

Entrepreneurial potential: Connecting some dots

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ABSTRACT

The present study proposes an entrepreneurial potential theoretical model and scale. Connecting the previous research evidences from entrepreneurs' literature, we define entrepreneurial potential as the individuals' readiness to engage on entrepreneurship typical activities, and we propose that the entrepreneurial potential includes four main dimensions (entrepreneurial motivations, management competencies, psychological competencies and social competencies) and eleven subdimensions. To assess the entrepreneurial potential we created the Entrepreneurial Potential Assessment Inventory (EPAI). In three studies, we present evidences of content, convergent and discriminant validity of the scale. The Inventory can be established as a tool of high value to the community to help identify competencies requiring development, and to help design or adjust training courses in entrepreneurship.

Key-Words - *individual characteristics; entrepreneurial potential; scale development*

INTRODUCTION

Multidisciplinary research on the entrepreneurship process has emphasized the importance of entrepreneurship promotion as a critical factor in economic, social development, self-employment, technological and innovation development (e.g., Licht and Siegel, 2006).

More than eighty years after the first contributions of Schumpeter (1934), entrepreneurship research is becoming a more stable field with its own theoretical, empirical and methodological debates (e.g., Connelly, Ireland, Reutzler, and Coombs, 2010). However, there are still some theoretical, empirical and practical aspects that require deeper attention, as is the case of explaining the individual psychosocial dimensions that are involved on the entrepreneurial potential.

Building theory based on past findings, the present study aims to slightly contribute to the development of the theoretical and empirical entrepreneurship field, proposing an entrepreneurial potential model and measurement. The main general question that guides the present research is: *“How the entrepreneurial potential construct can be theoretically explained and methodologically assessed?”*.

Theoretical roots of the entrepreneurial potential

The entrepreneurship process is deeply associated to the individuals' characteristics (Baum, Frese, Baron, and Katz, 2007) given that he/she is the main agent in the decision making process to implement entrepreneurial initiatives and to assume the recurrent consequences. Thus, research has focused on the identification and description of the psychological characteristics, traits or personality characteristics that differentiate the entrepreneur (Baum and Locke, 2004; Brandstätter, 1997, 2011).

In several decades of research on the question *“Who is an entrepreneur?”* (Carland, Hoy, and Carland, 1988; Gartner, 1989) empirical evidence is rich and diverse. Several scholars have supported the role of individual's variables while developing entrepreneurial intentions (Zhao and Seibert, 2005; Rauch and Frese, 2000). Some attempts for further development

have been made based on the theoretical assumptions of the psychology of entrepreneurship (Baum, Frese & Baron, 2006).

The first early work on the individual characteristics of the entrepreneur was McClelland's (1961) research on need for achievement. McClelland and Winter (1969) achievement motivation training aimed at improving economic development in some Indian cities, and it was conceived of as an attempt to check the theory of achievement motivation in a work field setting. McClelland and Winter (1969) did not find any relationship between pre-training levels of achievement motivation and change in business activity. However their theoretical framework is particularly focused on achievement theory taking apart from competencies. After the hint, research on entrepreneurs characteristics spread, and differences between entrepreneurs and other groups were identified, as for example the differences on achievement, support, independence and leadership among successful entrepreneurs (Hornaday & Aboud, 1973; McClelland, 1987).

Other robust theoretical approach was developed by Spencer and Spencer (1993). They suggested five universal competency models: (a) special technologists, (b) salesmen, (c) community workers, (d) managers, and (e) entrepreneurs. Each model consisted of more than ten different competency factors (Spencer & Spencer, 1993). The competency model for entrepreneurs described by the authors was based on 216 interviews to several countries business owners or partners, and the authors proposed seven generic competencies: achievement; thinking and problem solving; personal maturity; influence; directing and controlling; and orientation to others. Within the referred generic competencies, the authors proposed a total of twenty specific competencies.

Despite the richness of the motivational approach of McClelland and Winter (1969) and the competency based approach developed by Spencer and Spencer (1993) these approaches do not include the prior research developed during the previous decades and their theoretical frameworks were not integrated. We suggest that they can be integrated around a proposed construct of entrepreneurial potential. Grounded on the relevance, assumptions and richness of the theoretical approaches, we next present the definition, level of analysis and dimensions of the entrepreneurial potential construct.

Definition of the entrepreneurial potential

Krueger and Brazeal (1994) developed theoretical propositions upon a model of entrepreneurial potential. Based on the Shapero's (1982) model of entrepreneurial event, the authors proposed a model of entrepreneurial potential based on three critical constructs: perceived desirability, perceived feasibility and propensity to act. This aspired to be a multi-level model, including individual and organizational constructs, analyzing the potential entrepreneur in two disparate settings: corporate venturing and enterprise development.

Despite the relevance of these other levels, the present paper is focused exclusively on the individual level. The focus on the individual level is strengthened by the importance that individual characteristics take place on the entrepreneurial process (e.g., Baum, Locke & Smith, 2001).

We assume that entrepreneurship is not solely the result of individuals' actions and characteristics, as external factors also may play a role. However, as the environmental factors

are uncontrollable by the entrepreneur him/herself, we argue that the individual psychosocial characteristics perform a critical role in the development of the entrepreneurial process.

We propose a competency model to entrepreneurial potential and adopted the definition of competency suggested by Spencer and Spencer (1993): "*A competency is an underlying characteristic of an individual that is casually related to criterion-referenced effective and/or superior performance in a job or situation*".

Based on the Krueger and Brazeal (1994) assumptions and Spencer and Spencer (1993) competency definition, we consider that the entrepreneurial potential refers to the individuals' readiness to engage on entrepreneurship typical activities. We propose that the entrepreneurial potential is the summative result of the expression of several entrepreneurs' individual characteristics.

Connecting the previous research evidences from entrepreneurs' literature, the theoretical developments and the predicted relations among the constructs and variables, we next present a resume organized on the main dimensions concerning the constructs domain: entrepreneurial motivations, management competencies, psychological competencies and social competencies. Included on these main dimensions, literature has evidenced that there are several subdimensions that are considered as more distinctive among the entrepreneurial behavior. It is not our purpose to develop a systematic literature review on entrepreneurs' characteristics, and some good reviews (e.g., Chell, Haworth, & Brearly, 1991) and meta-analysis (Schwenk and Shrader, 1993) on psychological entrepreneurship research can provide a good overview on the research state of art.

Entrepreneurial Motivations

First, and one of the strongest predictors on entrepreneurial success, is human motivation as the main driver on pursuing entrepreneurial opportunities, assembling resources and engaging in the entrepreneurial process (Shane, Locke & Collins, 2003).

The entrepreneurial motivations highlighted in literature include general and task-specific levels (Shane, Locke & Collins, 2003). Further impact on venture growth was also sustainable (Baum, Locke & Smith, 2001). The rich complexities of motivations were engaged as a critical role in entrepreneurial behaviors (Carsrud & Brännback, 2011). The entrepreneurial motivations were identified in the literature as one of the greatest predictors of a new venture's success (Baum, Locke, and Smith, 2001). It expressed focused and directed effort on the entrepreneurial activity (e.g., Locke and Baum, 2007).

Desire of Independence

Among the entrepreneurial motivations, entrepreneurs' frequently assume that they pursue a driving force of *desire of independence*, showing that they do want authority to take the important decisions (Kuratko & Hodgetts, 2007). Hisrich (1985) found that one of the prime motivations for starting a business was a desire for independence. Hornaday and Aboud (1973) surveyed 60 founders with several personality inventories and showed that these founders were significantly higher than the general population on measures of independence.

Early, growth motivation has been characterized among entrepreneurship (Schumpeter 1934; Davidsson, 1991). Entrepreneurship drives innovation and technical change, and

therefore generates economic growth (Schumpeter, 1934). The pioneer Schumpeterian definition of entrepreneur included the notion that entrepreneurs' are primarily motivated by the desire to build a private kingdom in the form of a large enterprise (Schumpeter 1934).

Economic Motivation

The desire to pursue entrepreneurial opportunities to generate economic profit, i.e., the *economic motivation*, had been cited as one of the most shared characteristics of the successful entrepreneurs: the need to create money. Generally, entrepreneurs perceived their work as more profitable (e.g., Brice, and Nelson, 2008). Moreover, because the opportunities that entrepreneurs recognize and pursue have different economic value, the opportunities themselves influenced entrepreneurial behaviour and motivation. Thus, behaviourally oriented entrepreneurship researchers argued that it is important to consider and measure the economic value of business opportunities as they drove the motivations of entrepreneurs (Shane, Locke & Collins, 2003).

Management Competencies

Entrepreneurs also need to possess hard skills on how to manage a business - the *management competencies*. Entrepreneurship activity involves also the exploration of entrepreneurial opportunities, defined as the development of new ideas and the implementation of those ideas into thriving business. Thus, across the entrepreneurial process, individuals need to have specific skills on how to manage a venture. The *management competencies* are defined by the basic and specific competencies in business management (e.g., Baum, Locke, and Smith, 2001), and mostly they refer to the individual's ability to manage the four elements of the business: the entrepreneur him/herself, business strategy, business resources and human resources.

Entrepreneurial Self-Efficacy

The individual belief on his/her capacity to pursue a particular goal has been identified as crucial to several activities (Bandura, 1997) and on the entrepreneurial activity, it is no exception (e.g., Chen, Greene & Crick, 1998). Self-efficacy is important for entrepreneurs because they must be confident in their abilities to perform different and often unanticipated tasks in uncertain situations (Baum & Locke, 2004).

Individuals with high self-efficacy were likely to persist when problems aroused and searched for challenges and, therefore, challenging opportunities (Bandura, 1982, 1997). Entrepreneurs also evidenced a higher degree of personal initiative (Speier & Frese, 1997); showed higher expectation for success and took a long-term perspective (Heckhausen & Schulz, 1995). They also searched for information (Ashford & Tsui, 1991), which led to a better knowledge. Hence, self-efficacy has been related to business venture launch and success (Poon, Ainuddin, & Junit, 2006).

Vision

Although the diversity around the definition of vision, it is generally assumed as an idealized goal to be achieved in the future (Conger & Kanungo, 1987; Kirkpatrick, Wofford, & Baum, 2002) or an ideal and unique image of the future that articulates the values, purposes, and identity of its followers (Boal & Bryson, 1988). Greenberger and Sexton (1988)

argued that “*entrepreneurs are likely to have some abstract image in mind about what they intend to accomplish*” (p.5), and this vision serves as a guide for their own actions.

Empirically, vision capacity has been shown to be a predictor of entrepreneurial venture development (Baum, Smith & Locke, 2001). Baum, Locke and Kirkpatrick (1998) found direct and indirect causal effects of vision attribute, vision content, and vision communication on small venture performance. A longitudinal study found that visions of small business owners affected company performance directly as well as indirectly through vision communication to employees (Baum, Locke, & Kirkpatrick, 1998).

Resources Mobilization Capacity

The ability to gather the resources to manage the venture (financial and material) has been identified as an important predictor of entrepreneurial success, given that resources are an essential feature of new venture development and make it easier for new ventures to adjust to complex environments (e.g., Tan and Peng, 2003). It has also been identified as an important predictor to the entrepreneurial success, as financial resources are an essential ingredient for the development of new ventures (Dollinger, 1995). Financial resources serve to acquire other resources in such a way that provides a venture with strategic flexibility and makes possible its adjustment to complex environments (Tan & Peng, 2003).

Leadership Capacity

Leadership research has shown that leadership emergence is greatly affected by personality traits (Lord, DeVader & Alliger, 1986) while leadership success is less clearly related to personality factors (Landy, 1989). Entrepreneurial leadership has been identified as important to this process and has been described as the ability to influence others, to manage resources strategically in order to emphasize both opportunity-seeking and advantage-seeking behaviours (Ireland, Hitt, & Simon, 2003).

Psychological Competencies

There is a broad set of characteristics that can be included among the *psychological competencies*, and they refer to the wide group of skills and attributes which characterize entrepreneurial individuals (e.g., Chell, 2008). There is a set of situational characteristics that are often common to all entrepreneurs: an absence of other people giving orders; the need for emotional stability; demand for social contact and readiness to respond to change and try out new ideas. The emotional stability, openness to new ideas and self-confidence on own ideas were suggested as fundamental to assess entrepreneurial behavior (Brandstätter, 1997), as the individual differences on these characteristics related both to the decision set up in business and to entrepreneurial success.

Innovation Capacity

There are significant differences between entrepreneurs and employers. The capacity for innovation is one of the main characteristics on the entrepreneurial human capital (e.g., Engle, Mah and Sadri, 1997). It was possible to distinguish entrepreneurs from non- entrepreneurs based on achievement, self-esteem, personal control, and innovation (Robinson, Stimpson, Huefner, & Hunt, 1991). Innovativeness can be defined as a characteristic of an individual person and innovation implementation effectiveness depends on a group of persons, and thus,

is a characteristic of an entrepreneurial venture (Klein & Sorra, 1996). In other words, it refers to the capacity to engage in inventive development processes, resulting in the introduction of new products, processes or market services.

Emotional Intelligence

Mayer, Salovey, and Caruso (2000) defined emotional intelligence as a capability to express emotions, to use emotions for facilitating thinking, to understand and argue by means of emotions, to manipulate them inside and while communicating with other effectively. Previous research evidenced that entrepreneurs scored relatively high on emotional intelligence (Baron and Markman, 2000). Empirical studies, analyzing the relation of emotional intelligence with entrepreneurship attitudes and entrepreneurial intentions had been started to carry out.

Resilience

In entrepreneurship the uncertainty level is generally higher than in other organizational settings and entrepreneurs have to know how to design and implement adaptable behaviours. Resilience refers to the description and explanation of an unexpected positive outcomes despite a high risky and uncertainty scenario. Resilience evidenced multidimensional characteristics and can be conceptualized as a measure of successful stress-coping ability (Connor & Davidson, 2003).

Empirical research evidenced that entrepreneurs showed greater levels of persistency than non-entrepreneurs (e.g., Markman, Baron and Balkin, 2005). Given that entrepreneurship was strictly associated with risk, it was relevant to analyse entrepreneur's ability to cope with difficulties, threats and unsuccessful projects. We argue that resilience must be an important factor across the entrepreneurship process, as the level of uncertainty faced by entrepreneurs is greater than that of other organizational actors (Covin & Slevin, 1989). Entrepreneurs have to know how to design and implement positive adaptive behaviours that fit in the situation, i.e., they have to be resilient.

Social Competencies

The entrepreneur acts on a social context and has to interact with different actors, and thus, the social competencies were other dimension of entrepreneurs' characteristics, denoting an individual's ability to interact effectively with others (e.g., Baron, 2000). The entrepreneurs' effectiveness in interacting with others, that is, his / her social competence, may also affect their entrepreneurial success (Baron & Markman, 2003). These assumption were based on the prediction that the higher an entrepreneur's social competence, the greater the success of his or her business.

Persuasion and Communication Capacity

The ability to interact effectively with others has a positive effect on entrepreneurial success (Baron & Markman, 2000). Entrepreneurs consider themselves as having a greater capacity for persuasion (Hoehn-Weiss, Brush, and Baron, 2004). Recent studies evidenced that the social competencies bear significant relation to new venture performance measures, and this relation is mediated through success in information seeking and resources (Baron and Tang, 2009).

Network development capacity

The ability to develop a network between entrepreneurs and other individuals who can provide resources for business implementation and development was identified as one of the entrepreneurial performance predictors (Baughn, Cao, Le, Lim & Neupert, 2006). The ability to develop the social network, together with other constructs, has a direct effect on venture creation development (e.g., Lee and Tang, 2001). The network approach assumes that entrepreneur's ability to organize and coordinating networks between individuals and organizations was critical for both, starting up a company and business success (Rauch, & Frese, 2000).

The entrepreneurial potential construct

Based on the assumption that the same main dimensions that are typical on entrepreneurs are critical to assess the individuals' readiness to engage on entrepreneurship typical activities, i.e., individuals' entrepreneurial potential, we suggest that the entrepreneurial potential can be explained by the four main dimensions evidenced on the entrepreneurs' characteristics literature.

Thus, and growing up theory build upon previous research, and based on the reasoning developed and on the previous literature evidences described, we suggest that the entrepreneurial potential can be explained on four main dimensions: (a) entrepreneurial motivations; (b) psychological competencies; (c) social competencies; and (d) management competencies, which allow to identify and differentiate the entrepreneurial potential. Moreover, and connecting the dots to bring together the most outstanding aspects of previous empirical research and theoretical suggestions, literature review highlighted eleven subdimensions.

Taking into account that the entrepreneurial potential is conceptualized as the readiness of an individual to engage on entrepreneurial activities, it is also important to develop an assessment instrument based on the proposed theoretical model, which would allow to assess the entrepreneurial potential construct. Consequently, and to try to contribute to supply this aspects, the present study seeks to give a contribution to create an instrument to measure the entrepreneurial potential construct - the Entrepreneurial Potential Assessment Inventory (EPAI).

To deepen our understanding of the entrepreneurial potential construct, we sought to address the methodological and psychometric shortcoming associated with the entrepreneurial potential measure. To these ends, we performed three studies.

In the first and second studies, independent samples of individuals responded to the survey, which was tested on a university student's sample (study 1) and on a young employee sample (study 2). We assessed the factor structure, internal consistency, psychometric properties, and deleted the items that diminished coherence of the scale. Studies 1 and 2 were conducted to test the factor structure and content validity of the scale.

Study 3 was conducted to assess the convergent and discriminant validity of the scale. We tested the relation between the scale and the Attitudes Toward Enterprise scale (Athayde,

2009), and we tested the hypothesis that entrepreneurial intention and locus of control differentiates on the scores of the entrepreneurial potential.

Upon creating an initial pool of items for the scale, we conducted twelve semi-structured interviews with entrepreneurs, which allowed to assess how adjustable were the theoretical dimensions to the entrepreneurial context. Following a content analysis and preliminary tests, we compiled a second version with 42 items including several ones adapted from the previous studies, and others specifically created.

The pool of 42 items on the Entrepreneurial Potential Assessment Inventory included the following operationalization. *The desire to be independent* was measured by four items as, for example, “*One of the most important things to me is having a job where I’m my own boss*”. *Economic motivation* was measured by four items (for example, “*I will do my best to make as much money as possible*”). *Innovation capacity* was measured by four items, as for example, “*I often surprise people with my new ideas*”. *Emotional intelligence* was measured by four items (e.g., “*I easily recognize my emotions as I experience them*”). *Resilience* was measured by four items, as for example, “*In difficult times I tend to focus on what helps me to overcome them*”. *Communication and persuasion capacity* was measured by four items (for example, “*Normally, I am able to persuade others of many things*”). *Network development capacity* was measured by four items, as for example, “*I know people from a variety of different places*”. *Entrepreneurial self-efficacy* was measured by four items, among them were: “*When I decide to start any business project, I know I will see it through*”. *Vision* was measured by four items (for example, “*I can see clearly how to implement unlikely initiatives*”). *Resources mobilization capacity* was measured by five items as for example “*Normally, I can find the resources to implement the initiatives I have*”. *Leadership capacity* was measured with five items, as for example “*I can easily lead people who have differing ideas on initiatives that I seek to achieve*”.

STUDY 1

SCALE CONSTRUCTION AND PSYCHOMETRIC CHARACTERISTICS AMONG UNIVERSITY STUDENTS

This study included a sample of 521 university students, all aged between 17 and 30, 62.3 percent were female with a mean age of 22 (SD = 4.2). The majority of the students were undergraduates (92%) and 8% were doing a master degree. Their academic background included health sciences (24%), social sciences (32%), management sciences (23%) and technological sciences (21%).

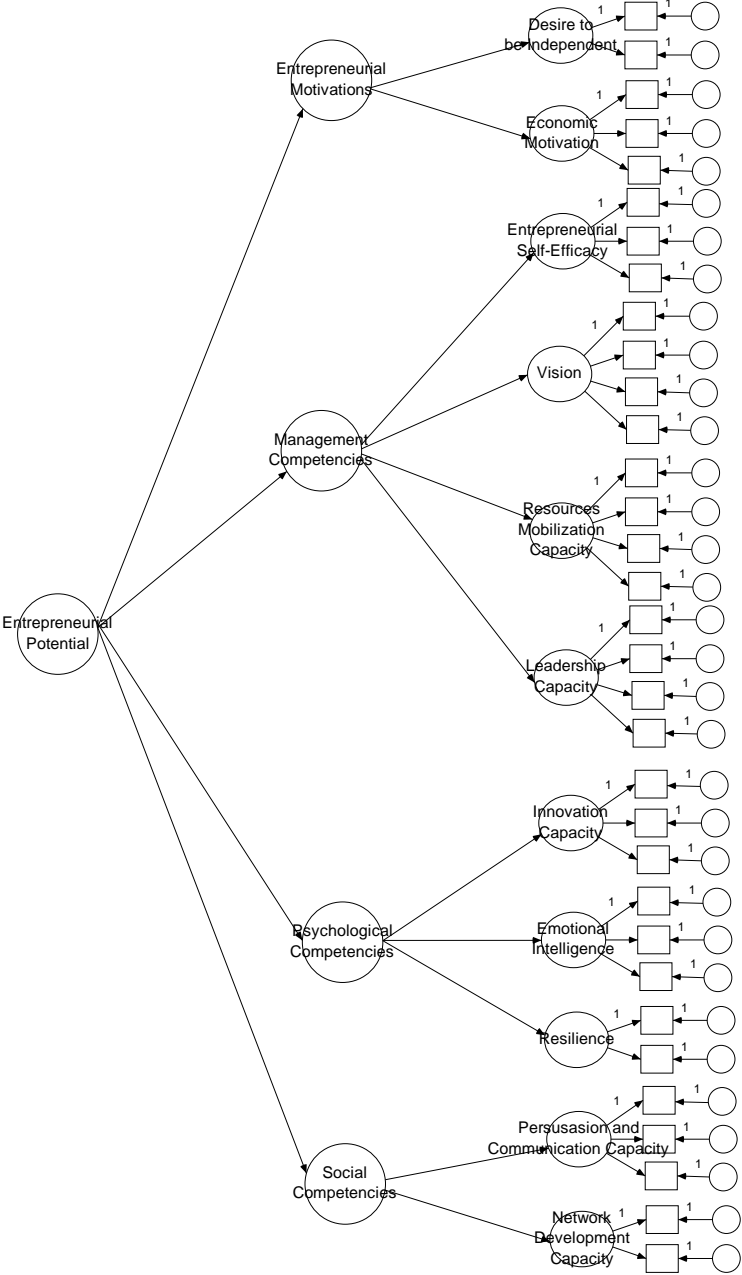
For each item, respondents indicated the level of agreement or disagreement with different sentences on a scale ranging from 1 (*completely disagree*) to 5 (*completely agree*).

To test whether the 42-items selected captured the proposed theoretical model on the entrepreneurial potential, we conducted two confirmatory factor analysis (CFAs) using AMOS software. In accordance with the classic model of survey development conducted by factor analysis (Kline, 1993), preliminary factor analyses were performed; however, we do not presented the detailed description of this analysis for reasons of parsimony. The results show that the loadings of some items are not appropriate and consequently, they are deleted

from the final model. Thus, the best confirmatory model for the operationalization of entrepreneurial potential that we arrive at comprise 33 items.

Figure 1 presents the confirmatory model of the Entrepreneurial Potential Assessment Instrument (EPAI).

Figure 1
Measurement model on the Entrepreneurial Potential - Confirmatory Factor Analysis



The confirmatory factor analysis of the Entrepreneurial Potential Assessment Inventory (EPAI) including the 33 items, was developed as shown in figure 1. The fit indexes for the university students' sample ($\chi^2 = 785.60$; $df = 454$; $p < 0,01$; $\chi^2/df = 1.73$; $CFI = 0.90$; $RMSEA = 0.04$; $SRMR = 0.05$) evidence an adequate fit of the data to the model. The

standardized regression coefficients on the four main dimensions are: $B_{\text{entrepreneurial motivation}} = 0.34^{**}$; $B_{\text{management competencies}} = 0.97^{**}$; $B_{\text{psychological competencies}} = 0.85^{**}$; $B_{\text{social competencies}} = 0.62^{**}$; $p < 0.01$.

This result support the construct validation of the theoretical model proposed for the operationalization of the entrepreneurial potential construct (Byrne, 1989). Thus, there are theoretical and empirical arguments to support that the entrepreneurial potential construct includes the four main dimensions and the eleven subdimensions.

STUDY 2

SCALE CONSTRUCTION AND PSYCHOMETRIC CHARACTERISTICS AMONG YOUNG EMPLOYEES

This study included a sample of 543 young employees. Their ages ranged from 18 to 30, they were all involved in the labor market at maximum on 3 years and 56.6 % were male. The mean age was 25 (SD = 2.3). The great majority were graduates (73 %), 27% had a masters degree or higher. The academic backgrounds included health sciences (5%), social sciences (17%), management sciences (44%) and technological sciences (34%).

The confirmatory factor analysis on the Entrepreneurial Potential Assessment Inventory (EPAI) model for the young employees' sample ($\chi^2 = 1090.38$; $df = 454$; $p < 0.01$; $\chi^2/df = 2.40$; $CFI = 0.90$; $RMSEA = 0.04$; $SRMR = 0.04$) evidence an adequate fit of the data to the model. The multi-groups confirmatory factor analysis, including both university students and the young employees, evidence good fit indexes ($\chi^2 = 1594.32$; $df = 908$; $p < 0.01$; $\chi^2/df = 1.76$; $CFI = 0.89$; $RMSEA = 0.03$) suggesting that there is structural invariance in the entrepreneurial potential construct. In other words, the structure of the entrepreneurial potential construct is both suitable for university students and young employees.

The mean values and factor intercorrelation among the university students (Study 1) and young employees (Study 2) are presented in table 1. The reliability, computed for both samples, is shown on the diagonal of table 1.

Table 1

Factor Intercorrelations, descriptive statistics and alpha de cronbach for eleven sub-dimensions of the entrepreneurial potential on the studies 1 - University Students - and 2 - Young Employees

	University Students Mean	Young Employees Mean	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. desire to be independent [†]	3.5	3.7	0.22 [‡]	0.21**	0.20**	0.12**	0.14**	0.13**	0.14**	0.12**	-0.03	0.16**	0.10**
2.economic motivation	3.2	3.2	0.35**	0.71	0.15**	0.16**	0.15**	0.13**	-0.01	0.10**	0.03	0.18**	0.04
3. entrepreneurial self-efficacy [†]	4.0	4.2	0.23**	0.10**	0.66	0.27**	0.20**	0.33**	0.19**	0.15**	-0.09**	0.16**	0.24**
4. vision [†]	3.2	3.4	0.18**	0.17**	0.45**	0.68	0.37**	0.33**	0.27**	0.19**	-0.03	0.32**	0.22**
5. resources mobilization capacity [†]	3.6	3.7	0.19**	0.15**	0.51**	0.49**	0.62	0.39**	0.20**	0.30**	-0.10**	0.30**	0.21**
6. leadership capacity [†]	3.5	3.7	0.16**	0.09**	0.36**	0.40**	0.44**	0.66	0.33**	0.22**	-0.07	0.32**	0.19**
7. innovation capacity [†]	3.2	3.4	0.14**	0.02	0.26**	0.38**	0.28**	0.35**	0.67	0.15**	-0.09**	0.16**	0.24**
8. emotional intelligence [†]	3.4	3.6	0.05	0.08	0.28**	0.27**	0.27**	0.25**	0.20**	0.57	-0.11**	0.17**	0.16**
9. resilience	3.2	3.2	-0.01	-0.01	0.10**	0.05	0.09**	0.06	0.10**	0.14**	0.25 [‡]	-0.07	-0.09**
10. communication and persuasion capacity [†]	3.4	3.7	0.19**	0.13**	0.35**	0.33**	0.27**	0.42**	0.23**	0.13**	0.04	0.68	0.14**
11. network development capacity [†]	2.7	3.0	0.17**	0.08	0.21**	0.28**	0.42**	0.30**	0.31**	0.17**	0.01	0.25**	0.35 [‡]

Note: Correlations below the diagonal are from Study 1 and correlations above the diagonal are from Study 2. Alpha de Cronbach is shown in the diagonal.

[†] significant differences, $p < 0.05$ between university students and young employees samples

** significant, $p < 0.05$

[‡], as computes involve two items, we present the correlation value; $p < 0.05$.

On the table 2 we present the descriptive analysis, correlation matrix and construct reliability of the four main dimensions of the entrepreneurial potential among the university students and the young employees.

Table 2

Mean Values, factor Intercorrelations and construct reliability of the four main dimensions of the entrepreneurial potential of the university students (study 1) and young employees (study 2)

	University Students Mean	Young Employees Mean	1.	2.	3.	4.
1.entrepreneurial motivation [†]	3.3	3.4	0.61	0.26**	0.12**	0.20**
2. management competencies [†]	3.6	3.8	0.25**	0.82	0.31**	0.47**
3. psychological competencies [†]	3.3	3.4	0.08	0.43**	0.62	0.19**
4. social competencies [†]	3.1	3.4	0.22**	0.51**	0.28**	0.71

Note: Correlations below the diagonal are from Study 2a and correlations above the diagonal are from Study 2b. Construct reliability (Hair, Black, Babin, Anderson, and Tatham, 2006) on the diagonal

[†] significant differences, $p < 0.05$ between university students and young employees samples

** significant differences, $p < 0.05$

There are significant differences between university students and young employees with regard to entrepreneurial motivation, management competencies, psychological competencies, and social competencies. Compared to the university students, young employees evidence greater mean values in all dimensions.

STUDY 3

CONVERGENT AND DISCRIMINANT VALIDITY

In selecting a measure as standard of comparison to assess convergent validity, we searched for the entrepreneurial attitude scales that seemed most likely to compete successfully with our measure of entrepreneurial potential. We expect that entrepreneurial potential is related to the “enterprise potential” in young people measured through attitudes towards characteristics associated with entrepreneurship (Athayde, 2009). The attitudes towards enterprise for young people - ATE test - includes four scales: leadership scale; creativity scale; achievement scale; and personal control scale.

In selecting an approach to assess entrepreneurial potential discriminant validity, we choose an entrepreneurial intention measure and locus of control. In fact, entrepreneurial intention as it was used on Zhao, Seibert and Hills (2005) research allows to differentiate individuals with different patterns of intentions to become entrepreneurs.

Perceived internal locus of control was defined as the personal belief that one has influence over outcomes through ability, effort, or skills; whereas external locus of control is the belief that external forces control outcomes (e.g., Brockhaus, 1982). The positive relation between the internal locus of control over the events in one's life to an individual's propensity to engage in entrepreneurial activity has been identified in literature in several studies (e.g., Shapero, 1975).

Based on previous research, and as discriminant validity evidence, we expect that: (a) a high entrepreneurial intention will be more strongly related to entrepreneurial potential than low entrepreneurial intentions; (b) external locus of control will be not be related to the entrepreneurial potential; and (c) internal locus of control will differentiate individuals with a high and low levels of entrepreneurial potential.

To address these issues, we asked 499 young people who were competing to an international funded internship (62% male) to complete the EPAI scale, the ATE test, entrepreneurial intentions and locus of control scales. Their ages ranged from 20 to 30, the mean age was 25 (SD = 2.03). The great majority were graduates (55 %) and 45% had a masters or higher degree. Most of the participants were unemployed (63%), 23% were employee, 11% were University Students, and 3% were freelancers.

For all measures, respondents were asked to indicate the extent to which they agreed or disagreed with each statement, using a five point Likert scale, ranging from 1 (*disagree completely*) to 5 (*agree completely*).

The *attitudes towards enterprise for young people* - ATE test - (Athayde, 2009) included 18 items comprising four dimensions. The leadership scale was measured by six items ($\alpha = 0.75$). The creativity scale was measured by four items ($\alpha = 0.67$). The achievement scale included four items ($\alpha = 0.61$). The personal control scale was measured by four items ($\alpha = 0.62$). The complete scale evidenced an internal consistency of 0.70.

The *entrepreneurial intention* was measured with four items, following Zhao, Seibert and Hills (2005) operationalization. The items asked participants how interested they were in engaging in the typical entrepreneurial activities: *starting a business, acquiring a small*

business, starting and building a high-growth business, and acquiring and building a company into a high-growth business ($\alpha = 0.81$).

The *internal* and *external locus of control* were measured with four items each, following Levenson (1973) items ($\alpha_{\text{internal LC}} = 0.68$; $\alpha_{\text{external LC}} = 0.66$).

Results shows that the entrepreneurial potential is positively and significantly related with the ATE-test ($r = 0.36$, $p < 0.05$), and to the four scales on the ATE-test: $r_{\text{leadership scale}} = 0.48^{**}$; $r_{\text{creativity scale}} = 0.10^{**}$; $r_{\text{achievement scale}} = 0.24^{**}$; $r_{\text{personal control scale}} = 0.11^{**}$ ($^{**} p < 0.05$).

To assess discriminant validity, we centered all the variables and then we created two levels (i.e., *high* - scores greater than zero; and *low* - scores lower than zero) on the discriminant variables: the entrepreneurial intention, the internal locus of control and the external locus of control. We performed regression analysis to assess the relation pattern between the discriminant variables and the entrepreneurial potential.

Results evidence that high and low entrepreneurial intention are positively associate with the entrepreneurial potential ($\beta_{\text{high Entrep.Intention}} = 0.28$; $\beta_{\text{low Entrep.Intention}} = 0.16$; $p < 0.05$) although the association is stronger with high entrepreneurial intention, as predicted. Internal locus of control is also positively associated with the entrepreneurial potential, on both high and low levels ($\beta_{\text{high Internal Locus Control}} = 0.30$; $\beta_{\text{low high Internal Locus Control}} = 0.20$; $p < 0.05$), and, once again, the association is stronger with high levels of internal locus of control, as predicted. About the external locus of control, results show that there is no association with the entrepreneurial potential ($\beta_{\text{high External Locus Control}} = -0.03$; $\beta_{\text{low External Locus Control}} = -0.07$; $p < 0.05$), evidencing that the entrepreneurial potential is not related with the external locus of control.

As predicted, the high entrepreneurial intention is strongly associated with the entrepreneurial potential, suggesting that the greater the entrepreneurial intention, the higher scores on the entrepreneurial potential. Differently, if the participants evidence a low entrepreneurial intention, the association with the potential is smaller.

A similar pattern is evidenced with the internal locus of control: there is a different association pattern between the individuals with a high and a low internal locus of control, and its entrepreneurial potential. Concerning the external locus of control there is no association pattern with the entrepreneurial potential.

GENERAL DISCUSSION

This study presented a theoretical model regarding the entrepreneurial potential construct and some studies on its empirical validation. More specifically, we developed a theoretical model integrating the main differentiating characteristics of entrepreneurs evidenced in the prior literature and an assessment instrument.

Our studies indicated that the proposed new measure on the assessment of entrepreneurial potential - the Entrepreneurial Potential Assessment Inventory (EPAI) - had good psychometric characteristics. The scale construction characteristics were assessed on two studies. The results on both studies evidenced that the proposed scale is suitable to assess the entrepreneurial potential.

A third study analyzed the relation between the entrepreneurial potential measure and the attitude towards enterprise scale, showing the convergent validity of the proposed measure. Moreover, this study also showed that the entrepreneurial potential scale successfully discriminated among individuals with high and low entrepreneurial intention and internal locus of control. Further, the entrepreneurial potential was not related with the external locus of control.

Theoretical and Methodological Contributions

The present study presents some contributions to the theoretical development of the literature on entrepreneurs' characteristics. More specifically, it suggests a theoretical entrepreneurial potential model building up theory grounded on the results of the psychosocial dimensions previous evidenced in the literature.

This study enhances the importance of individual characteristics and skills included in the entrepreneurial potential model, contributing to the strengthening of prior empirical results and comparisons with theoretical propositions. For example, Baron and Markman (2000) argued that social skills were highly important in the effectiveness of the behavior of the entrepreneur, and the present data supports that proposition. Our results on entrepreneurial self-efficacy corroborate the empirical studies performed by Chen, Greene and Crick (1998).

The present paper also aspired to develop a model integrating the main contributions from the theoretical frameworks on the motivational approach of McClelland and Winter (1971), and the competency based approach developed by Spencer and Spencer (1993). On developing a model on entrepreneurial potential as the one we propose, it is possible to argue that motivational aspects, competencies and attitudes can be integrate and contribute all to the same scope of entrepreneurial potential.

Our theoretical approach does not argue that these four dimensions capture all important aspects of entrepreneurial potential. The cognitive approach to the study of entrepreneurship points to the possibility that entrepreneurial competency may be related to the intelligence. Baum (2005), who examined the relationship between practical intelligence and entrepreneurship, found a positive correlation between entrepreneurial competency, learning and intelligence. Thus, we suggest that it is important to include cognitive ability measures in the assessment of an individual to be an entrepreneur, as it is often used on the selection to any job.

For the methodological contributions, this study tested an assessment instrument for the entrepreneurial potential whose results appear to be important for future empirical research. The need to develop assessment tools with cultural validation has been highlighted in research on entrepreneurship (e.g., Davidsson, 2000).

Limitations and Practical Implications

Despite the contributions, it also presents some limitations. First, we have some concerns about our samples, because in the university student sample only four areas of science were assessed. It will be interesting in future research to include samples from other areas, thus enabling the mapping of the entrepreneurial potential of students by field of training.

Concerning the employee sample, they only include young people, leaving the patterns of entrepreneurial potential for workers with greater experience still to be explored. It is further crucial to analyze the results of a sample of entrepreneurs. Second, the studies we have presented on this research are not sufficient to develop a complete validation process on the entrepreneurial potential scale. Validation is a long process, and further tests should be developed focusing on incremental and differential validity, which is particularly critical in the selection procedures (Kline, 1993; Spector, 1992). Moreover, it is critical to develop predictive validity tests, where the EPAI should assess exactly the same individuals, on a longitudinal design.

To supply the referred limitations and to continue developing the validity on the entrepreneurial potential scale, there is a long route of studies to be conducted. Future research should focus on predictive and concurrent validity. Other route for research concerns the cross-cultural research on the entrepreneurial potential scale, trying to compare entrepreneur's potential scores on different countries.

Regarding practical implications, the Inventory can establish itself as a tool of high value to the community, since it allows students, teachers, academics and financial funders of projects to assess the level of entrepreneurial potential as well as the dimensions that need to be developed.

Over the last decade, great attention has been paid to competency-based education, and its relevance in entrepreneurship education and training at the university level as well as other training venues has become apparent (Bird, 2002). A basic premise of this movement is that an educational position based on competency development can facilitate learning in a society characterized by complexity and rapid changes. Thus, our focus on the assessment of a preparedness to engage on typical entrepreneurship activities can be relevant also for the entrepreneurship education debates. In an educational setting the interest is in individual-level competency as we attempt to help students become more skilled and motivated to start and succeed in new ventures.

Against a background of economic and social crisis, entrepreneurship presents itself increasingly as a solution for self-employment (e.g., Ashcroft, Holden, and Low, 2009; De Nardi and Villamil, 2009). In this sense, Entrepreneurial Potential Assessment Inventory (EPAI) can play a critical role in the early stages of the entrepreneurial process: the individual's motivation and the assessment of the main skills to the development of entrepreneurial business success.

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