

# Cognitive Scripts and Entrepreneurial Success\*

## Habilidades cognitivas y éxito empresarial

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### ABSTRACT

This paper examines the scripts (cognitive abilities) of successful entrepreneurs and compares them with the scripts of less successful entrepreneurs in order to increase understanding of the factors underlying the entrepreneurial experience. We propose that success (real or perceived) depend on the level of expertise in entrepreneurial scripts. We used a sample of 104 business owners. We adapted a scale for measuring in entrepreneurial scripts. The results confirm that entrepreneurs with high script expertise showed greater levels of perceived success than entrepreneurs with lower levels of expertise. However, there were no differences in venture growth. Our study increases the applications of cognitive abilities as a key factor for entrepreneurial success and opens the door for a Cognitive Training Program for entrepreneurial success.

#### Keywords authors

Cognition, entrepreneur scripts, marketing.

#### Keywords plus

Organizational psychology, leadership, entrepreneur.

### RESUMEN

Este artículo examina los guiones (habilidades cognitivas) de los emprendedores exitosos y los compara con los guiones de los empresarios con menos éxito, con el fin de aumentar la comprensión de los factores que subyacen a la experiencia empresarial. Se propone que el éxito (real o percibido) depende del nivel de experiencia en habilidades empresariales. Para este estudio se utilizó una muestra de 104 dueños de negocios. Se adaptó una escala para medir los guiones empresariales. Los resultados confirman que los empresarios con alta experiencia mostraron mayores niveles de éxito percibido que los empresarios con bajos niveles de experiencia. Sin embargo, no hubo diferencias en el crecimiento de participación. El presente trabajo aumenta las aplicaciones de las capacidades cognitivas como un factor clave para el éxito empresarial, y abre la puerta para un programa de entrenamiento cognitivo para el éxito empresarial.

#### Palabras clave autores

Cognición, habilidades empresariales, marketing.

#### Palabras clave descriptores

Psicología organizacional, liderazgo, emprendimiento.

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## Introduction

Today there is no doubt regarding the importance of entrepreneurship, because it is considered an essential source of the economic growth, innovation and development of a country. Entrepreneurship involves the discovery, evaluation and exploitation of opportunities, the introduction of new assets and services, new forms of organization and new processes and materials. It includes in its domain of study the explanation of why, when and how the available opportunities are discovered, evaluated and exploited, from the acquisition of resources to the organization of efforts for their exploitation (Shane & Venkataraman, 2000). Thus, the discovery of opportunities represents the essence of entrepreneurship.

Understanding this process involves understanding the underlying cognitive infrastructure (Krueger, 2005). In turn, the study of the cognitive aspects of entrepreneurs provides us with essential information for understanding the emergence and evolution of entrepreneurship. In this context, the entrepreneur plays a key role, as he/she is the person who perceives the opportunity and creates an organization in order to take advantage of it (Bygrave & Hofer, 1991). In this sense our object of study focuses on entrepreneurial cognitions as distinctive ways of thinking and behaving, which make an important contribution to the entrepreneurial process.

We strongly believe that it is necessary to promote interest in this issue and to increase the volume of studies that contribute to generating a high-quality entrepreneurial education to serve as a solid source of entrepreneurship culture. Therefore, we highlight an implicit objective of our study: to contribute to the growth and strengthening of entrepreneurship as a field of study (Sánchez, 2011). Our main purpose is to examine empirically the cognitive abilities of successful entrepreneurs and compare them with the cognitions of less successful entrepreneurs in order to increase understanding of the factors underlying the entrepreneurial experience. We also intend to build on the work of previous researchers who have taken a cognitive

perspective in examining the differences in entrepreneurial success.

## Theoretical Foundations

The variables used to study entrepreneurs have gradually changed over the years (Sánchez, 2011). 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, Stimpson, Huefner, & Hunt, 1991).

A new line of analysis, cognition, has emerged as an important theoretical perspective for understanding and explaining entrepreneurial behaviour (Sánchez, Carballo, & Gutiérrez, 2011). Neisser (1967) defines cognition as “all processes by which sensory input is transformed, reduced, elaborated, stored, recovered, and used”. Mitchell 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” (pp. 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 (Allison, Chell, & Hayes, 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 et al., 2011).

Cognitive science has demonstrated how attitudes and beliefs, which 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 study 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,; pp. 128-129), a “highly developed, sequentially ordered knowledge” that forms “an action-based knowledge structure (Mitchell, Smith, Seawright, & Morse, 2000, pp. 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) 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 success.

Following this line, the issue, which this study addresses is: how do successful entrepreneurs think? In a context of companies with varying levels of business success, would we find differences in the scripts of entrepreneurs? Would we find differences in the structural cognition of successful and unsuccessful entrepreneurs? Do expert entrepreneurs guide their behaviour by some special scripts? Are there differences between real and perceived success in these groups of entrepreneurs?

Cognition Theory has been developed to the point where three types of cognitive scripts (arrangements, ability and willingness) have been found to be central to expert performance (Mitchell et al., 2000; Smith, Mitchell, & Mitchell, 2009).

### *Arrangements Scripts*

Arrangements scripts are the knowledge structures that individuals have about the contacts, relationships, resources, and assets necessary to form new economic relationships. Evidence has been found of at least four arrangements scripts in the business and entrepreneurship literature: those concerned with: 1) Idea protection, having to do with knowledge and use of patents, copyrights, franchise agreements, contracts, and other isolating arrangements that serve to prevent imitation; 2) Having an appropriate network, concerning knowledge about access to essential social contacts; 3) Having access to general business resources, including thoughts about controlling or having access to financial and human capital, and other business assets and resources necessary for new transaction formation; 4) The possession of specific skills, related to the extent to which a prospective entrepreneur recognizes the capabilities that serve to provide a sustainable competitive advantage for a new venture.

### *Willingness Scripts*

Willingness scripts are the knowledge structures that underlie (inform) the commitment to venturing into new transactions, and receptivity to the idea of starting or resuming an economic relationship. They include actionable thoughts about: 1) Opportunity seeking, concerned with openness, orientation, and drive to seek out new situations and possibilities and to try new things. 2) Commitment tolerance, which includes thoughts about “putting your money where your mouth is” and the assumption of the risk and responsibility of new transaction creation. 3) Opportunity pursuit, concern with “getting on with the task” and the belief that missing an opportunity is worse than trying and failing.

## *Ability Scripts*

Ability scripts are the knowledge structures that individuals have about the capabilities, skills, knowledge, norms and attitudes required to create a venture. At least three scripts relating to ability appear in the business literature: Diagnostic scripts concern the ability to assess the condition and potential of ventures and to understand the systematic elements involved in their creation. Situational knowledge scripts involve the ability to draw on lessons learned in a variety of ventures and apply those lessons to a specific situation. Opportunity recognition scripts have to do with the ability to see ways in which customer and venture value can be created in new combinations of people, materials, or products.

Expert information processing theory suggests that in expert script enactment, individuals require both “entry” (arrangements) and “doing” (ability and willingness) scripts in a two-step sequence. Thus, arrangements scripts are expected to occur first in the script enactment sequence, followed by ability and willingness scripts.

In the literature on entrepreneurship research the term success has many different interpretations. In the simplest definition success is equivalent to continued business operations and the opposite, failure, means going out of business (Simpson, Tuck, & Bellamy, 2004). Traditionally, the concept of success is defined in terms of financial performance, such as growth, profit, turnover or return of investment, or number of employees (see Greenbank, 2001; Simpson et al., 2004, Walker & Brown, 2004). Actually, the terms “growth,” “success” and “performance” are often very closely linked and are sometimes even used as synonyms in the research of entrepreneurship. The definitions of these terms seem to be blurred and intertwined. They are all measured by hard financial measures, such as turnover, or by increased numbers of employees (Reijonen & Komppula, 2007).

It has, however, been argued that financial measures alone are not sufficient for making decisions in modern firms, and therefore, performance measures should include both financial and non-financial

measures (Zaman, 2004). This is because success is also a subjective concept. All entrepreneurs have their own perceptions of what success means to them: they can regard themselves as successful, even though seen from outside and evaluated with traditional financial measures, their firms have attained different levels of success (Simpson et al., 2004). Consequently, the characteristics of the businesses and owners may influence their perceptions of their success and its relative importance (Walker & Brown, 2004). Non-financial measures of success include autonomy, entrepreneurial satisfaction, the ability to balance work and family, and flexibility (Walker & Brown, 2004).

Many factors have been found to affect the success of a firm. These include, among others, industry structure and competition, entrepreneurial decisions and objectives, employee relations, organizational culture, education and training (Simpson et al., 2004). We assume that there is no success without actions. Actions are mainly determined by the goals set and by the strategies employed, such as the use of cognitive scripts. Thus, the concept of action is central to this model and the strategies and tactics of actions form the bottleneck through which all of entrepreneurial success is accomplished or not accomplished. Obviously, both goals and strategies may turn out to be wrong, inefficient, or misplaced in a certain environment. Consequently, prior success and failure has an effect on modifying goals and strategies and developing different scripts with different levels of expertise in each of them (Rauch & Frese, 2000).

Defined as a judgment derived from a sub-conscious processing of information across one’s diverse experiences (Claxton, 2001), intuition allows an entrepreneur to quickly and subconsciously recall previous experiences and transform signals into useful knowledge for making entrepreneurial discoveries. Thus, scripts could be considered a materialized form of the intuition that keeps entrepreneurs successful.

In a study on young entrepreneurs, Bonnett and Furnham (1991) found that these subjects had a higher internal locus of control. Rotter (1966) proposed this concept to refer to how an individu-

al perceives the success and/or failure of his or her behavior as dependent on self (internal locus of control) or the context (external locus of control). In that frame, ability, arrangements and willingness scripts are considered internal locus of control variables. Thus, the higher the scores in these three variables, the higher the score in perceived success.

The review of the literature led us to make the following assumptions:

*Hypothesis 1:* Real success understood as venture growth depends on the level of expertise in entrepreneurial scripts, in the sense that the higher the levels of expertise in entrepreneurial scripts, the higher the venture growth, and vice versa.

*Hypothesis 2:* Perceived success depends on the level of expertise in entrepreneurial scripts in the sense that the higher the levels of expertise in entrepreneurial scripts, the higher the level of perceived success, and vice versa.

## Method

### Participants

For the purpose of this study, an entrepreneur was defined as one who has started and managed a business. Potential participants for the study were recruited through the use of Chamber of Commerce directories in Spain, in order to identify business owners who had started their own business in the last few years. Participants were contacted via telephone and e-mail and asked to complete a questionnaire, which was directly administered by a member of the research team.

The final sample comprised 104 business owners (64.4% males and 35.6% females) who agreed to collaborate in the research. Participants were aged between 34 and 61 years old, with a mean age of 34.59 ( $SD = 7.57$ ). Regarding the business activity, 49.5% of entrepreneurs were in the services sector, 30.5% had a business in the trade sector, 7.6% were in the production industry, 2.9% worked in the building industry, and 9.5% reported other activities. Fifty-eight point three of the participants had started a business in the last three years, and the remaining 41.7% had businesses that were more than three years old.

## Measure and variables

### Entrepreneurial scripts

The scales used to measure expertise in arrangement, willingness, and ability scripts were adopted from Mitchell et al. (2000, 2002). These authors developed 27 items to measure expertise in 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 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 the commitment to venturing and receptivity to the idea of starting a new venture. Finally, the ability scripts scale is composed of 11 items about the capabilities, skills, knowledge, norms, and attitudes required to create a venture. All items ask the participants for a choice 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. Items from the original scales were translated into Spanish using a *translation/back-translation* procedure (Behling & Law, 2000).

### Venture growth

We used the growth in the number of employees as an objective measure of business success, since several authors have accepted this variable to measure venture growth (e.g., Cooper, Gimeno-Gascon, & Woo, 1994; Sapienza & Grimm, 1997; Van Praag & Cramer, 2001). We measured it using the compound

annual employment-growth rate (CAGR) for each business, which is an average employment growth rate over a period of years. Different authors have used it previously to estimate business growth (e.g., Baum & Locke, 2004). It is a geometric average of annual growth rates, and is calculated by taking the  $n^{\text{th}}$  root of the total percentage growth rate, where  $n$  is the number of years in the period being considered:  $CAGR = (\text{ending value} / \text{starting value})^{1/(\text{number of years} - 1)}$ . Where: *Ending value* is the number of employees in the last year of activity. *Starting value* is the number of employees in the first year of activity. *Number of years* is the total period of activity of the business in years.

#### *Perceived success*

We used two items to evaluate perceived success as a subjective measure of business success. The items asked the participants about their opinion regarding the fulfillment of the foreseen objectives and about their satisfaction with the results obtained. Participants had to answer each item on a Likert type scale from 1 to 5, and an overall score was obtained by averaging the two items. The higher the score in the scale, the more the perceived entrepreneurial success, and vice versa. Cronbach's alpha of the two items in the study was 0.78.

#### *Demographic information*

With sample description aims, participants were asked to indicate their sex, age, activity sector of the business and the age of the firm.

#### *Procedure*

Data were collected in the same organizations that gave their authorization for participating in the research and with the managers who signed the consent protocol. Participants were informed of the objectives of the research and were guaranteed anonymity and confidentiality in regard to the information they were about to give. They also received instructions as to the response mechanics of the questionnaire and were encouraged to offer

sincere answers and not to leave anything blank. Any questions they had were addressed individually and in a personalized way during the data collection. In all cases, together with the note seeking authorization from the participating companies, it was given an express written commitment to provide information about the results once the study had finished.

#### *Statistical Analysis*

First of all, the corresponding factor analyses were run to verify the dimensionality of the cognitive scripts. Mitchell et al. (2000, 2002) recommend using principal components factor analysis to confirm the dimensionality of each of the formative script constructs. This was done with each of the arrangements, willingness, and ability scales, using criteria of a minimum Eigenvalue of 1 and VARIMAX rotation. Subsequently the descriptive indices (means and standard deviations) corresponding to the following variables were calculated: arrangements scripts, ability scripts, willingness scripts, venture growth and perceived success. Based on these scores, and in order to test the hypotheses, we then calculated the corresponding differences of means tests. In accordance with hypotheses 1 and 2, we carried out a three-way between-subjects factorial MANOVA to assess the existence of significant differences in growth venture and perceived success between entrepreneurs with different expertise levels in arrangements, willingness, and ability scripts. To do this, we created two levels of expertise in each of the scripts scales, based on the mid-point of the corresponding scale. Thus, the dichotomized measures of arrangements, willingness, and ability scripts served as independent variables, and the dependent variables were the two measures of objective and subjective business success.

#### **Results**

Table 1 shows the results obtained in this study and their correspondences with the conceptualized model by Mitchell et al. (2000, 2002). Support was generally found for the dimensions of the cogni-

tive scripts hypothesized by Mitchell et al. (2000, 2002), although the distribution of items in factors was slightly different. Also, some items were found to have high cross-loadings. Nevertheless, because items were summed into scales, these results do not adversely impact the study (Mitchell et al., 2000).

Three of the four arrangements scripts dimensions conceptualized by Mitchell et al. (2000, 2002)

were confirmed in this study, explaining 61.8% of the variance: protectable idea (items 6, 17 and 26), resource possession (items 8, 10 and 18), and venture network (item 25). Venture specific skills were not an observed factor in the data. All three willingness scripts dimensions conceptualized by Mitchell et al. (2000, 2002) were evident in the data, explaining 45.46% of the variance: seeking focus

**TABLE 1**  
*Factor Analysis Results*

Variable		Factor 1	Factor 2	Factor 3
<b>Arrangements scripts</b>		<b>Protectable Idea</b>	<b>Venture Network</b>	<b>Resource possession</b>
Item 6	Other protection	0.79		
Item 17	Patent protection	0.72		
Item 26	Venture vs. general skill set	0.58	-0.42	0.34
Item 25	Network utilization		0.67	
Item 8	Resource possession			0.78
Item 18	Venture network accessibility			0.76
Item 10	People and asset network		0.74	0.31
Percentage of variance explained		22.0	21.73	17.35
<b>Willingness scripts</b>		<b>Seeking Focus</b>	<b>Commitment Tolerance</b>	<b>Opportunity motivation</b>
Item 20	Action orientation	0.38		0.4
Item 16	Action orientation	0.63		
Item 22	Comfort in new situations	0.63		
Item 19	Open to possibilities or settled		-0.74	
Item 15	Investment orientation	0.42	0.71	
Item 12	Investment values		0.56	
Item 5	Time values	-0.35		0.68
Item 14	Commitment values			0.6
Item 2	Risk orientation			0.47
Percentage of variance explained		16.36	14.63	14.47
<b>Ability scripts</b>		<b>Ability- Opportunity Fit</b>	<b>Venturing Diagnostic Ability</b>	<b>Venture Situational Knowledge</b>
Item 23	Venture vs. business knowledge base	0.65		
Item 27	Opportunity recognition	0.51		0.37
Item 24	Locus of investment criteria	0.47		
Item 7	Normative knowledge base	0.45		-0.33
Item 11	Awareness of venture situations	0.43		
Item 1	Time investment criteria	0.33		
Item 21	Venture success scripts	0.34	-0.71	
Item 9	Delineation of knowledge base		0.7	
Item 4	Problem recognition		0.49	0.48
Item 3	Diagnosis from specific situations			0.65
Item 13	Success attribution			0.62
Percentage of variance explained		13.98	13.05	12.73

Source: Own work.

(items 16, 20 and 22), commitment tolerance (items 12 and 15), and opportunity motivation (items 2, 5 and 14). Item 19 did not load highly onto any factor and was removed from the analysis.

Finally, all three dimensions of ability scripts as conceptualized by Mitchell et al. (2000, 2002) were also found in the data, explaining 39.76% of the variance: ability-opportunity fit (items, 1, 7, 11, 21, 23, 24 and 27), venturing diagnostic ability (items 4 and 9), and venture situational knowledge (items 3 and 13).

Table 2 presents the correlations of the study variables. Contrary to what was expected, arrangements, willingness, and ability scripts were not correlated with venture growth. Arrangements and willingness scripts were positively related with perceived success. Also, arrangements and ability scripts had a significant correlation, whereas there was no correlation with the other script dimension.

Nevertheless, according to the nature of the cognition constructs, they do not need to be highly correlated to support our results (Mitchell et al., 2000, 2002).

Table 3 contains the means and standard deviations of success variables by level of expertise in the script dimensions and the results of the analysis.

The multivariate effect of arrangements scripts was significant, indicating differences in business success between entrepreneurs with different levels of expertise in such scripts  $F(2, 95) = 9.47, p < 0.001$ , chi-square = 0.83, by Wilk's lambda criterion. Analyses of variance (ANOVA) were conducted on each dependent variable as a follow-up test to the MANOVA. The univariate main effect of arrangement scripts was not significant for venture growth, but it was for perceived success,  $F(7, 96) = 18.86, p < 0.001$ , with entrepreneurs having high expertise in arrangements scripts scoring higher

**TABLE 2**  
*Correlations of the Study Variables*

Variable	Mean	1	2	3	4
1. Arrangements scripts	3.17 (1.26)				
2. Willingness scripts	3.6 (1.55)	0.16			
3. Ability scripts	4.44 (1.93)	0.21*	0.14		
4. Venture growth	1.42 (3.42)	0.01	0.02	0.14	
5. Perceived success	3.32 (0.98)	0.44**	0.28**	0.14	-0.09

Note. \*  $p < 0.05$ ; \*\*  $p < 0.01$ . Standard Deviations are in parentheses.  
Source: Own work.

**TABLE 3**  
*Results of MANOVA*

	Venture growth (VG)		Perceived success(PS)		F value		Eta squares	
					VG	PS	VG	PS
Arrangements scripts								
High expertise (N = 42)	1.02	(2.41)	3.78	(0.83)	1.23	18.86***	0.01	0.16
Low expertise (N = 62)	1.7	(3.96)	3	(0.94)				
Willingness scripts								
High expertise (N = 56)	1.2	(2.82)	3.61	(0.88)	0.19	11.21**	0.01	0.11
Low expertise (N = 48)	1.69	(4.03)	2.98	(0.99)				
Ability scripts								
High expertise (N = 49)	1.79	(3.99)	3.6	(0.97)	1.67	4.45*	0.02	0.04
Low expertise (N = 55)	1.1	(2.82)	3.07	(0.93)				

Note. \*  $p < 0.05$ ; \*\*  $p < 0.001$ ; \*\*\*  $p < 0.01$  Standard Deviations are in parentheses.  
Source: Own work.



than entrepreneurs with low expertise (high expertise,  $M = 3.78$ ,  $SD = 0.83$ ; low expertise,  $M = 3$ ,  $SD = 0.94$ ), as Table 3 shows.

The multivariate effect of willingness scripts was significant, indicating differences in business success between entrepreneurs with different levels of expertise in such scripts  $F(2,95) = 5.59$ ,  $p = 0.05$ , chi-square = 0.89, by Wilk's lambda criterion. Analyses of variance (ANOVA) were run on each dependent variable as a follow-up test to the MANOVA. Again, the univariate main effect of willingness scripts was only significant for perceived success,  $F(7, 96) = 11.21$ ,  $p = 0.001$ , with entrepreneurs having high expertise in willingness scripts scoring higher than entrepreneurs with low expertise (high expertise,  $M = 3.61$ ,  $SD = 0.88$ ; low expertise,  $M = 2.98$ ,  $SD = 0.99$ ), as can be observed in Table 3.

Finally, the multivariate effect of ability scripts was also significant, indicating differences in business success between entrepreneurs with different levels of expertise in such scripts  $F(2, 95) = 3.16$ ,  $p = 0.047$ , chi-square = 0.94, by Wilk's lambda criterion. Analyses of variance (ANOVA) were conducted on each dependent variable as a follow-up test to the MANOVA. Again, the univariate main effect of ability scripts was only significant for perceived success,  $F(7, 96) = 4.45$ ,  $p = 0.038$ , with entrepreneurs having high expertise in ability scripts scoring higher than entrepreneurs with low expertise (high expertise,  $M = 3.6$ ,  $SD = 0.97$ ; low expertise,  $M = 3.07$ ,  $SD = 0.93$ ), as shown in Table 3.

These results confirm our hypothesis 2 in the sense that, as expected, entrepreneurs with high scripts expertise showed greater levels of perceived success than entrepreneurs with lower levels of expertise. Otherwise, there were no differences in objective venture growth depending on the level of expertise in entrepreneurial scripts, which does not lend support to our first hypothesis.

## Discussion

The purpose of this study was to analyze the differences in cognitive abilities between successful and less successful entrepreneurs. It was suggested

that the level of success reflects the dominance of cognitive abilities.

Entrepreneurs in this study measured their success primarily through two measures, one objective (growth in number of employees) and one subjective (perceived success). These measures of success are consistent with the literature (e.g., Gray, 2002). As we predicted, the most successful entrepreneurs received higher scores in the ability, willingness and arrangements cognitive scripts. Contrary to expectations, no differences in these scripts were found when they saw the growth in the number of their employees as an objective measure of success. This result indicates that growth in the number of employees as a performance measure has little to do with cognitive scripts.

The literature regarding measures of success is contradictory. As opposed to some studies (e.g. Gray, 2002; Mäki & Pulkkinen, 2000; Perren, 2000), which advocate the growth of employees as a measure of business success, our study shows that this criterion of performance bears little relation to the cognitive characteristics of entrepreneurs. This result makes sense if we think that the predominant feature in small and medium enterprises is that they run solely by the entrepreneur.

Our results are consistent with other studies. The literature has argued that skills, motivations and goals affect the decision of entrepreneurs to expand their business or keep to the size with which they feel comfortable (Walker & Brown, 2004). It has also been argued that small business entrepreneurs have a diverse group of business objectives, such as satisfaction and control at work (Greenbank, 2001). On the other hand, some entrepreneur-managers make it clear that they have no intention of growing and that maximizing performance is not an important objective (Greenbank, 2001; Walter & Brown, 2004). Our study adds to these results a new one not considered so far and it is that there is no difference between the cognitive scripts of entrepreneurs whose companies have experienced growth in the number of employees and the cognitive scripts of entrepreneurs whose companies have not grown in number of employees. This is not true when we

consider performance as a criterion of subjective perception of success.

### *Contributions and Limitations*

Like all empirical research, the present study has certain strengths and weaknesses that deserve some comment. Among its limitations is that the data collection was based on self-descriptive instruments, and therefore the results may be contaminated by the variance of the common method. To overcome this problem, future research studies should include other means of exploration, such as the opinions of competitors and customers. Another limitation is the relatively low number of entrepreneurs measured, which may attenuate the strength of the results regarding the relationships between cognitive scripts and success. The sample of entrepreneurs was characterized mainly by companies in the services sector, which suggests that our results may not generalize to high-tech industries such as biotechnology. Also, this study is exploratory in nature since it applies a relatively new theory in relation to entrepreneurial success and examines relatively new constructs in the context of entrepreneurship research that are still in the early stages of development. Another limitation is that 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, the present study also has certain strong points. 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 entrepreneurs and how these

differences affect entrepreneurial success. In this way some progress has been made towards finding out what, when and how some individuals and not others have success. The use of emic instruments, such as those employed in this study, developed from the idiosyncratic characteristics of the target population, have possibly allowed us to capture more appropriately the connotative meaning of the constructs being investigated, as well as the intensity and direction of their interrelations. Finally, and despite the need for refinements, the research carried out has helped us to learn more about the impact of cognitive scripts on entrepreneurial success.

### *Perspectives for future research*

Future research on the cognitive scripts of entrepreneurs considering a wide range of companies is clearly necessary to demonstrate the external validity of our results. Cross-cultural comparison analysis should be done with regard to factor structure stability. Cognitive scripts should be compared cross-culturally in order to gain deeper insight their factor structure (Omar & Urteaga, 2010). Subsequent research should also assess more directly the degree to which cognitive scripts influence several measures of business success, both objective and subjective. In Spain, this is a major problem we encountered in investigations that seek to analyze success, given the limited availability of objective data to facilitate performance (e.g., ROA, ROI, etc.).

Future studies should also examine the relationships between cognitive scripts and other cognitive measures existing in current entrepreneurial research. For example, perseverance has been found to be related particularly to the success of entrepreneurs, and is directly associated with higher earnings (Markman, Baron, & Balkin, 2005). It would also be useful to see if there is a positive correlation between high scores in cognitive scripts and perseverance. Future research should also further enrich our knowledge by examining the relationship between cognitive biases, such as excessive risk propensity, counterfactual thinking, conceit, and overconfidence, and the impact of cognitive profiles and scripts on success.

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