

ENTREPRENEUR'S PROFILE OF HEALTH STAFF (HS): A SEM APPROACH

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ABSTRACT

This study aims at identifying the entrepreneurial spirit of a specific professional group: health staff (HS). In this context, the psychological and cognitive structure of the HS was compared with the non entrepreneurial HS. The study used primary data collected through a face to face and an online survey, using industry organisations and institutions, and labour unions in order to get access. The results regarding the entrepreneur's psychological and cognitive profile supported the hypothesis that HS who have created a firm have psychological and cognitive characteristics that support entrepreneurial activities.

Keywords: Entrepreneur's profile; HS, psychological factors, cognitive factors, motivation, SURE approach.

1. INTRODUCTION

There is much recognition of the importance of the entrepreneurial spirit for the development of a national, regional and local economy. Entrepreneurship is considered a complex and multidimensional phenomenon, which has triggered changes of paramount importance, to the point that the changes and reforms in the economy and markets, in what regards the qualifications of labour, made it a fundamental element on the economic and organisational development (Fragoso, 2008). This justifies the increasing necessity of empirical investigation in the various professional groups in order to design an entrepreneur profile.

The entrepreneur is considered as an individual able to innovate, identify and create opportunities while deploying resources so as to extract the maximum benefits from such innovations (Gartner and Shane 1995). According to various researchers (e.g. McClelland 1961; Green et al. 1996; Koh 1996), entrepreneurs share certain personal attributes, among the most prominent being the need for achievement, self-control, the propensity to take risk, tolerance of ambiguity, self-confidence and innovation. A study carried out by Shaver (1995) on psychological and cognitive characteristics showed that such attitudes, interpersonal skills and cognitive processes could be acquired throughout life ("learned in the broadest sense of the word"), most specifically through training and education.

Given the variety and complexity of the concept of entrepreneurship/entrepreneur, we recognise the pertinence of our study in terms of the psychological and cognitive characteristics of the entrepreneur; the influence of the sociological/cultural theory in making it of a broader application and more rigorous. This theory is mainly interested in the adaptation processes of entrepreneurial organisations to the environment in which they operate (Hannan and Freeman 1989; Delacroix and Rao 1993), in order to determine which circumstances are more helpful in legitimising the organisation (Elsbach and Sutton 1992; Aldrich and Fiol 1994). It also assumes that the firm creation decision is constrained by exogenous factors or conditions of the economic environment, i.e. the socio-cultural

factors or the institutional context are also determinants of the entrepreneurial spirit and of the firm creation in a given moment in time or place.

In an environment of change, innovators or entrepreneurs emerge to develop new methods and processes of delivering health care in a way that lowers the overall costs of care while improving outcomes. In this context, we considered relevant studying the entrepreneur profile within a very entrepreneurial health industry group: Health Staff (HS).

Having in consideration the personal and psychological attributes of the entrepreneur (e.g. McClelland 1961; Kourilsky 1980; Bygrave 1989; Begley 1995; Brandstatter 1997; Mueller and Thomas 2000; Stewart and Roth 2001; Van Praag and Cramer 2001; Hisrich & Peters, 2004), the cognitive actors (e.g. Mitchell 1994; Baron 1998; Mitchell et al. 2000; Mitchell et al. 2002; Tang et al. 2007), and the social/cultural context (e.g. Delacroix & Rao, 1993; Aldrich and Fiol 1994) it is possible to define three main research questions:

- (1) The HS entrepreneurs are characterised by common psychological characteristics with an entrepreneurial spirit?
- (2) The HS have cognitive characteristics similar to the rest of entrepreneurs' profile?
- (3) Does motivation play a role in mediating the psychological and cognitive factors and entrepreneurial profile?

The main aim of this study consists in identifying the entrepreneurial spirit of the HS. In this context, the psychological and cognitive structure of the HS was compared with the non entrepreneurial HS. There are no empirical studies focusing on the study of entrepreneur profile of professionals' of Health. The study pursues part of the work of Marques et al. (2010), which shows that apart from traditionally studies psychological factors, cognitive factors help defining the profile of the potential entrepreneur. This study contributes to the literature because it explores the entrepreneurial profile of Professional in a very specific industry – health.

The paper is structured as follows. Following an introductory section, there is a theoretical discussion of entrepreneurs' psychological and cognitive attributes; the paper then proceeds in the conventional fashion: method, results, discussion and conclusions. The research's main limitations and some avenues for future investigation, as well as implications for management practice, are also explored.

2. THEORY AND HYPOTHESES

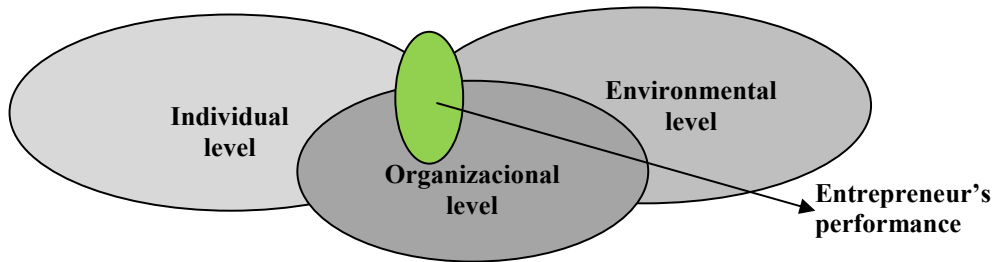
Defining the propensity to entrepreneurship is a complex task since a unanimous definition could not be found in the literature – different authors present differentiated perspectives, mainly due to their different academic backgrounds. However, some characteristics (mainly related to the individuals) have led us to create a single entrepreneur profile.

In this section, and based on the existing literature, it has been aimed at summarizing a selection of psychological and cognitive characteristics as much as the socioeconomic factors that can mostly contribute to defining the propensity to entrepreneurship at an individual level, regardless of the fact that a firm has or not been created previously.

For Ferreira *et al.* (2008) some characteristics that seem to be more frequently found in entrepreneurs can be identified. However, a single entrepreneur profile is not able to include all the characteristics previously mentioned. For these authors, the entrepreneurial attitude is not innate or hereditary, and although different combinations of personal characteristics, motivation, and leadership may lead to the entrepreneurial capacity, there are some traces of the personality and some characteristics that successful entrepreneurs share. Thus, entrepreneurship can be taught and the skills required by entrepreneurship can be developed.

Sarkar (2007) suggests that, even that part of the population may not have the entrepreneurs' characteristics, they can always become an entrepreneur if the stimulus provided by the society are positive and supportive, namely culture, formal education (universities, for example), and public policies. Regarding culture, Sarkar (2007) emphasizes the importance of an entrepreneurial culture as a manner of fostering entrepreneurship.

For Ferreira (2003) several factors play a key role in explaining successful entrepreneurship, and these can be grouped into three levels: individual level; Organisational level, environmental level (Figure 1)



Source: Ferreira (2003: p. 45)

Figure 1 - Levels of entrepreneurship

At the individual level the characteristic of the individual personality are included which, according to Schenatto e Lezana (2001) are: necessity, knowledge, skills and values. At the environmental level factors such as socio-economical, socio-cultural, physical and geographic, psychological and physiological, political, governmental assistance, market, are included. The organizational level regards factors related to the interpersonal relationships and to groups' and organisations' objectives. Also Rodrigues, Ferreira and Paço (2008) propose a conceptual model in which the relationships between a group of variables that can influence the propensity to entrepreneurship are considered. This group of variables include: (i) personal characteristics; (ii) the existence of a history of entrepreneurship in the family; (iii) the demographic profile; (iv) the professional background; (v) formal education, as much as (vi) the obstacles that can have a negative impact. In a similar manner, Gerry et al. (2008) referred the three way typology that distinguishes the mainly behavioural theories from the strategic and ecologic theories, in order to identify the determinants of entrepreneurship, considering this typology as the three explanations for the entrepreneurial success. However, according to the Filion's (2002) perspective, entrepreneurship is an emerging field of research where there is no established theory (p. 38).

Therefore, one can conclude that there is a large amount and diversity of research, some of them adopting the environmental, demographic, psychological and more recently cognitive characteristics as predictors of the entrepreneurial behaviour, and thus it has been decided to explore each of them in more detail in the subsequent sections.

2.1. The psychological factors construct

The approach to the psychological characteristics of entrepreneurs is one of the areas receiving more attention in the academic research, despite being one of the less understood (Donald & Bowman, 1985). In this area of research, the features and the characteristics of the individuals' personality are the main issue under investigation (McClelland, 1961; Brockhaus, 1980).

One of the first researchers to study this area was McClelland. Subsequently, various psychological characteristics have been pointed out as good predictors of the entrepreneurial behaviour (Hornaday & Aboud, 1971; Bygrave, 1989; Koh, 1996). These characteristics are inherent to the psychological and /or motivational and behavioural theories. In order to list the psychological characteristics in a briefer way, we presented an evolution of these studies in table 1, below:

Table 1 – Entrepreneur's psychological characteristics under different authors' perspective.

Author	Description of the entrepreneur according to the psychological characteristics
Schumpeter (1942)	Individual with distinctive characteristics in relation to the rest of the population, able to resist to social pressure and to benefit from economic and technological opportunities.
McClelland (1961)	Associates the entrepreneurial behaviour to certain personal features: the necessity of self recognition; attitude towards risk; preference for innovative and energetic activities; and the tendency to assume the responsibility for success or unsuccess.
Hornaday e Aboud (1971)	Entrepreneurs are very independent people, born leaders and with great necessity for recognition versus low need for support and sympathy.
Baird (1972) e Torrance (1972)	They increase creativity.
Khilstrom e Laffort (1979)	They have the capacity for facing uncertainty.

Schere (1982)	They add tolerance and ambiguity.
Kourilsky (1980)	For this author the most relevant characteristics are: the necessity to self recognition of achievement; creativity and initiative; the establishment of objectives; risk taking, self confidence and internal locus of control; independence and autonomy; motivation, energy and commitment; and persistency.
Davidson, P. (1989)	Highlights optimism as a very often present characteristic in initial stages of firm start up. However, he considers that optimism may help taking actions but it does not lead, alone, to positive results.
Bygrave (1989)	Presents the following features inherent to the entrepreneur's behaviour: Self recognition of achievement; tolerance to risk, and internal locus of control.
Koh (1996)	Entrepreneurs are more tolerant towards risk and ambiguity as they are also more innovative when compared to non entrepreneurs.
Hirisch e Peters (2004)	List the following psychological features of entrepreneurs: Self recognition of achievement; self esteem, optimism, risk seeking, courage, creativity and initiative, motivation and capacity to identify clear and feasible objectives, energy and commitment, persistency, decision, innovation, organisation skills, averse to the dependence of employment, being willing to act in a autonomous context and available to take risks.
Ferreira et al. (2008)	Consider that there are a large number of academic studies about the characteristics of entrepreneurs, being the most frequently associated to entrepreneurs' profile the following: Necessity for being independent and achievement, taking moderate risks, self esteem, responsibility taking, work capacity and energy, human relations skills, creativity and innovation, firm commitment, persistency despite failure, and intelligence in the execution.

Therefore, from the literature review done about the psychological characteristics of entrepreneurs one can conclude that the success of the entrepreneur is a result from a set of factors such as the personality driven to take actions, self recognition of achievement, entrepreneurial attitudes and self esteem. However, as subsequently mentioned, the social context, unexpected events, the recognition of a favourable opportunity and the access to the necessary resources may also induce the entrepreneur's success (Ferreira et al, 2008). This one is led to formulate the following research hypothesis:

$H_{0,1}$: There is a positive relationship between the psychological factors and the entrepreneurial spirit of the HS.

2.2. The cognitive factors construct

As previously mentioned, it is possible to define the psychological traces that distinguish entrepreneurs from non-entrepreneurs (Begley & Boyd, 1987; Green, David & Dent, 1996). However several authors suggest that these characteristics can change over time through education, training, and human interaction (Gartner, Shaver, Gatewood & Katz, 1994). Drucker (1985) considers that there are many cases in which entrepreneurs do not own these characteristics and nevertheless, they are able to successfully start up a firm. Thus, the potential entrepreneur may require, apart from the psychological characteristics, an adequate cognitive structure, i.e. the potential entrepreneur refers to individuals that can identify an opportunity, recognizing it as feasible and putting efforts in terms of the competencies, capacities and willingness to develop the firm (Shapero, 1981; Shaver & Scott, 1991; Reitan, 1997).

It seems to be unanimous that psychologists, recently influenced by the developments of cognitive psychology, are moving towards studying the cognitive variables that lead entrepreneurs to find a business opportunity and to efficiently explore it (Mitchell *et al*, 2000; Baron, 2004).

In what regards the definition of cognitive psychology, according to Gardner (1999, quotes in Aiub, 2002), it came to respond to epistemological questions, mainly those referring to the nature, origins, development and application of human knowledge, namely learning, memory, language, perception, and thinking, as referred by Carraher (1983). In this line of thought, Dorion and Drumm (2002) refer that the cognitive thinking is different from the psychological thinking because the former refers to the consequences of cause and effect relationships that the psychological determinants have

on the cognitive dimension. It is on this context that, about 20 years ago the study on the entrepreneur under the cognitive perspective has been taking an important role on the explanation of the individual mental process of the entrepreneur (Bird, 1992).

The first studies approaching these issues took into account the concept of cognitive bias and the heuristic processes regarding strategic decision making (Busenitz, 1992). These studies have also focused on the entrepreneurs' capacity to operationalise, perception and auto efficiency (Krueger, 1993; Krueger & Dickson, 1994). In what regards the auto efficiency, this is also considered as critical to the entrepreneurial success (Bandura, 1997, quoted in Markman, Baron & Balkin, 2005; Fernández, Liñán & Santos, 2009). Gumpston also assumes a key role in the capacity to successfully face the barriers found in their way (Eisenberger, 1992, quoted in Markman et al, 2005). It has been Mitchell *et al* (1994), however, that has used for the first time cognitive psychology to distinguish entrepreneurs from non entrepreneurs. Later, Baron (1998) conducted a research where the importance of the cognitive mechanisms on the entrepreneurial behaviour has been verified: Counterfactual thought (speculative); planning fallacy (illusionary plans) and control illusion.

Within the process of identifying the opportunities, an important tool has been recognized – “the alert state” and it refers to the information process and perception, which, in the entrepreneur translates into the ability to find opportunities without consciously seeking them (Kirzner, 1979, quoted Tang, Tang & Lohrke, 2007). Baron (2004) also refers that people in alertness tend to look for being precise and they usually can do it because they have more complex mental processes, using thought beyond the normal limits, i.e. they have a speculative thought. In what regards planning fallacy and illusion control, the same author refers that, entrepreneurs under evaluate the risks involved in the creation of start-ups, i.e. they assess the risk at an inferior level when compared to the rest of the population. Palich e Bagby (1992, quoted in Morales, 2004) approached the study of entrepreneurship in the perspective of the cognitive psychology and they concluded that entrepreneurs can be distinguished from non entrepreneurs due to their capacity in interpreting categorizing situations, because there are usually more aware of the strengths, when compared to the weaknesses and more opportunities than threats. Under this perspective, entrepreneurs seek for ignored opportunities because they can perceive the outcome of this opportunity with higher returns than non entrepreneurs.

In sum, Baron (2004) lists the main cognitive factors in the field of entrepreneurship: (i) decrease risk perception; (ii) misperception of the reduced probability of success; (iii) more sensible to cognitive biases; (iv) opportunities' recognition; and (v) alertness and speculative thought.

For Chen, Greene and Crick (1998) the emergence of a cognitive approach has contributed to overcome the obstacles in the definition of the entrepreneurial personality and, thus, to attract more researchers in the field of entrepreneurship. For them, the potential entrepreneur is an individual who, together with the context, identifies the cognitive mechanisms that differentiate them from others because they successfully understand the opportunities. IN line with the previously discussed, we propose the following research hypothesis:

$H_{0,2}$: There is a positive relationship between the cognitive factors and the entrepreneurial spirit of the HS.

2.3. The motivation construct

Entrepreneurs face challenges, and one of them is the motivation to start up a new business, as much as the motivations behind the growth of their businesses.

For Silva, Sales and Souto (2004) there is a complex dichotomy in trying to explain the motivation factor within entrepreneurship, since they consider that the concept of entrepreneurship lacks objectivity and varied across cultures and each individual has its own particulars.

We will refer to the two theories most commonly accepted on motivation: The Maslow necessities theory and the Hertzberg theory of the two factors. The first theory has developed a broader perspective creating a model of hierarchy in pyramid (physiological necessities, security, social, esteem, and finally self recognition) on motivation, based on the concept that only after having satisfied a necessity, the individual seeks to satisfy other necessities in upper levels. The second theory is restricted to two factors: those related to the ability to motivate and satisfy individual and those that avoid dissatisfaction (Dubrin, 2003).

In the field of entrepreneurship, several theories on motivation have been mentioned. However, the one receiving more attention is the theory of McClelland, because it seems to be the most adequate to this subject (Stanworth & Curm, 1973; Miner, 1990; Davidsson & Wiklund, 1999; Ferreira, 2003). In McClelland's perspective, and considering that a person has a high necessity of self recognition, starting up a firm will involve assuming moderating risks, responsibilities and paying attention to the firm finances, as much as discovering innovative manners of developing a product of

providing a service (McClelland, 1961). However, in certain unfavourable economic conjectures non motivation related factors are the most related to entrepreneurship, such as unemployment, by opposition to motivation factors such as self recognition or being part of a network of contacts (Silva *et al.*, 2004).

Minniti, Arenius, and Langowitz (2005) named entrepreneurs who recognise a business opportunity and start up a firm aiming at exploiting this opportunity, as “opportunity entrepreneurs”. On the other hand, they name entrepreneurs who are not led by entrepreneurship but started up a firm because they were unemployed or unhappy with their current job as necessity entrepreneurs.

In the context of female entrepreneurship one can also refer to the dichotomy push/pull, which is frequently approached in the transition of firms to entrepreneurship (Granger, Stanworth, & Stanworth, 1995). The push factors (factors that restrict the present situation of women and that lead them to abandon the firm) are defined as frustration, boringness with the previous activity, concerns regarding the familiar life, etc. The pull factors (factors hindering females to follow a new personal challenge) can be: recognition of a business opportunity, independency, self-achievement, etc. (Mallon & Cohen, 2001). For males, the push factors are less important and they can be difficulties in career progression, frustration in their present jobs, working under uncertainty conditions.

From all the studies explored by Buttner and Moore (1997), only one of them presented a female based analysis with more than 10% of female entrepreneurs in their sample. The results from this study show that men are more motivated to improve their social position and of their families, while female entrepreneurs were more motivated by personal goals. One can also conclude that it is widely accepted that both men and women started up their firms by the reasons explained previously: Self recognition, status and power, autonomy, economic motives, etc. (Brush & Gatewood, 2008).

In this study we have used the following hypothesis:

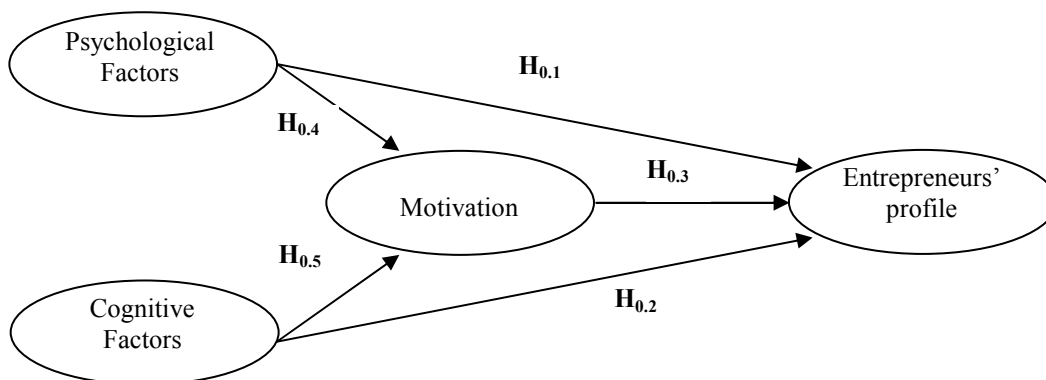
$H_{0,3}$: There is a positive relationship between the motivational factors and the entrepreneurial spirit (HS).

$H_{0,4}$: Motivation is a factor that intermediates between the psychological factors construct and the entrepreneurial spirit of HS.

$H_{0,5}$: Motivation is a factor that intermediates between the cognitive factors construct and the entrepreneurial spirit of HS.

The literature review presented in the previous sections provides the basis to argue that it is possible to present the following conceptual model of research: (Figure 2).

Figure 2 - Hypothesized model



3. METHOD

3.1. Sample and procedures

The methodology underlying this research was the collection of primary information through a direct survey and via online, via industry organisations and institutions and labour unions. It has covered 367 HS (a response rate of 24, 5%). From the 367 TDT, 24, 5% are male, and 75, 5% are female. 25, 9% are in the age group between 21 and 25 years old, 23, 7% between 26 and 30 years old, 25, 6% are between 31 and 35 years old and 24, 8% are above 35 years old. Most of the participants in the study have a university degree - 5 years (82, 3%), 10, 9% have a technical degree – 3 years; and 6, 8% have a master degree. We have also concluded that most of the TDT have no formal education in management and business, while only 11, 4% do.

3.2. Measures

Psychological factors. Psychological factors was measured with 17 seven-point items (1: “never”; ...; 7: “always”) proposed by Marques et al. (2010) based on McClelland (1961), Luchinger and Bagby (1987), Bygrave (1989), Douglas (1999), Hisrich and Peters (2004).

Cognitive factors. For assessing cognitive factor 18 items proposed by Marques et al (2010) based Tang et al. (2007), Gaglio and Katz (2001) and Baron (2004) with 7-point scale ranging from never (1) to always (7).

Motivation The measurement tool about the motivation for creating a firm was a survey composed by 7 items adapted from Tang et al. (2007).

3.3. Confirmatory factor analyses

In order to identify any change towards the professional future, the psychological and cognitive factors of university student respondents, we undertook exploratory factorial analysis of the respective questionnaire. The objective of applying factorial technical analysis was to obtain a reduced number of factors enabling the identification of structural relations between the variables that allocate importance to the psychological and cognitive factors of student respondents. The method deployed for extracting the factors to be applied was the main component method, through the Varimax approach. The common factors retained were those that registered an eigenvalue greater than 1, in accordance with the Scree Plot and the retained variance percentage, based on the conclusion reached by Hair et al. (2005) that the utilisation of a single criteria may lead to the retention of more/less factors than those actually relevant to describing the latent structure. In order to evaluate the validity of this exploratory factorial analysis, the Kaiser-Meyer-Olkin (KMO) criteria were adopted alongside the classification criteria defined in Hair et al. (2005). The scores of each subject under analysis across each of the retained factors were obtained by the Bartlett method, that is, the pondered square minimum method.

Table 2 sets out the factors for each dimension under study, the actual values of each factor, the explained variance percentage and the internal consistency of each factor based on Cronbach's alpha coefficient.

Table 2. Principal components analysis

Dimensions	Factors	Exp. Variance (%)	Cronbach's α consistency	KMO
Motivation	Self recognition	39,340	0,818	KMO = 0,768 and Bartlett's sphericity test = 921,274*
	Necessity / family influence	20,820	0,630	
	Social status	10,183	0,614	
Psychological factors	Creativity / innovation	34,929	0,828	KMO = 0,875 and Bartlett's sphericity test = 2155,322*
	Self-esteem / self-confidence	9,504	0,742	
	Self-control	7,205	0,691	
	Autonomy	6,202	0,642	
Cognitive factors	Alertness to external business opportunities	24,721	0,805	KMO = 0,875 and Bartlett's sphericity test = 2255,622*
	Professional and personal self-realisation	12,612	0,673	
	Accurateness / Effective problem solving rigour	10,101	0,680	
	Optimism/perception of success	7,761	0,614	
	Influence of the affective state	6,770	0,607	

*p<.000.

Analysis of the internal consistency of each factor reached acceptable (Cronbach's $\alpha > 0.60$) for the following factors: self recognition, necessity / family influence, social status, creativity/innovation, self-esteem/self-confidence, self-control, autonomy, alertness to external business opportunities, professional and personal self-realisation, accurateness / effective problem solving rigour, optimism/perception of success, influence of the affective state. These factors were adopted in the research model set out in the following section.

4. STRUCTURAL EQUATION MODELS

In order to analyse the validity of theoretical models, recourse was made to the AMOS 16.0 structural equation models (SEM) with a statistical methodology able to establish a confirmatory approach to the analysis of theoretical structures. SEM includes a set of statistical techniques enabling the evaluation of causal relations between latent variables (not directly observable) through a set of observed variables. According to Byrne (1994), the advantages of this technique outweigh the alternatives available, given that it (1) highlights that the variance is unstable over time, (2) enables the calculation of measurement errors (observed variables) and (3) enables swift calculation of the statistical significance of each causal effect and the (4) the consequent global adjustment of the hypothetical model. The relationships or effects presented in the model are approved through an appropriate global adjustment.

It should be stressed that in the calculation of these models, there was the need to reduce the sample to, so as to offset the impact of non-valid answers. Following the factorial analysis and the respective validation of the factors (by recourse to Cronbach's α), the final selection of factors was made based on the average of the variables belonging to each factor. The indicators for the latent variables were considered to be reflexive. The evaluation of the models was then carried out using global and local adjustment measures. The global adjustment of the model ensures evaluation of whether the model in question fits the data covariance matrix. The measures enabling decision taking were, specifically: χ^2 ; χ^2/df ; GFI; AGFI; CFI and RMSEA (Byrne 2001; Schreiber et al. 2006).

4.1 Entrepreneurial profile of HS entrepreneurs

The evaluation of the model considering the psychological factors, cognitive factors, and motivation constructs in relation to the profile of the HS entrepreneur was done using structural equations. The adjustment of the model was made using AMOS software (v. 17.0, SPSS Inc, Chicago, IL). In order to evaluate the quality of the adjustment the CFI, GFI, and PCFI, PGFI indexes were used, considering that these provide a good adjustment for value above 0, 9 and 0, 6 respectively. It has also been used the RMSEA, with a confidence level of 90%, and the rmsea probability $\leq 0, 05$. The confidence level considered for the RMSEA was 90% with an upper below 0, 10 which indicates an acceptable adjustment. The adjustment can be considered as very good when the upper limit of the confidence level is below 0, 05 (Maroco, 2007).

The model based on the psychological and cognitive factors and on motivation constructs in relation to the entrepreneurial profile associated to the business start-up, adjusted to 367 Portuguese HS is shown in Figure 3.

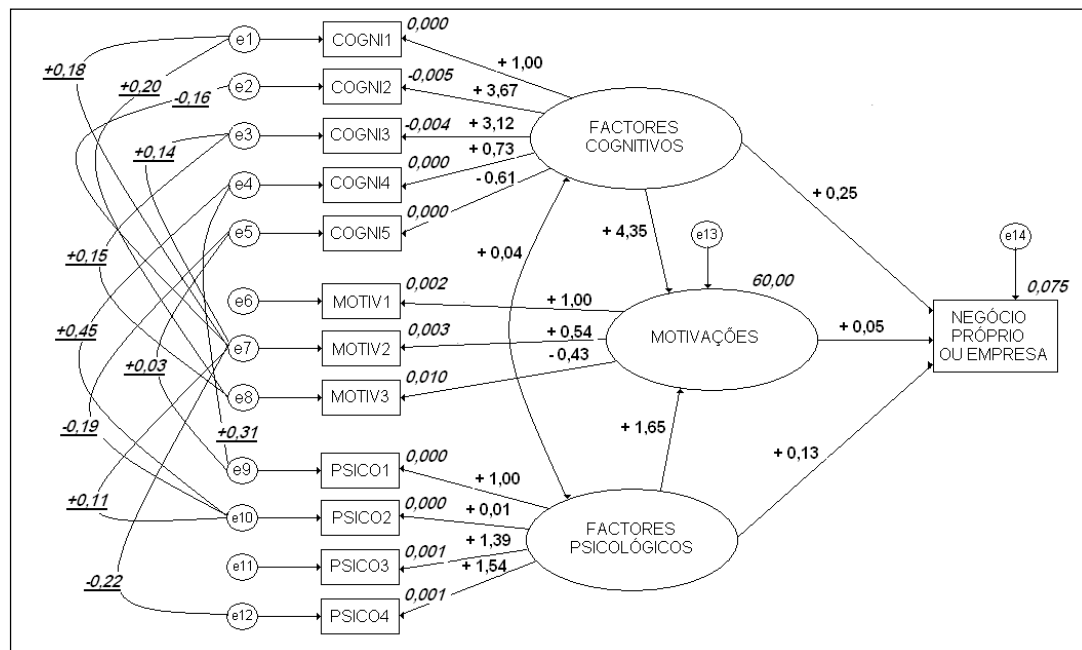


Figure 3 – Model of the psychological and cognitive factors; and motivations of entrepreneurship on the business start-up

The model is well adjusted to the structure of the variance covariance of the 13 items under analysis [$\chi^2(49) = 44,677$; $p = 0,649$]; ($\chi^2/g.l. = 0,912$), (CFI = 1,000), (PCFI = 0,628), (GFI = 0,982), (PGFI = 0,529), (RMSEA = 0,000; $p(\text{rmsea} \leq 0,05) = 1,000$, IC (90%) =]0,000; 0,029[. Based on the Chi-square test for every item, it has been verified that the construct on the motivational factors has a higher weight in the construction of the total chi-square.

In what regards the construct on **motivational factors** ('MOTIVAÇÕES'), these are positively related to self-esteem (MOTIV1) [$\lambda = + 1, 00$] and the “**necessity / Family influence**” (MOTIV2) [$\lambda = + 0, 54$], and negatively related to the factor “**Social Status**” (MOTIV3) [$\lambda = -0, 43$]; indicating that the factor motivation increases with the self esteem and the “necessity/family influence” and decreases as the “social status” increases.

In what regards the cognitive factors construct ('FACTORES COGNITIVOS'), this is positively related with: the “**attention to the business opportunities**” (COGN1) [$\lambda = + 1, 00$]; “**experience and knowledge**” (COGN2) [$\lambda = + 3, 67$]; and with the “**optimistic perception of success**” (COGN4) [$\lambda = + 0, 73$]. It is negatively related to the “**influence of the affective state**” (COGN5) [$\lambda = - 0, 61$].

The physiological factors construct ('FACTORES PSICOLÓGICOS') is positively related with “**creativity and innovation**” (PSICO1) [$\lambda = + 1, 00$]; “**self-esteem and self-confidence**” (PSICO2) [$\lambda = + 0, 01$]; “**self-control**” (PSICO3) [$\lambda = + 1, 39$] and “**autonomy**” (PSICO4) [$\lambda = + 1, 54$].

It has also been found a significant correlation between the cognitive factor construct and the psychological factor construct ($\pi=0, 04$; $P=0,030$), indicating that the higher the cognitive factors, the higher the psychological factors and vice-versa.

The influence of the psychological factors on motivations has shown to be significant ($\beta=1, 65$; $P=0,002$) – when the score of the psychological factors increases one unit, the score of motivation increases 1, 65. In a similar manner, it has also been shown that there is a significant influence of cognitive factors on motivation ($\beta=+4, 35$; $P=0,031$), revealing a significant influence of the cognitive factors on motivation ($\beta=+4, 35$; $P=0,031$), denoting that when the score of the cognitive factors increases one unit, motivation increases 4, 35 units.

Finally, regarding the direct effects of motivation ($\beta=0,05$; $P=0,172$), of cognitive factors ($\beta=0,25$; $P=0,126$), and of psychological factors ($\beta=0,13$; $P=0,012$) on the creation of the business, it

has been found a positive relationship, as expected to be found, and in accordance to several studies (e.g. Gaglio & Katz, 2001; Baron, 2004; Hirish & Peters, 2004; Markman *et al.*, 2005; Fernández *et al.*, 2006; Sharir & Lerner, 2006; Tang *et al.*, 2007).

4.2 HS Entrepreneurial profile on the future entrepreneurial intention

The model of the psychological, cognitive, and motivational factors construct on the entrepreneurial profile about the intention for future business start up ('INTENÇÃO FUTURA') was assessed by a structural equations model.

The adjustment of the model was done using AMOS software (v. 17.0, SPSS Inc, Chicago, IL). In order to evaluate the adjustment quality the CFI, GFI, and PCFI, PGFI indexes were used, considering a good quality of the adjustment in the presence of values above 0,9 and 0,6 respectively. The RMSEA has also been used with a confidence level of 90% and the rmsea probability $\leq 0,05$.

A confidence level for the RMSEA of 90% has been considered, with the upper limit below 0.10, which provides an indication of an acceptable adjustment, and that the adjustment is very good when the upper limit of the confidence level is below 0,05 (Maroco, 2007).

The model of the psychological, cognitive and motivational factors constructs of the HS profile on their future willingness to start up a business, adjusted to 332 Portuguese non-entrepreneurs HS is provided in Figure 4.

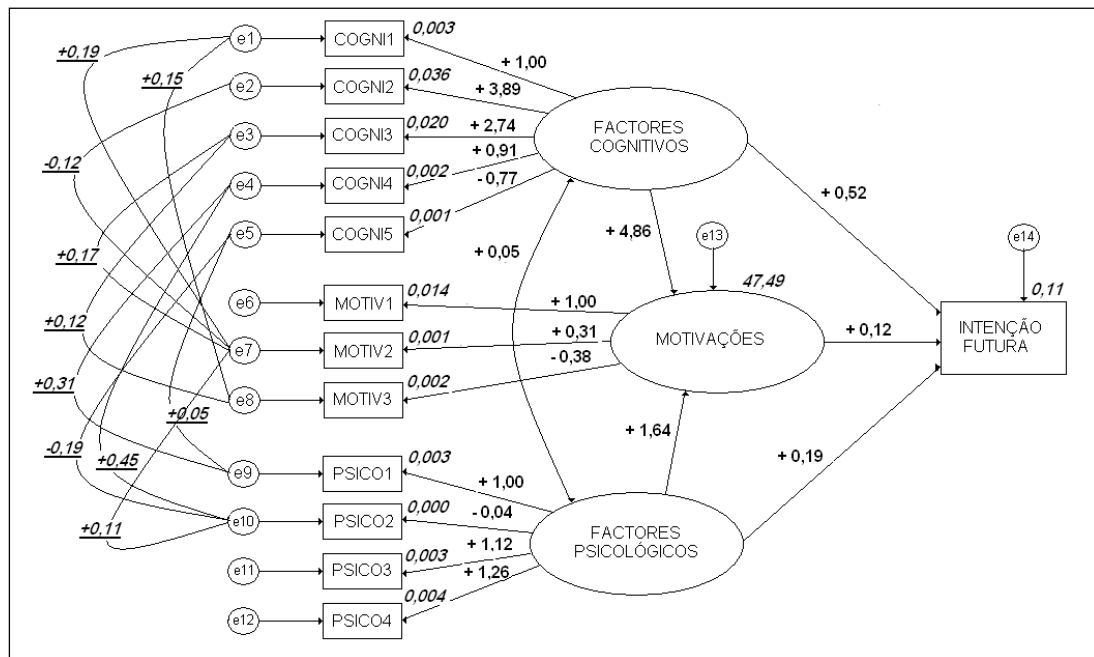


Figure 4 – Model of the psychological, cognitive and motivational factors constructs of the HS profile on their future willingness to start up a business

The model has a good adjustment to the variance covariance structure of the 13 items under analysis [$(\chi^2(49) = 56,275; p = 0,221)$; $(\chi^2/g.l. = 1,148)$, (CFI = 0,981), (PCFI = 0,616), (RMSEA = 0,021); $p(\text{rmsea} \leq 0,05) = 0,989$, IC (90%) =] 0,000; 0,043[. Based on the value of the chi-square test for every item, it has been shown that the motivational factors construct is the one weighting more on the total construction of the chi-square.

Regarding the motivational factors construct (MOTIVATIONS), these are positively related to the “**self-recognition**” (MOTIV1) [$\lambda = +1,00$] and to the “**necessity/family influence**” (MOTIV2) [$\lambda = +0,31$]. It is negatively related to the “**social status**” (MOTIV3) [$\lambda = -0,38$]. This indicates that the motivational factor increases with an increase in the “self-recognition” and the “necessity/family influence”, and decreases when the “social status” increases.

The cognitive factors construct has shown that they are positively related to “**attention to the business opportunities**” (COGNI1) [$\lambda = +1,00$]; “**knowledge and previous experience**” (COGNI2)

$[\lambda = + 3,89]$; “**precision/resolution of problems**” (COGNI3) $[\lambda = + 2,74]$; and “**optimistic perception of success**” (COGNI4) $[\lambda = + 0,91]$, and negatively related to the “**influence of the affective state**” (COGNI5) $[\lambda = - 0,77]$.

The Psychological factors are positively related to “**creativity and innovation**” (PSICO1) $[\lambda = + 1, 00]$; “**self-control**” (PSICO3) $[\lambda = + 1, 39]$; and to “**autonomy**” (PSICO4) $[\lambda = + 1, 54]$. It is negatively related to “**self-esteem and self-confidence**” (PSICO2) $[\lambda = - 0, 04]$.

There is evidence of a significant positive correlation between the cognitive factors construct and the psychological factors construct ($\pi=0, 04$; $P=0,039$), meaning that the higher the cognitive factors, the higher are the psychological factors and vice-versa.

The influence of the psychological factors on motivation has shown to be significant ($\beta=1, 64$; $P=0,006$) – when the score of the psychological factors increases one unit, the score of motivation increases 1, 64 units. In a similar manner, there is a significant influence of the cognitive factors on motivation ($\beta=+4, 86$; $P=0,046$). This shows that when the score of the cognitive factors increases one unit, the motivation increases 4, 86 units.

Finally, in what regards the direct effects of the motivational factors ($\beta=0,12$; $P=0,042$), cognitive factors ($\beta=0,52$; $P=0,123$), and of psychological factors ($\beta=0,19$; $P=0,035$) on the intention of a future business start-up, one found a direct influence as expected and in line with several studies (e.g. Gaglio & Katz, 2001; Baron, 2004; Hirish & Peters, 2004; Sharir & Lerner, 2006; Tang *et al.*, 2006; Gerry *et al.*, 2008; Rodrigues *et al.*, 2008).

4.3 The entrepreneurial profile of the Portuguese HS

After displaying and analysing the results, using the SEM approach a brief summary of the results obtained in the two models is provided, in order to be able to characterise the profile of the entrepreneurs HS and those willing to create a business.

The results show that the Portuguese HS display a similar profile to entrepreneurs, since there is a relationship between the factors presented in this paper and the fact that they have created or they are in the process of creating a firm, as supported by the theory, namely on the motivational factors (e.g. McClland, 1961; Cromie, 1987; Baron, 2004; Silva *et al.*, 2004; Minniti *et al.*, 2005; Fernández *et al.*, 2006; Sharir & Lerner, 2006; Tang *et al.*, 2007; Gerry *et al.*, 2008; Brush, 2008; Rodrigues *et al.*, 2008), on the psychological factors (e.g. McClelland, 1961; Luchinger & Bagby, 1987; Bygrave, 1989; Douglas, 1999; Hisrich & Peters, 2004; Markman *et al.*, 2005; Gerry *et al.*, 2008; Rodrigues *et al.*, 2008), and on the cognitive factors (e.g. Kirzner’s, 1982; Gaglio & Katz, 2001; Ardichvili *et al.*, 2003; Baron, 2004; Markman *et al.*, 2005 ;Tang *et al.*, 2007).

5. DISCUSSION AND CONCLUSIONS

5.1. Main findings

After the data analysis and application of the SEM model to test the conceptual model considered, the obtained results of the level of entrepreneur’s psychological profile supported the hypothesis that HS who have created a firm have psychological characteristics that support entrepreneurial activities (e.g. Mueller and Thomas 2000, Blacksmith 2003, Hisrich and Peters 2004). It has also been verified that motivation influences the willingness of firm creation.

One should highlight the direct influence of the motivational factor “necessity/family influence”, in relation to all its factors in the entrepreneurs HS in the AMOS model. There is also a direct influenced played by the psychological factors on the entrepreneurs HS, with a significant correlation with the cognitive factors and influence on motivation. A similar influence is observed in the cognitive factors of entrepreneurs HS.

HS with intention to start up a business in the future present can be characterised by the following profile: they have motivations such as self achievement, necessity/family influence and social status; they are creative, innovative and autonomous. These entrepreneurs are always alert to business opportunities, and they have gained the necessary knowledge and experience within the industry. They are precise, they have an optimist perception of success and the affective state does not influence them. One should note that these factors present a positive correlation and they influence their motivation. Therefore, based on the obtained results of the statistic analysis it has been possible to

conclude that the TDT display an entrepreneurial spirit, associated to the profiles draw before, and thus confirming all research hypothesis. This study is in line with the results obtained in the literature in what regards the motivational factors (Cromie, 1987; Baron, 2004; Silva *et al.*, 2004; Minniti *et al.*, 2005; Fernández *et al.*, 2006; Sharir & Lerner, 2006; Tang *et al.*, 2007; Gerry *et al.*, 2008; e Brush, 2008 e Rodrigues *et al.*, 2008); psychological factors (McClelland, 1961; Luchinger & Bagby, 1987; Bygrave, 1989; Douglas, 1999; Hisrich & Peters, 2004; Gerry *et al.*, 2008; Rodrigues *et al.*, 2008) and cognitive factors (Kirzner's, 1982; Gaglio, 2001; Ardichvili *et al.*, 2003; Baron, 2004; Tang *et al.*, 2007) of entrepreneurial spirit.

However, one can argue that despite what has been said in this study there are still much to explore. Subsequent analysis should be empirically based.

5.2. Limitations and future studies

The study presents some limitations, and future studies may provide a clearer view of how the variables studied here are empirically related and interact with other variables. First:

The sample dimension of the group associated to the TDT career is probably one of the limitations, which may not be faithful to the whole population, considering that our initial aim was to use a larger sample. However, it can be considered reasonable for our research, given that the nature of the data collection depends, to a large extent, on the respondents' diligence.

Secondly, problems in terms of representativity may be present, considering that in two professional classes there was no representatives in the sample, and in another one with a very small number of respondents. Thus, future research studies should include a larger sample and with more representativity of all the jobs within the health industry.

The third limitation (than can also be seen as a strength) is that there are very few, if any, studies devoted to explore entrepreneurship within the health industry. Associated to this characteristic of our study is there the comparison with similar studies was not possible.

Considering this context, these limitations may provide interesting opportunities for further research. One can point out that this study could be repeated with additional variables in the AMOS model, namely those related to the socio-demographic characteristics, socio-professional, and socio-economic, considering that it is viable to gain access to a larger sample.

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