

**ENTREPRENEURIAL STRATEGY, INNOVATION, AND COGNITIVE  
CAPABILITIES: WHAT ROLE FOR INTUITIVE SMEs?<sup>5</sup>**

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**ABSTRACT**

*The role of intuition applied to entrepreneurship remains under-researched. The present work contributes to the progress on research on this field proposing and testing an indicator to measure the degree of intuition of entrepreneurs at early and consolidated stages. The indicator is designed under the literature highlights and applied over a sample of 501 early stage and consolidated entrepreneurs, a sample extracted from GEM Spain 2011-2012. The intuitive behavior of the Spaniard entrepreneurs is moderated and depends significantly on leadership abilities along with skills to motivate others, capacity to develop technological products or services, and the age. The intuitive style is proportionally more prevalent at early stages of entrepreneurship and, in Spain, does not show significant dependence on the previous experience of the entrepreneurs as employees, managers of companies, other entrepreneurial activities or years in the same sector as they are operating at present.*

**Keywords:** Intuition, entrepreneurship, behavior indicator

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## INTRODUCTION

From the seminal works of Collins, Moore & Unwalla (1964), Rotter (1966), and McClelland (1961), personality-based entrepreneurship related to business performance has been widely studied, as in the works of Kautonen, Van Gelderen & Tornikoski (2013), Halim, Muda & Amin (2011), Hodgkinson et al (2009), Shane, Locke & Collins (2003), and others. However, despite these advances in the economic literature focused on the psychological aspects of entrepreneurs, the role of intuition in creativity applied to management remains under-researched (Doerfler & Ackermann, 2012). This reality is seen especially in the study of the reasons for entrepreneurship and the role that cognitive abilities have on entrepreneurship.

Arenius & Minniti (2005) have shown that perceptual variables, such as alertness to opportunities, fear of failure, and confidence about one's own skills, are significantly correlated with new business creation across countries and across gender, although women still lag behind men on startup activity (Mitchell, 2011)(Marlow & Patton, 2005). Complementarily to these perceptual variables, behavioral qualities of an entrepreneur, mainly leadership, risk-taking, and rational planning (Bruni, Cherardi & Poggio, 2004), foster entrepreneurship, as well as employment creation, reallocation of resources, and socio-economic wealth.

The objective of this work is to contribute to the study on how intuition affects entrepreneurship in SMEs ("intuitive SMEs"). The main goal has been to build an index able to estimate the degree of "entrepreneurial intuition" and to give answer to this research question: what are

the behavioral variables that characterize an intuitive entrepreneur? Secondary goals have been to use this indicator to test relevant hypotheses in the field of entrepreneurial intuition. Specifically, we ask whether intuition is more present in the early stage of entrepreneurship and also if higher degrees of intuition are linked to necessity driven entrepreneurs.

To achieve these goals, we first analyze the role of intuition in entrepreneurship and propose a theoretical model of intuitive behavior. Second, we apply the proposed model to newly born and to consolidated Spanish entrepreneurs using a sample of 501 cases from the 2011 GEM data. In what follows, we present a theoretical background section, the proposition of the theoretical model for intuitive entrepreneurship, the methodological section, analyses and results, a discussion of the results and the conclusions, limitations, and further research proposals.

## ENTREPRENEURSHIP AND THE ROLE OF INTUITION

The cognitive approach to entrepreneurship is a response to the limitations of the trait approach. Its aim is to explain entrepreneurial behavior through cognitions. The degree of intuition is contemplated within the cognitive approach as a concrete cognitive style, which has been defined as the way people perceive environmental stimuli and how they organize and use information from their environment to guide their actions.

Recent studies on cognitive styles of entrepreneurs (Boucknooghe et al., 2005) raised questions such as: what is the cognitive style of entrepreneurs? Is the way they perceive, organize, and use

environmental information different from the way non-entrepreneurs do? The investigation on these questions confirmed the notion that entrepreneurs differ from non-entrepreneurs in their cognitive styles, but they also indicate that there is a basis to distinguish between, at least, two relevant cognitive styles among entrepreneurs.

These styles were described as intuitive and rational by Bridge, O'Neil & Cromie (2003). For them, individuals who show intuitive (creative) styles are more driven by holistic and conceptual thinking, which reflects more capacity for creation, experimentation, opportunity's perception, and new challenges. Creative individuals do not like rules and procedures, and they take pleasure in uncertainty and freedom. They used to be more ambitious and achievement oriented than the average. Not only can this vision be considered the desirable paradigm for entrepreneurs, but Hodgkinson & Sparrow (2002) argue that the integration of both analytic (knowing) and intuitive (creative) processing styles is required to process information and to minimize the dangers of cognitive biases identified by other researchers into behavioral decisions.

Taking all the above in consideration, we can define intuitive entrepreneurship as a psychological behavior consisting of a decision process mainly guided by intuition in which experience has more weight than formation, especially in the early stages of company development.

According to Dalglish (2004), but contrary to Bass (1985, 1990 & 1997) and Kotter (1997), who focus business success on personal leadership and charisma, business sustainability in the long-term is mainly based on the business organization and not on the charisma and the personality of the

entrepreneur, as these psychological characteristics are only critical in the early stages of business development.

Moreover, Ardichvill, Cardozo, & Ray (2003) identify entrepreneurs' personality traits, social networks, and prior knowledge as antecedents of entrepreneurial alertness to recognize, develop, and evaluate business opportunities. Intuitive individuals see beyond the obvious facts and solutions for considering future possibilities. According to Baron (2006), entrepreneurs identify opportunities for new business ventures using human cognitive frameworks they have acquired through formation and experience to perceive connections between seemingly unrelated events or trends in the external world to end up in new ideas for new products or services. As a result, the combination of training and experience of the staff form the basis of the organization, which allows companies to reach leadership positions in the sector they operate.

Entrepreneurs in large organizations are more susceptible to the use decision-making biases and heuristics than managers. Under conditions of environmental uncertainty and complexity, biases and heuristics can be effective and efficient guides to decision-making, mainly through overconfidence (overestimating the probability of being right) and representativeness (the tendency to overgeneralize from few characteristics or observations). After having analyzed responses from 124 entrepreneurs, Busenitz & Barney (1997) show that overconfidence and representativeness variables correctly categorized entre-preneurs and managers more than 70 percent of the time; while entrepreneurs behave differently than managers do in large organizations was a substantial reason for these differences.

Biases and heuristics are necessary to create new businesses, but, whereas the use of cognitive biases may be beneficial in some circumstances, and mainly during the start-up years, it can lead to major errors in others damaging the firm.

To complete the literature’s overview on intuition and entrepreneurship, other research has shown that entrepreneurs collect, process, and evaluate information in a more intuitive way than managers, middle managers, and initiates. Senior managers tend to show cognitive styles similar to those of entrepreneurs (Allison, Puce, & McCarthy, 2000).

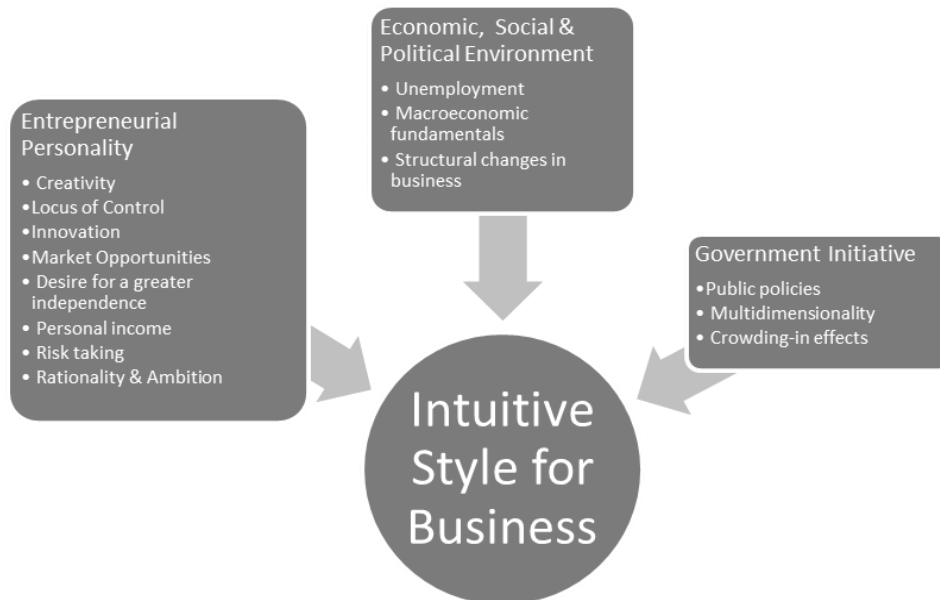
**A THEORETICAL MODEL FOR ENTREPRENEURIAL PERSONALITY AND BUSINESS PERFORMANCE**

Even though entrepreneurs often cite the

use of intuition as a basis for their venturing decisions, verifying that entrepreneurs are actually using intuition is very difficult (Blume & Covin, 2011).

One of the problems is the availability of data and especially of an indicator able to give a measure of the intuitive character of individuals. It is true that there are validated psychological tests and tools to estimate intuitive versus rational personalities, but as our research is focused in the role of intuition in entrepreneurship, we find it necessary to propose a theoretical model for entrepreneurial personality (see Figure 1) as a frame in which to place and identify variables that are critical in building the different cognitive styles. To do so, we selected key concepts, explained their role in the model, and developed a methodology to calculate and test a quantitative indicator of entrepreneurial intuition.

**Figure 1: Entrepreneurial Personality and Business Performance**



With respect to intuition, Doerfler & Ackermann (2012) distinguish between intuitive judgment and intuitive insight. The former is formed by the method of

deduction by analogy connected with past experiences, either directly lived by the individual or indirectly internalized thanks to the knowledge gained or given by

external experiences, while the latter is defined by achieving solutions from new perspectives. Business opportunity recognition is directly linked to intuitive insight, as three factors play an important role in it: (1) active search for opportunities, (2) alertness to them, and (3) prior knowledge of an industry or market, and the interrelation among these factors.

Intuitive entrepreneurship constitutes the first step for SMEs before starting a continuous learning process when the firm begins to operate. As the company grows, business decisions begin to be less guided by intuition and to be directed by experience. This high reliance on intuition in the early stages of development, coupled with the weakness in the financial resources available in the early years of the company, cause high business mortality in the first year of life organization.

As intuition is counterbalanced with training and experience, decision making is more consistent, which allows the organization to take on risky commercial and business operations. Businesses are inserted in a continuous process of organizational learning that is, according to Crossan, Lane & White (1999), integrated in four processes (intuition, interpretation, integration, and institutionalization) linking the individual, group, and organizational levels.

As the company grows, decision making becomes more complex while stakeholders are involved in a multidirectional learning process. Successful management teams build collective intuition through frequent meetings and real-time metrics that enhance their ability to see threats and opportunities early and accurately (Eisenhardt, 1999), as a

result of the internalization of the learning processes.

To analyze intuition's role in entrepreneurs, we will use the entrepreneurial intuition indicator as a proxy to try to measure the influence of intuition in making business decisions, especially in SMEs. We shall do it in the next section.

## **METHODOLOGY**

As pointed out in the introduction, the main goal of this research is to build an index able to estimate the degree of entrepreneurial intuition and to give an answer to the research question: what are the behavioral variables that characterize an intuitive entrepreneur?

To achieve this objective at a global level and to give a general valid response, we use a sample of 501 cases extracted from the Global Entrepreneurship Monitor results of 2011 for Spain. Data are related to businesses at entrepreneurial stage (less of 42 months operating in the market) and to established or consolidated businesses (42 or more months operating in the market). These cases were randomly selected and re-interviewed in 2012 in order to get additional information and details for research purposes.

Taking this in consideration, we built a variable that represents "intuitive style of entrepreneurship" as follows:

### **Enjoys discovering opportunities**

Considering entrepreneurial opportunities in the area they live for the next six months as little representative of the capacity and ability to discover business opportunities, we applied a validated construct on this topic. All the items were valued in Likert

scales of five points (1 = completely disagree, 5 = completely agree), and questions were as follows:

Qop\_1 I can recognize the opportunities of a new business in a sector in which I had no previous experience.

Qop\_2 New business opportunities that I have recognized were not previously interrelated.

Qop\_3 To recognize a good opportunity requires being immersed in a specific sector or market.

Qop\_4 Although I am immersed in activities and daily routines of my business, I think of new ideas for new business initiatives.

Qop\_5 I have a special ability to be alert or be sensitive to new business opportunities.

We consider that an individual that has a score of four or five points in variables Qop\_1, Qop\_2, Qop\_4, and Qop\_5 is more prone to be intuitive, as well as individuals having scores of one or two points in variable Qop\_3. To homogenize this last variable with the rest of the group, we recoded the scores and changed the text for a negative sentence: “to recognize a good opportunity does not require being immersed in a specific sector or market.” After making this operation, individuals that scored four or five points in variable Qop\_3 recoded were more prone to be intuitive.

**Takes risks, is less rational and is ambitious**

With respect to variables representing these features, GEM only provides a dummy variable to capture this fear of failure from

starting up. This was the reason to include the following items in the re-interview as they are more adequate to get information on risky, rational, and ambitious personalities:

Qr\_1 Operations taking place at my company are characterized as high risk.

Qr\_2 I take a non-conservative view when making important decisions.

Qa\_3 I tend to support decisions and projects where expected revenues are uncertain but high.

All these variables are valued in a five-point scale. We consider that an individual showing a score of four or five points in variables Qr\_1, Qr\_2, Qa\_3 is more prone to be intuitive, active on taking risks, less considered about rules, and ambitious.

**Is innovative**

To be innovative is a GEM variable valued in a three-point scale: 1 = none, 2 = some, and 3 = all. Following the literature, we can consider that the higher the score is, the higher is the possibility of an individual to be an intuitive entrepreneur, as creativity (innovation) is identified as one of the key characteristics of those individuals.

To build the variable “intuitive style,” we apply a simple function defined by a degree of intuitive behavior as a sum of scores of all the presented variables, being nine points the minimum value of the variable and 43 points ( $=3+5*8$ ) its maximum value, being the range of the variables of 34 points.

To better interpret the results of the variable “intuitive style,” we transformed the scale in order to have a minimum score of zero

points (low intuitive character) and a maximum score of 34 points (high intuitive entrepreneurial character). The transforming operation consisted in deducting nine points from the individual scores.

The distribution of the resulting variable and the test of normality are described in Table 1.

**Table 1: Distribution, Descriptive Statistic, and Kolmogorov Smirnov (KS) Test for the Variable “Intuitive Style”**

N	501	Percentiles	10	7.0000
Mean	14.1257		20	9.4000
Median	14.0000		30	11.6000
Mode	16.00		40	13.0000
Std. Dev.	5.49929		50	14.0000
Range	30.00		60	15.0000
Minimum	0.00		70	17.0000
Maximum	30.00		80	19.0000
Z KS test	1.147		90	21.0000
Significance	0.144	Result		Normality

The typical individual of the sample is moderately intuitive as the mean and the median show scores around 14 points over the upper limit of the variable of 34 points. The most frequent score is 16 points, and the higher score in the sample is 30 points. There are individuals that show null intuitive style with scores of zero points, and there are no individuals reaching the highest score of 34 points.

Once we built the “intuitive style” variable, we tested which are the behavioral variables that explain it, or rather which ones are able to determine the intuition of an entrepreneur among a selected group of abilities and experience. These selected explanatory variables were measured thanks to the extension of the survey applied to the GEM Spanish sample of entrepreneurs and consolidated businesses, as follows: Q12\_1: Ability to: Get good results leading and motivating people; Q12\_2: Ability to: Organize resources and coordinate tasks; Q12\_3: Ability to: Delegate tasks effectively; Q12\_4: Ability to: Supervise,

influence and lead people; Q12\_5: Ability to: Get the best possible results with limited resources; Q12\_6: Ability to: Develop technological goods or services; T16\_1: Years of Experience: Previous experience; T16\_2: Years of Experience: Working experience as employee; T16\_3: Years of Experience: Experience as a manager or company’s directive; T16\_4: Years of Experience: Experience in the same sector of my current company, and Age: Age of the individual in years. These six variables on abilities were measured on Likert scales of five points. As the dependent is a quantitative normal distributed variable, as well as are the rest of the proposed variables, we selected a multiple stepwise linear regression as the method to determine which of these variables have explanatory capacity on the “intuitive style.” There are precedents of the use of Likert scales of five points in linear regression. Although they do not satisfy the normality criteria, the method is recommended among other parametric ones because of the extension of the scale too long to be treated as a

categorical variable (Grace-Martin, 2011). So, as in our case, ordinal predictor variables can be reasonably considered as numerical if distances in the scale can be considered meaningful and equal.

Finally, we applied binary logistic regressions to test the complementary hypothesis: H1: intuitive behavior is more prevalent at early stages of entrepreneurship than in consolidated phases, and H2:

intuitive entrepreneurial behavior is more prevalent among necessity-driven entrepreneurs than among opportunity-driven entrepreneurs. In these binary logistic regressions, the dependent variables were the entrepreneurial stage, and the main reason for entrepreneurship and the independent variable was the “intuitive style.” Results are presented in the next section.

**RESULTS**

**Table 2: Results of the Multiple Stepwise Linear Regressions on the Intuitive Style Variable**

Dependent	Intuitive style			
Independents	Coefficients	Beta	t	P-value
Constant	8.701		5.419	0.000
Ability to get good results leading and motivating people	1.177	0.215	4.614	0.000
Ability to develop technological goods or services	0.799	0.185	4.318	0.000
Age	-0.089	-0.157	-3.759	0.000
Ability to supervise, influence and lead people	0.573	0.108	2.358	0.019
R square	0.412			
Corrected R square		0.163		

Variables out of the model are all those measuring years of experience and abilities to organize resources and coordinate tasks, getting the best possible results with limited resources and delegating tasks effectively

**Table 3: Results of the binary regressions on the entrepreneurial stage on the main reason for entrepreneurship**

Dependent	Stage: entrepreneurial = 0, consolidated = 1					
	B	E.T.	Wald	FD	p-value	Exp(B)
Intuitive style	-0.066	0.021	9.947	1	0.002	0.937
Constant	2.341	0.337	48.322	1	0.000	10.389
Dependent	E-ship reason: necessity = 0, opportunity = 1					
	B	E.T.	Wald	FD	p-value	Exp(B)
Intuitive style	-0.010	0.016	0.365	1	0.545	0.990
Constant	0.360	0.249	2.101	1	0.147	1.434



## CONCLUSIONS

To build an indicator of entrepreneurial intuitive behavior is a goal that can be achieved synthesizing the conclusions of previous academic research. The experience presented in this work opens the door to progress in this issue and to refine the presented tool.

The preliminary analytical results point out that in Spain the intuitive character in SMEs promoters is a variable that depends significantly on leadership and motivation skills, accompanied by abilities to develop technological goods or services. These abilities tend to be more present in young people as the relationship between age and intuitive style is negative. Also, intuitive behavior is determined by a positive behavior on supervision and influence to lead people. The years of experience as employees, of business management experience, and of previous entrepreneurial activities or activities in the same sector do not show significant relationships with intuitive style, which contradicts the literature, as intuition is expected to be a function of the experience. The explanation for this result can rely in the fact that Spanish entrepreneurs tend to show similar average years of experience, both in the entrepreneurial and the consolidated phase. Thus, if intuitive style is more associated to youth and to early stages of activity, as confirmed by the first binary logistic regression, and there is no difference in years of experience, then this variable has no effect in the overall determination of an intuitive style in this population, but results can differ in populations showing more variance in years of experience.

The results of the logistic regression allow us to accept the first complementary

hypothesis: the intuitive style is more prevalent at the early stages of entrepreneurship than at the consolidated phase. However, these results do not allow us to accept that the intuitive style is more prevalent among necessity-driven entrepreneurs. The first result is supported by the literature and the second can be due to the fact that the information was obtained in the middle of the economic crisis, a fact that adds noise to the GEM variable that captures the reasons for entrepreneurship in Spain. Thus, the profile of the entrepreneur in Spain is affected by an unusual increment of necessity-driven entrepreneurs due to the current crisis.

## LIMITATIONS AND FUTURE RESEARCH

Limitations of this research rely on the lack of data at international level. GEM Spain is a powerful observatory that allows researchers to re-interview samples and get complementary information to make in-depth investigation on several issues, but the extension of the general questionnaires is difficult to implement at a general level. To test a general hypothesis on entrepreneurial intuition will require the acceptance of a research proposal attractive for the observatory at international level. Entrepreneurial failure can be diminished if intuitive potential entrepreneurs are well oriented. This is an important contribution that the research on cognitive styles can offer and relevant to be considered to enlarge this research line.

Future research will be focused on making a general proposal to include information resources able to measure cognitive styles in the GEM tools. This experience and the results obtained allow us to analyze which refinements must be considered to build a

better indicator of entrepreneurial intuition and to include them in the planned proposal. If accepted, it is possible that in a few years we can test the general research questions proposed in this paper.

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