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## Entrepreneurial Intentions: The Role of the Cognitive Variables

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### 1. Introduction

The impact of entrepreneurial activity and the creation of new businesses on the economic growth of a country and the generation of jobs are recognized worldwide. The degree to which a society stimulates entrepreneurial activity, as opposed to stimulating an individual to select a career as an employee, varies among nations, and within the different social groups of a nation. The reasons mentioned for these variations include cultural explanations (e.g., Altinay & Basu, 2002), business environment explanations (Acs et al., 2005), psychological explanations (e.g., Koh, 1996), or a mix of these. Accordingly, the study of the relation between individual's sociodemographic and psychological variables with the desire to follow an independent career in the future, what we call "entrepreneurial intention", is considered pertinent. Therefore, one of the objectives of the chapter is to determinate the antecedents of the entrepreneurial intentions of undergraduates. A second objective is to assess the degree to which the cognitive processes contribute, beyond the student country and socioeconomic condition, to students' entrepreneurial intentions.

The variables used to study entrepreneurs have gradually changed over the years (Sánchez, 2011a). The personality traits and demographic variables that differentiate entrepreneurs from non-entrepreneurs were the initial focus of interest. These lines of analysis allowed us to identify significant relations between certain personality traits and demographic characteristics and individuals showing entrepreneurial behaviour. Nonetheless, some authors have criticized these approaches for their methodological and conceptual limitations and for their limited predictive capability (Robinson et al., 1991)

A new line of analysis, the cognition, has emerged as an important theoretical perspective for understanding and explaining entrepreneurial behaviour (Goodwin & Wofford, 1990; Sánchez, 2011b). Neisser (1967) defines cognition as "all processes by which sensory input is transformed, reduced, elaborated, stored, recovered, and used". Mitchel et al. (2002) consider that "entrepreneurial cognitions are the knowledge structures that people use to make assessments, judgments, or decisions involving opportunity evaluation, venture creation, and growth" (p.97). From this perspective, since the decision to become an entrepreneur is considered to be both conscious and voluntary (Krueger, 2000), it seems reasonable to analyze how that decision is taken. The analysis of cognition thus contributes significantly to the study of entrepreneurship (Allinson et al., 2000; Mitchell et al., 2002).

Indeed, some authors suggest that the future of entrepreneurship research should be focused on the study of cognitive social categories (Sánchez, 2011b).

Thus, entrepreneurship can be viewed as a way of thinking, a way of thinking that emphasizes opportunities over threats (Krueger, 2000), a process (opportunity identification) that takes place over time (Carrier & Kyrö, 2005). The opportunity identification process is clearly an intentional process, and, therefore, entrepreneurial intentions clearly merit our attention. The entrepreneurial intention has been considered as the key element to understand the new-firm creation process (Bird, 1988), as a prior and determinant element in the performance of entrepreneurial behaviours (Fayolle & Gailly, 2004). In cognitive psychology, intention is the cognitive state immediately prior to performing behaviour (Krueger, 2003). Essentially, behaviour is intentional if it is not the result of a stimulus-response relation, and any planned behaviour is intentional.

The intention to perform a behaviour (in our case, new venture creation) can be affected by certain factors, some of which are endogenous or internal (e.g., needs, values, habits and beliefs, Lee & Wong, 2004) and others are exogenous or situational (e.g., difficulty of the task). In this sense, entrepreneurial research has been conducted following two main lines: the personal characteristics or traits of the entrepreneur; and the influence of contextual factors in entrepreneurship (Robinson et al., 1991). From this last institutional approach, some entrepreneurial models with a cognitive basis emerged to explain this phenomenon: the Entrepreneurial Event Theory (Shapiro & Sokol, 1982) and the Theory of Planned Behaviour (Ajzen, 1991) appeared as the main theory-driver models. They have been widely adopted by entrepreneurial intention research to analyze new venture creation.

There is, however, little variation among the different approaches taken from these models (Krueger, 2000) and some authors have even tried to integrate them into a single model (Kolvereid & Lakovleva, 2009). These models use two critical antecedents of intentions that can be classified (give or take some obvious terminological differences) as perceived feasibility and perceived desirability.

Now then, if the intentions depend on personal beliefs and attitudes, then researchers interested in entrepreneurial behaviour should also explore the sources of these antecedents. Cognitive science has demonstrated how attitudes and beliefs that are expressed on the surface have their origins in deeper structures, in how we represent knowledge and how that knowledge is interrelated. That is, that knowledge does not exist as discrete “data” but rather is interconnected. To analyze these deeper structures, cognitive science has used methods such as causal maps, schemes and scripts. In this chapter we take into consideration cognitive scripts.

As its name suggests, a script is “a cognitive mechanism that comprises the key elements in a situation decision and the likely ordering of events” (Krueger, 2003, p. 128-29), a “highly developed, sequentially ordered knowledge” that forms “an action-based knowledge structure (Mitchell et al., 2000 p.975). In the field of entrepreneurship the underlying assumption in this respect is that entrepreneurs possess a thought structure in relation to entrepreneurship that is significantly better than that of non-entrepreneurs (Lord & Maher, 1990).

Script analysis has been considered primarily from the theory of expert information processing in order to examine differences between entrepreneurs and non-entrepreneurs as

regards decision-making and is rooted in the following idea: entrepreneurs develop unique knowledge structures and they process (transform, store, recover and use) information differently from non-entrepreneurs (e.g., Mitchell, 1994; Mitchell et al., 2000). Thus, according to the theory of expert information processing, entrepreneurs are experts in the field of entrepreneurship and through deliberate practice (e.g., Baron & Henry, 2006; Mitchell, 2005) can acquire entrepreneurial cognitions; that is, scripts or knowledge structures that allow them to use the information significantly better than non-expert entrepreneurs.

Although it has been shown that scripts are antecedent to the venture creation decision, little has been done in the way of analyzing how these scripts affect entrepreneurial intention. In our opinion it is reasonable to expect that these same entrepreneurial scripts are also antecedent to other previous steps in the process of business venture creation, such as the entrepreneurial intention. We thus suggest that there is a relation between scripts and entrepreneurial intention.

The reasoning behind these expectations is consistent with the fact that those who have an entrepreneurial intention may not perceive starting a business as a risk, since what may be perceived as a risk by some individuals is not perceived as such by others (Simon et al., 2000). Thus, we suggest that scripts affect entrepreneurial intention. Given that individuals who work in specialized fields have unique knowledge, it is logical to expect that among a broad range of demographic groupings (e.g., age, culture, gender, etc.), the individuals who score high in these dimensions of cognitive scripts probably have similar thought patterns in regard to entrepreneurship and to this extent they can be differentiated from those who do not have an entrepreneurial intention.

However, we also accept that, in some cases, the variance in the expected relation is not completely explained solely by inter-group analysis; there are often intra-group differences that can explain additional variance in this relation (Keppel, 1991). In the study of this relationship there are arguments that suggest the possibility of intra-group variance. Country of origin may be one possible explanation of intra-group variance. It is reasonable to expect that this intra-group variation in levels of entrepreneurial intention could be explained to the extent that perception is affected by the cultural values associated with the participants' country of origin.

Although it is well accepted that cultural values are an antecedent of human behaviour, they are also thought to affect the perceptions that precede that behaviour (Mitchell et al., 2000, 2002). Since each culture can have unique values and norms concerning the creation and running of business ventures, we can expect that entrepreneurial scripts may be culturally specific in their effects on entrepreneurial intention, given the differences in perception that emerge in the processes of engaging in creating an enterprise. Thus, we expect that, to the extent that there are cultural differences between countries, the effects of entrepreneurial scripts on entrepreneurial intention may be country-specific, and therefore we suggest that the effects of the scripts on entrepreneurial intention vary by country.

In this context, the main objective of this chapter is to identify some of the cognitive elements that may explain differences in start-up intentions. The chapter proceeds in the following manner. First, we discuss the central research question to further enable entrepreneurial cognition inquiry. Second, we present the conceptual background and

several representative approaches to entrepreneurial cognition research that form the context for this question. Third, we introduce the empirical analysis carried out to examine the relationships between cognitive scripts and intention, by comparing diverse socio-cultural background. Finally, we offer the results and conclusions concerning the challenges facing the next generation of entrepreneurial cognition and intention. Thus, this chapter seeks to contribute toward redressing this gap in our knowledge by empirically testing a model that draws on the theory of planned behaviour to examine the cognitive antecedents of entrepreneurial intentions among students.

## 2. Entrepreneurial intention

Psychologists have claimed that assessment of intentions is the most obvious way of predicting the behaviour (eg. Ajzen, 1991). In various situations, intentions have been considered as the most effective predictor of behaviours, such as job search activities and career choice (Kolvereid, 1996). In the entrepreneurship context, behaviours as new ventures, creation of new values are outcomes of entrepreneurial intentions (Bird, 1988). Thus, the entrepreneurial intention has been considered as the key element to understand the new-firm creation process. In this sense, entrepreneurial research has been conducted following two main lines: the personal characteristics or traits of the entrepreneur (eg. Zhao et al, 2005); and the influence of contextual factors (e.g. political and social context, markets, industry opportunities, and financial support, Franke & Luthje, 2003) in entrepreneurship (Robinson et al. 1991).

However, these lines have a limited understanding of the processes through which entrepreneurial intentions develop and come into existence (Markman et al., 2002). Fini et al. (2009) identified several explanations a) the research in this area has an empirical orientation with scant theoretical contribution; and b) many studies have considered isolated variables, often without a clear theoretical rationale, as drivers of entrepreneurial intentions (Zhao et al., 2005). That is, predicting entrepreneurial intentions by modelling only individual or contextual factors as isolated domains usually resulted in disappointingly small explanatory power and even smaller predictive validity (Krueger, 2000).

To address these limitations, some authors have undertaken a multi-disciplinary approach, adopting the so-called process models (or intention models). Historically, the first widely accepted model was the theory of reasoned action (TRA, Ajzen & Fishbein, 1980). Later, was called the theory of planned behaviour (TPB). Thus, according to Ajzen, intentions are explained by: a) subject's attitudes (perceptions of personal desirability of performing the behaviour); b) social norms (the approval or disapproval that important referent individuals -or groups- have in relation to the enactment of a given behaviour); and c) perceived behavioural control (the perception that the target behaviour is within the decision maker's control). According to the theory, attitudes, subjective norms and perceived control predict intentions, while intentions and perceived control predict behaviour. The TPB (Figure 1) is the most used model of the human intentions to this day (Ajzen, 1987, 2002).

Another well recognized model is the Shapero's entrepreneurial event model (SEE), that is conceptually similar to Ajzen's theory of planned behaviour. In this model, entrepreneurial intentions depend on three elements: a) the perception of the desirability; b) the perception

of feasibility; and c) the propensity to act (Shapero, 1982; Shapero and Sokol 1982). The perceived desirability is defined as the attractiveness of starting a business, perceived feasibility as the degree to which the individual feels capable of starting a business, and propensity to act as the personal disposition to act on one's decisions.

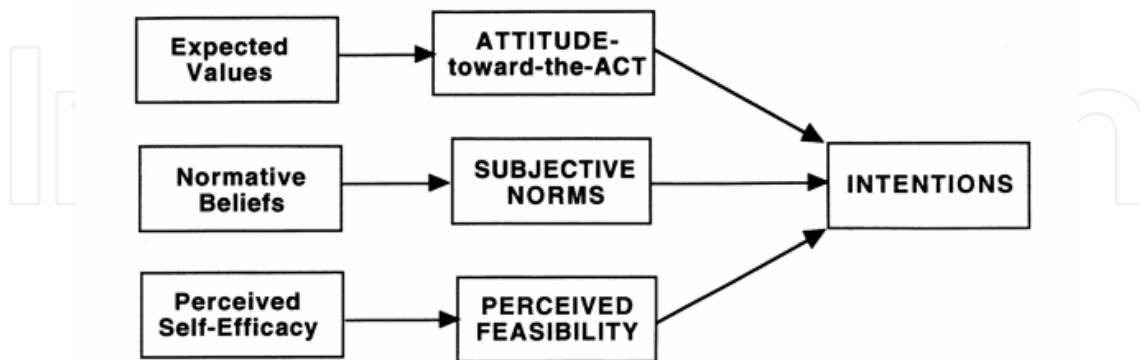


Fig. 1. Ajzen's Theory of Planned Behaviour

While the SEE model was developed to understand entrepreneurial intention and behaviour, Ajzen's TPB was developed to explain individual behaviour in general. According to the TPB attitudes, subjective norms and perceived behavioural control determine intentions. Intentions, in turn, along with perceived behavioural control determine actual behaviour. Empirical testing of entrepreneurial intentions among students has found support for both the SEE model and the TPB (Kolvereid, 1996; Krueger, 2000). Krueger (1993) argued that attitude in the TPB encompasses the notion of perceived desirability in the SEE model. He also argued that subjective norm overlaps with the notion of desirability and feasibility, and that feasibility overlaps with perceived behavioural control. Bagozzi (1992) suggested that attitudes may first be translated into desires, which then develop into intentions to act, which direct action. Armitage & Conner (2001) speculated that desires would inform intentions, upon which behavioural self-predictions are partly based. They argued, however, that further work is needed to test the causal relationship between desires, intentions, and self-predictions.

Another model of intentions was developed by Bird (1988) which considers that entrepreneurial intentions are based on a combination of both personal and contextual factors. Further development of the Bird's model was made by Boyd & Vozikis (1994) to include the concept of self-efficacy taken from the social learning theory. Another model was proposed by Davidsson (1995), which suggested that entrepreneurial intentions can be influenced by: conviction, defined by general attitudes (change, compete, money, achievement, and autonomy) and domain attitudes (payoff, societal contribution and know how); conviction, in turn, is related to personal variables including age, gender, education, vicarious experience and radical change experience.

Different studies have been conducted around the models described above (see e.g. Audet, 2002; Boyd & Vozikis, 1994; Davidsson, 1995; Peterman & Kennedy, 2003; Souitaris et al., 2007). However, none of these models and studies have considered cognitive variables as variables that can influence and determine the entrepreneurial intention.

### 3. The cognitive approach

The cognitive approach uses the cognitive aspects of entrepreneurs to study and even to explain their behaviour, which is related to the identification of opportunities for the creation of businesses and business growth. In fact the term "cognitive style" is used to characterize certain ways of processing information related to entrepreneurial behaviour. Two main lines can be differentiated within the cognitive literature: the study of cognitive *structures* and the study of cognitive *processes* (Sánchez et al., 2011). Some studies have attempted to identify the knowledge structures that entrepreneurs use to make assessments, judgments or decisions, in evaluating opportunities, and in the creation and growth of businesses (Boucknooghe et al., 2005; Gaglio & Katz, 2001; Mitchell et al., 2000). Other types of research are based on the idea that whatever the individual thinks, says or does is influenced by the cognitive processes through which individuals acquire, use and process information (Baron & Markman, 1999; Evans & Krueger, 2004). This perspective suggests that entrepreneurs think and process information differently from non-entrepreneurs and such differences may help to distinguish people who create or aim to establish businesses (entrepreneurs) from people who do not create and will not create companies (non-entrepreneurs). Thus, some authors have coined the term "cognitive style" to characterize certain ways of processing information related to entrepreneurial behaviour (Baron, 2004; Boucknooghe et al., 2005).

Cognitive psychology is not only an aid to understanding individuals and their behaviour, considering their mental processes when they interact with other people, but also addresses the environment in which these mental processes and interactions take place (Mitchell et al., 2002). The Theory of Social Cognition introduces the idea of knowledge structure; i.e. the mental models (cognitions) that are used to achieve personal effectiveness in certain situations. Thus, since entrepreneurship is defined as relating to individuals or teams that create products/services for other people, Cognitive Psychology is increasingly useful to help establish the phenomena associated with entrepreneurship (Sánchez, 2011b).

In this sense, experts insist on the possibility of explaining a large part of entrepreneurial behaviour and its origin from both cognitive structural and process variables (e.g., Busenitz & Lau, 1996). Cognitive structures represent and contain knowledge, while cognitive processes relate to the manner in which that knowledge is received and used. In sum, the field of entrepreneurial cognition includes all aspects of cognition that can potentially play an important role in certain aspects of the entrepreneurial process. Thus, we shall address the main cognitive aspects reflected in the literature that shed light on the study of entrepreneurship.

#### 3.1 Self-efficacy

Originally defined by Bandura (1994, p. 72) as "one's beliefs in their abilities to perform a certain level of performance or desired outcomes that influence situations that affect their lives", self-efficacy has become an important variable considered in the cognitive study of entrepreneurial behaviour. Shane et al. (2003) emphasize self-efficacy as a robust predictor of individual outcome in a given activity and its validity to explain why people with equal skills may act differently.

Like Chen et al. (1998), by entrepreneurial self-efficacy we understand the self belief in one's ability to adopt the role and conduct the tasks of an entrepreneur successfully. Thus, research on self-efficacy in entrepreneurial behaviour has been characterized by making distinctions between entrepreneurs and non-entrepreneurs (Chen et al., 1998; Markman et al., 2005). In a given situation, entrepreneurs perceive more opportunities than those who have low levels of entrepreneurial self-efficacy, who perceive the same situation to have more costs and greater risks (Cooper & Lucas, 2005; Vecchio, 2003). People who have a higher level of self-efficacy also feel more competent to overcome perceived obstacles and they anticipate more positive results (Vecchio, 2003) and persist in the effective search and organization of activities in the midst of uncertainty (Trevelyan, 2009).

Entrepreneurial self-efficacy enables us to differentiate entrepreneurs from managers and it also correlates with the intention of owning a business, pointing to the notion that the individual who believes or feels him or herself most capable of undertaking a business concern is more prone to implementing such behaviour than one who does not feel able to do so (Chen et al., 1998). Self-efficacy can also be used to identify the reasons why some individuals avoid becoming entrepreneurs, since some people avoid entrepreneurial activities not because of their lack of ability but because they believe that they do not have such ability. Moreover, it can be used to identify areas of weakness or strength for developing the entrepreneurial potential of individuals or communities and to improve the performance of existing entrepreneurs (Chen et al., 1998).

Further, entrepreneurial self-efficacy studies provide data that help to understand why some businesses do not grow, on the grounds that some entrepreneurs have insufficient self-efficacy to cope with specific tasks (Vecchio, 2003).

All these contributions have lent considerable impetus to clarifying the cognitive study of entrepreneurs. Accordingly, it is crucial to focus on possible factors that might influence the development of self-efficacy. For example, Oliveira et al. (2005), seeking to identify the impact of the social environment on the self-efficacy beliefs of entrepreneurs, reported that those who had a favourable micro-social environment (support from family and friends) had higher levels of self-efficacy than those who had an unfavourable micro-social environment. Similarly, Krueger and Kickul (2006) argued that individuals assess their entrepreneurial skills in reference to perceived resources, opportunities, and obstacles in the environment; thus, the environment exerts an impact on entrepreneurial self-efficacy.

### 3.2 Scripts

The area of scripts has expanded considerably and has provided fruitful results in the field of entrepreneurship, mainly thanks to Ron Mitchell and colleagues. Like Fiske & Taylor (1991), we define a script (schema) as a cognitive structure of beliefs and standards concerning a given domain of stimulus, which provides the individual with a reference point from which to represent his or her environment and provides guidelines for action and decision making. This cognitive structure represents the organized knowledge that a person has about a particular concept and contains information about the attributes of this concept and about the relationships between such attributes (Busenitz & Lau, 1996).

Within the context of entrepreneurship, scripts are considered to refer to the knowledge structures that entrepreneurs use to make assessments, judgments or decisions regarding



the assessment of opportunities, enterprise creation and business growth. In other words, research on entrepreneurial scripts refers to the study of how entrepreneurs use simplified mental models to link previously unconnected information that will help them to identify or invent new products or services and the necessary resources to start up and cultivate a business (Mitchell et al., 2002). Thus, scripts in the field of entrepreneurship are knowledge structures that individuals have concerning the actions themselves to be undertaken (Busenitz & Lau, 1996).

The main contribution of these studies suggests that expert entrepreneurs think differently from novices. The way in which entrepreneurial experts become experts is reflected in the development of an expert script. Experts have knowledge structures or scripts about a particular domain that allow them to perform better in their environment than non-experts, who neither have nor use structured knowledge (Mitchell et al., 2000; Westhead et al., 2009).

This contribution extends to the intercultural level. Several cross-cultural studies have shown that knowledge structures differentiate between entrepreneurs and non-entrepreneurs in different countries (Mitchell et al., 2002; Smith et al., 2009). The explanation is that entrepreneurs have shared experiences about the conceptualization, early development and growth of new businesses, leading them to develop similar and more refined mental models than non-experts might have, given their reduced experience in the domain (Mitchell et al., 2002, Smith et al., 2009).

Moreover, script studies provide clues to understanding the functioning of entrepreneurs in a group. Scripts are manifested not only individually, but are also manifested in a team. Although teams do not have cognitions alone, the prospects of the team about what is an appropriate action (schema) are significantly greater than the collection of individual perspectives, and the collective cognition of the entrepreneurial team is what drives many strategic business decisions (West, 2007).

### 3.3 Cognitive styles

Cognitive style is defined as the way people perceive environmental stimuli, and how they organize and use information from their environment to guide their actions. In their study, Boucknooghe et al. (2005) raised the following questions: "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 results of that investigation confirmed the notion that entrepreneurs differ in their cognitive styles.

Successful entrepreneurs enjoy discovering opportunities, being innovators and taking risks, as do inventors. Individuals who use a *knowing style* (analytical and conceptual) look for facts and data. They want to know exactly how things are, and they tend to retain many facts and details. They are task-oriented and accurate, and they thrive on complex problems if they can find a clear and rational solution. The creative style is characterized by holistic and conceptual thinking. Individuals who use this style tend to be creative and enjoy experimentation. They tend to see opportunities and challenges. They do not like rules and procedures, and take pleasure in uncertainty and freedom. They are ambitious and achievement-oriented. Successful entrepreneurs show more originality than others and are able to produce solutions that run against established knowledge. Creative thinking also facilitates the recognition of business opportunities (Bridges et al., 2003). The integration of

both analytic (knowing) and intuitive (creative) processing styles is required to process information (Hodgkinson & Sparrow, 2002) and minimizes the dangers of cognitive biases identified by researchers into behavioural decisions (e.g. Mintzberg, 1994; Sinclair et al., 2002).

In addition, other research has shown that entrepreneurs collect, process and evaluate information in a more intuitive manner than managers, middle managers and initiates. Senior managers have cognitive styles similar to those of entrepreneurs (Allison et al., 2000). Recently, Lindblom et al. (2008) have found differences in the cognitive style of the different types of entrepreneurs. Those authors investigated the cognitive style of retail entrepreneurs with respect to marketing decisions. The results revealed that the cognitive style of retail entrepreneurs is more consistent with the style of employees than with that of other entrepreneurs.

### 3.4 Decision making: Heuristics and errors

Research on heuristics has afforded important results in our understanding of the cognitive functioning of human beings in general and of entrepreneurs in particular. Heuristics are simplifying strategies that individuals use to manage information and reduce uncertainty in decision making (Khaneman & Tversky, 1973).

Research has shown that entrepreneurs with a logic based on heuristics are able to make sense of complex and ambiguous situations more quickly and take more orthodox approaches in making decisions (Mittchel et al. 2009). However, other studies (Baron & Markman, 1999) have shown that the use of certain cognitive heuristics leads to biases and errors, as discussed below.

*Counterfactual thinking.* This is understood as an afterthought in decision-making in which the procedures followed to perform the task are discussed, and various alternatives that could have been followed are considered (Wadeson, 2006). These are the thoughts that occur due to adverse outcomes or wrong expectations (Markman et al., 2005). Counterfactual thinking has positive and negative effects on the entrepreneur. On the one hand, it can lead to regret and can reduce perceived self-efficacy if one decides the choice was not the best one. On the other hand, counterfactual thinking can lead to the formation of alternative strategies for the future, so the best strategies can be learned from experience.

In the field of entrepreneurship, research that has analyzed counterfactual thinking reveals that entrepreneurs are less likely to engage in counterfactual thinking, they regret missed opportunities less and bear past mistakes more easily, both their own and those of others (Baron, 2000).

Another important contribution was a study by Gaglio and Katz (2001), who hypothesize that people on entrepreneurial alert are involved in counterfactual thinking, unravelling the causal sequences. Therefore, they are more likely to increase the complexity of their mental patterns, changing in response to novel events. A further discussion of the role of counterfactual thinking and its importance in entrepreneurship can be found in Gaglio's work (2004).

*The planning fallacy.* The planning fallacy is a cognitive aspect related to errors in planning, that is, the tendency to believe that one can achieve more in a given period of time than one

is really is capable of. The planning fallacy is the result of people failing to break down multifaceted mental tasks into their different components (Evans & Krueger, 2004). Thus, when people are asked to break down the tasks to be performed, the planning fallacy becomes reduced. Most people, including entrepreneurs, tend to overestimate how much they can accomplish in a given period of time and may underestimate the amount of resources needed to complete certain projects (Baron & Markman, 1999).

These authors defended the idea that entrepreneurs tend to be more susceptible to the planning fallacy than other people, because they operate in a dynamic and uncertain environment, under the severe pressure of time and large amounts of information. However, the results have shown the opposite, i.e. that entrepreneurs are less prone to the planning fallacy (Baron & Markman, 1999).

*Overconfidence.* Over-confidence refers to the tendency of thinking one knows more than what one really knows (Baron & Markman, 1999). That is, our failure to know the limits of our own knowledge. Over-confidence occurs when decision makers' assessments are overly optimistic. In sum, overconfident people are characterized by poor meta-cognition.

According to Russo & Schoemaker (1992), overconfidence may be the result of the availability heuristic, the anchoring and adjustment heuristic, confirmatory bias, and hindsight bias. The confirmation bias is a tendency to gather evidence for and assign more weight to information that confirms one's belief, and to stop seeking or to ignore dissonant information. Hindsight bias is a tendency to see past events as more predictable than they actually were, such as the familiar saying: "I knew it." It is important to realize that to collect less information when a person is feeling very safe is not really a heuristic, but something rational. However, if the confidence level is not justified, then it will fail in the collection of information.

*Over optimism.* This is the tendency to believe that things will work out. Overoptimism has three main forms (Brown & Taylor, 1988): positive self-evaluation, optimism about plans and future events and over-optimism due to the illusion of control bias. Cooper et al. (1988) found that 81% of entrepreneurs interviewed believed that their chances of success would be at least 70% and 33% claimed that they were destined for success. However, reality showed that only 25% of new businesses survive for more than five years. Such positive statements partly reflect a need for self justification. The authors suggest that entrepreneurs can start a psychological phenomenon called post-decisional reinforcing, in which decision makers tend to exaggerate the attractiveness of an option once it has been chosen. They also advance the possibility that employers may have a natural tendency to talk positively about their efforts as an incentive to encourage others, such as financiers, employees and customers into believing they will be successful. If employers are more optimistic when they decide to start a business, then this has additional implications in comparison to a situation in which one is only over-optimistic after the initial decision.

According to Vecchio (2003), there are studies that have identified highly secure entrepreneurs and managers of small businesses. He cites the discovery of Cooper et al. (1988) that entrepreneurs express a high level of confidence in success. Also, Parker (2006) argues that certain findings in the psychology literature suggest that entrepreneurs are particularly over-optimistic. It is this optimism that tends to be greater when individuals have emotional commitment to the results of their work.

Bernardo & Welch (2001) found that by providing positive information externally to their social group, over-confident entrepreneurs are more preferred by their environment. If these externalities are significant enough, then social welfare will be increased through having some over-confident people in the population, even though such people are not behaving in an optimal way as regards their own welfare. This has important implications and applications for the workplace, and suggests that the inclusion of over-confident workers in the company will have beneficial effects on work climate, self-efficacy, performance, etc.

In conclusion, the relationship between different heuristics is established: overconfidence, as defined above, leads to incorrect estimates of the risks that an entrepreneur has to face, but the estimates could go in two directions: either being too pessimistic or too favourable, depending on whether the estimate is positively or negatively biased. However, it is quite possible that people who are optimistic enough to start a business show a tendency towards the overconfidence bias in the direction of underestimating the risk they face. Similarly, the belief in the law of small quantities can lead to over-confidence if the small sample used is biased in a positive direction. The anchor could lead to overoptimism about the creation and progress of a company, in cases where the expectations based on indications of the progress made so far are too optimistic.

#### 4. The study

In the field of entrepreneurship, three types of entrepreneurial scripts have gradually been defined: arrangements, willingness, and ability scripts (e.g., Mitchell, 1994; Mitchell et al., 2000, 2002). Arrangements scripts are the knowledge structures that individuals have about the contacts, relations, resources, and assets that are needed for economic relations. Willingness scripts are the knowledge structures underlying the idea of engaging in an economic relation. Ability scripts are the knowledge structures that individuals have about the capabilities, skills, knowledge, norms, and attitudes needed to create a business venture.

Although it has been shown that entrepreneurial arrangements, willingness, and ability scripts are antecedent to the venture creation decision, little has been done in the way of analyzing how these scripts affect entrepreneurial intention. In our opinion it is reasonable to expect that these same entrepreneurial scripts are also antecedent to other previous steps in the process of business venture creation, such as the entrepreneurial intention. We thus suggest that there is a relation between arrangements, willingness, and ability scripts and entrepreneurial intention.

Consistent with previous research (Mitchel et al., 2000), we argue that people who are able to: a) use arrangements scripts most suitably in relation to the idea of protection, resource possession, venture networks, and venture specific skills; b) possess more developed willingness scripts with respect to their opportunity seeking focus, opportunity motivation, and risk tolerance; and c) trust in their ability scripts to diagnose the conditions and potential to create business ventures, see the need and create value and apply the lessons learned to a variety of experiences (Abelson & Leddo, 1986) will have a higher entrepreneurial intention.

The reasoning behind these expectations is consistent with the fact that those who have an entrepreneurial intention may not perceive starting a business as a risk, since what may be

perceived as a risk by some individuals is not perceived as such by others (Simon et al., 2000). Thus, we suggest that scripts affect entrepreneurial intention. Given that individuals who work in specialized fields have unique knowledge, it is logical to expect that among a broad range of demographic groupings (e.g., age, culture, gender, etc.), the individuals who score high in these dimensions of cognitive scripts probably have similar thought patterns in regard to entrepreneurship and to this extent they can be differentiated from those who do not have an entrepreneurial intention. In short, we expect to find that: High scores in arrangements, willingness, and ability scripts are positively related to high scores in entrepreneurial intention (proposal 1).

However, we also accept that, in some cases, the variance in the expected relation is not completely explained solely by inter-group analysis; there are often intra-group differences that can explain additional variance in this relation (Keppel, 1991). In the study of this relationship there are arguments that suggest the possibility of intra-group variance. Country of origin may be one possible explanation of intra-group variance. It is reasonable to expect that this intra-group variation in levels of entrepreneurial intention could be explained to the extent that perception is affected by the cultural values associated with the participants' country of origin.

Although it is well accepted that cultural values are an antecedent of human behaviour, they are also thought to affect the perceptions that precede that behaviour (Mitchell et al., 2000; Mitchell et al., 2002). Since each culture can have unique values and norms concerning the creation and running of business ventures, we can expect that entrepreneurial scripts may be culturally specific in their effects on entrepreneurial intention, given the differences in perception that emerge in the processes of engaging in creating an enterprise. Thus, we expect that, to the extent that there are cultural differences between countries, the effects of entrepreneurial scripts on entrepreneurial intention may be country-specific, and therefore we suggest that: The effects of the arrangements, willingness, and ability scripts on entrepreneurial intention vary by country (proposal 2).

The data were collected from a sample of 726 university students, 266 of them from Mexico, 252 from Italy, and 208 from Spain. Approximately 64.2% of the surveyed participants were women. Participants' ages ranged between 19 and 24, with a mean age of 21.24 (Sd=3.32) in the Mexican sample, 21.9 (Sd=3.09) in the Italian sample, and 21.09 (Sd=2.90) in the Spanish sample. No differences were found among the participants from Mexico, Italy or Spain regarding age and sex. The level of formal education was also similar among the different countries. Although education is not theoretically linked to entrepreneurial cognition or intention (Fischer & Reuber, 1994) it can limit the clarity of the variance explained by the cognitive scripts and was thus entered as a control variable when examining the proposals.

#### 4.1 Measures

The participants responded to 4 items concerning intentions to start their own business (dependent variable). The responses were categorized on a 0 (very unlikely) to 5 (very likely) point Likert-type scale. An index of intention to become self-employed was created by averaging the four item-scores. Our data confirmed the reliability of the scale ( $\alpha=0.75$ ), which exceeds the Nunnally (1978) criterion of .70 for scale reliability in exploratory research.

The scales used to measure scripts (independent variables) were adopted from Mitchell et al. (2000; 2002). Items from the original scales were translated into Spanish and Italian using a *translation/back-translation* procedure (Behling & Law, 2000).

Mitchell et al. (2000; 2002) developed 27 items to measure entrepreneurial scripts indirectly, following an accepted script-scenario construction model proposed by Read (1987). In this approach, the existence and degree of mastery of scripts is inferred based on selection by respondents from paired response choices; one represents expertise and the other is a distracter cue. When solving problems within a specific domain, experts are able to select the response consistent with their expert scripts (Glaser, 1984), whereas non-experts are more likely to choose the socially desirable distracter cue (Crowne & Marlowe, 1964).

The arrangements scripts scale is comprised of 7 items regarding the contacts, relationships, resources, and assets necessary to engage in entrepreneurial activity. The willingness scripts scale includes 9 items about engaging in venturing and receptivity to the idea of starting a new venture. Finally, the ability scripts scale is composed of 11 items regarding the capabilities, skills, knowledge, norms, and attitudes required for venture creation. All items ask the participants to choose between an expert script (coded as "1") and a distracter cue (coded as "0"). Responses in each script scale are used as formative indicators and summed into interval scales (Nunnally, 1978) indicating the likelihood or strength of script possession.

#### 4.2 Data analysis

Before testing the proposals, and following the recommendations of Mitchell et al. (2000; 2002), a factor analysis was run (principle components analysis, using an eigenvalue of 1 and varimax rotation) to confirm the dimensionality of each of the script constructs. Proposal 1 was tested using analysis of co-variance (ANCOVA), with education and country of origin as the co-variants. Proposal 2 was tested using multivariate analysis of variance (MANOVA) and hierarchical regression analysis. Since ANCOVA requires categorical variables, the scales used to measure arrangements, willingness, and ability were recoded in three categories of approximately the same size - low, intermediate, and high (each category contained at least 20% of the participants surveyed). The mean values of each scale were assigned to the intermediate category and at least two values for each of the low and high categories. These three categories were chosen to minimize the loss of explanatory power in the categorization processes, maintaining groups of sufficient size to fulfill the analytical suppositions. To test proposal 2 we used the original independent variables (interval scale) in the hierarchical regression analysis. Hierarchical regression analysis checks the ANCOVA results using the information provided by the measures.

#### 4.3 Results

Support was found for the dimensions conceptualized in the work of Mitchell et al. (2000; 2002) regarding scripts. Although some items showed high loadings on several factors they were not eliminated from the analysis and were assigned to the factor most related to the theoretical content of the subscale. The items assigned to each factor were averaged to obtain the score of the participants in each of the script subscales.

After controlling for the effects of the education and country of origin variables, ANCOVA (Table 1a), showed that arrangements, willingness, and ability scripts explained 39% of the variance in entrepreneurial intention and these cognitive constructs explained 22% of the total variance when the effects of the education and country of origin variables were not taken into account. The main effects were all significant, thus confirming our first hypothesis: arrangements, willingness, and ability scripts are related to the level of entrepreneurial intention despite the participants' country of origin and level of education. Similar results were found using hierarchical regression (Table 1c, all).

To test our second proposal we performed a MANOVA (Table 1b). The results of this analysis indicate that the mean values of arrangements, willingness, and ability scripts were significantly different according to the countries studied. We found differences in arrangements and willingness between Spain/Italy and Mexico and in ability between Spain and Mexico. The rest of the comparisons were not found to be significant. These findings suggest that there may be some differences in scripts according to country, but that there can also be some similarities (e.g., between Spain and Italy). A regression analysis (Table 1c) was run in an attempt to understand the differential effects of the scripts on entrepreneurial intention.

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The results of this analysis indicate that the mean values of the arrangements, willingness and ability scripts were significantly different according to the countries under study. *Post hoc* analyses showed differences between Spain/Italy and Mexico in Arrangement and Willingness scripts and between Spain and Mexico in Ability. No differences were found between Spain and Italy in any of the cognitive scripts. These results suggest that country differences exist in the content of entrepreneurial scripts, but that there are also similarities. We therefore performed a hierarchical regression analysis to understand the potential effects of the scripts on entrepreneurial intention (Table 1c).

A. Hypothesis 1 - ANCOVA†			B. Hypothesis 2 - MANOVA			C. Hypothesis 2 Hierarchical Regression‡							
	MS	F	p		Multi- variate F	Wilkes' lambda p	Univariate F's		All	Spain	Italy	Mexico	
							F	p					
Covariates	141.4	357.5	.000	Country effect	5,54	.000	Formation		,211***	,122*	,128*	,272***	
Formation	3,97	10,05	.002	Arrangements			14,68	,000					
Country	29,23	73,91	.000	Willingness			9,46	,000					
Main effects				Ability			3,65	,026	Scripts model				
Arrangements	15,94	40,31	.000						Arrangements	,281***	,261*	,272***	,240**
Willingness	1,40	3,54	.029						Willingness	,209***	,110	,212**	,242**
Ability	1,80	4,56	.011						Ability	,077*	,100	,109*	,013
									Formation	,116**	,086	,056	,156*
									R <sup>2</sup> (base model)	,044***	,015	,012*	,074***
									Δ R <sup>2</sup>	,253***	,149***	,225***	,251***

Table 1. Hypothesis Tests

The Chow Test turned out to be significant, and thus there are significant differences between the models at country level and the overall model. No script was significant in the sample of Spanish participants, whereas they were all significant for the sample of Italian participants. The results of the MANOVA and the regression analysis indicate that although the arrangements, willingness, and ability scripts are related to entrepreneurial intention, there are nevertheless certain differences between the countries. To analyze these differences we examined the relation between the attributes of the cognitive scripts and entrepreneurial intention, performing a *post hoc* hierarchical regression and considering the attributes of the scripts within each country. The results of this hierarchical analysis are shown in Table 2a. The arrangements scripts block of variables were significant for Spain, Italy and Mexico, explaining, respectively, 7%, 16%, and 14% more of the variance in entrepreneurial intention. All of the subscales were significant in the three countries. The willingness scripts block of variables is significantly related to entrepreneurial intention in all three countries, explaining, respectively, 5%, 2%, and 6% more of the variance in entrepreneurial intention than the base model, education. Seeking focus was significant for Italy and Mexico. Risk tolerance was significant for Spain and Mexico whereas Opportunity motivation was not significant in any of the countries. The ability script block was only significant for Mexico, explaining 3% more of the variance than the base model (education). The total effects of the script constructs were examined in a stepwise regression (Table 2b) in order to identify the most salient scripts in each country. Resource possession (arrangement) and venture specific skills (arrangement) were significantly related to entrepreneurial intention in all three countries. Protectable idea (arrangement) was significant ( $p < 01$ ) in the Spanish and Italian models but not in the Mexican one. Venture work (arrangement), seeking-focus scripts (willingness), and venture situational know-how (ability) were significant in the Italian and Mexican models, but not in the Spanish one, and risk tolerance was significant in the Spanish and Mexican models, but not in the Italian one.



These results support the idea that there are similarities and differences between the countries as far as the content of the entrepreneurial scripts is concerned. By identifying these similarities and differences we have thus extended the work of Mitchell et al. (2000). The theory of social cognition suggests that interactions among the arrangements, willingness, and ability scripts can be crucial for representing the script, since representation requires a configuration of forces of both entry scripts and action scripts (Fiske & Taylor, 1991). Arrangements scripts are necessary for carrying out the subsequent steps in the creation of value, but alone are probably not sufficient. Without the willingness scripts, there may not be enough motivation to constitute the arrangements scripts. Without the ability scripts, there may not exist sufficient capability to enact the arrangements scripts. Willingness scripts without ability scripts may not give rise to the following steps in the creation of value sequence. These potential interaction effects were explored using *post hoc* ANCOVA (controlling for the effects of country and education). None of the two-way interaction effects were significant, but the three-way interaction among arrangements, willingness, and ability scripts was significant ( $p < .05$ ) beyond the significant principal effects, which is consistent with the theory of social cognition and entrepreneurial cognition that the arrangements, willingness, and ability scripts all combine to influence entrepreneurial intention.

	A. Block Effects									B. Full model stepwise						
	Spain			Italy			Mexico			Spain		Italy		Mexico		
	$\Delta R^2$	B	P	$\Delta R^2$	B	p	$\Delta R^2$	B	p	B	p	B	p	B	p	
Formation	.015*	,122		.016*	,128	,043	.074***	,272	,000	,122	,079	,128	,043	,272	,000	
Arrangement	.078**			.160***			.141***									
Protectable idea		,339	,001		,360	,000		,188	,009	,353	,001		,275	,001		
Resource possession		,348	,001		,493	,000		,188	,000	,365	,002		,380	,000	,173	,034
Venture work		,223	,010		,398	,000		,408	,000				,309	,000	,305	,000
Venture specific skills		,278	,001		,275	,000		,298	,000	,246	,005		,220	,001	,176	,009
(Formation)		,101	,141		,041	,489		,162	,005							
Willingness scripts	.054**			.023*			.067***									
Seeking focus		,101	,201		,179	,011		,189	,003				,174	,013	,204	,001
Risk tolerance		-,172	,013		,063	,314		,239	,000	-,161	,021				,235	,000
Opp motivation		-,085	,273		,048	,464		,058	,324							
(Formation)		,067	,333		,045	,452		,150	,008							
Ability scripts	.017			.020			.030**									
Ability/opportunity fit		,103	,138		,062	,301		-,106	,051							
Diagnostic		-,066	,330		-,065	,262		-,045	,403							
Venture situational know		,069	,297		,111	,055		,142	,008				,111	,055	,142	,008
(Formation)		,061	,384					,155	,006							
										$\Delta R^2$	,16***	$\Delta R^2$	,21***	$\Delta R^2$	,31***	

Table 2. Post Hoc Tests

## 5. Conclusion

The aim of this chapter has been twofold: first, to extend the theoretical development of the research on entrepreneurial cognition beyond the level of individuals, and second, to increase the usefulness of previous work regarding entrepreneurial intention. To meet these two objectives we posited two basic proposals.

The results of our study suggest that individuals with high scores in the dimensions of the cognitive scripts considered have higher levels of entrepreneurial intention, regardless of the country of origin and educational level of the participants, thus confirming our first proposal. Our results also show that the effects of the scripts on entrepreneurial intention vary according to country. There are differences in the scripts according to the different countries, but we also found similarities between some of the countries studied as regards some of the contents. What do these cognitive differences mean when it comes to entrepreneurial intention? To answer this question we shall examine the results presented in Table 2b and then discuss what these differences may mean.

Our first observation of the results in Table 2b is related to the similarity among the participants of the three countries. On the one hand, the participants seem to have important scripts in common: in all three countries, resource possession and venture specific skills are significantly related to entrepreneurial intention. The fact that these characteristics are shared by the three countries may be suggesting the importance of resources and specific skills as the main scripts for being able to carry out an entrepreneurial intention. That is, if individuals have the resources and skills necessary to create a business venture, they will have more possibilities for carrying out that venture. This is a very hopeful result that can suggest concrete ways of action to foster entrepreneurial intention among university students. This result contrasts with those found in the literature analyzing the differences between new entrepreneurs and experienced entrepreneurs, where the seeking-focus scripts emerge as the most common and important script in experienced entrepreneurs across countries (Smith et al., 2009).

Our second observation has to do with the differences among the countries studied. Although the differences found in the cognitive scripts may hinder the process of comprehending the entrepreneurial intention, we feel that an understanding of these differences may be the key to a better understanding the entrepreneurial intention process. More specifically, we found that a protectable idea is significantly related to the entrepreneurial intention for the participants in both Spain and Italy, but not for those in Mexico; that risk tolerance is significant for Spanish and Mexican university students but not for Italian ones, and that venture work (arrangement), seeking-focus (willingness), and venture situational know-how (ability) scripts are significant for the Italian and Mexican samples, but not for that of Spain. What can account for these differences are the institutional paradigms established in these countries that favour or hinder entrepreneurial intention in young people, for example with the creation and transmission of anecdotes, stories, role models, or social models that facilitate (or not) engagement with the creation of business ventures. Through social influence (Carsrud & Krueger, 1993; Weick, 1995) such paradigms transmit to youth an understanding of the processes of acquiring resources and the feasibility (or not) of entrepreneurial ideas. These differences become obvious if we

examine, for instance, the GEM (Global Entrepreneurship Monitor [GEM], 2009) reports at an institutional level.

Thirdly, we can point out that the risk tolerance scripts are positively significant only for the Mexican participants. One of the explanations for this greater risk tolerance in the Mexican students may be necessity (being unemployed, seeking an alternative way to work, etc.). In the literature two types of entrepreneurs have been differentiated: those who become entrepreneurs through necessity and those who do so through opportunity. Whereas entrepreneurs through opportunity start a business because they perceive certain weaknesses in the market and develop a product or service to satisfy that gap, entrepreneurs through necessity are those that choose to act independently because they are not able to find a satisfactory job (or are unemployed). Thus, the former take a more long-term view and generate businesses with high growth potential, whereas the latter tend to create smaller enterprises where the idea is to generate an income for the owners in the face of unattractive job prospects. The GEM survey, carried out in 46 countries and coordinated in Mexico by the Centre for Entrepreneurial Development of the Graduate School in Public Administration and Public Policy of the Tec in Monterrey and by the Secretary of the Economy, shows that in Mexico the majority of those who have recently started a business have done so out of necessity. According to the study, this is due to the economic factors of the country, its historical dynamics and the entrepreneurial spirit of Mexicans.

Our final observation is in regard to extending the theory of entrepreneurial intention. Different models of entrepreneurial intention have emerged in the literature, but none of them has considered the information processing perspective. Many decisions are taken to a certain extent through automatic processing. Some decisions are derived simply from a relatively limited group of decision norms based on an equally limited group of deep-rooted suppositions. Only a relatively small number of decisions require in-depth processing. These suppositions represent the critical architecture of how we structure our knowledge (including our cognitive schemes, scripts and maps). Previous literature in this sense (Smith et al., 2009) has shown that experienced entrepreneurs use expert scripts to process information differently from novices. Much of this literature has compared experts to novices, but little has been done to analyze the differences in these scripts in regard to entrepreneurial intention comparing individuals who intend to start a business venture and those that do not. Our study shows that participants who score high in these scripts, that is, those who have more expert knowledge, show a higher intention to start a business. This result contrasts with previous research that deterministically saw entrepreneurial intention as based on innate traits and abilities (Seibert & Zhao, 2006). Thus, research on information processing is fundamental in the study of entrepreneurial intention. In particular, one element of this information processing theory that this study has shown to be very useful in research on entrepreneurial intention is the notion of cognitive scripts.

Our study has shown that people who intend to start a business, as opposed to those who do not, use to a greater extent cognitive scripts that allow them to process information in such a way that they can see the advantages despite adverse market conditions. This is because they utilize the information in a significantly better way than those who do not have an entrepreneurial intention. These cognitive heuristics allow them to make quicker decisions and to reduce the perception of risk, which in turn seems to create a bias towards action that favours the decision to start a business venture (Keh et al., 2002; Simon et al.,

2000). This result is similar to that found by other authors when comparing the cognitive scripts of expert and novice entrepreneurs (Abelson & Leddo, 1986; Lord & Maher, 1990).

Our study also corroborates findings in the literature on the sequencing of cognitive scripts (Abelson & Leddo, 1986). According to the theory, arrangements scripts are expected to occur first, followed by willingness and ability scripts. Our results are consistent with this theoretical expectation. Arrangement scripts were more salient in their relation to entrepreneurial intention, followed by willingness and ability scripts, and this held true for the three countries studied.

These results must be considered in relation to the limitations of the study. First, this study is exploratory in nature since it applies a relatively new theory in relation to entrepreneurial intention and examines relatively new constructs in the context of entrepreneurship research that are still in the early stages of development. Second, in this study we used an intended sample. Nonetheless, we believe that this did not affect the results, since those surveyed in each country were demographically similar in regard to educational level, age, and so on. Third, the "cognitive situation" was collected at a specific moment in time, making it necessary to use the same instrument to measure both the independent and dependent variables. To mitigate potential problems we used a combination of self-reported measures and more objective measures, employing different scales and asking questions related to the dependent variable before asking about the entrepreneurial scripts.

We hope to have thus satisfied the necessary measurement requirements and minimized the potential disadvantages of measurement (Smith et al., 2009). Despite these limitations, we believe that the research results provide grounds for additional cross-level theory development with implications that can lead to an increase in the practicality of the theory of information processing based on entrepreneurial cognition. They also identify important differences in potential entrepreneurs and how these differences affect entrepreneurial intention. In this way some progress has been made towards finding out what, when and how some individuals and not others intend to start a business.

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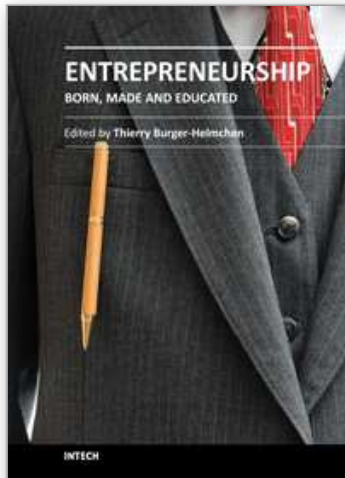
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## **Entrepreneurship - Born, Made and Educated**

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Entrepreneurship has a tremendous impact on the economic development of a country. As can be expected, many public policies foster the development of self- entrepreneurship in times of unemployment, praise the creation of firms and consider the willingness to start new ventures as a sign of good fortune. Are those behaviours inherent to a human being, to his genetic code, his psychology or can students, younger children or even adults be taught to become entrepreneurs? What should be the position of universities, of policy makers and how much does it matter for a country? This book presents several articles, following different research approaches to answer those difficult questions. The researchers explore in particular the psychology of entrepreneurship, the role of academia and the macroeconomic impact of entrepreneurship.

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