β for the three estimated models and the variance explained (R²) in the dependent constructs.

[INSERT TABLE 4 ABOUT HERE]

Model 1 shows the results for the control variables. First, men have a significant higher entrepreneurial intention than women (β = -0.136, p = 0.000). Additionally, both experience as employee (β = 0.160, p = 0.000) and as self-employed (β = 0.087, p = 0.030) are positive related with entrepreneurial intention. However, age (β = 0.052; p = 0.104) is not significant for entrepreneurial intention.

Model 2 allows us to test the hypotheses regarding the main effects. First, results indicate that social networks size positively and significantly affects entrepreneurial information of social networks (β = 0.122; p = 0.000), supporting H1. Furthermore, results support H2, providing evidence with regard to the positive and significant relationship between entrepreneurial information of social networks and the entrepreneurial intention of individuals (β= 0.201; p = 0.000).

Model 3 examines, based on trait activation theory, the moderating effects of need for achievement. First, need for achievement does not moderate (β= 0.007; p = 0.407) the relationship between social networks size and entrepreneurial information of social networks. Therefore, H3 is not supported. Nevertheless, need for achievement positively moderates (β= 0.091; p = 0.009) the relationship between social networks entrepreneurial information and entrepreneurial intention, thus supporting H4.

6. Discussion
Our study extends the literature on entrepreneurial intention by analyzing how the combination of social networks and need for achievement is important for the development of entrepreneurial intention among individuals. In this sense, our study contributes to expand the antecedents and moderators of entrepreneurial intention (Fayolle & Liñan, 2014). Furthermore, we complement the literature on social networks and entrepreneurship, finding that social networks are not only important when individuals establish a firm (Greve & Salaff, 2003), but these networks are also important in the decision to start a firm. Therefore, we improve the understanding of how social environment (e.g. social networks) matters for entrepreneurial cognition (e.g. entrepreneurial intention) (De Carolis et al., 2009). Additionally, we extend the role of need for achievement in entrepreneurship. Overall, our result suggest that need for achievement intensify how social networks helps to the development of entrepreneurial intentions, not being related with entrepreneurial intentions in a direct way as previous research has found (Frank, Lueger, & Korunka, 2007; Hack, von Bieberstein, & Kraiczy, 2016). Finally, from a broader perspective, our paper contributes to trait activation theory (Tett & Burnett, 2003). So far, trait activation theory has been scarcely used in entrepreneurship research, (Foo et al., 2009; Foo et al., 2016), but it can contribute to a more complete view of the process of entrepreneurial intention (Hodgetts & Kuratko, 2001) in the extent to which it considers simultaneously individual factors and social environment for explaining entrepreneurship (Tett & Burnett 2003; De Carolis & Saparito, 2006; De Carolis et al., 2009).

In a more specific way, our results provide different essential findings. First, our results show that greater social networks size is important for obtaining more entrepreneurial information in social networks. When individuals need information related to start a new business or discuss about an entrepreneurial idea, a greater number of contacts help these individuals to obtain this relevant information because they have more possibilities among their social contacts (Burt, 1992; Anderson, 2007). Testing this, we differentiate among social networks in terms of network structure and content (Hoang & Antonic, 2003; Gedajlovic et al., 2013), finding that the structure of the relationships, i.e. size, allow individuals to obtain different resources such as entrepreneurial information (Anderson, 2007). Additionally, our findings support that entrepreneurial information of social networks helps for developing entrepreneurial intentions. The reason would be that the entrepreneurial information that individuals can obtain from their social networks helps them to consider entrepreneurship as more attractive since they could have more control in the entrepreneurial process (De Carolis, Litzky, & Eddleston, 2009), finally obtaining the expected outcomes of entrepreneurship (De Carolis & Saparito, 2006). In sum, social networks thus promote entrepreneurial intention in two consecutive steps. Social networks size help to obtain entrepreneurial information, which in turn, influence positively entrepreneurial intentions. Our study helps to the understanding of the specific mechanisms through which social networks have their effects (Anderson, 2007), especially in the first cognitive steps of entrepreneurship.
Beyond the main direct effects, our results do not show a significant intensifying effect of need for achievement in the relationship between social networks size and entrepreneurial information of social networks. Previous research has already found that need for cognition moderates the relationship between social network size and social networks information gathering for managers (Anderson, 2007). It is likely that potential entrepreneurs would be similar to the managers in this point, being need for achievement more important in a more advanced step of social networks (Gedajlovic et al., 2013). Indeed, we find that need for achievement positively and significantly intensifies the relationship among entrepreneurial information of social networks and entrepreneurial intention of individuals. This result is in line with the fact that potential entrepreneurs have more need for achievement than average individuals (Aboal & Veneri, 2016), likely because this need for achievement allow them to develop their entrepreneurial intentions starting from the information of social networks. In other words, based on trait activation theory (Tett & Burnett, 2003), entrepreneurial information of social networks activate need for achievement in individuals higher in this particular trait in order to take advantage of this information (Burt, 1992) and develop entrepreneurial intentions. In general, comparing with the previous cognitive models of entrepreneurial intention (Ajzen, 1991) or the personality traits approach (Rauch & Frese, 2007), trait activation theory can help to explain entrepreneurship and at the same time social networks and personality (Anderson, 2007), which has been recognized as important (Emirbayer & Goodwin, 1994; Burt et al., 1998; Mehra, Kilduff, & Brass, 2001).

6.1 Practical implications

The study has practical implications for understanding and encouraging entrepreneurial intentions in individuals. First, universities, which guide students toward future careers, should promote training courses related to social abilities among university students that allow them to improve their social networks size, which in turn, improves the entrepreneurial information that they could access and obtain. In developing such social abilities, university students should understand the importance of both the structure and the content of social networks. Second, our research points to the important role of the combination of social environment and personality to develop entrepreneurial intentions. Under favourable social circumstances, individuals high in need for achievement are especially interested in starting-up. Therefore, companies that are interested in promoting entrepreneurial behaviour of their employees should, and through this social networks, activate the entrepreneurial intention of high need for achievement individuals. This could even be applied in a greater level, being the institutions responsible for creating a social environment that is favourable toward the interchange of entrepreneurial information for high need for achievement individuals. Finally, our finding about need for achievement is particularly important because this personality trait is activated to turn entrepreneurial information of social networks into more entrepreneurial intention. For example, when different individuals request start-up money for a new business, funders can capture the individuals’
need for achievement to help in the selection of entrepreneurial projects. In particular, funders should recognize if their entrepreneurial information of social networks is affected by need for achievement that ultimately has an impact on their entrepreneurial intentions.

6.2 Limitations

Our research has several limitations. First, our cross-sectional analysis, despite having certain benefits, does not allow us to make strong inferences regarding the causality of the proposed relations. Although theoretical arguments suggest a causal direction, the nature of the relations could be assessed through a longitudinal research. The relation among social networks and entrepreneurial activities may be reciprocal in nature, in as much as social capital is both a logically antecedent and the result of entrepreneurship (Carney & Gedajlovic, 2002). Second, although samples of university students have the advantage of analyzing individuals of similar age and qualifications, which provides homogeneity to the sample, this condition of students does not allow to know if the results apply to samples based on a broader population. Finally, social networks are a complex construct (Gedajlovic et al., 2013) and as such, it is very difficult to find a measure that can represent its nature completely (Adler & Kwon, 2002). Therefore, other measures of social networks could capture better the complex nature of social networks both in terms of the structure and the content of these networks.

6.3 Future research

Our findings suggest other lines of research. First, we could extend our entrepreneurial intention model, including some other environment variables beyond social networks. Indeed, previous research has found the influence of organizational factors (Lee, Wong, Der Foo, and Leung, 2011) and cultural perceived barriers (Shinnar, Giacomin, and Janssen, 2012) on entrepreneurial intentions. Hence, future research can examine if these environmental factors promote or not the activation of need for achievement in order to develop higher entrepreneurial intentions among individuals. Second, regarding social networks, the Internet and, specifically, social networks sites (e.g., Facebook, Twitter, etc.) play an integral role in social relationships because these sites create a context that favour meaningful communicative exchanges and supplements physical relationships (Ellison, Vitak, Gray, & Lampe, 2014). Entrepreneurs are increasing the use of these social networks sites (Fischer & Reuber, 2014), so future research can explore the role that these social networks sites on the previous step of entrepreneurship such as entrepreneurial intention. Finally, following trait activation theory (Tett & Burnett, 2003), there can be another traits that can be activated through the social networks. For example, risk taking propensity –an individual’s tendency to take or avoid risks (Sitkin & Weingart, 1995)– is an important factor to explain entrepreneurial processes because individuals with higher risk-taking propensity tend to take more risks when running their activities in terms of resource acquisition, strategy, and organizing (Tang & Tang, 2007). Among these activities, social networks are important mechanisms that minimize the impact of risk-taking behavior of individuals (Granovetter, 2005).
Therefore, future research could consider how the combination of risk-taking propensity and social networks can influence entrepreneurial processes, not necessarily being in a positive way.

7. Conclusion

Entrepreneurship has a relevant role as a promoter of economic activity and innovation factor. Therefore, it is essential to understand how to develop entrepreneurial intention among individuals. The majority of the previous research have only considered cognitive or personality models to study entrepreneurial intentions. Although very informative, social environment also plays a key role in entrepreneurship (De Carolis & Saparito, 2006). We shed light on this issue by relating social environment and personality in the development of entrepreneurial cognition. Thus, this study increases our understanding of the importance of both social networks size and information for entrepreneurial intention and the interplay of social networks entrepreneurial information and need for achievement in the development of these entrepreneurial intentions among individuals.
References


Table 1. Sample characteristics

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>% of total</th>
<th>Age</th>
<th>N</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>248</td>
<td>41.5</td>
<td>19</td>
<td>10</td>
<td>1.7</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>34.9</td>
<td>20</td>
<td>92</td>
<td>15.2</td>
</tr>
<tr>
<td></td>
<td>21</td>
<td>34.9</td>
<td>21</td>
<td>201</td>
<td>33.7</td>
</tr>
<tr>
<td>Female</td>
<td>349</td>
<td>58.5</td>
<td>22</td>
<td>126</td>
<td>21.1</td>
</tr>
<tr>
<td></td>
<td>23</td>
<td>38.9</td>
<td>23</td>
<td>72</td>
<td>12.1</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>38.9</td>
<td>24</td>
<td>28</td>
<td>4.7</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>38.9</td>
<td>25</td>
<td>26</td>
<td>4.4</td>
</tr>
<tr>
<td></td>
<td>&gt;25</td>
<td>7.1</td>
<td>26</td>
<td>42</td>
<td>7.1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>597</td>
<td>100.00</td>
<td>TOTAL</td>
<td>597</td>
<td>100.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Experience as self-employed</th>
<th>N</th>
<th>% of total</th>
<th>Experience as employee</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>30</td>
<td>5.0</td>
<td>Yes</td>
<td>302</td>
</tr>
<tr>
<td>No</td>
<td>567</td>
<td>95.0</td>
<td>No</td>
<td>295</td>
</tr>
<tr>
<td>TOTAL</td>
<td>597</td>
<td>100.00</td>
<td>TOTAL</td>
<td>597</td>
</tr>
<tr>
<td>Table 2. Measurement scales and psychometric properties</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measurement items</td>
<td>Mean (S.D.)</td>
<td>Factor loadings</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Entrepreneurial Intention</strong> (\alpha = 0.941, \text{AVE} = 0.813, \text{CR} = 0.956)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rate the following statements:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am ready to do whatever it takes to become an entrepreneur</td>
<td>3.99 (1.51)</td>
<td>0.854**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My professional goal is to become an entrepreneur</td>
<td>3.85 (1.57)</td>
<td>0.923**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I will make every effort to create and run my own company</td>
<td>3.99 (1.70)</td>
<td>0.928**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am determined to set up a firm in the future</td>
<td>3.81 (1.69)</td>
<td>0.933**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have e seriously thought about starting a business in the future</td>
<td>3.81 (1.92)</td>
<td>0.868**</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Social networks size</strong> (\alpha = 0.859, \text{AVE} = 0.878, \text{CR} = 0.935)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Answer the following questions about your social relationships:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many people do you consider to have a social relationship?</td>
<td>4.06 (2.65)</td>
<td>0.963**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many of these people do you maintain a frequent contact?</td>
<td>2.68 (1.85)</td>
<td>0.910**</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Social networks entrepreneurial information</strong> (\alpha = 0.819, \text{AVE} = 0.727, \text{CR} = 0.889)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indicate the degree to which your participation in social relationships…</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Would make easier for you to start with a new company</td>
<td>5.13 (1.42)</td>
<td>0.866**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provides you a forum to discuss new business ideas</td>
<td>4.82 (1.50)</td>
<td>0.816**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Afford you a greater access to business information</td>
<td>4.88 (1.51)</td>
<td>0.874**</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Need for achievement</strong> (\alpha = 0.698, \text{AVE} = 0.576, \text{CR} = 0.799)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indicate agreement:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I will not be satisfied unless I have reached the desired level of results</td>
<td>5.73 (1.11)</td>
<td>0.621**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Even though people tell me ‘it cannot be done’, I will persist</td>
<td>5.92 (1.05)</td>
<td>0.820**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I look upon my work as simply a way to achieve my goals</td>
<td>6.18 (0.96)</td>
<td>0.854**</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of years</td>
<td>22.27 (3.46)</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male or female</td>
<td>0.59 (0.53)</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience as employee(d)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If the student has (or not) labor experience</td>
<td>0.51 (0.50)</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience as self-employed(d)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If the student has been (or not) entrepreneur previously</td>
<td>0.05 (0.22)</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(a\) Likert scale ranging from 1 = strongly disagree to 7 = strongly agree.

\(b\) (<10; 11–15; 21–25; 26-30; 31-35; 36-40; 41-45; 46-50; >50). <10 corresponds to a 1 in the scale and >50 corresponds to 10.

\(c\) 0 = male; 1 = female.\(d\) 0 = no; 1 = yes.

\(\alpha\) = Cronbach’s alpha. \(\text{CR}\) = composite reliability. \(\text{AVE}\) = average variance extracted. ** \(p < 0.01\). * \(p < 0.05\).
Table 3. Zero-order correlations and discriminant validity

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Entrepreneurial intention</td>
<td>0.902</td>
<td>0.191</td>
<td>0.218</td>
<td>0.100</td>
<td>0.159</td>
<td>0.206</td>
<td>0.141</td>
<td></td>
</tr>
<tr>
<td>2. Social networks size</td>
<td>0.165</td>
<td>0.887</td>
<td>0.133</td>
<td>0.050</td>
<td>0.029</td>
<td>0.217</td>
<td>0.026</td>
<td>0.069</td>
</tr>
<tr>
<td>3. Social networks entrepreneurial information</td>
<td>0.201</td>
<td>0.121</td>
<td>0.817</td>
<td>0.163</td>
<td>0.068</td>
<td>0.049</td>
<td>0.051</td>
<td>0.041</td>
</tr>
<tr>
<td>4. Need for achievement</td>
<td>0.077</td>
<td>0.043</td>
<td>0.131</td>
<td>0.759</td>
<td>0.076</td>
<td>0.130</td>
<td>0.105</td>
<td>0.140</td>
</tr>
<tr>
<td>5. Age</td>
<td>0.097</td>
<td>0.023</td>
<td>0.068</td>
<td>0.060</td>
<td>n.a.</td>
<td>0.020</td>
<td>0.233</td>
<td>0.063</td>
</tr>
<tr>
<td>6. Gender</td>
<td>-0.092</td>
<td>-0.204</td>
<td>0.040</td>
<td>0.108</td>
<td>-0.020</td>
<td>n.a.</td>
<td>0.066</td>
<td>0.092</td>
</tr>
<tr>
<td>7. Experience as employee</td>
<td>0.200</td>
<td>0.002</td>
<td>0.004</td>
<td>0.085</td>
<td>0.233</td>
<td>-0.092</td>
<td>n.a.</td>
<td>0.209</td>
</tr>
<tr>
<td>8. Experience as self-employed</td>
<td>0.136</td>
<td>0.065</td>
<td>0.036</td>
<td>0.107</td>
<td>0.063</td>
<td>-0.066</td>
<td>0.209</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

Note: The diagonal elements (in bold) are the values of the square root of the AVE. The values below the diagonal are the zero-order correlation coefficients. The elements above the diagonal are the values of HTMT ratio. n.a. = not applicable.
Table 4. Standardized regression coefficients of the testing model

<table>
<thead>
<tr>
<th>Control variables</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.052</td>
<td>0.037</td>
<td>0.036</td>
</tr>
<tr>
<td>Gender</td>
<td>-0.136**</td>
<td>-0.144**</td>
<td>-0.149**</td>
</tr>
<tr>
<td>Experience as employee</td>
<td>0.160**</td>
<td>0.164**</td>
<td>0.166**</td>
</tr>
<tr>
<td>Experience as self-employed</td>
<td>0.087*</td>
<td>0.079*</td>
<td>0.073*</td>
</tr>
</tbody>
</table>

Hypothesized relationships

<table>
<thead>
<tr>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social networks size → Entrepreneurial information of social networks (H1)</td>
<td>0.122**</td>
<td>0.107*</td>
</tr>
<tr>
<td>Entrepreneurial information of social networks → Entrepreneurial intention (H2)</td>
<td>0.201**</td>
<td>0.197**</td>
</tr>
<tr>
<td>Need for achievement*Social networks size → Entrepreneurial information of social networks (H3)</td>
<td></td>
<td>0.007</td>
</tr>
<tr>
<td>Need for achievement*Entrepreneurial information of social networks → Entrepreneurial intention (H4)</td>
<td></td>
<td>0.091**</td>
</tr>
</tbody>
</table>

R² Entrepreneurial intention | 0.070  | 0.110  | 0.120  |
R² Entrepreneurial information of social networks | -      | 0.015  | 0.031  |

Note: * p<0.05, ** p<0.01.