



Early stages in the entrepreneurship nexus:
Business opportunities and individual characteristics

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in Human Resources Management and Development

Susana Helena Correia Santos

Supervisors:

PhD, António Caetano, Full Professor
Instituto Universitário de Lisboa, ISCTE-IUL

PhD, Luís Curral, Assistant Professor
Faculdade de Psicologia da Universidade de Lisboa

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**Early stages in the entrepreneurship nexus:
Business opportunities and individual characteristics**

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Susana Helena Correia Santos

Composição do Júri

Doutor Soumodip Sarkar, Professor Associado com Agregação do Departamento de
Gestão da Escola de Ciências Sociais da Universidade de Évora

Doutora Maria José Madeira Silva, Professora Auxiliar do Departamento de Gestão e
Economia da Escola de Ciências Sociais da Universidade da Beira Interior

Doutor Luís Frutuoso Martinez, Professor Auxiliar da Nova School of Business and
Economics

Doutor José Paulo Esperança, Professor Catedrático do Departamento de Finanças da
International Business School do ISCTE – Instituto Universitário de Lisboa

Doutor Luís Alberto Curral, Professor Auxiliar da Faculdade de Psicologia da
Unviersidade de Lisboa

Doutor António Caetano, Professor Catedrático do Departamento de Recursos Humanos
e Comportamento Organizacional da International Business School do ISCTE –
Instituto Universitário de Lisboa

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ABSTRACT

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This thesis focuses on the individual-opportunity nexus in the early stages of the entrepreneurship process, and includes five empirical studies. The aim of Study 1 was to contribute to the explanation of cognitive maps during the early stages of entrepreneurship. Results suggest that individuals with greater entrepreneurial experience have richer, clearer and simpler cognitive maps. Study 2 sought to obtain evidence concerning the basic dimensions included in cognitive prototypes pertaining to opportunity recognition and decision to launch a new venture. For the “business opportunity” prototype these are utility and distinctiveness while for the decision to launch a new venture, the basic dimensions are feasibility and motivational aspects. The two studies mentioned above focused on the opportunity side of the nexus. For the individual side of the nexus, we focused on the entrepreneurial potential construct applied in different contexts. With Study 3, we put forward a theoretical model for the entrepreneurial potential construct. Through six research steps, this study presented the development of the Entrepreneurial Potential Assessment Inventory, which can be used to measure the entrepreneurial potential construct. Study 4 aimed to analyse the predictive capacity of entrepreneurial potential profiling among entrepreneurial team members. Our results showed that, in a venture competition context, the teams with higher results in socio-psychological aspects became finalists. Study 5 presented a methodology for the selection of potential entrepreneurs for an entrepreneurship promotion program. The main results showed that individual and business opportunity characteristics are critical dimensions. Based on these empirical studies, this thesis also describes valuable tools that can contribute towards fostering entrepreneurship in Portugal.

Keywords: opportunity recognition; cognitive structures; individual characteristics; entrepreneurial potential

JEL Classification System: L2 - Firm Objectives, Organization, and Behavior; L26 – Entrepreneurship;

RESUMO

RESUMO

Esta tese focaliza-se no *nexus* indivíduo-oportunidade durante as fases iniciais do processo empreendedor e apresenta cinco estudos empíricos. O estudo 1 contribui para compreender a evolução dos mapas cognitivos nas fases iniciais do processo empreendedor. Os resultados mostram que os indivíduos com uma maior experiência empreendedora apresentam estruturas cognitivas mais ricas, claras e simples. O estudo 2 desenvolve um modelo bi-dimensional do processo de reconhecimento de oportunidades e da conseqüente decisão de lançar o negócio. Os resultados sugerem que o protótipo de oportunidade de negócio inclui duas dimensões: utilidade e distintividade. Por sua vez, o protótipo da decisão para fundar o negócio inclui os aspetos relacionados com a fiabilidade e com a motivação para lançar o negócio. O estudo 3 apresenta o modelo teórico do potencial empreendedor, e o desenvolvimento do Inventário de Avaliação do Potencial Empreendedor. O estudo 4 analisa a capacidade preditiva do potencial empreendedor entre equipas empreendedoras. Os resultados sugerem que, no contexto de um concurso de empreendedorismo, as equipas com resultados mais elevados nas dimensões psicossociais do potencial empreendedor foram selecionadas como vencedoras. O estudo 5 apresenta uma metodologia para a seleção de empreendedores num programa de promoção do empreendedorismo, e os resultados mostram que algumas das dimensões do potencial empreendedor e as características da oportunidade de negócio são críticas para a seleção. Com base nestas evidências empíricas, esta tese apresenta instrumentos com aplicação prática que podem vir a contribuir para o desenvolvimento do empreendedorismo em Portugal.

Palavras-Chave: oportunidades de negócio; estruturas cognitivas; características individuais; potencial empreendedor;

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“There is little I will say that has not been said somewhere by someone.”

Kirzner (1973, p.3), *Competition and Entrepreneurship*

GENERAL INTRODUCTION

General Introduction

Over the last few decades, entrepreneurship and almost all aspects of human agency and society have been much discussed around the world. These days, entrepreneurship is present in attitudes, education, social, academic, political and economic issues. Although it may appear to be a new concept or trend, entrepreneurship has been part of human agency since the beginnings of human history, especially if we consider that originally an entrepreneur was defined as an "*undertaker*" (Cantillon, 2010 / 1755). Throughout the centuries, humans have been required to *undertake* changes and mutations in population size and distribution, feeding, posture, life history, social organization, and social behaviour (see Stringer, 1994, for a review).

Entrepreneurship has been an important subject for several disciplines since the 18th century. It has been studied in depth and in different contexts using diverse methodologies and has been applied to various settings. As a result of the increasing effort to understand the phenomenon, entrepreneurship has been broadly conceptualized as critical to social, educational, regulatory and economic development. Today, most economists, politicians and social practitioners recognise and accept the important role entrepreneurs play in society. Economic development is a consequence of introducing and implementing innovative ideas, be they a product, a process, a market or organizational innovations. When new ventures are successfully launched, new jobs for the working population are created so, during times of economic crisis, reliance on entrepreneurship is even greater. However, believing entrepreneurship to be one of the most relevant mechanisms for solving economic, financial and social problems can lead to its ability to deliver being overestimated. The myths and illusions of entrepreneurship have been identified (Shane, 2008), and policy makers are aware of this situation (Shane, 2009). In general, entrepreneurship is a powerful mechanism for societies, but it has to be integrated in a social and cultural framework.

Nevertheless, entrepreneurship has become a buzzword around the world, across many disciplines, and among individuals, groups, organizations, societies, and policy makers. Entrepreneurship stopped being purely an economic mechanism to become a transversal trend, integrating individual, group and organizational phenomena.

Hence, discovering the dynamics of the entrepreneurship process would be the answer to the billion-dollar question! Bygrave and Hofer (1991) stressed clearly the relevance of uncovering the entrepreneurship process and model for society in general:

“If researchers could develop a model or theory to explain entrepreneurial processes, they would have the key that unlocks the mystery of entrepreneurship. (...) With that kind of predictive power, we would have the key to economic growth! (...) Entrepreneurship would be the giant of the business sciences, perhaps all the social sciences!!” (p. 16).

In a recent article, Ventakaraman, Sarasvathy, Dew and Forster (2012) propose the conceptualization of an entrepreneurial method, analogous to the scientific method, as the necessary mechanism behind what makes someone an enterprising person. This methodological approach would allow a systematic study and understanding of the phenomenon, and could thus enhance the development of entrepreneurship education from the very outset of the school curriculum. The inclusion of curricula focused on developing entrepreneurial skills from early school years would, by the generational effect, unleash the entrepreneurial potential of human nature. By leveraging the generational process, entrepreneurship would solidify as an agent of transformation for careers, communities, and political, economic and social systems. This paradigm shift is ambitious, challenging and progressive. The contributions made by research and activities for entrepreneurship that we observe today are only the beginning. And on their own, and as temporary and hitherto unframed policies, they will not have the desired effect. Entrepreneurship needs to be fostered and integrated in our culture as action, method and strategy.

Since 1997, the Global Entrepreneurship Monitor (GEM) has been conducting the most comprehensive worldwide barometer of entrepreneurship (Wennekers and Thurik, 1999; Carree and Thurik, 2003; Acs, 2006). The main indicator of the GEM is the Total Early-Stage Entrepreneurial Activity (TEA). This represents the percentage of adults (18 to 64 years old) in the population who are involved in either nascent or new firms. Nascent entrepreneurs are those individuals who are committed to starting a business, and whose business is less than three and a half years old and has not yet paid out any wages or salaries. New entrepreneurs or young business owners are those individuals who have been currently running a business for more than three months, but less than three and a half years (Bosma, Wennekers, Amorós, 2012). TEA, therefore, is an analysis of entrepreneurial businesses that are already up and running in the year during which the country is analysed.

Portugal was first included as a GEM country in 2001, and data was collected in five further waves: 2004, 2007, 2010, 2011, and 2012. There will also be data collection

in 2013. Results from 2001 showed that Portugal had a 7.1% TEA rate, meaning just over 7 entrepreneurs for every 100 people aged 18-64 years (Global Entrepreneurship Monitor, 2001). The 2004 data reported that the TEA rate in Portugal was 4.0%, down from 7.1% in 2001 (Global Entrepreneurship Monitor, 2004). In 2007, Portugal evidenced a TEA rate of 8.8%, and in 2010, Portugal evidenced a TEA index of 4.4% (Global Entrepreneurship Monitor, 2010). In 2011, Portugal evidenced a TEA index of 7.5% (Bosma, Wennekers and Amorós, 2012), and in 2012, TEA in Portugal was 8.0% (Xavier, Kelley, Kew, Herrington and Vorderwülbecke, 2013).

These results demonstrate the instability of entrepreneurial activity in Portugal: (TEA_{2001 PT} = 7.2%; TEA_{2004 PT} = 4.0%; TEA_{2007 PT} = 8.8%; TEA_{2010 PT} = 4.4%; TEA_{2011 PT} = 7.5%; TEA_{2012 PT} = 8%).

Overall, the indicators for Portugal collected by GEM gives a macro level perspective on entrepreneurship in the country. Despite the economic and financial crisis Portugal has faced since 2010, the country has followed the entrepreneurial activity trend of other European countries and its entrepreneurial activity rate has kept pace with them. Nevertheless, the dynamics of the creation of new businesses in Portugal and Spain between 2000 and 2007 was lower than in the European Union and OCDE's average (Sarmiento & Nunes, 2012).

These indicators, however, are neither sufficient nor satisfactory for a European country in the 21st century, and the demands of worldwide constraints mean that greater effort must be made. Consequently, European countries are focusing on promoting entrepreneurship in the primary, secondary and tertiary sectors. Portugal is following this trend, and has made entrepreneurship a national imperative. There is now a proliferation of activities, conferences, associations, competitions, workshops, training courses, television programs, books, and so on, about the topic. Entrepreneurship is now embedded in the everyday lexicon and people have at their disposal a large set of conditions that aim to increase individual and collective initiatives. However, most of these entrepreneurship activities are not achieving their goal. Most of them are dissociated from international best practices and examples, they do not integrate suggestions from research, and some of them are a waste of resources. Thus, there is an emergent need to go beyond entrepreneurship promotion programs and activities as mere buzzwords and embrace integrated and valuable practices.

Entrepreneurship is an important mechanism for economic and social development, but it needs to be integrated in societal, group and individual contexts.

Entrepreneurship is a cyclical process that begins with the generation of an idea which translates into a business opportunity and is then converted into a value proposition for an enterprising activity. To effectively transfer this idea into practice there are a set of necessary structural conditions integrated at various levels. At the macro and societal level, society needs to be culturally prepared to generate innovative ideas and effective management of resources. At the intermediate and group level, organizations, private and public institutions have to urgently start the process of intrapreneurship by encouraging employees to take risks, to accept and learn from failure and to be responsible for the development of innovative products or services for their businesses. Individually, each person chooses to engage in entrepreneurship and to stimulate their ability to recognize business opportunities. In general, the success or failure of entrepreneurship does not depend on a set of individual, sporadic or surgical activities conducted at a national or local level. They will rely rather on combined intra and inter level strategies that trigger a shift to an entrepreneurial culture, climate and method.

Despite the great relevance of this phenomenon in most of the communication systems and media, the impact of entrepreneurship on economic, financial and political spheres remains unclear. Gartner (1990) alerted the scientific community to the danger of disseminating entrepreneurship before developing systematic research on it: “*is entrepreneurship just a buzzword, or does it have particular characteristics that can be identified and studied?*” (p. 16).

Gartner’s (1990) question was a provocative one and generated some anxiety in academia. Consequently, scholars have put considerable effort into showing that entrepreneurship is a complex, macroeconomic, societal, organizational, and individual phenomenon worthy of study through a number of different approaches. With this thesis we attempt to make our own modest contribution in response to Gartner’s (1990) challenge to identify the particular characteristics and processes of entrepreneurship.

This thesis approaches entrepreneurship via the cognitions, actions, decisions, aspirations and emotions of the entrepreneur (Venkataraman, Sarasvathy, Dew and Forster, 2012). This perspective is grounded in the evidence that entrepreneurship is a human based practice and intrinsically dependent on individuals’ decisions and actions. There is no entrepreneurship without the individual. Or, as McMullen and Shepherd (2006) stated: “*Entrepreneurship requires action (...) To be an entrepreneur, therefore, is to act on the possibility that one has identified an opportunity worth pursuing*” (p.132). Additionally, entrepreneurship always requires an opportunity, or an idea. The

individual-opportunity nexus perspective in entrepreneurship was defined by Venkataraman (1997) and further developed by Scott Shane. In his book “*A General Theory of Entrepreneurship: the Individual-Opportunity Nexus*”, Shane (2003) presented the state of the art of opportunity research, including individual differences, environmental contingencies, resources acquisitions and strategy. Subsequently, the interaction between opportunities and individuals became more relevant and systematically analysed, and guided several research themes and trends.

This thesis focuses on both sides of this nexus: opportunities and individuals. And although both opportunities and individuals are relevant at all stages of the entrepreneurship process, we focus on its early stages. As Baron and Shane (2008) suggested, entrepreneurship is a process that starts with the recognition of a business opportunity and is followed by the decision to launch a venture. These are the two early entrepreneurship stages. However, before the business opportunity recognition stage, there is a set of other mechanisms that can promote or buffer the attitude of an individual towards entrepreneurship. These mechanisms, which frequently come into play in the early stages of the entrepreneurship process, include environmental and structural conditions, and also the individual’s attitude and intention to engage in typical entrepreneurial activities.

The general goal of this thesis is to contribute towards explaining further the individual-opportunity nexus, particularly with regard to the cognitive processes associated with business opportunity recognition and exploitation, and the individual psychosocial characteristics of entrepreneurs. Specifically, the main focus is on the early stages of the entrepreneurship process: pre-entrepreneurial stages, business opportunity recognition and decision to launch a venture. We attempted to broadly contribute to answer to some of the central questions of entrepreneurship research: “(1) *why, when, and how opportunities for the creation of goods and services come into existence; (2) why, when, and how some people, and not others, discover and exploit these opportunities; and (3) why, when, and how different modes of action are used to exploit entrepreneurial opportunities*” (Shane & Venkataraman, 2000, p. 218). To achieve this goal, we conducted five empirical studies.

Study 1 contributes to further understanding the cognitive maps of entrepreneurial motivation, business opportunity, and decision to launch a venture, among three groups of individuals with different entrepreneurial experience: entrepreneurial trainees, would-be entrepreneurs and novice entrepreneurs. These

groups were selected to represent different developmental states in early entrepreneurship. Individual interviews were conducted, the data were computer content analysed and cognitive maps were extracted. The results showed that entrepreneurship experience develops the structure of cognitive maps, increasing clarity, richness and experience-based features. The originality of this study resides in the inclusion of entrepreneurial motivation in business opportunity recognition and the decision to launch a venture model. This study uses a cross-sectional design, and achieves a temporal perspective by including different entrepreneurship stages.

Study 2 contributes to uncover the basic dimensions underlying business opportunity prototype and decision to launch a venture prototype. Based on research by Baron and Ensley (2006) we developed hypotheses concerning the basic dimensions of these prototypes, and tested bi-dimensional models relating to them with a sample of founding entrepreneurs. Results indicated that, consistent with predictions, both prototypes include two basic dimensions. The dimensions for the “business opportunity” prototype are utility and distinctiveness, while the basic dimensions for the decision to launch a new venture are feasibility and the motivational aspects of decision-making. These results help to further clarify the nature of the cognitive frameworks individuals use to identify potential opportunities and reach an initial decision about whether to pursue their development.

Study 3 presents the development of a scale to assess the entrepreneurial potential among individuals - the Entrepreneurial Potential Assessment Inventory (EPAI). This tool is based on a theoretical model regarding the entrepreneurial potential construct, and the main psychosocial aspects that contribute towards an individual's preparedness to engage in activities typically associated with entrepreneurship. The proposed theoretical model of entrepreneurial potential comprises four main dimensions - entrepreneurial motivation, management competencies, psychological competencies, and social competencies - and eleven sub dimensions - desire for independence, economic motivation, entrepreneurial self-efficacy, vision, mobilization resource capacity, leadership capacity, innovation capacity, emotional intelligence, resilience, communication and persuasion capacity, and network development capacity. Five research steps indicated that the proposed new measure for assessing entrepreneurial potential- (EPAI)- had good psychometric properties, convergent and discriminant validity. The entrepreneurial potential assessment inventory can be used by an entrepreneur for self-assessment, for training and for professional development.

Study 4 presents the entrepreneurial potential construct in entrepreneurial teams competing in a venture competition, following a *proxy* for a longitudinal research. We assessed the entrepreneurial potential profile of entrepreneurial teams, and based on the results we were able to predict four track finalists and the grand finalist of the venture competition. Our results, based on the socio-psychological aspects of entrepreneurial potential profiles and team productivity of each team, demonstrated that we could predict the grand finalist of the venture competition judged by an international panel of experts seven months in advance. These results show that the entrepreneurial potential profile can be a useful tool for indicating which teams have high potential and are, therefore, more likely to be successful.

Finally, in study 5 we used the same instrument integrated in a selection method for entrepreneurs engaged in an entrepreneurship promotion program. This study describes a method designed to help make sound investment decisions by selecting those entrepreneurs most likely to succeed. The methodology involves two steps: the first focuses on the assessment of individual characteristics; and the second focuses on the evaluation of the business opportunity. We applied this methodology on an entrepreneurship promotion program that involved applications from 74 would-be entrepreneurs. By the end of the program, the 15 selected participants were successful in the implementation of their start-ups. This would indicate, therefore, that using this entrepreneur selection method can help in the investment decision making process because it enables entrepreneurship agents to more effectively evaluate individuals and their opportunities.

In general, this thesis contributes to the cognitive and psychological theory of entrepreneurship. The nexus between individual and opportunity (e.g., Shane, 2003) is an emergent topic in entrepreneurship literature nowadays, and our findings can contribute to the theoretical discussion about both sides of the nexus. On the opportunity side of the nexus, we contribute to further developing the pattern recognition theory (Baron, 2006), integrating prototypes literature and the motivational aspects. In the individual side of the nexus, we contribute to the literature on individual characteristics literature, by building an integrative theoretical model on entrepreneurial potential.

The findings from this thesis include some relevant practical implications of entrepreneurship. Using the theoretical models and the empirical evidence, we were able to develop a tool - the entrepreneurial potential assessment inventory - that can

contribute towards fostering the practice of entrepreneurship in Portugal, and can help in making more accurate decisions. This tool was then further adapted for two different contexts: among entrepreneurial teams and in a selection method. Thus, incubators or policy makers can now make use of this tool to decide which applicants to invest their budget and resources in. To avoid misdirecting budgets, they will naturally seek to invest in those applicants with the greatest potential for success, and this is where the entrepreneurial potential inventory can be an advantage.

We believe our findings will contribute towards enhancing the understanding of entrepreneurship phenomena, mainly with regard to: the processes involved in business opportunity recognition, the decision to exploit the opportunity, and the individuals who pursue them. Furthermore, we hope this thesis can inspire future theoretical developments and that it will continue to nurture an entrepreneurial attitude amongst the Portuguese.

The originality and value of this thesis reside in three main aspects. First, the theories used are a departure from the individual-opportunity nexus, and we integrated cognitive, psychological and motivational theories. Second, the diverse samples and methods used reveal that entrepreneurship is such a complex phenomena that only a comprehensive methodological framework can fully encompass it. Third, and most relevant, this thesis includes theoretical models and empirical evidence that were tested and integrated in technical and practical contexts.

As a general roadmap, this thesis started presenting a general theoretical framework (Part I). Next, we developed two empirical studies focused on opportunities (Part II), and three empirical studies about individual characteristics associated with the entrepreneurship activity, including instruments that can be transferred to practice (Part III). Finally, in Part IV we presented the general conclusions of this research.

As a general overview of this research project, Table 1 presents a synopsis of the five empirical studies that it comprised, including the main research questions, theoretical frameworks, empirical approaches, research designs, and samples.

Table 1. *Synopsis of the empirical studies*

Context	Early stages of entrepreneurship process				
Entrepreneurship nexus	Opportunities		Individuals		
Empirical studies	Study 1 - Cognitive maps in the early entrepreneurship stages: From motivation to implementation	Study 2 - Prototype models of opportunity recognition and the decision to launch a new venture: Identifying the basic dimensions	Study 3 - Psychosocial aspects of entrepreneurial potential	Study 4 - Socio-psychological characteristics of entrepreneurial teams: Profiling the entrepreneurial potential	Study 5 - Entrepreneurs selection method for entrepreneurship promotion programs
Main research questions	How do different entrepreneurial experience levels influence the structure and evolution of cognitive map at the early entrepreneurship stages?	What are the basic perceptual and cognitive structures in opportunity recognition and decision to exploit it?	What skills, competencies, motives and personal characteristics do entrepreneurs need to succeed?	The socio-psychological characteristics of entrepreneurial teams contribute to identify the more successful entrepreneurial projects?	What entrepreneurial potential dimensions and business opportunity characteristics are critical to the selection of successful entrepreneurs?
Main theoretical frameworks	Cognitive processes	Cognitive processes	Entrepreneurs characteristics	Entrepreneurs characteristics and team characteristics	Entrepreneurs characteristics, personnel selection and assessment
Empirical approaches and research designs	Qualitative / Cross sectional	Qualitative / Cross sectional	Quantitative / six research stages cross sectional	Quantitative / longitudinal design	Mixed methods: qualitative and quantitative / longitudinal design
Samples	Entrepreneurship trainees, would-be entrepreneurs and novice entrepreneurs	Founder entrepreneurs	University students, young employees, entrepreneurs	Entrepreneurial teams	Would-be entrepreneurs

PART I.

ENTREPRENEURSHIP: THEORIES, DEFINITIONS AND LEVELS

Introduction to Part I

In Part I we present a review on the main theories, definitions and levels of entrepreneurship phenomena. Entrepreneurship has been addressed since the 18th century, and the historical roots of entrepreneurship portraits the richness and the complexity of the construct. Entrepreneurship started as a phenomenon highly linked to economic and management theories. Later, the psychological and sociological theories also focused on it, and nowadays entrepreneurship has been settled as a research field, with its own research questions, debates and methods (Shane & Venkataraman, 2000; Shane, 2012; Venkataraman, Sarasvathy, Dew, & Forster, 2012). As a result from the diverse theories and practices around entrepreneurship, different definitions and conceptualizations also raised.

In order to systematize the state of the art, we begin Part I with a historical overview on the entrepreneurship theories, focusing on the most relevant authors and theories over different disciplines (Chapter 1). Next, we present the entrepreneurship *process* perspective (Chapter 2), defining its different stages, from business opportunity development to the strategic exit. The process perspective is relatively consensual over entrepreneurship scholars, academics and practitioners. The entrepreneurship process is included in a complex system of factors that operate at different levels, from macro environmental impacts to proximal influences. These factors make for direct and indirect effects over the entrepreneurship process, and the human agency has different levels of influence over them. In chapter 2 we begin by presenting the macro system where entrepreneurship is embedded, and then move to focus on the relevance of proximal factors and on the two early stages of the process: business opportunities and decision to launch a venture.

Business opportunities emerge as the genesis of the entrepreneurship process — they are often (although not always) the start of the entire process (e.g., Alvarez & Barney, 2010; Eckhardt & Shane, 2003; Shane, 2000; Short, Ketchen, Shook, & Ireland, 2010). Nevertheless, it is clear that “*without an opportunity, there is no entrepreneurship.*” (Short, Ketchen, Shook, & Ireland, 2010, p. 40). In Chapter 3 we review the concept of business opportunity, and go further to enter to the decision to exploit it and entrepreneurial motivations.

Chapter 1. A route through the entrepreneurship state of the art and construct clarification

1.1. Introduction

The etymology of the word *entrepreneurship* derives from the French *entreprendre*, i.e., “*entre*” and “*prendre*”, which means to undertake, to be on the market between the supplier and the consumer (Cantillon, 2010/1755). The origin of the word is classically attributed to Richard Cantillon, a Parisian banker and businessman, who wrote “*Essai sur la Nature du Commerce en Général*” (2010/1755). His approach to economics was based on his practical view and was focused on the structure and process of emerging market economies, described as an enterprise economy rather than a political economy. The role of governments on this enterprise economy was described as moderately passive and “*the most active and central participant was the entrepreneur, who motivates the entire economic system.*” (Hébert, 2010, p.6, in the Foreword of the English version of *Essai sur la Nature du Commerce en Général* (2010/1755). The centrality that the entrepreneur took in Cantillon’s theory contributed to name him as “*the father of enterprise economics*” (Hébert, 2010, p.6, in the Foreword of the English version of *Essai sur la Nature du Commerce en Général* (2010/1755).

On his first reference to entrepreneurs on the “*Essai sur la Nature du Commerce en Général*” (2010/1755) Cantillon described the market towns, which were “*held once or twice a week, [and¹] encourage several little entrepreneurs and merchants to establish themselves there*” (Cantillon, 2010/1755, p.31). The entrepreneurs were described as individuals who bought products from villagers, and transported and exchanged them in larger towns for other goods which they sold back again on market days to villagers. After describing the exchange process in markets, Cantillon (2010/1755) described cities as the place where big property owners lived, and where entrepreneurs built their houses to have easier access to products, factories and manufacture. Based on an exchange process, Cantillon defined a circular flow economy process with five main agents: artisans, labour, farmers, entrepreneurs and property owners. Among all, there was a bidirectional process of exchange, similar to a self-regulation network of reciprocal exchange.

The “*Essai sur la Nature du Commerce en Général*” includes the reference to the risk involved in entrepreneurship activity: “*The farmer is an entrepreneur who promises to pay the property owner, for his farm or land, a fixed sum of money (...)*

¹ Added to the original transcription.

without assurance of the profit they will derive from this enterprise.” (p.73). Further, there are also references to the competitors and the uncertainty faced by entrepreneurs: “These entrepreneurs never know how great the demand will be in their city, nor how long their customers will buy from them since their rivals will try, by all sorts of means, to attract their customers. All this causes so much uncertainty among these entrepreneurs that every day one sees some of them go bankrupt.” (p.74).

In general, Cantillon made this first known reference to entrepreneurs as economic agents within the markets processes, and was aware of several variables that have been recently stated as central to modern entrepreneurship theories: risk, competition and uncertainty. Furthermore, these were the key variables that scholars developed later on their approaches to entrepreneurship. Thus, in addition to coining the term “entrepreneur” as an active element in the economic process, Cantillon anticipated the main variables that are determinant in the entrepreneur’s environment: risk, competition and uncertainty.

Jean Baptiste Say wrote “*A Treatise on Political Economy*” (2007/1836) which turned to be an important contribution to this research field mainly because it established the differences between the entrepreneur and the capitalist focusing on their functions. He was the first economist to emphasize the managerial role of the entrepreneur. The entrepreneur was described as an essential and active agent who mediated the relation between consumers and workers, performing a key role on production, distribution and consumptions of goods and services. Jean Baptiste Say (2007/1836) was oriented toward the individuals and described how they can actively contribute to businesses, creating value in the agricultural, manufacturing and commercial industries. In this task, Say recognized some characteristics of the entrepreneur such as moral and intellectual competencies, organizational skills, risk taking and development of more innovative ways of production. Moreover, he referred to the entrepreneur as an agent who transforms economic resources from a low productivity sector to a higher productivity and income sector, as a creative problem solver interested in more practical things (Say, 2007/1836).

1.2. The roots of entrepreneurship in the 20th century

Knight (1921) wrote “*Risk, Uncertainty and Profit*”, other important essay to the entrepreneurship history. The preface included that “*the particular technical contribution to the theory of free enterprise which this essay purports to make is a fuller and more careful examination of the role of the entrepreneur or enterpriser, the recognized “central figure” of the system, and of the forces which fix the remuneration of his special function.*” (Knight, 1921, p.ix). Generally, Knight stressed the difference between entrepreneurs and the society’s individuals, based on the competencies and capacities that allow entrepreneurs to take risks in uncertainty situations. Thus, he was pioneer in introducing the dimension of risk-taking as a central characteristic of entrepreneurship and considered uncertainty as a factor of production. This perspective underlined that the entrepreneur earned profit as a reward for taking risks. The Chapter IX “*Enterprise and profit*” described his theory for entrepreneurship and he specifically assumed that “*The supply of entrepreneurs involve the factors of (a) ability, with the various elements therein included, (b) willingness, (c) power to give satisfactory guarantees, and (d) the coincidence of these factors.*” (p.282 and 283). As a general argument to highlight the role of risk and responsibility, Knight reinforced that “*The entrepreneur must almost of necessity own some property and the owner of property used in a business can hardly be freed from all risk and responsibility.*” (p.309). Moreover, the role of risk and uncertainty was crucial in the relation between profit and the entrepreneurial function (Knight, 1942).

In the thirties of the 20th century, entrepreneurship had a great development due to Joseph A. Schumpeter, an economist, who aimed to “*develop a theoretical model focused on the changing economic process over time*”² (Schumpeter, 1996/1937, p.148) where entrepreneurial activity performed a critical role.

In his approach, Schumpeter (1996/1937) differentiated two types of reactions in changing situations: adaptative and creative answerers. The adaptative answers referred to an increase on the quantity and quality of the practices that are currently applied. The creative answers referred to “*something out of the scope of existing practices*”² (p.203). These creative answers presented three characteristics: (a) they could not be predicted

² The original source is written in Portuguese and this is a free translation.

based on prior knowledge; (b) changed the long-term final output; and (c) depended on the quality of the individuals who perform them, as well as from their decisions, actions and behaviours. Based on this description of creative answer, Schumpeter defined the entrepreneur and his / her function: “*the defining characteristic is doing new things, or doing things that had already been done in a new way (innovation)*”² (p.204).

The economic function of the entrepreneur accordingly to Schumpeter was very clear. The entrepreneur was the prime mover in economic development, and his function was to innovate, or to carry out new combinations.

Schumpeter clearly defined that “*Development in our sense is then defined by the carrying out of new combinations. This concept covers the following five cases: (1) The introduction of a new good – that is one which consumers are not yet familiar – or of a new quality of a good. (2) The introduction of a new method of production, that is one not yet tested by experience in the branch of manufacture concerned, which need by no means be founded upon a discovery scientifically new, and can also exist in a new way of handling a commodity commercially. (3) The opening of a new market, that is a market into which the particular branch of manufacture of the country in question has not previously entered, whether or not this market has existed before. (4) The conquest of a new source of supply of raw materials or half-manufactured goods, again irrespective of whether this source already exists or whether it has first to be created. (5) The carrying out of the new organisation of any industry, like the creation of a monopoly position (for example through trustification) or the breaking up of a monopoly position.*” (p. 66).

This definition is clearly embedded on the innovation theory developed by Schumpeter, which distinguished five types of innovation: (a) the introduction of a new good (or an improvement in the quality of an existing good); (b) the introduction of a new method of production; (c) the opening of a new market (in particular an export market in a new territory); (d) the conquest of a new source of supply of raw-materials or half-manufactured goods and (e) the creation of a new type of industrial organization, in particular the formation of a trust or some other type of monopoly (Schumpeter, 1934/2008). Thus, the conceptualization of the entrepreneur role was as a technological innovator, translating the invention into innovation and seeking to exploit for the creation of wealth. Schumpeter did not emphasize the risk bearer on the entrepreneur definition, as he considered that risk is more associated with investors, who trust the funds to the entrepreneur (Schumpeter, 1934/2008).

During the second half of the twentieth century, several studies focused on the entrepreneur and the entrepreneurial process, and other disciplines besides the economics also contributed to explain the phenomena.

McClelland (1961) launched a different school of thought on entrepreneurship research, shifting the focus to the psychosocial theories and individual characteristics, mainly the need for achievement. The research question which drove McClelland (1961) approach on the book "*The Achieving Society*" was: why do certain societies develop more dynamically than others? Based on the theory of achievement motivation, McClelland (1961) hypothesized that the values that prevail in a given society, particularly in regard to the need for achievement (*nAch*) are of vital importance for the economic development of that society. McClelland (1961) studied relationships between high need for achievement and entrepreneurial behaviour and proposed that "*the most reasonable interpretation of these facts seemed to be that high nAch predisposes a young man to seek out an entrepreneurial position in which he can, normally, attain more of the achievement satisfactions he seeks than in other types of positions.*" (McClelland, 1965, p.390). In general, the results showed that economically better developed nations were characterized by lower focus on institutional norms, and greater focus on openness towards other people and a higher *nAch* in society.

On a longitudinal study, students from Wesleyan University at the university time and fourteen years later, McClelland (1965) found that "*83% of the entrepreneurs had been high in n Ach 14 years earlier versus only 21% of the nonentrepreneurs.*" (p.390). The entrepreneurs were characterized as individuals employed in occupations that met the following criteria: "*sales (except clerical sales); real estate and insurance sales; operates own business (including family business if a key executive); management consulting, fund raising; officer of a large company, assistant to the President of a large company, etc*" (p.390). These criteria are an interesting reflection of the conceptualization of what an entrepreneur was in the sixties and generally it included a group of occupations that involved taking personal responsibility for decisions, tolerance of risk situations and knowledge of business and possible outcomes.

Other relevant and pioneer study on achievement motivation sought evidence between achievement motivation training and improvement on the economic development in some Indian cities. It was also conceived as an attempt to check the theory of achievement motivation in a work field setting. Psychological variables were assessed at the beginning of the training including pre-training levels of achievement

motivation (McClelland, Atkinson, Clark, & Lowell, 1953) and the most influential variable was whether the men were in charge of their business or not. However, the authors did not find any relationship between pre-training levels of achievement motivation and change in business activity.

As a sum of McClelland's point of view, the entrepreneur was seen as the major driving force in the development of the society, able to transform a country's level of achievement in economic growth. The most relevant characteristics of the entrepreneur were *need for achievement*, *moderate risk taking*, *self-confidence*, and *individual problem solving*.

Israel Kirzner is other inescapable author on the history of entrepreneurship. The professor of economics described his book "*Competition and Entrepreneurship*" (1973) as "*a critique of contemporary price theory from an "Austrian" perspective; or it may be viewed as an essay on the theory of entrepreneurship, or on the theory of competition*" (p. ix and x, preface).

In fact, Kirzner main theory is based on a dynamic market processes and the entrepreneurial process, showing how markets are a competitive process. In general, this book was determinant to evidence that entrepreneurship and competition can coincide: "*we will find that a useful understanding of the market process requires a notion of competition that is analytically inseparable from the exercise of entrepreneurship*" (Kirzner, 1973; p.9).

The role of the entrepreneurs in the market system was described as active in the market, as long as they were alert to perceive the changes in prices that their activities could promote. In this process, competition emerged when entrepreneurs offered lower prices provoking dynamics in the prices and markets system. Entrepreneurs were thus described as "*individuals who are market participants who do learn from experience*" and "*who are alert to changing buying and selling possibilities*" (Kirzner, 1973; p.15). In essence, an entrepreneur's activity was essentially competitive, and thus, competition was inherent in the nature of the entrepreneurial market process. The description of the entrepreneur came out as the discovery of opportunities that had not been taken advantage of, and was called the *entrepreneurial element of human action*.

The development of the market where the entrepreneur acts was described in different ways by Kirzner (1973) and Schumpeter (1934). Following Kirzner (1973) entrepreneurs were alert to identify and act upon profit-making opportunities based on an identification of the gap between supply and demand; whereas in the Schumpeterian

view (1934) the entrepreneur was an innovator introducing new combinations of resources, hence creating disequilibrium on the market. In other words, Kirzner claimed that the entrepreneurial role was equilibrating, while Schumpeter claimed that entrepreneurship was disequilibrating. In the equilibrium scenario, there was a set of prices at which demand for each good equalled supply of the same good. In the disequilibrium systems, the innovations were the endogenous cause of change and development in the economic system which destroyed the equilibrium in the economy to create a new equilibrium. Thus, the innovation processes implied continuous changes in the economic system and continuous disequilibrium (Schumpeter, 1934/2008).

Peter Drucker was frequently considered as the man who invented management (Byrne, 2005), or as the management visionary (Sullivan, 2005). The work developed by Drucker had a great impact over the years and on different fields of studies, such as management, economics, finance and entrepreneurship. In an article published in the Harvard Business Review, Drucker described the United States economic environment in the middle eighties as “*Our entrepreneurial economy*”, where the entrepreneurial sector was depicted as “*fast growing, publicly owned companies that are not less than 5 or more than 15 years old*” (1984, p. 59). In this entrepreneurial sector there were high tech companies, service companies, and primary activities such as education and training, health care and information. Despite the relevance of these companies that were included on Drucker’s entrepreneurial economy, the author also called the attention for the development of the third sector activities. “*(...)Third Sector is busily creating new health care institutions- some founded by hospitals, some in competition with them, but each designed to turn the crisis into an entrepreneurial opportunity*” (p.60). These entrepreneurial opportunities included examples of health care centers and private nonprofit education. But the emerging sector that was described as “*the most important of entrepreneurship*” (p. 60) was the fourth sector of public-private partnerships, including government and municipal elements to create private companies with competitive advantages. The sources of the development of this entrepreneurial economy included the rapid technologic and knowledge evolution, the demographic changes, the venture capital support and the fact that industry learned how to manage entrepreneurship (Drucker, 1984).

The importance of economic systems in entrepreneurship is relevant, but the events that explain why entrepreneurship becomes effective are out of economic boarders. “*The causes are likely to lie in changes in values, perception, and attitude,*

changes perhaps in demographics, in institutions (...), perhaps in education as well” (Drucker, 1985, p. 12).

One of the most relevant questions of Peter Drucker was to define the entrepreneurship phenomena and contribute to clarify the concept. Before his work, to be an entrepreneur in the U. S. was the same as begin an owner of a small new business. Nevertheless, the importance of innovation, the relevance of creating something new and different, was settled on the book “*Innovation and Entrepreneurship*”, where innovation was placed on the center of the development process of entrepreneurship. The first two sentences of chapter 2 captures this relevance: “*Entrepreneurs innovate. Innovation is the specific instrument of entrepreneurship.*” (Drucker, 1985, p. 27).

The inclusion of Peter Drucker in the historical review could be questionable by some scholars (Landström & Benner, 2010), because he was not always considered an important contributor to the entrepreneurship research field. However, in our opinion, his work, field experience and impact over the practitioners were significant to the theoretical and practical development of entrepreneurship and entrepreneurial activities.

Table 1.1. systematizes the historical overview about the conceptualization of entrepreneurship in the economic system and the characteristics of the entrepreneur.

Table 1.1. *Historical overviews over the entrepreneurship construct evolution*

		Position in the economic system	Characteristics of the entrepreneur
Richard Cantillon	(1680-1734)	Entrepreneurial function within the economic system, responsible for exchanges and circulations in the economy. Entrepreneur established equilibrium	Recognized the uncertainty over the entrepreneurs (defined as the arbitragers)
Jean Baptiste Say	(1767-1832)	Entrepreneur played a coordinating role both in production and distribution, at firm and market level	Entrepreneurs should have experience and knowledge with the position
Joseph Schumpeter	(1883-1950)	Entrepreneur as an innovator which were a source of change and development to the economic system. The innovator, this means the entrepreneur, was the engine of economic growth. Entrepreneur destroyed the equilibrium.	Entrepreneurs sought opportunities for profit, and introduce innovations to achieve it. An entrepreneur was a person who develop new combinations, in whatever position - is an innovator. And an entrepreneur had also to possess leadership ability in order to lead existing means of production into new ways.
Frank Hyneman Knight	(1885-1972)	The entrepreneurs could bear uncertainty, which had been ignored in economic theory before.	Analysed the motivations and characteristics needed to become a successful entrepreneur: a successful uncertainty - bearer and judgmental decision maker.
David McClelland	(1917-1998)	Entrepreneurial growth can be explained in terms of need for achievement motivation which was considered as the major determinant of entrepreneurial development	Motivation was directly related to entrepreneurship and assumed as the immediate cause of the entrepreneurship
Israel Kirzner	1930 -	Entrepreneurs were described as persons in the economy who were alert to discover and exploit profit opportunities, and had the role of equilibrating forces in the market process. The market process was competitive because relies on the freedom of would be entrepreneurs to enter markets to compete for available profits. Entrepreneur achieved tendencies towards and equilibrium position which is never achieved.	<i>“The kind of knowledge required for entrepreneurs in ‘knowing where to look for knowledge.’... the word which captures most closely this kind of knowledge seems to be alertness” (Kirzner, 1973, p.68)</i> Entrepreneurs were the most alert persons to profitable opportunities in the economy. To be able to act upon profit opportunities required also being creative and leader.
Peter Drucker	(1909-2005)	Entrepreneurship was beyond the economic system. Entrepreneurship involved systematic innovation: <i>“the purposeful and organized search for changes, and in the systematic analysis of the opportunities such changes might offer for economic or social innovation.”</i> (Drucker, 1985, p. 31)	<i>“the entrepreneur always searches for change, responds to it, and exploits it as an opportunity”</i> (Drucker, 1985, p. 25)

1.3. The emergence of a discipline: From a multidisciplinary field to the entrepreneurship research field

In general, for economists, entrepreneurship is described as a process that goes beyond economics itself, as it influences and changes economy without being formally part of it (Drucker, 1985). This general evidence about entrepreneurship suggested that research on this topic was guided to move away from an exclusively economic topic to become an interdisciplinary research field. As a result, the changes in the main disciplines that have dominated the entrepreneurship field had consequences over the composition, definitions, and trends of the field over time.

Entrepreneurship research over time can be organized in three main eras anchored in different disciplines: economics era (late nineteenth century and early twentieth century), social sciences era (mid twentieth century) and management studies era (after the second half of the twentieth century) (e.g., Landström & Benner, 2010). In fact, entrepreneurship has been perceived as a complex phenomenon and the multiple theoretical lenses have been critical to contribute to a more comprehensive and rich understanding of the process.

The main arguments against the creation of entrepreneurship as a research field were: (a) most of the entrepreneurship questions were included in existing disciplines (e.g., Alvarez, 2003; Meyer & Heppard, 2000); and (b) research legitimacy required achieving quality standards that were easily guaranteed when included in mature disciplines (Davidsson, 2003).

Other movement of scholars advocated that entrepreneurship should emerge as a specific research area. In fact, the existing theories could be not broad and open enough to address the development of new concepts, models and relations to explain the phenomena. Moreover, to leave the mainstream disciplines would allow creating a strong research community in entrepreneurship that would be able to focus on the most central questions of the subject (Low, 2001; Acs & Audretsch, 2003).

Consequently, most scholars worked to establish entrepreneurship as a research field looking for maturation with its own debates, theories, and approaches.

Entrepreneurship as a research field should establish its own epistemological and ontological basis, so that it can define its boundaries and key constructs in order to achieve higher legitimacy (Busenitz, West III, Shepherd, Nelson, Chandler, &

Zacharakis, 2003). One of the examples was given by Venkataraman (1997) who posited that “*entrepreneurship as a scholarly field seeks to understand how opportunities bring into existence “future” goods and services are discovered, created, and exploited, by whom, and with what consequences*” (p. 120). Another attempt to define the field of research on entrepreneurship (Bruyat & Julien, 2001) argued that “*The scientific object studied in the field of entrepreneurship must be the Individual (I) ↔ New Value Creation (NVC) dialogic. It is influenced by the environment or community and takes place within a dynamic of internal and external change.*” (p. 177).

Within the management area, entrepreneurship has been positioned as a developing discipline which led to the creation of a division on the Academy of Management. Entrepreneurship division states the mission of this specific domain as including: “*(a) The actors, actions, resources, environmental influences and outcomes associated with the emergence of entrepreneurial opportunities and/or new economic activities in multiple organizational contexts, and (b) the characteristics, actions, and challenges of owner-managers and their businesses. (revised 8/2011)*” (in Entrepreneurship Division of Academy of Management website, 2012)

Despite these efforts to establish entrepreneurship as a research field, the trend to look at the phenomena using different theoretical perspectives also prevailed under the label of a multi-research approach, and there is no theoretical body that can connect all the phenomena included in entrepreneurship (Gartner, 2001).

The discussion around entrepreneurship as a research field resembles the parable of the six blind man and the elephant that explains the powerful role of perception (e.g., Pople, 2010). This parable suggests that individuals do not consider the whole picture and information when they perceive a stimuli (i.e., when a blind man touches a different part of the elephant gives a different description and characteristics - when a man touch the trunk he can say that it is a snake, or when a man touch the leg we can describe it as a tree, and so on). So, as Churchill (1992) draw attention to, entrepreneurship researchers would be falling in the exploration of the same “elephant” which included a set of parts that belong to a larger picture. This is one problem that can become visible in entrepreneurship research. Zahra (2007) reflected over the importance of contextualizing theory building in entrepreneurship research and alerted for the common problems that can arise.

Despite the discussion and the different lenses that scholars have been using to describe entrepreneurship, the fundamental paper that established entrepreneurship as a

research field was written by Shane and Ventakaraman (2000). The authors presented entrepreneurship as a promising field of research with solid basis and own research questions. Shane and Ventakaraman (2000) argued that *“By providing a framework that both sheds light on unexplained phenomena and enhances the quality of research, we seek to enhance the field's legitimacy and prevent its marginalization as only “a research setting” or “teaching application.”* (p.217 and 218). In this article, Shane and Ventakaraman (2000) defined the entrepreneurship research framework as *“(1) (...) the focus on the existence, discovery and exploitation of opportunities; (2) (...) the influence of individuals and opportunities, rather than environmental antecedents and consequences; and (3) (...) consider a framework broader than firm creation.”* (p.219). Furthermore, Shane and Ventakaraman (2000) also defined entrepreneurship as the process by which *“opportunities to create future goods and services are discovered, evaluated, and exploited”* (p.218). This paper received an Academy of Management Review decade award and was greatly cited, suggesting the significant influence of this framework and definition. In the next section we will focus further on the definitions of entrepreneurship and justify our decision to adopt Shane and Ventakaraman's definition.

More recently, Shane (2012) reflected on the 2010 Academy of Management Review Decade Award that was granted to “The Promise” paper. At this reflection, Shane (2012) reinforced the assumption that entrepreneurship is a distinctive domain, and even challenged the academy to develop a *“set of empirical phenomena explained by entrepreneurship and not explained or predicted by other fields, including strategic management, and/or to clearly identify the assumptions and theories unique to entrepreneurship.”* (p.12). By this way, it would be able to show beyond doubt that the entrepreneurship domain exists.

1.4. Defining entrepreneurship: the debate around definitions and justifications

As a result of the great debate around entrepreneurship as a research field, the definition of entrepreneurship has also suffered changes and lead to different proposals. In 1991 there was the clear vision that the definition of entrepreneurship and the entrepreneur was a deep debate among scholars: “*entrepreneurship scholars have been embroiled in a never-ending debate over the definition of an entrepreneur.*” (Bygrave & Hofer, 1991, p.13).

This debate and heterogeneity added greater relevance and interest over time to entrepreneurship. Table 1.2. presents a compilation of some entrepreneurship definitions, referred by the most relevant scholars in the field. This table does not intend to present an exhaustive and complete list of all published definitions of entrepreneurship. Nevertheless, it attempts to collect the most relevant entrepreneurship definitions to our theoretical approach to the phenomena.

Table 1.2. *Definitions of entrepreneurship*

Schumpeter, 1934/2008	<i>“development in our sense is then defined by the carrying out of new combinations” (p. 66) (...) “The carrying out of new combinations means, therefore, simply the different employment of the economic system’s existing supplies of productive means – which might provide a second definition of development in our sense” (p. 68)</i>
Gartner, 1988	<i>“Entrepreneurship is the creation of organizations.”(p. 11)</i>
Stevenson and Jarillo, 1990	<i>“entrepreneurship is a process by which individuals – either on their own or inside organizations – pursue opportunities without regard to the resources they currently control” (p.23)</i>
Drucker, 1998	<i>“Today, much confusion exists about the proper definition of entrepreneurship. Some observers use the term to refer to all small businesses; others, to all new businesses. In practice, however, a great many well-established businesses engage in highly successful entrepreneurship. The term, then, refers not to an enterprise’s size or age but to a certain kind of activity. At the heart of that activity is innovation: the effort to create purposeful, focused change in an enterprise’s economic or social potential.” (p. 3)</i>
Brazeal and Herbet, 1999	<i>“entrepreneurship is enabled by (a) the current or potential existence of something new (an innovation), (b) which may have been developed by new ways of looking at old problems (creativity), (c) or the lessened capability of prior processes or solutions to respond effectively to new problem parameters brought on by new or emerging external conditions (environmental change), (d) which can supplant or be complementary to existing processes or solutions (a change), (e) when championed by one or more invested individuals (the innovator).” (p. 34)</i>

Wennekers and Thurik, 1999	<i>“Entrepreneurship is the manifest ability and willingness of individuals, on their own, in teams, within and outside existing organisations to perceive and create new economic opportunities (new products, new production methods, new organizational schemes and new product-market combinations), and to introduce their ideas in the market, in the face of uncertainty and other obstacles, by making decisions on location, form and the use of resources and institutions”</i> (p. 46)
Reynolds, Hay and Camp, 1999	GEM project defined entrepreneurship focusing on its role to the economic growth, as <i>“any attempt at new business or new venture creation, such as self-employment, a new business organization, or the expansion of an existing business, by an individual, a team of individuals, or an established business.”</i> (p.3)
Shane and Venkataraman, 2000	<i>“involves the study of sources of opportunities; processes of discovery, evaluation and exploitation of opportunities; and the set of individuals who discover, evaluate, and exploit them”</i> (p.218)
Also in Shane, 2003	<i>“Entrepreneurship is an activity that involves the discovery, evaluation and exploitation of opportunities to introduce new goods and services, ways of organizing, markets, processes, and raw materials through organizing efforts that previously had not existed (Venkataraman, 1997; Shane & Venkataraman, 2000)”</i> (p.4)
Hitt, Ireland, Camp and Sexton, 2001	<i>“the identification and exploitation of previously unexploited opportunities”</i> (p. 480)
Shane, 2003	<i>“the operational definition of entrepreneurship discussed in this book is the founding of a new business, which is defined as the forming of a business venture or not-for-profit organization that previously was not in existence.”</i> (p.5)
Oviatt and McDougall, 2005	entrepreneurship as <i>“the discovery, enactment, evaluation, and exploitation of opportunities (...) to create future goods and services”</i> (p.540)
Davidsson, Delmar and Wiklund, 2006	entrepreneurship as <i>“the creation of new economic activity”</i> (p.27)
Baron, 2013	entrepreneurship is defined as follows: <i>“the application of human creativity, ingenuity, knowledge, skills, and energy to the development of something new, useful, and better than what currently exists - something that creates some kind of value (economic, social or other).”</i> (p.3)

Even though there is not total agreement upon the definition of entrepreneurship, the most cited was the one from Shane and Venkataraman (2000, p.218), suggesting it *“involves the study of sources of opportunities; processes of discovery, evaluation and exploitation of opportunities; and the set of individuals who discover, evaluate, and exploit them”*, creating a competitive profitable innovation.

To present, that is the most comprehensive definition of entrepreneurship (Shane, 2012), and is the one that best integrates the diversity of forms and outcomes that can arise from entrepreneurial activities or events. For instance, to circumscribe entrepreneurship definitions to firm formation (e.g., Gartner, 1988; Reynolds, Hay, &

Camp, 1999; Aldrich & Cliff, 2003; Reynolds, 2009) is to reject the other institutional arrangements that can arise from the identification, evaluation and exploitation of opportunities, such as creating innovations in existing firms (Shane, 2012; Shane & Venkataraman, 2000). The same is valid for the fact of limiting the entrepreneurship definition to its outcome, such as the economic activity (Davidsson, Delmar, & Wiklund, 2006).

Despite the fact that Shane and Venkataraman (2000) contributed to disseminate an embracing definition of the phenomena, there is a call for attention that “*we need to do a better job of deciding on our definition of entrepreneurship and aligning conceptual and operational definitions in empirical work.*” (Shane, 2012, p.13).

Nevertheless, the operational definition of entrepreneurship we adopted in this thesis follows Shane and Venkataraman’s proposal: (2000, p.218): “*involves the study of sources of opportunities; processes of discovery, evaluation and exploitation of opportunities; and the set of individuals who discover, evaluate, and exploit them*”.

At this point, it is also relevant to set the boundaries between entrepreneurship and two other highly related constructs: *self-employment* and *new venture creation*.

Self-employment is sometimes referred to as the simplest form of entrepreneurship, but it is also included on the operational definition of the Global Entrepreneurship Monitor (GEM), where is clearly stated that entrepreneurship is “*any attempt at new business or new venture creation, such as **self-employment**, a new business organization, or the expansion of an existing business, by an individual, a team of individuals, or an established business.*” (Reynolds, Hay, & Camp, 1999, p.3, bold added). Thus, for some authors (e.g., Reynolds, Hay, & Camp, 1999), it seems to be no borders between entrepreneurship and self-employment, with this later being a special form of entrepreneurial activity. Following this categorization, Chell (2008) noticed that “*self-employment refers to those individuals who work for themselves but do not employ other people; this is often characterized as a lifestyle choice as it does not constitute the entrepreneurial act of wealth creation or business founding.*” (p.110). Self-employment is related to the performance of work that is targeted to personal profit (Lee, 1999), rather than paying wages to others. The designation of the individuals who prefer to be self-employed is also congruent with the expression found in the literature of latent entrepreneurs (Blanchflower, Oswald, & Stutzer, 2001; Grilo & Thurik, 2005; Gohmann, 2010), which corresponds to the declared preference for self-employment over employment.

New venture creation is also a concept that is highly related to entrepreneurship, mainly for authors like Gartner (1988), who considered entrepreneurship as the creation of new ventures or organizations. In 1985, Gartner defined “*New venture creation is the organizing (in the Weickian sense) of new organizations.*” (p.697) and defended that his definition was synonymous of the definition of the new organization presented by the Strategic Planning Institute (Gartner, 1985, p.698). In general, the new venture creation definition and framework suggested by Gartner (1985) assumed the multidimensionality of the phenomena, in such a way that it is the product of interaction between individuals, organization, environment and new venture process.

Bhave (1994) defined new venture creation as a process “(...) *that roughly begins with the idea for a business and culminates when the products or services based upon it are sold to customers in the market.*” (p.224). In general, the definitions of new venture creation were considered as highly relevant for entrepreneurship research, once that Gartner (1988) literally assumed that “*Entrepreneurship is the creation of organizations. What differentiates entrepreneurs from non-entrepreneurs is that entrepreneurs create organizations, while non-entrepreneurs do not*” (p.11). The analysis of new venture creation definition and process makes clear that it involves also the interaction between environments and individuals, and thus it suggests that it is also integrated in the individual-opportunity nexus (Venkataraman, 1997).

Thus, new venture creation and entrepreneurship are two constructs that are intrinsically related, as the case of creating a new venture is considered a specific type, form and output of entrepreneurship.

Chapter 2. Entrepreneurship process: Definition and influencing factors

2.1. Introduction

Defining entrepreneurship as a phenomenon which “*involves the study of sources of opportunities; processes of discovery, evaluation and exploitation of opportunities; and the set of individuals who discover, evaluate, and exploit them*” (Shane & Venkataraman, 2000, p.218), makes it clear that it is a process and not a state.

Entrepreneurship is not an isolated event that happens once in a moment during the active life of an individual. It develops over time (e.g., Baron & Shane, 2008; Saraiva, 2011) and several times over an individual’s active life. In fact, developing a new venture requires a complex group of activities that can be defined as different stages. Since the early debates around entrepreneurship, Schumpeter (1996/1947) argued that being an entrepreneur was not an occupation or a stable condition over time, except if the individual innovated continuously. As a consequence of this evidence, researchers started to conceptualize entrepreneurship as a process, with a set of stages with defined and distinctive activities.

2.2. Entrepreneurship as a process

There are different conceptualizations around the main stages involved in entrepreneurship (e.g., Timmons & Spinelli, 2007; Baron & Shane, 2008; Burns, 2011) and venture creation (Gartner, 1985; Bhawe, 1994). The entrepreneurial process “*(...) involves all the functions, activities, and actions associated with the perceiving of opportunities and the creation of organizations to pursue them.*” (Bygrave & Hofer, 1991, p. 14).

Several approaches were developed to embrace and define the entrepreneurship and the venture creation process. Gartner (1985) described the sequence of the venture creation process as: *allocation of business opportunity, accumulation of resources, market products and services, production of the product, building the organization and answering to government and society*. The simplified model included the interaction between environment, organization, individual(s) and process, defined as a multidimensional phenomenon of venture creation.

Bhawe (1994) developed a venture creation process model from a grounded theory perspective, integrating information from interviews with entrepreneurs.

Throughout a deep analysis, the author designed a process model of entrepreneurial venture creation including three main stages: opportunity stage; technology setup and organization creation; and exchange stage. Included in each of these stages were “*natural transition points*” (p.235): business concept, commitment to venture creation, organization creation and production of technology, product and customer.

Ardichvili, Cardozo and Ray (2003) developed a theory of entrepreneurial opportunity identification, development and evaluation. The authors stated clearly the process and factors that affected the core process, such as entrepreneurial alertness, information asymmetry and prior knowledge, social network, personality traits, and types of opportunity.

Scott Shane (2003) also modelled the entrepreneurial process, integrating the opportunity-individual nexus in a main process that started with entrepreneurial opportunities, followed by the discovery process, the opportunity exploitation and the execution. This process was described as a product of the influences of individual attributes and macro and micro environmental characteristics.

Thus, the entrepreneurship process has been theorized and developed by several authors following different approaches and perspectives (e.g., Bhave, 1994; Ardichvili, Cardozo, & Ray, 2003; Shook, Priem, & McGee, 2003; Shane, 2003; McMullen & Shepherd, 2006; Baron & Shane, 2008). Despite the different conceptions, there is a general agreement upon the description of the entrepreneurship process as involving six main stages, as described by Baron and Shane (2008): recognition of an opportunity (stage 1); decision to launch a venture (stage 2); assembling the resources (stage 3); actual launch of new venture (stage 4); building a successful business (stage 5) and harvesting the rewards (stage 6).

These six stages are interrelated and some of them can occur at the same time and simultaneously. Each stage is not a “*start-end*” phenomenon, since they might co-occur and influence each other.

The first stage - *recognition of an opportunity* – is generally defined as the starting point of the entrepreneurship process and involves the process of recognizing an opportunity, i.e., identifying the potential to create something new, be it products, markets, production processes, or organizing technologies.

“*How do some individuals and not others recognize business opportunities?*” is one of the most intriguing questions of entrepreneurship research (e.g., Baron, 2006). Several scholars and approaches have been focusing on this critical stage (e.g.,

Sarasvathy, 2001; Baron, 2006; Dimov, 2011). Without an opportunity, the entrepreneurship process is not able to continue, and it is not possible to proceed to the next steps. Thus, this first stage is crucial and determinant to the subsequent activities.

After the process of recognizing a business opportunity the individual starts an intermediate stage that involves the intuitive and informal evaluation of the opportunity. This assessment is not a deep and rigorous economic evaluation and does not imply the development of strict and reliable financial tests, but it refers instead to an informal appraisal of the opportunities viability. The individual starts gathering information about the desirability of the product or service among family, colleagues, and friends. Based on the information collected, it is possible to have the first informal assessment of the opportunity's desirability. If the first informal inputs about the opportunity are not positive, the individual reformulates the opportunity concept or develops other one. If the opinions are positive and the individual perceives a positive feedback from the network, the entrepreneur starts a deeper decision making process – stage 2.

The second stage - *decision to launch a venture* - refers to the initial decision to proceed with the development of the tasks and activities to pursue the opportunity (Baron & Shane, 2008). The decision to implement the business model and launch a venture is a critical turning point in the entrepreneurship process (e.g., Pina e Cunha, 2007). At this stage, the individual recognized a business opportunity, gathered positive informal assessments, evaluations and inputs from the closest network and is ready to start working on the development of the business opportunity.

Due to time limits, lack of technical experience and knowledge, career options, or private and family constraints, the individual might decide to launch, or not, a business.

There are some options to an individual who recognized a business opportunity but decided not to launch a venture like selling the business opportunity to companies, business angels, or venture capitalist, among others (e.g., Gaspar, 2008).

On the other hand, if the individual decides to launch the venture, the process can progress to the next stages and, consequently, a set of activities, tasks and duties follow. The decision to launch a venture is determinant for the next stages. The process of new venture decisions is then complex and involves different perceptions of risk. At the decision making process, Forlani and Mullins (2000) defined risk as “*the degree of uncertainty and potential loss associated with the outcomes which may follow from a given behaviour or set of behaviours*” (p.309) and risk propensity as “*the tendency of a*

decision-maker either to take or to avoid risks” (p.310). Following an experimental study focused on risk as the central feature of entrepreneurial decision making, Forlani and Mullins (2000) found that the higher the risk propensity levels of an entrepreneur, the lower will be the perceived risk associated with a particular new venture; and the higher the risk propensity of the entrepreneur, the more likely he or she will be to select new ventures having higher levels of risk. Thus, the risk propensity of the entrepreneur plays an important role on the entrepreneurial decision making to launch a venture. An exploratory research on the triggers of entrepreneurs’ decision to launch a venture, found that these triggers come from five main domains: personal, opportunity/idea, job related, financial and family/interpersonal (Liang & Dunn, 2007). Generally, both psychological variables (e.g., Miao & Liu, 2010) and environmental variables (e.g., Schwenk & Shrader, 1993) have an impact in the decision to launch (or not) a venture.

The decision to launch a venture is categorized as one of the most relevant entrepreneurial actions and decisions. For instance, McMullen and Shepherd’s (2006) entrepreneurial action model assumed that the decision to exploit an opportunity included two main aspects: the feasibility assessment (related to the knowledge) and desirability assessment (related to the motivation).

The third stage - *assembling the resources* - refers to the action of gathering the initial resources to actually launch the venture. The required resources include (a) basic information, such as the markets dynamics, environmental conditions and legal frameworks; (b) the human resources, as the entrepreneurial team, partners, and initial employees; and (c) the financial resources, as the initial budget and start-up funding (e.g., Duarte & Esperança, 2012). At this stage, entrepreneurs work in gathering the required resources to start developing the venture, both for the launching stage and the growing stage. Entrepreneurs with family and professional social ties, either direct or indirect (Zang, Soh, & Wong, 2010), with a specific industry, and start-up experience, are more likely to raise more resources for their ventures (Kotha & George, 2012). The resource construction perspective, based on Levi-Strauss’s concept of bricolage, gave rise to the entrepreneurial bricolage perspective (Baker & Nelson, 2005). The bricolage concept is defined as “*making do by applying combinations of the resources at hand to new problems and opportunities*” (Baker & Nelson, 2005, p.333). Research and focus around bricolage as a resource construction perspective translates accurately the strategy that an entrepreneur has to adopt during the entrepreneurship process. At this stage, the entrepreneur gathers the resources needed and develops the business plan, financial and

economic analysis. After the financial assessment, the entrepreneur can be called to make some adjustments on the business plan.

The fourth stage - *actual launch of new venture* - happens after the required resources are assembled, and includes a broad set of actions and decisions that allow the start of running the business. Formally, all the business plan strategies have been implemented at this point of the process, and the business starts to run.

The fifth stage - *building a successful business* – is other key phase of the process and includes the growing of the business, making it profitable, innovative (e.g., Silva and Leitão, 2009) the development of strategies to keep the business successful and alive. At this stage, the focus is on the discovery of new business opportunities within the venture. In other words, at this stage, the process starts again: recognizing new business opportunities to be developed in the business; deciding to launch those new business opportunities; assembling the necessary resources; and launching those business opportunities. The entrepreneurial venture has to be intrapreneurial in its own nature in order to be a successful business. The intrapreneurship, as the implementation of entrepreneurship within existing organizations (Antoncic & Hisrich, 2001), is a critical dispositive to the survival and development of existing firms.

Finally, the sixth stage - *harvesting the rewards* - refers to the strategic exit of the business, and the entrepreneur harvest the rewards for the time, effort and talent dedicated to the business. The rewards from entrepreneurship include pecuniary and nonpecuniary treats (Carter, 2011). The most frequent examples of strategic exit options for businesses include selling, merge and acquisition, initial public offering (IPO) or liquidation and close.

The entrepreneurship process as described above was based on Baron and Shane (2008) perspective, and is depicted on figure 2.1.

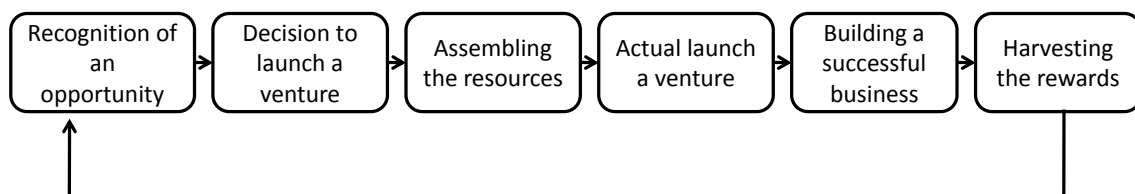


Figure 2.1. The entrepreneurship process, following Baron and Shane (2008)

It is important to reinforce that the process perspective described above does not imply that the stages are sequential and that they reflect “the best way” to develop an entrepreneurial venture. The process is not depicted as an ordered, planned, and deliberated way (e.g., Shane, 2012). Figure 2.2. tries to represent the entrepreneurship process in a non-linear graph, representing the interaction and dynamics among the stages. Nevertheless, the conceptualization for theoretical purposes of the process is an advantage, as it helps to achieve a complete picture of the process. Furthermore, the process perspective is crucial to define entrepreneurship as a dynamic and back-forward phenomenon rather than an event or a specific type of individual.

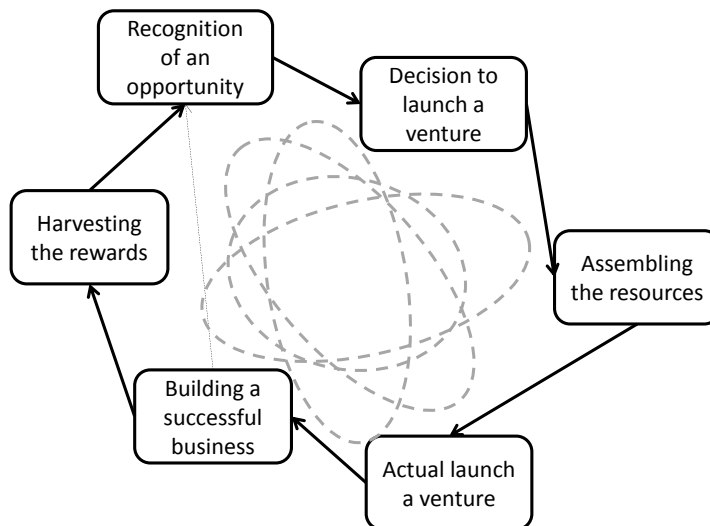


Figure 2.2. The entrepreneurship process

This process flies embedded in the action of direct forces from different levels of factors that have an impact in the entrepreneurship process, affecting all the stages and new ventures’ cycles of life. The process stages are then influenced by events from several sources that tend to shape the process: worldwide changes (i. e, the distal level variables), cultural, social and interpersonal changes (i.e., the intermediate level variables) and individual mechanisms (i.e., the proximal level variables) (Baron & Shane, 2008). In the next section, we detail the influence of these factors over the entrepreneurship process.

2.3. Factors influencing the entrepreneurship process

Variables from different levels of analysis affect and can determine the success of the process (Baron & Shane, 2008). More specifically and similarly to any other social organism, entrepreneurship is affected by macro, intermediate and micro level variables that have different impacts on the phenomenon.

The *distal factors* are unpredictable, they are not controlled nor can be changed by any individual, but the perception of their existence influences the interest in starting a business (Begley, Tan, & Schoch, 2005; Begley & Tan, 2001). These factors refer to government policies, economic conditions, and technology. The relation between economic development stages (Porter, 1990; Porter, Sachs, & McArthur, 2002) and entrepreneurship has been systematically studied since 1999, in the Global Entrepreneurship Monitor (GEM) reports across several countries (Acs, Desai, & Hessels, 2008). In general, data from GEM suggested that “*a U-shaped relationship may in fact exist between entrepreneurial activity and economic development in the global economy*” (Acs, Desai, & Hessels, 2008, p.222). The upswings in the small-scale economic activity and the variations inter- and intra-countries in self-employment include six main sources: (a) stages of economic development, (b) the bias of technological change, (c) changes in industry composition, (d) changes in female labour force participation, (e) unemployment and (f) cultural factors (Acs, Audretsch, & Evans, 1994; Acs, Desai, & Hessels, 2008). Generally, economic, technological, financial, industrial and cultural changes influence entrepreneurship activity (e.g., Bosma, Wennekers, & Amorós, 2012), and they are specially determinant for policy makers and institutions (Acs, Desai, & Hessels, 2008; Lundström & Stevenson, 2005). A reflection over the determinants of entrepreneurship in a comparison between Europe and United States shows the importance of an eclectic theory of entrepreneurship that includes policies, institutions and culture (Verheul, Wennekers, Audretsch, & Thurik, 2002) as distal influencers of the entrepreneurial activity.

Present times are a good example: the general economic crises in the developed countries have an impact on the small and micro enterprises, on new entrepreneurial ventures, and on new incoming entrepreneurship projects. Generally, the world and national economic conditions have a direct impact on daily life mechanisms and in entrepreneurship as well. However, individuals *per se*, cannot predict, change, control, avoid, enhance, nor monitor the economic conditions that they are involved in (e.g.,

Baron, 2013). Individuals' lack of control is also evident on the technology impact and development: each individual, *per se*, is not able to predict, change, control, avoid, enhance, nor monitor the new technological devices that are being developed all over the world, the new raw materials that are being applied on new software and hardware. Similarly, the individual, *per se*, is not able to monitor the political conditions, the world, European and national regulatory laws, and the political strategies.

Summarizing, the distal factors (i.e., economic conditions, technological changes, political and regulatory systems), have a direct impact on individuals, organizations and new ventures' lives, but they cannot be controlled by individuals (i.e., an entrepreneur).

The *intermediate level* variables refer to factors that include the social environmental conditions involving the entrepreneur and the new venture. More specifically, it refers to the competitors, social ties (e.g., Klyver, Hindle, & Meyer, 2008), entrepreneurial team, cultural context, effectiveness in interactions with venture capitalists, customers, or potential employees. In general, social capital is related to new venture creation (Dominginhos, Pereira e Silveira, 2007; De Carolis, Litzky, & Eddleston, 2009). Moreover, the relevance and interaction of these social networks vary along the entrepreneurship process stages (e.g., Greve & Salaff, 2003). The social agents, including networks, competitors, and working force in the entrepreneurial venture are closer to the individuals than the distal factors.

Some of these intermediate level factors can be analysed. The competitors of a new business refer to all the firms that sell or produce similar products/services to the ones that the new firm will develop. The competitors are important influencers of the entrepreneurship process, since the business has to pursue competitive advantage. Porter (1985, 1998) explained the competitive advantage of organizations by stressing that a company can obtain it through a lower cost strategy or a differentiation strategy. Thus, entrepreneurial firms need to include a competitive strategy on their environment (McGrath, Tsai, Venkataraman, & MacMillan, 1996; Ong, Ismail, & Goh, 2010). In such an environment, entrepreneurs, as individuals, must assess and analyse the competitors that act in similar market niches in order to avoid overlapping with existing ventures and to develop the competitive advantage in their business. Despite the focus on the competitors and the efforts to create competitive advantage (e.g., O'Donnell, Gilmore, Carson, & Cummins, 2002; Ong, Ismail, & Goh, 2010), entrepreneurs *per se* are not able to monitor the complete strategy and environment of the competitors, as it

does not depend exclusively from entrepreneurs, but refers to an external strength or weakness. The creation of a competitive advantage depends on a great extent on the entrepreneur and entrepreneurial team's decisions, but it also depends to a great extent on the others firms and organizations.

Entrepreneurial teams and human resources are vital for the venture's success. Ventures founded with teams seem to achieve better results and performance than ventures founded by individuals alone (Cooper & Bruno, 1977; Weinzimmer, 1997). Thus, to start-up ventures based on a team unit is more reliable and promising than starting it individually. Nevertheless, entrepreneurial teams are made of individuals and consequently include the dynamics, diversity and relationships that occur at individual level and that are transferred to the team level of analysis. The heterogeneity and size of teams are determinant for the process of acquisition and departure of team members, which impact the venture performance (Chandler, Honig, & Wiklund, 2005). The entrepreneur chooses his or her team, aiming to the best human resources involved in the new venture, and gathering the diversity, social capital, knowledge and experience needed to contribute to venture performance. Human resources of new entrepreneurial firms require great commitment, identification, extrarole behaviours, and thus, employees need to be highly motivated. Despite the entrepreneurs' efforts to motivate, engage, and empower human resources, entrepreneurs *per se* are not able to monitor all the entrepreneurial team members' behaviours, knowledge and actions (Baron, 2013). Thus, the entrepreneur may have some influence on the entrepreneurial team, but it is not possible to monitor it completely.

The cultural and social context of the entrepreneurial venture has also a great impact on the flow and development of the business. The community cultural rhythms, habits and behavioural patterns are critical to the entrepreneurial success. What do people buy, do, sell? For how much do people buy the product that entrepreneurs want to sell? These are examples of critical questions that entrepreneurs try to answer as accurate as possible in order to adapt the business idea and the entrepreneurial venture to markets' needs and demands. There are products and services that are adjusted to cultural settings and conditions, but that do not generate the same output on a different cultural environment. Moreover, societies change frenetically, trends are quickly rebounded, and consequently, it is not possible for the entrepreneur *per se*, to predict, change nor monitor the complex system of the cultural and social context of the entrepreneurial venture (e.g., Baron, 2013).

Generally, based on the exposed arguments, it is possible to stress that the intermediate factors have a direct impact on the entrepreneurship process, but entrepreneurs are not able to control all the strengths and weaknesses that emerge from there. Thus, albeit the ability to monitor these factors when compared to the distal factors, they are still significantly uncontrollable.

The *proximal factors* refer to the individual skills and abilities, motives, capacities, knowledges and experiences. Generally, the proximal factors refer to all the individual dimensions that impact over the entrepreneurship process. Literature has shown that entrepreneurs are distinct from managers on critical skills and abilities such as risk taking (Miner and Raju, 2004), and self-efficacy (e.g., Chen, Greene, & Crick, 1998), for example. Thus, to be an entrepreneur, an individual must possess specific skills and abilities. The motives that drive entrepreneurs, day after day, through the entrepreneurial stages are also determinant to the flowing of the entrepreneurship process (Shane, Locke, & Collins, 2003). Only a high motivational pattern makes the entrepreneur move forward on the hardest moments, not to bounce back when facing disappointments and negative events. Similarly, the entrepreneurs' capacities and knowledges on the business area are critical to the success of the entrepreneurial process (Shane, 2000). Every entrepreneur has to possess deep and prior knowledge on the business area (Eckhardt & Shane, 2003). Moreover, experience on similar business is also important to successfully launch a venture (Morris, Kuratko, Schindehutte, & Spivack, 2012).

Thus, all the individual factors have a direct impact in the entrepreneurship process and they share a common characteristic: they are all controllable and possible to monitor by the entrepreneur. The entrepreneur can train him or herself on the specific skills and abilities; the motives and drives that move the entrepreneur are only dependent on his or her will; the entrepreneur can gain and assimilate the required knowledge and experience on the business venture area. Furthermore, it is well established in the literature that entrepreneurial activity depends on the human action (*c.f.*, Bygrave & Hofer, 1991; Baum, Frese, & Baron, 2007; McMullen & Shepherd, 2006)

Figure 2.3. describes the entrepreneurship process stages and the three levels of influencing variables: distal, intermediate and proximal factors.

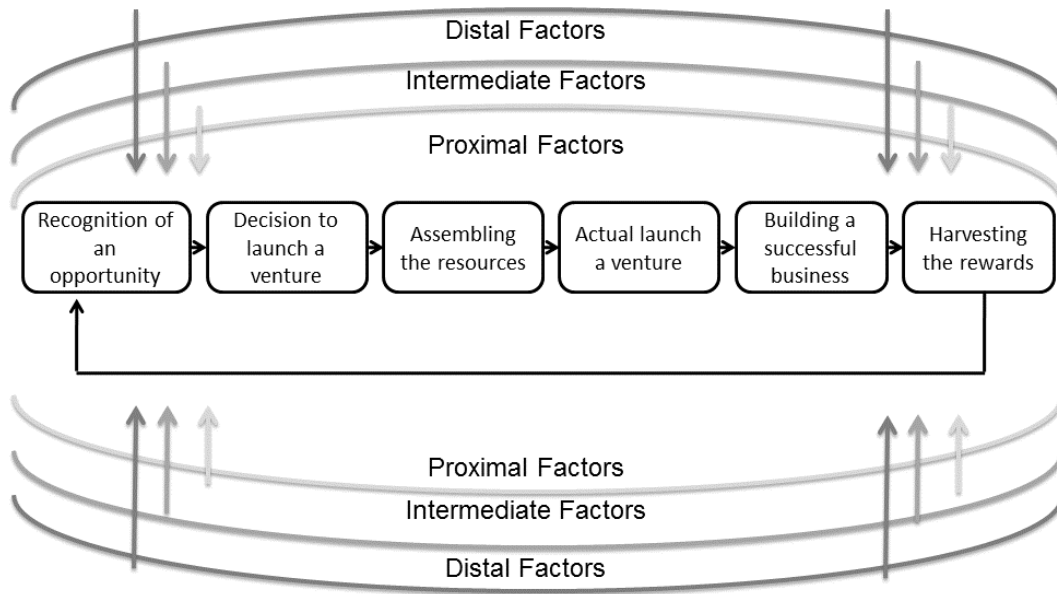


Figure 2.3. Entrepreneurship process stages and the three levels of influencing variables adapted from Baron and Shane (2008)

The proximal factors are the most controllable by the individual so, it is important to increase the focus on the comprehension of the individual side of entrepreneurship. To promote research on the individual level of entrepreneurship can help to develop evidence-based practices for entrepreneurship education, strategies, platforms and policies focused on the human development. Following this relevance, there is an increasing research work on entrepreneurship focusing on individual perspectives by adapting several theoretical frameworks, such as psychology (e.g., Baum, Frese, & Baron, 2007; Rauch & Frese, 2012) and cognitive science (e.g., Baron, 2004; Baron & Ward, 2004).

Despite the relevance of the individual factors, it is important to highlight that the three levels of influencing variables are interactive. The three-level factors are critical and have different and systematic impacts over the process (Audretsch, Thurik, Verheul, & Wennekers, 2002). Borrowing the words from Shane and Venkataraman (2001a): “we argue that individuals and opportunities are the first-order forces explaining entrepreneurship and that environmental forces are second order.” (p.14). Or, as Hmieleski and Baron (2009) noticed, the “effects of individual-level variables occur primarily through interactions with key environmental factors” (p.474).

The most relevant characteristics of the entrepreneurial process are exposed clearly by Bygrave and Hofer (1991, p.17): *“It is initiated by an act of human volition; It occurs at the level of the individual firm; It involves a change of state; It involves a discontinuity; It is a holistic process; It is a dynamic process; It is unique; It involves numerous antecedent variables; Its outcomes are extremely sensitive to the initial conditions of these variables.”*

On the present thesis, we will focus on the proximal factors of entrepreneurship: an individual level analysis. However, this does not mean that we consider entrepreneurship solely from an individual point of view. Entrepreneurship is a multilevel process, which can only be explained as phenomena that derives from top-down and bottom-up processes.

Chapter 3. From the *individual-opportunity nexus* to the main theories of opportunities and entrepreneurs

3.1. Introduction

Venkataraman (1997) in his Editor Note in “*Advances in Entrepreneurship, Firm Emergence, and Growth*” presented the initial insights about the core heart of entrepreneurial activity: the individual-opportunity nexus. Venkataraman (1997) posited that the general framework of entrepreneurship includes the examination of entrepreneurial opportunities; the individuals who discover and exploit them, the role of processes of resources acquisition and organization, as well as the strategies that make possible to exploit and protect the profits.

The core idea underlying the individual-opportunity nexus is that entrepreneurship can be explained by considering the conjunction of *enterprising* individuals and *valuable and profitable* opportunities (Shane, 2003). This general framework is useful for entrepreneurship research as it allows to explain the process of discovery and exploitation of opportunities, the strategies for resources acquisition and organizational processes, and the entrepreneurial strategy.

The individual-opportunity nexus is consistent with the entrepreneurial process we described earlier. In fact, the pioneer element of the entrepreneurial process is recognizing business opportunities (Baron & Shane, 2008), and the nexus perspective also posits that the first element of entrepreneurial process is the perception of the existence of a business opportunity (Shane, 2003). This business opportunity is perceived by individuals with a high alertness (Gaglio & Katz, 2001), called entrepreneurs, who are able to discover, exploit and execute opportunities. Thus, opportunities can exist in the environment, but they will not be exploited if no individual perceives them. Opportunities will only gain shape and life after an individual discovers them. This is the core of individual-opportunity nexus in entrepreneurship.

Entrepreneurial individuals and opportunities are highly interconnected and dependent from each other. There is no entrepreneurship without opportunities and individuals, or groups of individuals, who discover, exploit and execute them (Shane, 2003). The individual-opportunity nexus is the nuclear gear to understand entrepreneurship. Entrepreneurship requires objective entrepreneurial opportunities that are profitable, and individuals who are enterprising (Shane, 2012).

Recently, Venkataraman, Sarasvathy, Dew and Forster (2012) revised the nexus between individuals and opportunities, and proposed a new nexus between action and interaction or between the “*inner and outer environment*” (p.28). The action-interaction nexus highlights the role of contingencies, suggesting that entrepreneurship is the result of artefacts that individuals create in the market and in the environment. This approach impacts the conceptualization of entrepreneurship as a scholarship: “*a focus on how entrepreneurs act and interact with their endowments and environments moves our scholarship from models of decision making under uncertainty toward problems of designing with constraints*” (Venkataraman, Sarasvathy, Dew, & Forster, 2012, p.30).

The action and interaction nexus in entrepreneurship (Venkataraman, Sarasvathy, Dew, & Forster, 2012) is not a substitute of the individual-opportunity nexus (Venkataraman, 1997; Shane, 2003; Shane, 2012). They reflect different scientific paradigms and epistemological approaches. To the individual level of analysis, where this thesis is focused, the individual-opportunity nexus gains great relevance and matches the entrepreneurship definition (Shane & Venkataraman, 2000). Next we will reflect about the two main cells of the nexus: opportunities and individuals.

This chapter reviews briefly business opportunity, motivation, decision to launch a venture and entrepreneurs characteristics. We will start by defining and describing theories and approaches about business opportunities and the decision to exploit them. Next, we approach the motivational roots of entrepreneurs and their individual skills, abilities, capacities, knowledge and experience. These factors refer to all individual dimensions that impact the entrepreneurship process.

3.2. Business opportunities definitions

Reflecting about the great importance of individuals and business opportunities, the influential paper by Shane and Venkataraman (2000) and a recent follow-up of that original publication (Shane, 2012) suggests that “*...the field appears to have moved toward consensus around the core idea that entrepreneurship is a process that depends on both opportunities and individuals*” (p.18). Further, Shane (2012) noted that “*objective opportunities must be a central part of the explanation of the opportunity-based perspective on entrepreneurship that researchers have been developing over the past decade.*” (p.16).

Business opportunity takes a special relevance on the entrepreneurship literature, as it represents the first stage of the entrepreneurial process, as defined by Ardichvili, Cardozo and Ray (2003), Shook, Priem and McGee (2003), Timmons and Spinelli (2007), and Baron and Shane (2008) among others.

The conceptual approaches to opportunities construct have been theoretically rich, including a multitude of theories such as coherence theory (e.g., Shepherd, McMullen, & Jennings, 2007), creation theory and discovery theory (e.g., Alvarez & Barney, 2007), organizational learning (e.g., Dutta & Crossan, 2005), research on affect (e.g., Baron, 2008), social cognitive theory (e.g., De Carolis & Saporito, 2006;) and structural alignment (e.g., Grégoire, Barr, & Shepherd, 2010).

The interest around business ideas is evident. Researchers, academic tutors, entrepreneurs, governments and policy makers look forward to enhance the knowledge about business idea generation. Thus, understanding business opportunities processes has become one core question to the entrepreneurship research (Gaglio & Katz, 2001; Shane, 2003; Shane & Venkataraman, 2000).

In an attempt to address the opportunity side of the nexus described by Shane (2003), research over the past decades has been focused on the definition, process and determinant factors of the business opportunities (Shane, 2003; Baron, 2004a; Baron, 2004b; Short, Ketchen, Shook, & Ireland, 2010; Hansen, Shrader, & Monllor, 2011; Grégoire, & Shepherd, 2012).

It is important to call attention again to the fact that understanding business opportunities processes is one of the core issues in entrepreneurship. As Venkataraman suggested, the central question in entrepreneurship is “*seeking to understand how opportunities bring into existence future goods and services are discovered, created, and exploited, by whom, and with what consequences*” (1997, p.120).

Business opportunities definitions are broad and diverse (Schumpeter, 1934). Nevertheless the answer to the question “*What is an opportunity?*” is essential to the entrepreneurship research and practice. Table 3.1 presents the most relevant definitions of opportunities.

Table 3.1. *Opportunity definitions*

Stevenson and Jarillo-Mossi, 1986	“a possible action, deemed to be feasible, that leads to a desirable future state that is different from the present state” (p.10)
Shane and Venkataraman, 2000	“those situations in which new goods, services, raw materials, and organizing methods can be introduced and sold at greater than their cost of production.” (p.200)
Ardichvili, Cardozo and Ray, 2003	“opportunity may be the chance to meet a market need (or interest or want) through a creative combination of resources to deliver superior value” (p.108).
Shane, 2003	“a situation in which a person can create a new means-ends framework for recombine resources that the entrepreneurs believes will yield a profit.” (p.18).
Eckhardt and Shane, 2003	“situation in which new goods, services, raw materials, markets and organizing methods can be introduced through the formation of new means, ends, or means-ends relationships” (p.336). This definition follows the perspectives of Casson (1982) and Shane and Venkataraman (2000) by highlighting that opportunities have to pursue the potential to change the economy.
Short, Ketchen, Shook, and Ireland, 2010	“An opportunity is an idea or dream that is discovered or created by an entrepreneurial entity and that is revealed through analysis over time to be potentially lucrative.” (p.55).
Grégoire, Shepherd and Lambert, 2010	entrepreneurial opportunities are “as projected courses of action to introduce (and profit from) new and/or improved supply-demand combinations that seek to address market failure problems.” (p.117).

In general, the majority of opportunities definitions include three characteristics: *potential economic value*, *newness*, and *perceived desirability* (Baron, 2006). In addition to the referred characteristics, some definitions include the criterion of acceptability in a given society. That is, only opportunities that are viewed as consistent with the values and laws of a society are *bona fide* opportunities, suitable for development; the ones that are not, can also generate new ventures and other business activities, but are described by Webb, Ireland, Tirhanyi and Sirmon (2009) as occurring in the “informal economy”. The entrepreneurship process in the informal economy is currently a relevant topic nowadays, and there are important clues on how the process can be moved to the formal economy (Webb, Ireland, Tirhanyi, & Sirmon, 2009).

Most of the different definitions of opportunity share the general assumption that they bring into existence new goods, services, raw materials and organizing methods that allow outputs to be more profitable, i.e., they can be sold at more than their cost of production (Shane, 2000, 2003; Eckhardt & Shane, 2003; Grégoire, Shepherd, & Lambert, 2010). Following this mainstream we will adopt in this thesis this general operational definition of opportunity: *they bring into existence new goods, services, raw materials, and organizing methods that allow outputs to be more profitable, i.e., they*

can be sold at more than their cost of production (Shane, 2000, 2003; Eckhardt & Shane, 2003; Grégoire, Shepherd, & Lambert, 2010).

Having defined opportunities, it is relevant now to shed some light on business opportunities nature and role. The two main perspectives on the existence and source of entrepreneurial opportunities were described by Kirzner and Schumpeter and were included on their general entrepreneurship theories. Kirzner (1973) posited that entrepreneurial opportunities are based on the access of information, and that individuals make different use of the information to form beliefs that are on the basis of opportunity creation. Schumpeter (1934) suggested that changes in technology, policies, laws, economy and society create new information that is aggregated in order to recombine resources into a more valuable way. In general, Kirzner conceives opportunities as less innovative than Schumpeter because in his view they derive from existing information. Since opportunities according to Schumpeter are based in new information, they are more innovative as they involve breakthrough and creation.

These two mainstreams about the source and role of opportunities reflect the richness in opportunities literature, suggesting that opportunities are discovered, created, and/or recognized. As we briefly presented, there are different approaches that try to answer the question about how business opportunity arise: through a discovery process, through a creation process, through an identification process or through a recognition process. Regardless of the approach, it is important to highlight that the process of business opportunity generation is temporal dynamic (Dimov, 2007) and, as integrated in the entrepreneurial process, changes over time (Eckhardt & Ciuchta, 2008). Furthermore, there is a set of individual characteristics that play a role in the process. These individual differences are the answer for the question “*Why do some people, and not others, discover a particular opportunity?*” (Shane, 2003; Baron, 2006).

In the model of entrepreneurial opportunity identification and development, Ardichvili, Cardozo, and Ray (2003) clearly conceptualized the core processes of opportunity development, recognition and evaluation. The authors grounded these three processes on a theoretical framework that include five individual related factors deemed to affect the process: (1) entrepreneurial alertness; (2) information asymmetry and prior knowledge; (3) discovery versus purposeful search; (4) social networks; and (5) personality traits, including risk-taking, optimism and self-efficacy, and creativity. This model integrated the role of individual idiosyncrasies into the process of opportunity

identification, showing that the process of discovery of entrepreneurial opportunities is dependent from the individual.

The main antecedents of opportunity recognition that have been studied as primary processes at the individual level include the following: prior knowledge (Lee, Herr, Kardes, & Kim, 1999; Shane, 2000; Shepherd & DeTienne, 2005), entrepreneurial alertness (Gaglio & Katz, 2001), social sources of information (Ozgen & Baron, 2007), social capital (De Carolis & Saporito, 2006), learning processes (Lumpkin & Lichtenstein, 2005; Corbett, 2005), pattern recognition processes (Baron & Ensley, 2006), and structural alignment (Grégoire, Barr, & Shepherd, 2010). In section 3.2 we develop this rational further and describe the antecedents of business opportunities, based on the cognitive theory.

3.3. “Where do opportunities come from?”: the cognitive answer

As mentioned before, one of the antecedents to the opportunity process is explained by the cognitive processes in which individuals engage. In fact, cognitive ability is one of the qualities that allow some individuals to identify opportunities (Shane & Venkataraman, 2000).

Briefly, Shane and Venkataraman (2000, p.222) stated that the reason why some people will discover opportunities while others will not is contingent on two issues: “(1) *the possession of prior information necessary to identify an opportunity and (2) the cognitive properties necessary to value it.*”

Based on human cognition research in general, and in cognitive frameworks in particular, Baron (2004a; 2006) developed one of the most sustainable approaches on business opportunity recognition. Specifically, he suggested that individuals perceive business opportunities as they perceive connections between apparently unrelated events or trends - e.g., changes in technology, demographics, markets, or government policies - as a meaningful pattern. These events, trends, and changes are objective for the individuals; and the process of “connecting the dots” among them to generate a meaningful pattern is the result of a subjective process, based on perception mechanisms and shaped by the prior knowledge, experience and interests of the individual. This means that the process of opportunity recognition departs from objective pieces of information (i.e., events, trends, changes) that merge into subjective perceptions which form one opportunity pattern (e.g., Grégoire, Shepherd, & Lambert,

2010). In order to be recognized as an opportunity, that pattern will be compared to the “business opportunity” prototype that the individual has in his or her cognitive structure. Therefore, pattern recognition theory has been identified as a key component of business opportunity recognition (e.g., Baron, 2006).

In other words, the entrepreneurs’ cognitive framework, i.e., prototypes or schemas, promotes the recognition of meaningful patterns that are possible business opportunities, by “connecting the dots” between the perceived unrelated environmental changes. For instance, when an entrepreneur finds that any of his/her prototypes fits the perceived environmental patterns, a business opportunity may emerge and the decision to launch a venture can (or not) occur (Baron, 2006). Figure 3.1. presents a schematic representation of the “connecting the dots” process.

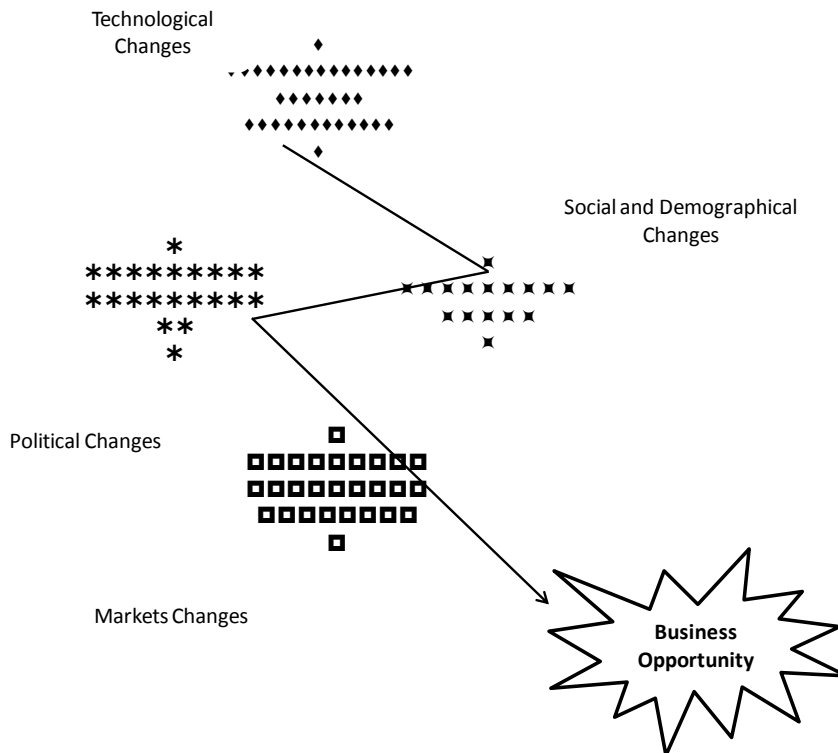


Figure 3.1. “Connecting the dots” process (Adapted from Caetano, Santos, & Costa, 2012)

This perspective, based on pattern recognition, integrates three aspects that have been evidenced as determinants in opportunity recognition: active search (Shane, 2003), alertness (Kaish & Gilad, 1991) and prior knowledge (Shane, 2000). Overall, pattern

recognition perspective contributes to the explanation of why some persons, but not other, recognize business opportunities.

Baron and Ensley (2006) conducted the first empirical study on the pattern recognition approach. They identified and described the factors that are part of the business opportunity prototype and the decision to launch a venture prototype. Prototypes are cognitive representations of the “most representative” member of a category or class.

Concerning the *business opportunity prototype*, Baron and Ensley (2006) found a five factorial dimensions structure: (1) solving a customer’s problems, (2) the ability to generate a positive cash flow, (3) manageable risk, (4) superiority of the product/service and (5) potential to change the industry. Similarly, the *decision to launch a venture prototype* comprises five factors that are the essential features to the prototype: (1) a favourable financial model, (2) positive assessment or advice from others (friends, financial advisors and industry experts), (3) the idea’s novelty, (4) a large untapped market and (5) intuition or gut feeling (Baron & Ensley, 2006).

After taking note of the importance of cognitive science for understanding various aspects of entrepreneurship (Baron & Ward, 2004), the several findings from this field have been adapted to research in the area of entrepreneurship. Among these, two basic aspects of information analysis have been found to be most applicable: categorization and structural alignment.

Categorization is one of the basic processes of placing a new experience or event into a class or cluster of experiences or events that are similar in some respect (Moskowitz, 2005; Markman & Gentner, 2001). Prototype categorization is a cognitive model which suggests that concepts are expressed through the ideal representation features involved in an underlying structure, a group of features that are indicative of a category membership (Lakoff, 1987; Rosch & Mervis, 1975). Research has shown that such categorization is socially shared (e.g., Morris & Peng, 1994) and is often an act of inference that occurs automatically (e.g., Bruner, 1957). In contrast, structural alignment (Gentner, 1983), another important cognitive process, is based on comparison processes that permit the detection of common as well as contrasting aspects of a pair of events. Structural alignment is based on the mental models, analogy theories, and similarity (Gentner, Holyoak, & Kokinov, 2001; Markman & Gentner, 2001). The general idea behind structural alignment is that the process of comparison of structured, complex

stimuli considers the similarities between and among its elements (Markman & Gentner, 2001).

Grégoire, Barr and Shepherd (2010) applied structural alignment to the process of opportunity recognition following an approach developed by Gentner (1983). Their research involved executive entrepreneurs who were challenged to describe business opportunities based on brief technology descriptions they received. The main conclusion was that those “*executives (...) did not use opportunity prototypes and their attributes*” but rather, focused on a “*cognitive alignment of new technologies and markets*” (Grégoire, Barr, & Shepherd, 2010, p. 414).

We believe that Grégoire, Barr, and Shepherd (2010) structural alignment perspective is compatible with the prototype or pattern recognition perspective, as both approaches operate with respect to identification of business opportunities. That is, the prototype or categorization processes and the structural alignment approach can be complementary. According to Markman and Gentner (2011), “*as Goldstone (1994) points out, structural alignment provides constraints on which commonalities among items are relevant for categorizing them. In particular, systematic relational structures are likely to be important for categorization. This point helps to bridge the gap between theory-based and similarity-based categorization.*” (p.236). Moreover, in Markman and Gentner’s (2001) review, the authors describe several findings which “*suggest that structural alignment influences the representations of new categories.*” (p.236). Thus, structural alignment is presented as a specific aspect of categorization, an integral part of general reasoning theory.

Further, Baron and Ensley (2006) and Grégoire, Barr and Shepherd (2010) results were consistent with the classical ecological theory of perception or direct perception (Gibson, 1966) which considered that the environment contains all of the information needed - *structures* - to determine the properties of a perception. Gibson’s ecological theory of perception highlighted the reciprocity between the perceiver and the environment, in which continuous transactions occur between both. The concept of affordances was proposed by Gibson (1986) and links perception to action, connecting an individual to its environment in accordance to its meaning. Thus, there is an individual active effort to generate a meaningful pattern from the perceived features of the environment in its structural characteristics.

The findings from perception studies indicated that recognizing a complex pattern involves a feature analysis in which the global pattern is rooted in a set of

features, and these are recognized and combined to allow the recognition of a pattern (e.g., Palmer, 1977). The process in which individuals split an overall pattern into single features is determined by the gestalt principles (Hoffman & Richards, 1985). Furthermore, the recognition of a pattern involves the integration of bottom-up and top-down processes. The bottom-up processes require the use of sensory information (e.g., Tulving, Mandler, & Bauml, 1964), and the top-down processes include the use of the context and general knowledge (e.g., Reicher, 1969; Wheeler, 1970; McClelland & Rumelhart, 1981).

Overall, the perception, attention and information processing evidences (see Anderson, 1980 for a revision) can help to resolve the debate established between pattern recognition and structural alignment theories. Applying these propositions to entrepreneurship research suggests that the active role of the individual - *the entrepreneur* - in perceiving opportunities, includes reciprocity and the development of a meaningful interpretation of the environmental features and structure.

As it was revised before, theoretical approaches (e.g., Baron, 2006) and empirical studies (e.g., Baron & Ensley, 2006; Grégoire & Shepherd, 2012) about business opportunities antecedents were mainly based in the cognitive science. In fact, cognitive science is a powerful lens to understand various aspects of entrepreneurship (Baron & Ward, 2004; Dimov, 2011; Grégoire & Shepherd, 2012).

In sum, the most important contributions to the business opportunity research field using the cognitive approach include studies on the definition of opportunities (*c.f.* Gartner, Carter, & Hills, 2003), the idiosyncrasy of the processes of opportunity recognition (Dimov, 2011) and the cognitive processes involved in the opportunity recognition (Baron & Ensley, 2006; Grégoire, Barr, & Shepherd, 2010; Cornelissen & Clarke, 2010).

3.4. Decision to exploit the business opportunity

When recognizing a business opportunity, the entrepreneur can decide to explore it and systematically work for the development of the opportunity, or can decide not to proceed with the process. This is one of the first decisions in the entrepreneurship process, and is the result of opportunity evaluation. Thus, there is a bidirectional relation between opportunity recognition and decision to exploit it. Actually,

“entrepreneurial decision making refers to the choices made by entrepreneurs when faced with entrepreneurial opportunities.” (Miao & Liu, 2010, p.357).

Business opportunity recognition and decision to exploit it are interconnected stages of the entrepreneurship process, and there are several theoretical models describing how they relate to each other (e.g., Bhave, 1994; Ardichvili, Cardozo, & Ray, 2003, McMullen & Shepherd, 2006). Furthermore, both business opportunity recognition and decision making process are intrinsically related to the entrepreneurs' cognitive mechanisms and perceptual patterns (e.g., Forbes, 1999)

Opportunity recognition was described as a process including two possible orientations: *“externally stimulated opportunity recognition”* and *“internally stimulated opportunity recognition”* (Bhave, 1994; p.228). In the *“externally stimulated opportunity recognition”* the *“decision to start a venture preceded opportunity recognition for certain entrepreneurs. The decision was influenced by the entrepreneurs' personal and environmental circumstances at that time.”* (p.238); and in the *“internally stimulated opportunity recognition”* the *“opportunity recognition preceded the decision to start their ventures. The prospective entrepreneurs experienced, or were introduced to, needs that could not be easily fulfilled through available vendors or means.”* (p.230). These two orientations of opportunity recognition, show the mutual relation between opportunity recognition and decision to launch a venture, confirming its motivational drive in the entrepreneurial process (Bhave, 1994).

The decision to act entrepreneurially over a business opportunity (McMullen & Shepherd, 2006) is involved in the process of opportunity development and evaluation (Ardichvili, Cardozo, & Ray, 2003). The opportunity *evaluation* includes the informal investigation focused on the preliminary assessment of business opportunity penetration in the market. The opportunity evaluation is related to the decision to launch, or not to launch, the venture as a result of the business opportunity recognition.

The decision to launch a venture was also conceived as a catalyst of the business opportunity recognition (Bhave, 1994), as it refers to the entrepreneurial action about an opportunity (McMullen & Shepherd, 2006): *“entrepreneurial action refers to behaviour in response to a judgmental decision under uncertainty about a possible opportunity for profit.”* (p.134). This entrepreneurial action model assumes that the decision to exploit an opportunity included two main aspects: the feasibility assessment (related to the knowledge) and the desirability assessment (related to the motivation) (idem p.140).

The decision to proceed to exploit the business opportunity is thus related to the characteristics of the opportunity itself.

3.5. Creation of new ventures: effectuation and causation processes

Another approach to explain the creation of new ventures was proposed by Saras D. Sarasvathy (2001, 2008). It is based on the identification and development of a decision model involving effectuation and causation processes. The effectuation theory has influenced and shaped the course of entrepreneurship research, mainly the business opportunity emergence and the entrepreneurial decision making processes.

The definition of the processes of causation and effectuation are as follows: *“Causation processes take a particular effect as given and focus on selecting between means to create that effect. Effectuation processes take a set of means as given and focus on selecting between possible effects that can be created with that set of means.”* (Sarasvathy, 2001, p. 245)

Causation is then consistent with the perspectives about planned strategies and with the general idea that business opportunities are recognized and their effects are predicted through business plans. In other words, causation follows the planned strategy approaches, including deep planning and analysis in such a way that the outcomes can be achieved by calculation or statistical inference (Sarasvathy, 2001, 2008).

In contrast, effectuation process is consistent with emergent and unpredictable strategies, and occurs under uncertainty conditions in such a way that planning is impossible. Effectuation is consistent with the non-predictive strategies, and assumes that the uncertainty and the changing circumstances turn impracticable to develop statistical inferences and to calculate the output of an action (Sarasvathy, 2001, 2008). The main distinguishing characteristic between both processes is *“choosing between means to create a particular effect, versus choosing between many possible effects using a particular set of means”* (Sarasvathy, 2001, p. 245).

According to effectuation theory, entrepreneurs are not able to decide the best course of action to their business opportunity, but they have to deal with the contingencies, to be flexible and use experimentation (Sarasvathy, 2001, 2008). Sarasvathy (2001, 2008) further suggested that entrepreneurs engaged in the effectuation approach use the results of their decisions as new information source to

change the action, work with resources at their control and develop the needed adjustments.

Effectuation process is defined by four key dimensions or principles: means, affordable loss, partnerships, and acknowledging the unexpected (Sarasvathy, 2001). The first dimension is known as the “bird in hand” principle (Sarasvathy, 2008) and reflects the fact that entrepreneurs start with their own means, after imagining the possible outcomes originated by those means. Effectuation processes are thus driven by given means instead of targets (causation). The second dimension is affordable loss and refers to the focus on the downside risk instead of the expected returns (causation). The effectuation is driven by the knowledge and commitment about what the entrepreneur is willing to lose. Effectual entrepreneurs limit risk through the knowledge of what they are going to lose at each step, and they choose actions that can have a benefit, even if the negative scenario is happening. The third principle is denominated as “patchwork quilt” and refers to the role of partnerships in reducing uncertainty, instead of a competitive market analysis (causation). By creating partnerships and pre-commitments with stakeholders, entrepreneurs reduce uncertainty and can create a market with their partners. Finally, the fourth principle includes acknowledging the unexpected. This is a principle known as “lemonade” and refers to leverage contingencies in such a way that negative events are conceptualized as potential hints to create new markets and opportunities. These characteristics contrast with causation, that avoids contingencies and try to minimize unexpected outcomes (Sarasvathy, 2001, 2008; Brettel, Mauer, Engelen, & Küpper, 2012).

Effectual reasoning is then a process which departs from three given means: (1) who I am - my traits and abilities; (2) what I know – my education, training, expertise, and experience; and, (3) whom I know - my social and professional networks. Using these means the effectual entrepreneur can imagine different and possible new ends (Sarasvathy, 2001a).

Effectuation is related to entrepreneurial bricolage (Baker & Nelson, 2005) which refers to “*making do by applying combinations of the resources at hand to new problems and opportunities*” (Baker & Nelson 2005, p.333), dealing with the resources constraints that exist in the environment. Entrepreneurial bricolage is a relevant construct nowadays and empirical research has been growing in this topic. For example, entrepreneurial bricolage is related to performance outputs and is affected by firm innovativeness (Senyard, Baker, & Davidsson, 2009).

3.6. Motivations in entrepreneurship: Definitions and theories

Motivation is a prerequisite for all human actions. Generally, the actions to become an entrepreneur are driven by entrepreneurial motivation. The importance of motivation in entrepreneurial activity is unquestionable. Entrepreneurship activity is the result of motivated human action and external factors, and logically it influences the entrepreneurial process (e.g., Shane, Locke, & Collins, 2003; Hessels, van Gelderen, & Thurik, 2008; Miller, Grimes, McMullen, & Vogus, 2012).

Shane, Locke and Collins (2003) proposed a theoretical model about entrepreneurial motivation which identified general and task-specific entrepreneurial motivations that have direct effects on opportunity recognition, idea development and execution. General motivations include the need for achievement, locus of control, vision, desire for independence, passion and drive. Task-specific motivations include goal setting and self-efficacy. This was one of the most relevant and integrative models about the influence of motivations on the entrepreneurial process.

Despite that integrative theoretical model of entrepreneurial motivation, research lacks similar efforts to integrate the diffuse theoretical propositions, empirical evidences and case study suggestions about the role of motivation in the entrepreneurship phenomena. Moreover, entrepreneurial motivation was set aside from entrepreneurship research in the last decades (Carsrud & Brännback, 2011), as researchers focused in explaining entrepreneurship behaviour based in entrepreneurial intentions as the best predictor of future entrepreneurial activity occurrence (e.g., Krueger & Carsrud, 1993; Davidsson, 1991; Krueger & Brazeal, 1994; Krueger, Reilly, & Carsrud, 2000; Carvalho & González, 2006; Rocha, Silva, Simões, 2012). Nevertheless, critics to the focus of entrepreneurial intentions emerged, as there was a reduced knowledge and understanding about the relation between intentions and actions (Bird & Schjoedt, 2009). Motivation can help to clarify this relation (Carsrud & Brännback, 2011).

Motivation is the process used to allocate energy to maximize the satisfaction of needs (Pritchard & Ashwood, 2007). The motivational process is characterized by three components: (1) *Direction* - which actions we will work upon; (2) *Effort* - how hard we will work upon those actions; and (3) *Persistence* - how long we will work upon those actions. For the development of the motivational process, all components have to be favourable. This process is based on the notion of need as the ultimate source of motivation. When a need is perceived, the motivational intention emerges. To perform a

task, an amount of physical, mental and emotional resources have to be available to apply on the execution of those activities. The available energy determines the three motivation components that have been described before: the direction (the tasks that an individual can perform), the effort (the intensity level that an individual applies on the task); and the persistence (the duration and frequency in which the actions can be performed) (Pritchard & Ashwood, 2007).

In general, everyone has similar needs, but we differ on the strength of those needs and on the strategies that we apply on their resolution. As we identify clearly our needs, we can also feel the need of satisfaction. While the strength of needs is quite stable, the level of need satisfaction is temporary. Individuals will only be motivated if they expect that their actions will lead to outcomes that satisfy their needs. The level of need satisfaction changes frequently, depending on how well our needs are being met. The major motivation is the expectation of how satisfying something will be in the future, as the motivation is orientated for the future: it is the expected satisfaction that determines behaviour.

A high motivational pattern is achieved when a person has sufficient energy and believes that he or she can apply this energy in actions that create results that will be positively evaluated and lead to outcomes that satisfy needs.

As a process, motivation is developed in a sequence of steps that have important implications on performance improvement. DeNisi and Pritchard (2006) presented an *expectancy-based motivation model* which had performance improvement as its ultimate outcome. The actual motivation process is based on several assumptions: (a) individuals have a certain amount of energy that they can devote to work at any time; (b) individuals have certain needs at any time that they seek to satisfy; and (c) individuals are more likely to exert time and effort in ways that maximize their anticipated need satisfaction. The model uses the term 'actions' to refer to behaviours or tasks. The motivation process, then, is where people allocate energy to actions in a way that will maximize their anticipated need satisfaction (DeNisi & Pritchard, 2006).

Another related theory of motivation that has also taken great attention in the entrepreneurship domain is the goal-setting theory (Locke & Latham, 2002). According to this theory, individuals identify specific goals and they direct their efforts and actions to achieve these goals. To reach a higher performance, goals need to be specific, challenging and attainable (Locke & Latham, 2002).

Entrepreneurial motivation has been proposed as a main force that highly contributes to the entrepreneurial behaviour. Thus, the entrepreneurial motivation may have an impact on the behaviours and strategies selected by entrepreneurs. During all entrepreneurial process, motivation plays an important role, like enhancing the process development, for example. At this point, we would like to bring back the entrepreneurship process model that we presented in chapter 2 and highlight the role of entrepreneurial motivation in that process. More specifically, we posit that entrepreneurship process has to be systematically involved in entrepreneurial motivation, which will allow the individual, the team, or the start-up venture to dynamically follow the activities required in entrepreneurship (figure 3.2.)

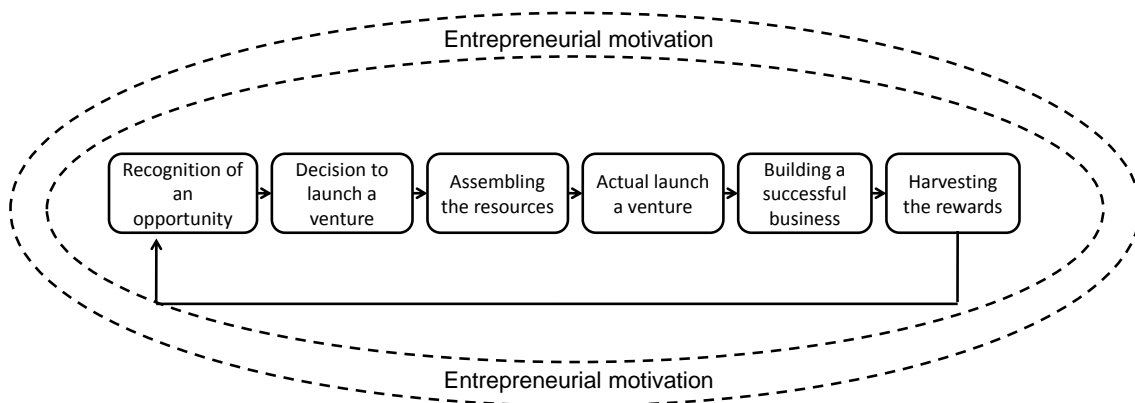


Figure 3.2. The entrepreneurial process involved in entrepreneurial motivation

In sum, entrepreneurial motivation is an expressed, focused and directed effort on the entrepreneurial activity, acting dynamically during business life courses (Jayawarna, Rouse, & Kitching, 2011). It includes the motives that drive individuals towards typical entrepreneurial activities. It is the main driver in pursuing entrepreneurial opportunities, assembling resources and engaging in the entrepreneurial process (Shane, Locke, & Collins, 2003). Only a high motivational pattern can make the entrepreneur move forward on the hardest moments and not to bounce back when facing disappointments and negative events. The entrepreneurial motivation concept advanced in the literature include general and task-specific levels, each with different impacts on the entrepreneurial process (Shane, Locke, & Collins, 2003) and venture growth (Baum, Locke, & Smith, 2001). Thus, it is unquestionable that entrepreneurial motivations play

a role during all stages of the entrepreneurial process, but not as stable and unchallengeable process.

3.7. Defining the entrepreneur and empirical studies on the entrepreneurs characteristics

“Who is the entrepreneur?” is a seminal question in entrepreneurship research but was also considered as a wrong question (see Gartner, 1989). The definitions of entrepreneur are multiple and diverse. Table 3.2. presents some definitions of entrepreneur. Once again, we do not attempt to develop an exhaustive and comprehensive list of definitions over time and disciplines. Rather, we intend to assemble a set of definitions that we consider more relevant during the 20th century.

Table 3.2. *Definitions of entrepreneur*

Schumpeter, 1934	<i>“The carrying out of new combinations we call ‘enterprise’; the individuals whose function it is to carry them out we call ‘entrepreneurs’ ” (p.74)</i>
Smith, 1967	<i>“Entrepreneur: the individual who is primarily responsible for gathering together the necessary resources to initiate a business” (p.2)</i>
Kirzner, 1973	Entrepreneurs are described as <i>“individuals who are market participants who do learn from experience”</i> and <i>“who are alert to changing buying and selling possibilities” (p.15)</i>
Brockhaus, 1980	<i>“Entrepreneur is defined as a major owner and manager of a business venture who is not employed elsewhere” (p.510)</i>
Casson, 1982	Entrepreneur as <i>“someone who specializes in taking judgmental decisions about the coordination of scarce resources” (p.23).</i>
Carland, Hoy, Boulton and Carland, 1984	An entrepreneur <i>“is an individual who establishes and manages a business for the principal purpose of profit and growth (and) is characterized principally by innovative behaviour and employs strategic management practices” . (p.358)</i>
Hebert and Link, 1988	Entrepreneur as <i>“someone who specializes in taking responsibility for and making judgmental decisions that affect the location, the form, and the use of goods, resources or institutions” (p.155).</i>
Gartner, 1989a	<i>“Entrepreneur is not a fixed state of existence, rather entrepreneurship is a role that individuals undertake to create organizations” (p.28)</i>
Bygrave and Hofer, 1991	<i>“Entrepreneur is someone who perceives an opportunity and creates an organization to pursue it.” (p.14)</i>
Kuratko and Hodgetts, 1998	Entrepreneurs <i>“serve as agents of change; provide creative, innovative ideas for business enterprises; and help businesses grow and become profitable” (p.32)</i>

Although each of these definitions has its own perspective of entrepreneurs, they all share some notions, such as the importance of creating something new, innovative, action and risk taking.

Entrepreneurs are not necessarily small business owners, as Carland, Hoy, Boulton and Carland (1984) pointed out: “*A small business owner is an individual who established and manages a business for the principal purpose of furthering personal goals. The business must be the primary source of income and will consume the majority of one’s time and resources. The owner perceives the business as an extension of his or her personality, intricately bound with family needs and desires*” (p.358).

Research has been showing that entrepreneurs really matter and are different from other people. There are individual characteristics from different scopes that are associated with entrepreneurs’ actions, judgments, decision making processes, and that can lead to success or failure in new business creation (e.g., Baron, 2013; Fine, Meng, Feldman, & Nevo, 2012).

Research focused on entrepreneurs is seeking to understand “*the ultimate paradox of entrepreneurship: why, among so many talent, motivated, and passionately engaged individuals, do so few actually succeed in converting the possible into the real?*” (Baron, 2013, p.16).

Generally, entrepreneurs’ traits and characteristics have been broadly researched and they all aim to contribute to the answer of a crucial research questions: “*Why are some individuals entrepreneurial, while others are not?*” (Gartner, 1989). The answer of this question has important outcomes, both for research, and for the performance of entrepreneurial activity.

One of the first empirical studies on entrepreneurs’ characteristics showed that risk taking propensity may not be a distinguishing characteristic of entrepreneurs (Brockhaus, 1980). Brockhaus (1982) and Brockhaus and Horowitz (1986) developed large reviews of the entrepreneurial traits and characteristics, and concluded that need for achievement, internal locus of control and a risk taking propensity were attributes that contributed to the success of new start-ups. Furthermore, Brockhaus and Horwitz (1986) showed that entrepreneurs have an internal locus of control orientation, more than external, because risk and ability perception are important for an entrepreneurial decisions. Nevertheless, Brockhaus and Horwitz (1986) argued that the results of the psychological characteristics were disappointing, and this could be due to four main reasons (Carsrud & Johnson, 1989): assumption of stable characteristics; poor application of knowledge; confusion of levels of analysis; and lack of systematic research. These three classical studies (Brockhaus, 1980; Brockhaus, 1982; Brockhaus

& Horowitz, 1986) showed how research about individual characteristics of entrepreneurs was diffused.

Even so, research about the characteristics of entrepreneurs can be integrated on two conceptual frameworks to base empirical studies and theoretical propositions (Gartner, 1989a). The first is grounded on the differences between entrepreneurs and non-entrepreneurs, and posits, “*entrepreneurs cause entrepreneurship*” (Gartner, 1989a, p.30). The second assumes that there are many types of entrepreneurs, and that this variety explains diversity among the types of entrepreneurship (Gartner, 1989a).

Following the first conceptual framework, literature has shown that the individual characteristics of entrepreneurs are distinct from managers (e.g., Miner & Raju, 2004; Chen, Greene, & Crick, 1998), and that there are different characteristics of entrepreneurs (e.g., McClelland, 1987; Gartner, Mitchell, & Vesper, 1989). Table 3.3. lists the main results and evidences about the personality characteristics of entrepreneurs in the last decade.

Table 3.3. *Main results about the personality characteristics of entrepreneurs*

Author, Date	Main results
Zhao and Seibert, 2006	Meta-analysis results shows that there are differences between entrepreneurs and managers in conscientiousness, openness to experience, neuroticism, and agreeableness.
Zhao, Sibert, and Lumpkin, 2010	Meta-analysis results indicate that conscientiousness, openness to experience, emotional stability, and extraversion are related to entrepreneurial performance and entrepreneurial intentions. From the Big Five personality dimensions, only agreeableness was not related to the outputs.
Koe Hwee Ng and Shanmuganathan, 2010	Among social entrepreneurs, agreeableness has a positive influence in social vision, sustainability, social networks, innovation and financial returns, whereas openness exerts a positive influence only on social vision, innovation and financial returns
Olakitan, 2011	Nigerian entrepreneurs who were high on extraversion show more innovative behaviour than those who were low on it
Brandstätter, 2011	Meta-analysis on personality traits showed that Big Five traits matter when comparing to managers
Mathieu and St-Jean, 2013	Student entrepreneurs score significantly higher than non-entrepreneur students, city workers, employees and managers on a measure of narcissism.
Obschonka, Schmitt-Rodermund, Silbereisen, Gosling, and Potter, 2013	Entrepreneurship-prone Big Five profile is regionally clustered in the United States, Germany, and the United Kingdom

These evidences show that research on the personality traits and entrepreneurship has still a varied group of unanswered questions, and maybe research will need further maturation to give more accurate answers to this complex topic. Nevertheless, generally, research findings seem to suggest that conscientiousness,

openness to experience and emotional stability are significantly related to entrepreneurship (e.g., Zhao & Siebert, 2006). Results about extraversion are less clear, once that Zhao, Seibert and Lumpkin (2010) showed that entrepreneurs are higher also in this dimensions, but others results did not confirm this result (e.g., Brandstätter, 2011). Despite these specific misspecifications, is clear that entrepreneurship have some personal tendencies or dispositions (more or less stable) that are somehow related to the entrepreneurial activities (Baron, 2013).

Cognitive mechanisms are also a relevant aspect of the personal side of entrepreneurs, and research in the last decade has also contributed significantly to uncover what happens inside the entrepreneurship “*black box*”. Table 3.4. resumes the main results of cognitive mechanisms of entrepreneurs in the last decade.

Table 3.4. *Main results about the cognitive mechanisms of entrepreneurs*

Author, Date	Main results
Allison, Chell, and Hayes, 2000	Successful entrepreneurs are more intuitive in their cognitive style than the general population of managers.
Baron, 2000	Entrepreneurs are less likely to have counterfactual thinking than others. More specifically, entrepreneurs reported as being less likely to think about how things would have been if they had acted differently in the past.
Simon, Houghton, and Aquino, 2000	Entrepreneurs are overconfidence, see less uncertainty and risk, exhibit illusion of control, and are more likely to get disproportionately more positive information.
Gaglio and Katz, 2001	Entrepreneurial alertness is positively related to opportunity identification
Stewart and Roth, 2001	Meta-analysis reveals that entrepreneurs are greater than managers in risk propensity. There are larger differences between entrepreneurs whose primary goal is venture growth versus those whose focus is on producing family income.
Markman, Balkin, and Baron, 2002	The general self-efficacy and regretful thinking distinguishes innovators who started a business (i.e., technology entrepreneurs) from innovators who have not started a new business (i.e., non-technology entrepreneurs).
Forbes, 2003	Founder-managers are more overconfident than are new venture managers.
Markman, Baron, and Balkin, 2005	Results indicate that entrepreneurs score significantly higher on self-efficacy, perceived control over adversity and perceived responsibility regarding outcome of adversity, than did non-entrepreneurs.
Poon, Ainuddin, and Junit, 2006	Generalized self-efficacy is related to business creation and success.
Hmieleski and Baron, 2009	Entrepreneurs levels of optimism have a negative relationship with the performance of their new ventures. Furthermore, entrepreneurial experience and environmental dynamism moderate this relationship.
Cornelissen and Clarke, 2010	Entrepreneurs follow inductive reasoning, through analogical and metaphorical aspects, to create and justify the launch of new ventures. Furthermore, inductive reasoning also affects the way entrepreneurs communication about their venture.

Baron and Henry, 2010	The cognitive resources of entrepreneurs are acquired through current or past practice.
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The affective processes and general skills in entrepreneurship have also showed their relevant contribution to entrepreneurship performance. Table 3.5. resumes the main results about skills and affect of entrepreneurs in the last decade.

Table 3.5. *Main results about the skills and affect of entrepreneurs*

Author, Date	Main results
Baron and Markman, 2003	Social competences of entrepreneurs were positively related to financial success of ventures
Cross and Travaglione, 2003	Results show a significant high level of emotional intelligence in all entrepreneurs, as well as a sufficiently high level in all subscales of the two models of EQ.
Baum and Locke, 2004	Goals, self-efficacy, and communicated vision had a direct effect on the growth of the enterprise, and these factors mediate the effects of passion, tenacity, and new resource skill growth.
Collins, Hanges, and Locke, 2004	Meta-analysis indicates that achievement motivation statistically correlated with the choice of an entrepreneurial career and entrepreneurial performance.
Hoehn-Weiss, Brush, and Baron, 2004	There are no differences in self-perceptions among entrepreneurs who receive and do not receive funding. In particular, entrepreneurs consider themselves higher on persuasion and social skills than the experts did.
Rauch and Frese, 2007	Meta-analysis indicate that need for achievement, generalized self-efficacy, innovativeness, stress tolerance, need for autonomy, and proactive personality are related with entrepreneurial behaviour (business retain, and business success).
Baron, 2008	Affect influences opportunity recognition, resources acquisition, development of social networks, adequacy to dynamic environments and tolerance for levels of stress.
Baron, Hmieleski, and Henry, 2012	There is a curvilinear relationship between entrepreneurs' level of dispositional positive affect and their performance of tasks closely related to new venture development and growth.
Baron and Tang, 2011	Positive affect of entrepreneurs is related to their creativity, and creativity is also positively related to firm-level innovation

As previous tables show, researches about the individual characteristics of entrepreneurs are diverse and disperse. More specifically, there is a lack of a systematic review and an integrative model. Furthermore, there are unspecificities on the level of analysis, on the methods and measurement instruments used, and on the criteria variables.

Nevertheless, the impact of individual characteristics of entrepreneurs is critical, valuable and a determinant for the entrepreneurship process. Individual characteristics of entrepreneurs include personality traits (e.g., Zhao & Seibert, 2006; Zhao, Sibert, & Lumpkin, 2010), cognitive mechanisms (e.g., Simon, Houghton, & Aquino, 2000; Cornelissen & Clarke, 2010), attitudes (e.g., Hmieleski & Baron, 2009), skills (e.g.,

Hoehn-Weiss, Brush, & Baron, 2004), and affect (e.g., Baron, Hmieleski, & Henry, 2012) among others.

Similarly, the entrepreneurs' capacities and knowledge on the business area are critical to the success of the entrepreneurial process (Shane, 2000). Every entrepreneur has to possess prior knowledge on the business area (Eckhardt & Shane, 2003). Moreover, experience on similar business is also important to successfully achieve the launch a venture procedure (Morris, Kuratko, Schindehutte, & Spivack, 2012). The decision making strategies are also determinant for the entrepreneurship process and new venture development. Decision makers are usually required to make fast decisions with limited information (Eisenhardt, 1989; Ocasio, 1997). Entrepreneurs are increasingly required to decide in uncertain environments, with fuzzy clues and unstable information (Baum & Wally, 2003). Nevertheless, all decision makers have cognitive limits, and all decision makers seek to influence outcomes (Norton & Moore, 2002).

In the part III of this thesis we will reflect more deeply about the individual characteristics of the entrepreneur and we present a theoretical model that aims to organize and integrate previous research evidences.

Conclusions of Part I

Conclusions of Part I

The general theory of entrepreneurship framework developed by Scott Shane (2003) focused on the nexus between individuals and opportunities. The definition of entrepreneurship developed in the “*Promise*” by Shane and Venkataraman (2000) also highlighted both opportunities and individuals in three main processes: discovery, evaluation and exploitation.

Thus, business opportunities and individuals are included on the definition and theories of entrepreneurship. In fact, new ventures or other types of entrepreneurial actions “occur” because specific individuals – entrepreneurs – convert their ideas into opportunities that are new, useful and presumably better than something that currently exists. The process of turning ideas into reality is one of the most intriguing processes in entrepreneurship, and thus research has been trying to uncover it.

Entrepreneurs and researchers know that entrepreneurial opportunities do not simply “*jump out*” to our lives and sights, nor either there is a recipe to generate entrepreneurial business opportunities. However, there is a consensus around the diversity of the opportunities identification process (Gaglio, 2004). More commonly, it is well-accepted that they emerge in an interactive process between the individual and the environment. The individual differences about the reasoning strategies and thinking resources were empirically evidenced as crucial to the opportunity identification (Gaglio & Katz, 2001).

Mainly, it is shared that the business opportunity emergence is a process and a product of entrepreneurial cognitions, which previously called for the researchers’ attention (e.g., Busenitz & Barney, 1997; Simon, Houghton, & Aquino, 2000). Moreover, the entrepreneurship research has been increasingly focusing on the cognitive perspective. In fact, many researchers have already revealed that this approach brings many advantages for the understanding of the entrepreneurship process (e.g., Baron, 2004).

The “human engine” is at the core of entrepreneurship process and can be analysed from different levels of analysis and borrows influences from different theoretical fields. Nevertheless, research has demonstrated that business opportunities are an objective phenomenon that requires recognition. The business opportunities recognition occurs as a subjective process, dependent of the perception of a pattern between unrelated events, prior knowledge and experience, and shaped by individual

interests. The entrepreneurial reasoning strategies are mainly characterized as a process of construction based on the available means or information, characterized by creativity and innovation processes. The simplest answer to the well-known research question how some persons generate opportunities while others do not (Shane & Venkataraman, 2000) is because persons have different reasoning processes, that is, people think differently.

The characteristics of entrepreneurs are relevant for the process of entrepreneurship, and entrepreneurial motivation is a critical engine that impulse the process of creation of new business. Together with motivational patterns, achievement and self-regulation processes play a core role in turning real the ideas. Furthermore, entrepreneurs are also characterized by processes of creativity, innovation and specific human cognition processes, which also include heuristic shortcuts and the ability to avoid cognitive bias. All of these idiosyncrasies lay the bases for reasoning processes and decision making strategies that lead to more successful outputs. But entrepreneurs are not just creativity, cognition and reasoning processes. There is also a key role performed by social skills, and a broad range of other characteristics and skills that are related to success.

Entrepreneurship is not solely the result of an individual's actions and characteristics, as external factors also play a relevant role (e.g., the economic, technological, political and regulatory context). The entrepreneurship context affords a wide range of freedom to choose and change tasks according to personal preferences and goals. The personality traits and cognitive ability of entrepreneurs are obviously important when it comes to successfully performing varied activities and tasks in a complex and uncertain environment. However, they are not the only aspects that enable entrepreneurs to successfully respond to the socio-economic circumstances they have to face. Other competencies, since they are specifically related to the performance criteria of job tasks go beyond personality traits and cognitive ability. In general, competencies complement personality traits and cognitive ability, and contribute to explain the entrepreneurship process.

The theoretical framework we described in Part I is mainly focused on the individual level, as this is our main interest. This thesis is focused on the individual-opportunity nexus (Shane, 2003), using an individual level of analysis, and contributes to the theoretical understanding of the processes of business opportunity recognition and the individual characteristics associated with entrepreneurship.

Based on the general framework described, Part II “*Entrepreneurial business opportunities, motives and decision to launch a venture*” is focused on business opportunities, decision to launch a venture and entrepreneurial motives. It includes an introduction and two empirical studies, which can contribute to the field of entrepreneurship as Shane (2012) highlighted: “*We also have advanced very little in our knowledge of how entrepreneurs identify opportunities, formulate business ideas, and evaluate them.*” (p.14).

Study 1 (chapter 4) is entitled “*Cognitive maps in early entrepreneurship stages: From motivation to implementation*” and aims to contribute to the explanation of cognitive maps during the early stages of entrepreneurship. This is an exploratory study about mental processes, including a proxy for three early stages of entrepreneurship based on three samples: entrepreneurship trainees, would-be entrepreneurs and novice entrepreneurs. This study provides some answers to the question *how do different entrepreneurial experience levels influence the structure and evolution of cognitive maps at the early stages of entrepreneurship?* We answered this question using qualitative data from entrepreneurship trainees, would-be entrepreneurs and novice entrepreneurs.

Study 2 (chapter 5) is entitled “*Prototype models of opportunity recognition and the decision to launch a new venture: Identifying the basic dimensions*” and sought to develop bi-dimensional models of the processes of business opportunity recognition and subsequent decision to launch a venture. This study is based on the original model of Baron and Ensley (2006) about the prototypical features of business opportunity and the decision to exploit it, based on pattern recognition theory. We present a specification of this model, which reveals the organization of the prototypical features. By identifying the underlying dimensions of these two prototypes, we help to distinguish between the cognitive frameworks that play a role in opportunity recognition and exploiting decisions. In this study we contribute towards answering the question: *what are the basic perceptual and cognitive structures in opportunity recognition and decision to exploit it?* Study 2 is based on a sample of founder entrepreneurs who responded to a survey adapted from literature.

Part II finishes by including a discussion of the main results of Study 1 and 2, and their main conclusions. With these two empirical studies we wish to add some insight to the debate on the opportunities side of the nexus, using the cognitive approach.

PART II.
ENTREPRENEURIAL BUSINESS OPPORTUNITIES, MOTIVES
AND DECISION TO LAUNCH A VENTURE

Introduction to Part II

This part is focused on the opportunity side of the opportunity-individual nexus, as defined by Venkataraman (1997) and Shane (2003).

Business opportunities recognition, evaluation and exploitation are a critical processes for the early stages of entrepreneurship. Entrepreneurship starts with an idea, which can be a real business opportunity. After recognising a business opportunity, individuals begin an evaluation process, to assess the viability and feasibility of the opportunity. Based on this evaluation, individuals can decide to exploit it, or not. These are considered the early stages of entrepreneurship process. Moreover, entrepreneurial motivation also plays a critical role in these early stages, as well as in the entrepreneurship process in general.

The two empirical studies presented here are focus on business opportunity, decision to launch a venture and motivation, according to a cognitive approach. The entrepreneurial cognitions “*are the knowledge structures that people use to make assessments, judgments, or decisions involving opportunity evaluation, venture creation, and growth*” (Mitchell, Busenitz, Lant, McDougall, Morse, & Smith, 2002, p.97).

Study 1 focus on the “*Cognitive maps in the early entrepreneurship stages: From motivation to implementation*”. It aims to contribute to the explanation of cognitive maps during early entrepreneurship stages. The study main contribution resides on the description of cognitive maps about early stages of entrepreneurship in individuals with different entrepreneurial experience.

Study 2 is entitled “*Prototype models of opportunity recognition and the decision to launch a new venture: Identifying the basic dimensions*”. This study sought to develop bi-dimensional models of the processes of business opportunity recognition and subsequent decision to launch a venture. The main contribution of this study resides on the identification of the organization of the prototypical features of business opportunity and decision to launch a venture.

Chapter 4. Cognitive maps in early entrepreneurship stages: From motivation to implementation (Study 1)

4.1. Introduction

Entrepreneurship has been widely studied through management, economics, political science and psychology frameworks (e.g., Baron & Shane, 2008; Levenburg, Lane, & Schwarz, 2006). Despite this increasing interest in entrepreneurship research and its recognized importance in modern societies, there are still limited explanations regarding some aspects of its cognitive and behavioural processes.

The entrepreneurial process can be depicted in a sequence of six stages – (1) recognition of an opportunity; (2) decision to launch a venture; (3) assembling the resources; (4) actual launch of the new venture; (5) building a successful business and (6) harvesting the rewards (Baron & Shane, 2008). Across all the entrepreneurship stages, proximal, mezzo and distal factors have important consequences for their successful conclusion and decision-making process. For example, opportunity recognition is a crucial stage that occurs as a cognitive process carried out by a specific person and thus reflects his or her unique life stories and previous experiences. Moreover, the mental processes through which we acquire, store, transform and retrieve information and data are crucial to idea generation (Baron, 1998). Thus, the ideas people generate reflect the periods in which they live, the current state of technology and scientific knowledge, the actual government policies and many other factors (Baron & Shane, 2008). Because of that, entrepreneurship has been progressively described as a multidimensional construct, including different factors' levels.

Besides the economic and managerial aspects, the entrepreneurial process lacks the inclusion of entrepreneurial motivation. Moreover, a critical aspect that research has not yet thoroughly analysed concerns the three early stages, from entrepreneurial motivation to business implementation: *entrepreneurial motivation, business opportunity recognition and decision to launch a venture*.

As Baron (2006) highlighted, it is important to know the processes involved in early entrepreneurship stages in order to establish an integrative model, and also to improve academic training programmes and practices targeted at young people, promoting the entrepreneurship spirit in high school and university. The literature (e.g.,

³ Part of this study has already been published on a peer reviewed journal and is available on the following reference:

Santos, S. C., Cural, L., & Caetano, A. (2010). Cognitive maps in early entrepreneurship stages: From motivation to implementation. *International Journal of Entrepreneurship and Innovation*, 11 (1), 29-44

Shane, Locke, & Collins, 2003) lacks any treatment of the integration of these initial entrepreneurship process stages.

This study seeks to extend previous knowledge regarding the integration of business opportunity recognition, the decision to launch a venture prototype and the entrepreneurial motivation, following the scientific developments in Baron and Ensley's (2006) and Shane, Locke and Collins's (2003) previous works. Hence, this study aims towards contributing to the explanation of the early entrepreneurship stages, from business opportunity recognition to the decision to launch a venture.

The main research question this study addresses is: *how do different entrepreneurial experience levels influence the structure and evolution of cognitive maps at the early entrepreneurship stages?* More specifically, we state the differences between three groups in the three early entrepreneurship stages– entrepreneurial motivation, business opportunity and the decision to launch a venture.

Specifically, the present research used a qualitative approach, comparing three different groups of entrepreneurs with different experience patterns: *entrepreneurship trainees* (individuals who attend a post-graduate course in entrepreneurship), *would-be entrepreneurs* (individuals who are six months away from launching their entrepreneurial project) and *novice entrepreneurs* (one-experience entrepreneurs).

This design allows us to answer the following specific questions: *What are the main motivations underlying early entrepreneurship stages? How do people recognize business opportunities? How does a decision to launch a venture occur?* To answer these questions, a model was developed connecting entrepreneurial motivation, business opportunity recognition and the decision to launch a venture.

Baron and Ensley (2006) discussed prototype entrepreneurial features that characterise business opportunities and the decision to launch ventures, comparing novices with experienced entrepreneurs. Our study presents a step forward in entrepreneurship research as it presents entrepreneurs' cognitive relationships among recognised features through cognitive maps. More specifically, it presents the cognitive maps of the motivation, business opportunity and decision to launch, including not only the prototypical features, but also the relationship among them.

Moreover, this study is innovative in comparing the cognitive framework between early stages of entrepreneurship, that is, among entrepreneurship trainees, would-be entrepreneurs and novice entrepreneurs. Understanding cognitive maps changing at these early stages may be particularly important for designing educational

strategies that promote knowledge concerning *how* entrepreneurial activity evolves and increases entrepreneurship (e.g., Costa & Carvalho, 2011).

Theoretically, the present research contributes to refine the knowledge regarding the early entrepreneurship stages, as it: (a) clarifies relations between the entrepreneurial motivation, business opportunity and decision to launch a venture through cognitive maps; and (b) allows a development perspective by means of comparing entrepreneurship trainees, would-be entrepreneurs and novice entrepreneurs.

4.1.1. Entrepreneurship: The motivational driver

Entrepreneurship is most commonly defined as the process by which “*opportunities to create future goods and services are discovered, evaluated, and exploited*” (Shane & Venkataraman, 2000, p. 218). Accordingly, entrepreneurship activity is the result of motivated human action and external factors (Shane, Locke, & Collins, 2003).

Evidence from qualitative and quantitative research suggests that motivation influences the entrepreneurial process (Shane, Locke, & Collins, 2003). Shane and colleagues model (2003) identifies general and task-specific entrepreneurial motivations that have direct effects on opportunity recognition, idea development and execution. General motivations include the need for achievement, locus of control, vision, desire for independence, passion and drive. Task-specific motivations include goal setting and self-efficacy. Moreover, Baum and Locke (2004) determined that situationally specific motivation (i.e., communicated vision, self-efficacy and goals) have direct effects on venture growth. More recently, McGee, Peterson, Mueller and Sequeira (2009) evidenced the importance of entrepreneurial self-efficacy to a new venture creation process as an entrepreneurial motivation core feature.

A meta-analysis of 47 studies revealed that achievement motivation was significantly correlated with entrepreneurial performance and the choice of an entrepreneurial job (Collins, Hanges, & Locke, 2004). Despite the many studies focused on entrepreneurial motivation (e.g., Vijaya & Kamalanabhan, 1998), the results are still not comprehensively integrated into an explanation of the entrepreneurial process, especially the initial stages of business opportunity recognition and the decision to launch a venture.

4.1.2. Business opportunity recognition and the decision to launch a venture

Entrepreneurial business opportunity research has focused mainly on the discussion around its operationalization and its nature. How the opportunities are recognized is still one of the central questions of entrepreneurship research (Smith, Matthews, & Schenkel, 2009; McMullen, Plummer, & Acs, 2007).

Concerning operationalization, business opportunities involve the bringing into existence of new goods, services, raw materials and organizing methods that allow outputs to be more profitable, i.e., that can be sold at a higher price than their cost of production (Shane, 2003). In general, the definition includes three characteristics: potential economic value, novelty and perceived desirability (Baron, 2006). Recently, the need to link the micro-analytic research results and the macro level of social and economic theory has been evidenced as critical to understand the origins of opportunity (Plummer, Haynie, & Godesiabois, 2007).

Concerning its nature, the research has followed two different approaches. Most American researchers suggest that opportunities exist ‘out there’, and they are available to be discovered. On the other hand, some European researchers have argued that entrepreneurial opportunities emerge from an entrepreneur’s perception, interpretation and understanding of the environment (Dutta & Crossan, 2005).

In an attempt to resolve this discrepancy, Kickul and Gundry (2000) suggested an integrative approach. Concerning their multidimensional and complex nature, entrepreneurial opportunities would emerge from the recognition of profitable scenarios.

As an integrative approach, Shane (2003) developed a general theory of entrepreneurship in which opportunities are thought of as existing before their recognition. Their perception depends on the characteristics of opportunities (e.g., high-growth industries) and the characteristics of the people who exploit them (Casson, 2005). Despite the important contribution of this approach, Shane (2003) does not specifically include the motivational role in the entrepreneurship process.

Moreover, no comprehensive framework has been given to business opportunity or the decision to launch a venture. Focusing on the perception of both steps, and based on pattern recognition theory, Baron (2004a, 2006) suggested that individuals perceive business opportunities as they perceive connections between apparently unrelated events or trends – for example, changes in technology, demographics, markets or government policies – as a meaningful pattern. The crucial assumption in this approach is that opportunities are recognized rather than constructed. Entrepreneurs’ cognitive

frameworks, the so-called entrepreneurs' mental schemes or maps (e.g., Bird, 1988), or prototypes, may be developed on the basis of pattern recognition. The entrepreneurs' cognitive framework, by "*connecting the dots*" between the perceived unrelated environmental changes, permits the recognition of meaningful patterns that are possible venture opportunities. For instance, when an entrepreneur finds that any of his/her prototypes fits the perceived environmental patterns, a business opportunity may emerge and the decision to launch a venture can occur (Baron, 2006).

Baron and Ensley (2006) offered the first empirical paper on the "*connecting the dots*" approach to entrepreneurial opportunity recognition. As qualitative exploratory research to test the assumption that entrepreneurship opportunity recognition operates as pattern recognition, the authors conducted interviews with novice (first-time) and repeat (experienced) entrepreneurs aiming to compare business opportunity prototypes. They simply asked the participants to "*describe the idea on which your new venture was based*" and "*why did you feel this was a good idea – one worth pursuing?*". The first question endorsed the identification of the business opportunity prototype and the second question allowed the identification of the decision to launch a venture prototype. The data collected in that study were content analysed with Ethnograph, which reports frequencies of words, and, in addition, panel members identified distinct ideas or attributes present in the entrepreneurs' responses. After a strict procedure, Baron and Ensley (2006) identified that a business opportunity prototype included: (1) solving a customer's problems, (2) the ability to generate a positive cash flow, (3) manageable risk, (4) superiority of the product/service and (5) potential to change the industry. Regarding a decision to launch a venture, they identified the following prototypical features: (1) a favourable financial model, (2) positive assessment or advice from others (friends, financial advisors and industry experts), (3) the idea's novelty, (4) a large untapped market and (5) intuition or gut feeling.

Evidence shows that experienced entrepreneurs have prototypes that are clearer, richer and more venture-focused on business opportunities and the decision to launch a venture prototype than novice entrepreneurs (Baron & Ensley, 2006). These results support the assumption of opportunity recognition as pattern recognition and identify a variety of factors that constitute the business opportunity and the decision to launch prototypes.

4.1.3. From pattern recognition to cognitive maps

Baron's (2006) "*connecting the dots*" approach to business opportunities and the decision to launch is based on pattern recognition theory – the process through which individuals perceive complex and apparently unrelated events as meaningful patterns (Matlin, 2005). Within this approach, prototypes are considered as representations of the most typical features that characterize one category (Rosch, 1978). In pattern recognition theory, a prototype can be described by templates, feature lists or structural descriptions (Palmer, 1977). The process involves the comparison of the input pattern with the highly specific dimensions of the categorical representation stored in memory – the prototype. The decision strategy is based on the perceived computed similarity between the input pattern and the categorical prototype (Palmer, 1977).

Basically, every time a new event or trend is perceived, it is compared with the memory-stored prototype, and its specific features or possible connections are evaluated. This process has been explored, for example, in social psychology (e.g., Bonito, 2004; Curseu, Schrujier, & Boroş, 2007), experimental psychology (Intraub, Bender, & Mangels, 1992) and more recently in entrepreneurship research (Baron & Ensley, 2006).

Prototypes can be considered as a specific type of mental model (or cognitive model), as they represent the mental world, which, in turn, is a representation of the real world (Palmer, 1977). In entrepreneurship research, prototypical features that characterize a business opportunity and the decision to launch a venture have already been described (Baron & Ensley, 2006). We can go further than the description of the features in the entrepreneurial process and also include the analysis of the relationships among the categories. So, the present research intends to represent the entrepreneur's mental model graphically through cognitive maps.

Cognitive maps may be constructed as graphic devices that individuals use to represent and associate categories and ideas with special issues (Eden, Ackermann, & Cropper, 1992; Langfield-Smith, 1992; Tolman, 1948). In the map, categories are graphically represented by nodes and are linked by causal relationships or means to achieve a given goal that is situated at the arrow's tail (Carbonara & Scozzi, 2006).

Different methodologies have been proposed to assess cognitive maps. Semi-structured interviews have been used as the main approach to data collection (Eden, 1988; Laukkanen, 1998). Other elicitation techniques include content analysis, repertory grid techniques, factor analysis, adjacency matrices, interactive interviewing (e.g., Self-

Q) and semiotic analysis (Swan, 1995). Some of these approaches can be classified as nomothetic methods that require participants to select from a predefined set of categories and focus on the relationships between them (Goodhew, Cammock, & Hamilton, 2005); and others are ideographic methods, which allow free-categories inclusion (Cossette & Audet, 1992). More recent methodologies turn to software packages, such as Decision Explorer or CMAP2 (Cossette & Audet, 1992).

As this has been used as one of the main methodologies to study cognitive maps (e.g., Eden, 1988), this study collected semi-structured individual interviews to draw cognitive maps. Although responses to the questionnaires commonly used in these studies do not provide an understanding of the association or relationship between factors, cognitive mapping does. Specifically, we use cognitive maps to explain the different factors interacting during the stages of motivational process, business opportunity recognition and the decision to launch a venture, and to describe, analyse and compare three different entrepreneurs' groups. In other words, in 'what way' do different groups structure knowledge concerning initial entrepreneurship stages? Evidence of how knowledge is structured between different developmental entrepreneurship groups has the potential to shed light on whether early entrepreneurship stages are perceived differently, thereby leading to different practical implications.

4.1.4. The present research

Although Baron and Ensley (2006) identified the main factors that characterize business opportunity recognition and the decision to launch a venture prototype, it is still a preliminary model as it does not consider other crucial factors that may interfere in the process, such as motivational factors. As the development of any entrepreneurship theory requires consideration of the motivation of people making entrepreneurial decisions (Shane, Locke, & Collins, 2003), it is important to examine the relationship between them.

In this study, three groups were selected to represent different developmental states in early entrepreneurship: entrepreneurship trainees are characterized by entrepreneurial motivation and are looking for opportunity recognition; would-be entrepreneurs have entrepreneurial motivation and have already decided to launch a venture, as they will be founding their project within six months; and, finally, novice entrepreneurs have already implemented their entrepreneurial projects. Thus, these three

groups have different but sequential developmental features, characterizing the three critical early stages in the entrepreneurship process (Table 4.1.). The present study will analyze this changing process through cognitive maps, describing motivational, business opportunity and the decision to launch factors.

Table 4.1. *Developmental features of the groups in the research*

<i>Entrepreneurship Trainees</i>	Entrepreneurial motivation	Recognizing opportunities		
<i>Would-be Entrepreneurs</i>	Entrepreneurial motivation	Opportunity recognized	Deciding to launch a venture	
<i>Novice Entrepreneurs</i>	Entrepreneurial motivation	Opportunity recognized	Decision to launch a venture	Implementing of entrepreneurial project

The literature reveals that longitudinal research into entrepreneurship is difficult and scarce (Davidsson, 2004). Although the present research is cross-sectional, it may be considered as *proxy-like* for a longitudinal perspective, as it has three different groups that correspond to three different developmental stages. Thus, the present research in some way seeks to fill in this gap in the literature. Moreover, the three groups chosen can allow us to grasp the changing pattern of entrepreneurs' cognitive maps, allowing the inference of their evolutionary and developmental perspective, depending on the groups' experience level and ability for decision making: from entrepreneurship trainees to novice entrepreneurs, or from entrepreneurial motivation to entrepreneurial project implementation.

This study proposes a bidirectional-mediation framework (Figure 4.1.). The entrepreneurial process begins with motivation and aims to reach the decision to launch a venture. Despite the powerful effect of entrepreneurial motivation, the decision to launch a venture requires the recognition of business opportunities. Thus, business opportunity recognition may play a mediating role between entrepreneurial motivation and the decision to launch a venture. At the beginning of the entrepreneurial process, motivation is a critical factor, catalysing the development of the process. Without strong, focused, general and task-specific motivations, the entrepreneurship process is unable to proceed (Shane, Locke, & Collins, 2003).

Bidirectional entrepreneurial motivation promotes business opportunity recognition as an elaborated and mediated cognitive process to the decision to launch a

venture. Business opportunity recognition has to be systematically fed by entrepreneurial motivation, creating a bidirectional and dynamic effect. It is assumed that opportunities are perceived from the environment as meaningful patterns. When perceived events or trends assume prototypical features that are critical to pattern recognition, a business opportunity emerges (Baron, 2006).

The decision to launch a venture is the output from the early stages in the entrepreneurship process, according to the existence of essential factors that are perceived as indispensable to the continuation of the entrepreneurship process. The decision to launch a venture occurs when their meaningful features are recognized as prototypical of a pattern (Baron & Ensley, 2006), which is similar to business opportunity recognition.

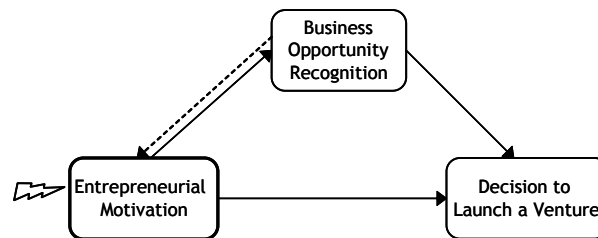


Figure 4.1. Entrepreneurship early stages process: Proposed model

As the entrepreneurship process is involved on multilevel factors, such as the proximal, mezzo and distal factors (Baron & Shane, 2008), in addition to analysing the cognitive maps' structures, we intend to study the social and individual factors that they may comprise. The literature already provides evidence that the entrepreneurship process is multidimensional and requires the interaction of different domain variables (e.g., Shane, 2003). Thus, it was predicted that macro-social, micro-social, individual and cognitive factors would be crucial to the ability to move from entrepreneurial motivation to the decision to launch a venture. With regard to macro-social factors, economic, professional and technological variables were considered (e.g., Begley, Tan, & Schoch, 2005). At the micro-social level, family, friends and colleagues (e.g., Siqueira, 2007) were taken into account. At the individual level, motivation and personality (e.g., Zhao & Seibert, 2006) variables were considered. Finally, regarding cognitive factors, it was predicted that decision making, opportunity recognition and problem-solving strategies (e.g., Baron, 1998) would be central during the early stages of entrepreneurship.

4.2. Method

4.2.1. Participants

Altogether, 18 participants were involved in this study. The sample consists of 3 groups: 7 entrepreneurship trainees, 5 would-be entrepreneurs and 6 novice entrepreneurs. The average age is 31.7 years, and 1 participant is female. Their ages range from 23 to 51, with a standard deviation of 8.6 years.

Entrepreneurship trainees

The participants attended a graduate-level training course in Entrepreneurship and Venture Launch at a Portuguese university business school. All the participants have an undergraduate degree, and two have a Masters degree.

Would-be entrepreneurs

The would-be entrepreneurs are participants who are preparing their own entrepreneurship project to be started within six months. Sixty percent have an undergraduate degree, and all are employed. Entrepreneurial projects include Internet-based services, human resources recruitment, design and creative ateliers and biotechnology applications.

Novice entrepreneurs

All the participants have their own business, lasting on average for 2.8 years, with a range of 6 months to 5 years and a standard deviation of 1.9 years. All the entrepreneurs are engaged in their first entrepreneurial project and all the ventures are located in the Metropolitan Area. All the entrepreneurs have an undergraduate degree (Management, Physical Engineering or Sociology) and one of them has a post-graduate degree in Entrepreneurial and Venture Launch; 90% had previously been employed in other firms, before starting their own business. Entrepreneurial firms include strategic marketing consulting, market research services, editorial commerce and a targeted event organizer.

4.2.2. Procedure and data analysis

A qualitative approach was chosen as it was one stated to be one of the most powerful approaches to develop the early stages of entrepreneurship research (e.g.,

Bygrave, 2007; Davidsson, 2004). More specifically, concerning the motivational drivers, the business opportunities and the decision to launch a venture, the qualitative approach is one of the most powerful research approach. Within the qualitative approach, the semi-structured interviews were assigned as the most appropriate method to collect data on the referred research topics (e.g., Baron & Ensley, 2006; Shane, Locke, & Collins, 2003).

The data were content analysed on ATLAS-TI, version 5.0 (Muhr, 2004). The option to use computer-aided text analysis was based on the empirical and theoretical evidence of the clear advantage of processing large samples with high speeds and reliabilities (Short, Broberg, Cogliser, & Brigham, 2009). The analysis with this computer content analysis software follows a research methodology based on grounded theory (Strauss & Corbin, 1998).

The option for this method is based on the objectives of the research. As we are interested in explaining the process rather than measuring the contribution of each key stage, the grounded theory approach answers this purpose as it develops theory that is grounded in data (Strauss & Corbin, 1998) and describes a formal set of procedures that guide a reliable qualitative analysis (Henwood & Pidgeon, 2003). The Atlas-Ti software supports the data analysis based on the grounded theory paradigm and enhances the bidirectional process between the data and the researcher's assumptions (e.g., Henwood & Pidgeon, 2003).

Each participant was individually interviewed and the data were recorded. The data were all collected during approximately one month. The main questions were “*what motivated you to start entrepreneurial activity?*”, “*describe the idea on which your venture was based*” and “*why did you feel that was a good idea – one worth pursuing?*”. The last two questions were used by Baron and Ensley (2006). We also asked participants to describe their professional and relevant personal life path until the present time. Data were transcribed *verbatim* and content analysed with Atlas-Ti, a powerful program for coding and interpreting textual data (Barringer, Jones, & Neubaum, 2005). The narratives were coded using standard content analysis techniques (Lincoln & Guba, 1985). The minor discrepancies that existed between the coders were resolved by examining the data together.

The cases were initially coded at the sentence level with each substantive sentence assigned to one or more of four categories. The sentences were then analysed to identify variables, such as prior entrepreneurial experience, business opportunities

sources and venture launch decision making. Examples of how the coding was performed are provided in table 4.2.

As the process of induction of theory from data (Henwood & Pidgeon, 2003), the codes and memos were data created. The data analysis was based on the main literature concepts. The final step was the graphic representation of the relations between the concepts in analysis.

Table 4.2. *Examples of data coding for the three early entrepreneurship stages in our case-study sample (the three groups are included)*

Coding Category	Example
Entrepreneurial motivation	
Passion for work	<i>If I can choose to work on the business area that I love, (...) I have to accomplish this desire. I love what I do, and I would never change my occupation. (...)</i>
Work independence	<i>I can take my decisions, (...) I can work independently from greater hierarchical positions (...)</i>
Work autonomy	<i>I can manage my time (...), I can choose where to work (...) It's possible to manage the family–work time easily</i>
Economical motivation	<i>I feel that I can receive more income if I work for myself (...) I need to improve my monthly salary (...)</i>
Dissatisfaction with working culture	<i>I don't like the working culture where I was working (...)</i>
Family support	<i>My family is, somehow, also involved in the project (...) I feel that my family can give me some advice and management experience (...)</i>
Market opportunity	<i>I identified a market opportunity (...) I can see clearly that I may provide this service in a more efficient way (...)</i>
Entrepreneurship team work	<i>I can choose the persons who will work with me (...) It's a privilege when you can choose the best partners for your entrepreneurial team (...)</i>
Ambition	<i>Only with my own business I feel like I have conquered what I dream about (...) I had the clear vision that I would be an entrepreneur (...) I still can feel that I have the energy to go further and to develop more business (...)</i>
Business opportunity recognition	
Social corporate responsibility	<i>I know that my business develops better ways to serve our society (...)</i>
Partner's idea	<i>My partner had a great business idea, and I joined him (...)</i>
Policy knowledge	<i>The law concerning the (...) is changing; thus, it's important to exploit this gap (...)</i>
Innovative concept	<i>There isn't anything similar in the market (...) We will provide a different and innovative service/product (...)</i>
International professional experience	<i>My working experience abroad allowed me to see that the market had a specific need for (...)</i>
Social demographic context	<i>The social demographic context is changing (...); this is a clear business opportunity (...)</i>
Socio-economic world development	<i>The change in the socio-economic worldwide patterns evidence that there is a gap (...)</i>
Family business opportunity idea	<i>My brother had this idea (...); I am applying that idea (...) It was a business area already performed by my relatives (...)</i>
Decision to launch a venture	
Passion for work	<i>I love my business (...) I love what I do (...)</i>
New in the market	<i>We could assess clearly the newness of the product in the market (...)</i>
Technical market	<i>I know how the market works (...)</i>

knowledge	<i>These technical issues are currently a need on the market (...)</i>
Market acceptance	<i>I assessed whether my clients would accept my product (...)</i> <i>The acceptance in the market (...) is critical to the decision (...)</i>
Business creation know-how	<i>I have know-how on business creation (...)</i>
Financial fund available	<i>The initial financial investment was available (...)</i> <i>We had the money to make the first investment (...)</i>

Concerning internal validity, three independent raters evaluated the data and inter-rater reliability was computed based on Cohen's 2×2 unweighted kappa (Cohen, 1960), through an Excel program developed to assist researchers in the determination and presentation of confidence intervals. The results revealed an acceptable agreement (kappa = 0.58), meaning that the analysis could proceed.

4.3. Results

Entrepreneurship trainees', would-be entrepreneurs' and novice entrepreneurs' cognitive maps on entrepreneurial motivations, business opportunity recognition and the decision to launch a venture were extracted. The elicited categories with a direct association with each early entrepreneurship stage process are presented in table 4.3.

Table 4.3. *Categories with direct association with the corresponding cognitive map target: entrepreneurial motivation, business opportunity recognition and decision to launch a venture*

	Entrepreneurial motivation	Business opportunity recognition	Decision to launch a venture
Entrepreneurship trainees	<i>Passion for work</i> <i>Wish to go further</i> “My own business” Dissatisfaction with working culture Economic motivation Remain in activity Work autonomy	Group brainstorming Observation Policy knowledge Gap in the market Job experience Emotional business opportunity identification Partner’s idea Market necessity Social corporate responsibility	<i>Passion for work</i> New to the market Market problem Policy knowledge Technical market knowledge Financial funds Differentiation from the competitors Market acceptance Viability Value chain profitable
Would-be entrepreneurs	Work flexibility Entrepreneurship team work Decision-making autonomy Work autonomy Passion for work Family support Dissatisfaction	Entrepreneurship team work Market with ethical problem Entrepreneurship management knowledge Socio-economic world development Innovative concept Family business opportunity idea	<i>Trust in business idea</i> Passion for work New investment area Small investment Market acceptance Small competition patterns Business creation know-how Market opportunity
Entrepreneurs	Autonomy Work flexibility Overlap with studied area Entrepreneurship team work Passion for work Ambition Small risk Independence	Socio-demographic context Risk taking International professional experience Freelancer Market problem	Ability to solve market’s problems Financial resources available Independence Passion for work Entrepreneurship team work

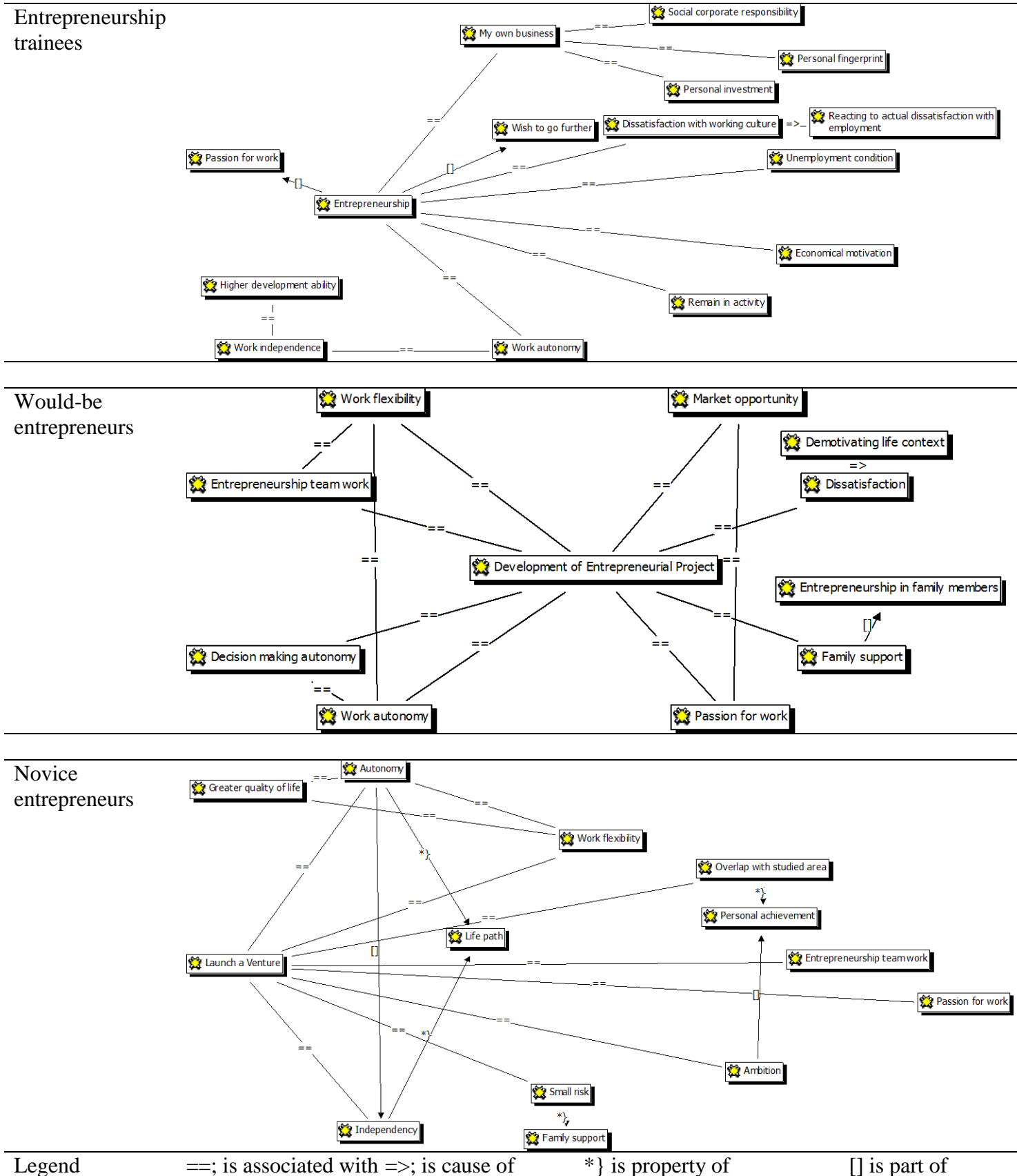
4.3.1. Entrepreneurial motivation

Entrepreneurship trainees identified several motivations toward entrepreneurship (Table 4.4.). They identified entrepreneurship as part of a passion for work and the wish to go further. Entrepreneurship motivations are mainly individual factors. They are an active response to the trainee’s current professional situation: unemployment threat and remaining active (in the case of some pre-retirement trainees). Moreover, ‘my own business’ desire is also associated with entrepreneurship motivation, as it reflects a social responsibility, a personal ‘fingerprint’ or a personal investment. The dissatisfaction with local working culture and economic motivation are also identified. Work autonomy motivation is the only working condition identified, as it is associated with independence and higher development ability.

Would-be entrepreneurs identified motivations underlying the desire to launch a venture in three factors: *work design* – work flexibility, autonomy and decision-making autonomy are associated with the motivation to develop an entrepreneurial project; *working conditions* – to have the opportunity to choose the involved entrepreneurial team work; *life path* – the dissatisfaction with their life path, associated with the unpleasant life context; the recognition of a market opportunity and passion for work are associated with the motivation to develop an entrepreneurial project. Similarly, their families have some entrepreneurship experience, which provides some family support. There is an associative triangle between work autonomy, work flexibility and the motivation to develop an entrepreneurial project; and passion for work, market opportunity and the motivation to develop an entrepreneurial project.

Motivations underlying *novice entrepreneurs*' wish to launch a venture emerge from four factors: *work design* – the ability to have greater work autonomy, flexibility and independence is identified as crucial and associated with the perception of the chance to have a better quality of life; *working conditions* – the chance to choose and work with their own entrepreneurial team and the possibility to have their own business in their academic specialization area are motivating working conditions; *financial condition* – entrepreneurs refer to the controllable risk underlying their venture projects, and they have family support; *life path* – entrepreneurs associate their motivation to launch a venture with a high level of ambition and passion for work.

Table 4.4. *Entrepreneurial motivation cognitive maps: entrepreneurship trainees, would-be entrepreneurs and novice entrepreneurs*



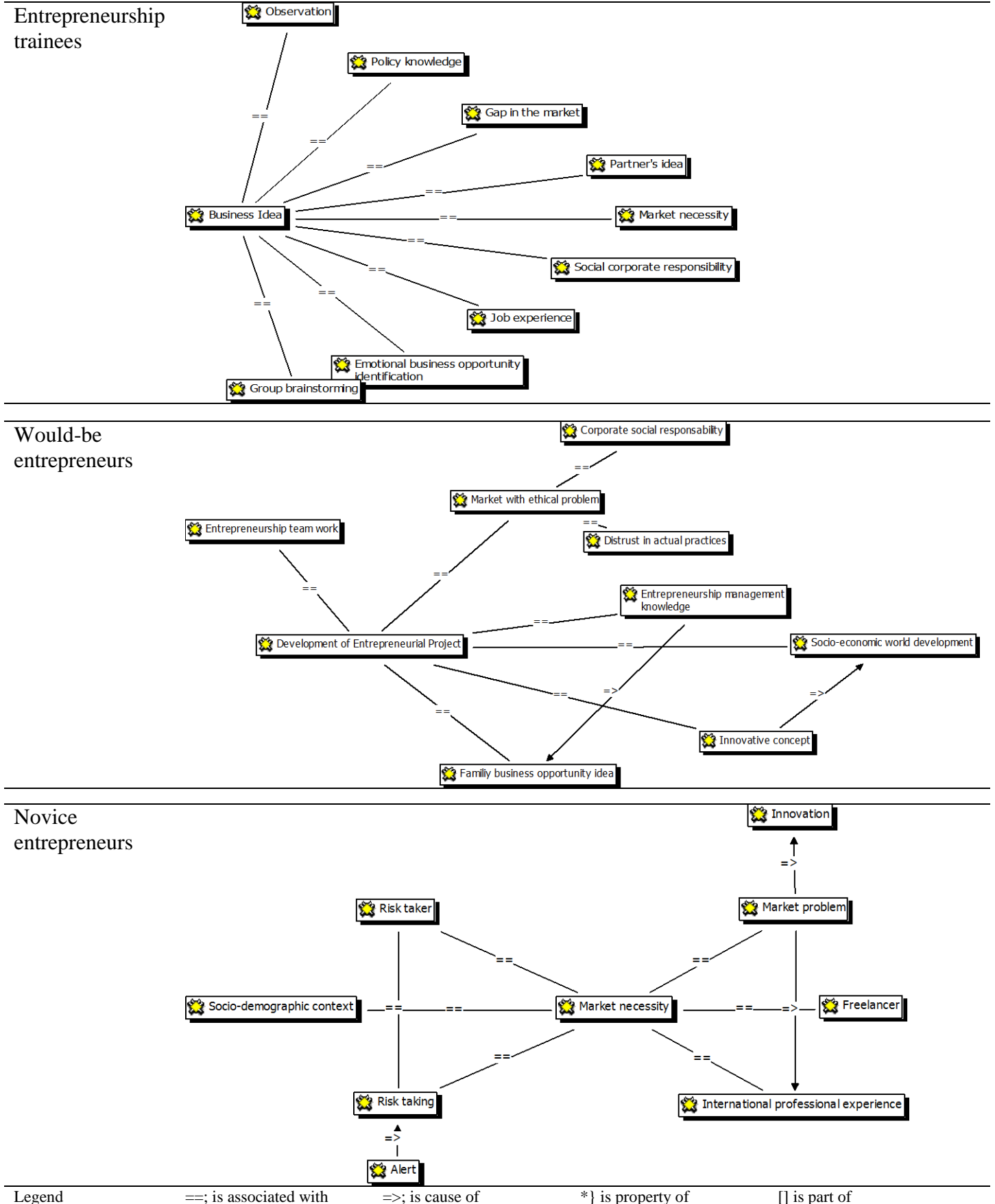
4.3.2. Business opportunity recognition

Business opportunity recognition factors (Table 4.5.) are linearly identified by *entrepreneurship trainees*. Business idea recognition is associated with observation, policy knowledge, gaps in the market, a partner's idea, market necessity, social corporate responsibility, job experience, emotional identification and group brainstorming.

Would-be entrepreneurs associate it with ethical problems in the market (e.g., firms whose products have a lower quality than claimed), as they distrust these practices and assume the opportunity as corporate social responsibility. Business opportunities can also be identified by members of the family who are also entrepreneurs. Thus, business opportunity recognition is associated with the perceived knowledge of entrepreneurship management. The development of a world socio-economy and innovative concepts are also associated with business opportunity recognition. Moreover, entrepreneurial teamwork, identified as a motivation, is also present in opportunity recognition.

Concerning *novice entrepreneurs*, business opportunity recognition emerges from a simple framework. The recognition of a market necessity is associated with an international professional experience, a freelancer experience, a market problem identified in a previous job, the socio-demographic development of the country and some propensity for risk taking, as a cause of an alert state. When emerging from past international experience or market problems, business opportunity recognition is associated with the introduction of innovation.

Table 4.5. *Business opportunity recognition cognitive maps: entrepreneurship trainees, would-be entrepreneurs and novice entrepreneurs*



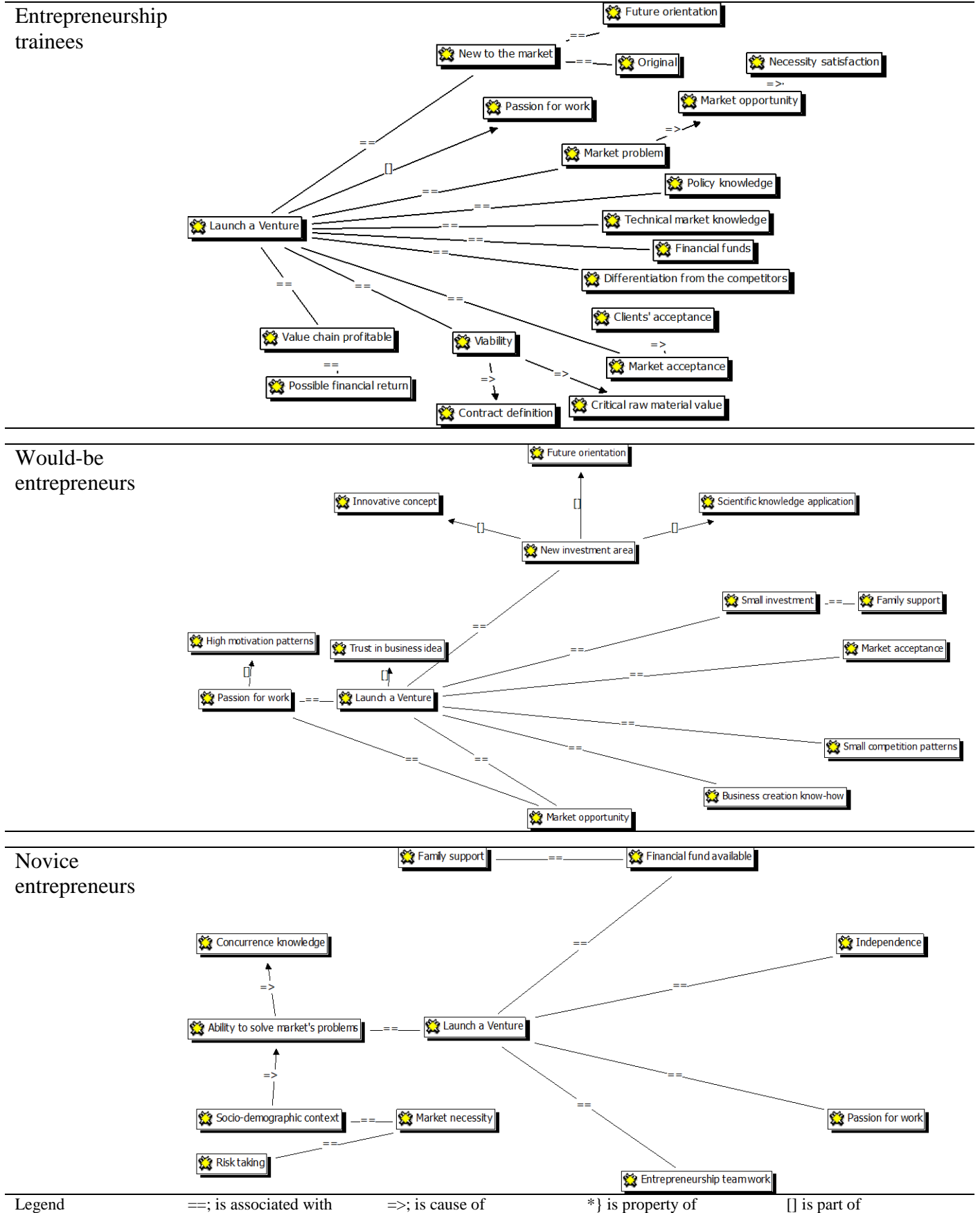
4.3.3. Decision to launch a venture

First, *entrepreneurship trainees'* factors leading to the decision to launch a venture are part of the passion for work. Moreover, the decision to launch a venture is associated with environmental factors, concerning the newness to the market (e.g., future orientation and originality), the ability to solve market problems, policy knowledge, technical market knowledge, financial resources, differentiation from competitors, market acceptance (as a cause of clients' acceptance), viability (caused by contract definition and critical raw material value) and a profitable value chain.

On the one hand, *would-be entrepreneurs* associate a decision to launch a venture with passion for work, high levels of motivation and trust in the business area. On the other hand, a decision to launch a venture is based on the assumption that it is a new investment area (e.g., an innovative concept, based on future orientations, and with scientific knowledge applications). The investment is normally small and they have background family support. Concerning the market environment, when deciding to launch a venture, would-be entrepreneurs consider the market acceptance, the competition patterns and the belief in the perceived market opportunity, as they are also associated with their passion for work. Moreover, business creation know-how is an important factor.

The decision to launch a venture is associated with *novice entrepreneurs'* perceived ability to solve market problems, as they know the concurrence and the socio-demographic development of the country that was identified as a market opportunity. At the same time, categories presented in the entrepreneurial motivation cognitive map are also associated with a decision to launch a venture (e.g., the availability of financial resources, the need for independence, the passion for work and the opportunity to choose and work with the entrepreneurial team). Table 4.6 presents the graphic representation of the cognitive maps on the decision to launch a venture.

Table 4.6. *Decision to launch a venture cognitive maps: entrepreneurship trainees, would-be entrepreneurs and novice entrepreneurs*



Overall, concerning the number of categories elicited and the cognitive maps' structure, novice entrepreneurs' cognitive maps are clearer, richer and more experience-based than those of would-be entrepreneurs and entrepreneurship trainees. These findings agree with the cognitive psychology assumption that experience increases clearness, richness and reality-basing (Matlin, 2005). Moreover, this evidence is consistent with the results presented by Baron and Ensley (2006).

As predicted, the cognitive map analysis suggests that macro-social (economic, professional and technological), micro-social (family, friends and colleagues), individual (motivation and personality) and cognitive (decision making, opportunity recognition and problem-solving strategies) factors are critical domains during specific business opportunity recognition and the decision to launch a venture for would-be and novice entrepreneurs (Table 4.7.).

Table 4.7. *Domain analysis in cognitive maps: Example of categories*

Domains in analysis	Categories
Macro-social	Dissatisfaction with working culture; Policy knowledge; Gap in the market; Technical market knowledge; Financial resources; Work autonomy; Work flexibility; Professional independence; Small competition patterns; Freelancer
Micro-social	Entrepreneurship team work; Family support; Overlap with studied area; Group brainstorming; Emotional business opportunity identification; Partner's idea; Family business opportunity idea
Individual	Economical motivation; Remain in activity; Ambition; Passion for work; Wish to go further; "My own business"
Cognitive	Decision-making autonomy; Small risk; Innovative concept; Risk taking; Ability to solve market's problems

Macro-social factors were identified by all the groups in entrepreneurial motivation (e.g., dissatisfaction with working culture), business opportunity recognition (e.g., the socio-demographic context; previous international professional experience; freelancer; socio-economic world development; policy knowledge) and in the decision to launch a venture (e.g., the availability of financial resources; small competition patterns). The role of micro-social factors was also identified by all the groups in the importance of the entrepreneurial teamwork or family support evidence. Moreover, business opportunity recognition can emerge from would-be entrepreneurs' relatives.

Life path and cognitive factors were also mentioned as critical, namely the risk-taking propensity and ambition.

It is worth noting that work autonomy, flexibility and independence are central factors that are associated with entrepreneurial motivation in all the groups. Passion for work is also a critical feature, as it is identified as important for motivation, but it is also present in the decision to launch a venture cognitive map for all the groups.

However, a business opportunity recognition cognitive map from entrepreneurship trainees is very simple and more linear. This is an interesting map as it reports the academic knowledge acquired from an entrepreneurship graduate-level training course. In fact, policy knowledge, a gap in the market and perceived market necessities are referred to in most entrepreneurship textbooks as business opportunity sources. Moreover, entrepreneurship trainees are seeking business opportunities in all possible sources, suggesting dispersed attention and a lack of fitness for the environment.

4.4. Discussion

The main goal of this exploratory study was to contribute to the clarification of the dynamics of the entrepreneurship process. Indeed, through semi-structured interviews, it was possible to extract cognitive maps of entrepreneurship trainees, would-be entrepreneurs and novice entrepreneurs concerning the entrepreneurial motivation, business opportunity recognition and the decision to launch a venture.

Overall, the comparison between the cognitive maps' data suggests that entrepreneurship experience develops the structure of cognitive maps, increasing clarity, richness and experience-based features, from entrepreneurship trainees to novice entrepreneurs. So, it can be assumed that experience in entrepreneurship changes cognitive maps over time, since cognitive maps become clearer and richer as one moves from entrepreneurship trainees to novice entrepreneurs.

Business opportunities and the decision to launch a venture prototype, identified by Baron and Ensley (2006), were not all present in this research. This might be due to the fact that their data were obtained from experienced (repeat) and novice (first-time) American entrepreneurs. In this paper, we focused on entrepreneurship trainees, would-be entrepreneurs and novice entrepreneurs. As the American model is not universal, it is not strange that prototypical features are not coincident, since culture may have an

important impact. Future research should study early stages of entrepreneurship in other cultures too, driven by the new innovative and provocative research paradigm (see Tan, Fischer, Mitchell, & Phan, 2009).

The model proposed in this research suggests a dynamic-mediation framework, assuming a strong relationship between entrepreneurial motivation and the decision to launch a venture, mediated by business opportunity recognition. However, the analysis of the present data suggests that this model must be further developed. In fact, the data provide evidence that a few motivations associated with the entrepreneurial intentions were also present in decisions to launch a venture, such as passion for work. This evidence suggests that motivation is not only a critical input to the entrepreneurial process, but that it is also important in decision stages, having a systematic influence on them, as Shane, Locke and Collins (2003) have already suggested.

Thus, the present research proposes a development of the previous model according to data evidence from early entrepreneurship stages where motivation has not only the active catalytic effect, but also a moderating role in business opportunity recognition and the decision to launch a venture.

A decision to launch is the output from entrepreneurship's early stages, and it will only occur when high motivational patterns are perceived, suggesting a moderating role of entrepreneurial motivation. Future research should test this model, including both mediation and moderation effects. As passion for work has already been identified as a crucial feature for venture growth (e.g., Baum, Locke, & Smith, 2001), it is also important to explain its importance in the initial stages of the entrepreneurial process. Moreover, the importance of passion in the entrepreneurial process has been evidenced as crucial across the successful venture launch. Cardon, Wincent, Singh and Drnovsek (2009) worked on a comprehensive model of entrepreneurial passion and developed a theory on the nature and experience of entrepreneurial passion. The authors stressed the importance of entrepreneurial passion in the entrepreneur's self-identity, recognizing its importance to the regulation of the emotional states and management of conflicts, as well as its importance to the venture's employees (Cardon, 2008).

We can also identify the factors mentioned simultaneously by entrepreneurs, would-be entrepreneurs and entrepreneurship trainees in each of the stages (Fig. 4.2.).

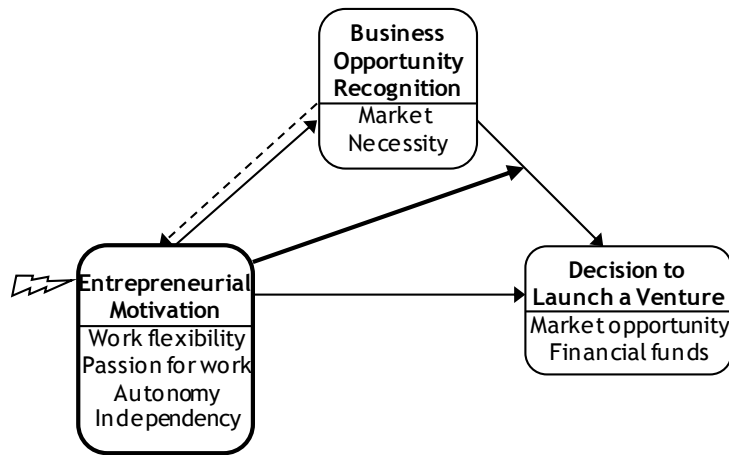


Figure 4.2. Features shared by entrepreneurs, would-be entrepreneurs and entrepreneurship trainees

At an initial stage, work flexibility, passion for work, autonomy and independence are the main motivations within entrepreneurship, suggesting that entrepreneurs wish to have more control over their decision making at work. This motivation leads to business opportunity recognition, mainly through the perception of a necessity in the market. The decision to launch a venture is mainly based on the assumption that there is a profitable market opportunity and financial resources available to invest. At this stage, passion for work is also important, as its high motivational patterns are a determinant of the decision to launch a venture.

Overall, the reported findings contribute to understanding how different entrepreneurial experience levels influence the entrepreneurial motivations, the business opportunity recognition and the decision to launch a venture. Moreover, the present research allows us to design a comprehensive framework between the three early entrepreneurship stages, expanding the previous knowledge about entrepreneurial motivation and business opportunity recognition, namely Baron and Ensley's (2006) work.

The present study evidences that: (a) there are clear structural and categorical differences between entrepreneurial motivation, business opportunity and the decision to launch a venture cognitive maps of entrepreneurship trainees, would-be entrepreneurs and novice entrepreneurs; (b) novice entrepreneurs show clearer, richer and experience-based early entrepreneurship cognitive maps than would-be entrepreneurs and entrepreneurship trainees; (c) there are simultaneously mentioned factors in each of the stages by entrepreneurs, would-be entrepreneurs and entrepreneurship trainees,

suggesting that there are some shared factors among the groups. All the evidence is new to entrepreneurial literature and provides new research avenues.

Considering the methodological approach conducted in the present study, some limitations should be stated. Firstly, the qualitative data collected could be improved through a triangulation of data collection methods (Flick, 2008, 2009). Secondly, although the clear advantages provided by the Atlas-Ti, the software also addresses some of the typical criticisms of the use of software on social sciences data analysis (see Seidel, 1991).

4.4.1. Cultural considerations

Business opportunity and decision to launch a venture prototypes identified by Baron and Ensley (2006) were not all present in this study. Their data was obtained with experienced (repeated) and novice (first-time) American entrepreneurs, from the three major south-eastern U.S. cities. We can consider the absence of prototypical business opportunity and decision to launch a venture features in this study because of cultural divergences. In fact, when we consider economical and/or psychological variables, a high level of unexplained variation across studies can be explained by cross-country and cultural factors. Generally, as culture represents the shared values and beliefs of a society it is obvious that it is as important factor for entrepreneurship, as it emerges within a given culture, country or region.

In fact, a cross-cultural cognitive model of new venture creation was developed by Busenitz and Lau (1996) to clarify why individuals from some cultures tend to be more productive in new ventures than others in different cultures. Thomas and Mueller (2000) raised a particular question to entrepreneurship international research: “*Is the American entrepreneurial archetype universal?*” (p. 298), which makes particular sense in the present research. In fact, the relevance and transferability of U.S. research to non-U.S. contexts is not universal (Thomas & Mueller, 2000). We reformulate the cited question, asking: *Are American entrepreneurship prototypes universal?* The present data suggest that the respond to this question may be a no, but much more research is needed.

In fact, there is a need for international comparative studies of entrepreneurship, encouraging entrepreneurial activity in diverse countries and cultures (Thomas & Mueller, 2000; Mitchell, Smith, Morse, Seawright, Peredo, & McKenzie, 2002).

4.4.2. Practical implications

This study allows us to infer some practical consequences for the development of academic entrepreneurship programmes. This research provides evidence that entrepreneurship trainees and novice entrepreneurs have different cognitive structures concerning the early stages of entrepreneurship. Thus, we have to be aware that entrepreneurship trainees do not have the same prior experience as novice entrepreneurs. As a consequence, academic programmes must be conducted taking into account the developmental characteristics of trainees' cognitive structures.

Thus, it is suggested that the entrepreneurship academic programme promoters should take into account the present evidence by designing entrepreneurship programmes that respond to the different experience patterns. Moreover, the programmes should promote simulations of business ideas and the decision to launch a venture (see Sanz-Velasco, 2007).

Improving training on opportunities recognition through important changes in the environment and evaluating opportunities may be crucial to entrepreneurship programmes. This study evidences that entrepreneurial motivational features have an important role between business opportunities and the decision to launch a venture. Thus, it is suggested that entrepreneurial motivation features should be clearly stated at the beginning and throughout the entrepreneurship process, as they have a direct impact on business opportunities and the decision to launch a venture. Similarly, there is a need to expand entrepreneurship-related education to non-business students (Shinnar, Pruett, & Toney, 2009).

Moreover, focusing attention on the dynamics of motivational and cognitive processes of entrepreneurial ventures may be important for entrepreneurship trainees, helping them to analyse the changes in the environment. Promoting entrepreneurial activities and projects during entrepreneurship programmes is also important for enhancing the probability of success.

Chapter 5. Prototype models of opportunity recognition and the decision to launch a new venture: Identifying the basic dimensions (Study 2)

5.1. Introduction

In a key sense, business opportunities serve as the genesis of the entrepreneurial process (e.g., Bhave, 1994; Alvarez & Barney, 2010; Eckhardt & Shane, 2003; Shane, 2000; Short, Ketchen, Shook, & Ireland, 2010; Dimov, 2011). Reflecting this basic idea, the highly influential paper by Shane and Venkataraman (2000) and a recent follow-up to that original publication (Shane, 2012) suggests that “...*the field appears to have moved toward consensus around the core idea that entrepreneurship is a process that depends on both opportunities and individuals*” (p. 18). Further, Shane (2012) noted that “*objective opportunities must be a central part of the explanation of the opportunity-based perspective on entrepreneurship that researchers have been developing over the past decade.*” (p. 16).

Definitions of business opportunity differ, but they generally include three characteristics: potential economic value, newness, and perceived desirability to potential customers (e.g., Ardichvili, Cardozo, & Ray, 2003; Baron, 2006; Casson, 1982; Hansen, Shrader, & Monllor, 2011; Kirzner, 1973; Schumpeter, 1934). In addition, some authors (e.g., Baron, 2012), include the criterion of acceptability in a given society; that is, only opportunities that are viewed as consistent with the values and laws of a society are *bona fide* opportunities, suitable for development; ones that are not, can indeed generate new ventures and other business activity, but they are described by Webb, Ireland, Tirhanyi, and Sirmon (2009) as occurring in the “informal economy”.

According to one view of opportunity recognition, the pattern recognition perspective (Baron, 2004a, 2006), individuals perceive business opportunities by “connecting the dots” between seemingly independent events, trends, and changes in several business-related areas, such as technology, demographics, markets or legal frameworks (Baron, 2006; Schumpeter, 1934). These events, trends, and changes are objective in that they are actually occurring and can be independently assessed, while the perceived pattern is the result of a subjective process, based on perception and

⁴ Part of this study was submitted to a peer reviewed journal and is under review. This article was developed in a co-authorship with Professor Robert A. Baron, Ph.D., Spears Chair of Entrepreneurship, School of Entrepreneurship, Oklahoma State University, United States of America.

cognitive mechanisms involving integration of prior knowledge, experience and interests of the individual with new information. This perspective suggests that the process of opportunity recognition involves not simply objective, verifiable information (i.e., events, trends, changes), but also cognitive combination of this information into new, and potentially valuable patterns. Further, as Baron (2006) suggests, the pattern so uncovered is then compared with the “business opportunity” prototype that the individual in question (i.e., the entrepreneur) has developed through prior experience. The closer the match, the more likely is the newly identified pattern to be perceived as an actual opportunity, potentially worthy of further development. In one sense, this process is related to the process of structural alignment described by Grégoire and Shepherd (2012), in that it also involves comparing new information with cognitive representations of previously perceived or acquired information. However, as noted in more detail below, the two processes also differ in important ways. Overall, though, both recognize the central importance of cognition in the identification and/or creation of viable business opportunities.

Baron and Ensley (2006) performed the first empirical study to investigate the pattern recognition approach, and in doing so, identified and described several factors that are included in entrepreneurs’ business opportunity prototype—the cognitive frameworks with which newly perceived patterns are compared in order to determine whether they constitute opportunities. Prototypes are cognitive representations of the “*most representative*” member of a category or class. In the model proposed by Baron (2006), pattern recognition contributes to the formation of prototypes both for “*business opportunity*” and for assessment of the desirability of proceeding with its development. In their research, Baron and Ensley (2006) described the features that are included in both prototypes. In this research, we attempt to further clarify these findings, in order to gain additional insights into the nature of these two nested stages of entrepreneurship (opportunity recognition; an initial decision to proceed with development) and the cognitive frameworks (i.e., prototypes) that play a role in their occurrence. We posit that although these two important aspects of entrepreneurship are somewhat distinct, they are interrelated and interdependent and are both influenced by cognitive structures possessed by current or nascent entrepreneurs—that is, their prototypes. However, since business opportunity recognition involves a cognitive process distinct from that involved in the decision to launch a venture (*c.f.*, McMullen & Shepherd, 2006), the prototypes too, are distinct, and may rest on contrasting underlying dimensions

(Ardichvili, Cardozo, & Ray, 2003). A primary goal of the present research is identifying these underlying dimensions, and thus, helping to distinguish between the cognitive frameworks that play a role in opportunity recognition and exploitation decisions.

There are aspects about the basic dimensions that are on the essence of business opportunities and decision to exploit it that are not known yet. When entrepreneurs are looking for an opportunity, which criteria do they look for? And when entrepreneurs are deciding to proceed, or not, with the exploitation of that opportunity, which are the basic dimensions that account for it? A primary goal of the present research is identifying the underlying dimensions on opportunity recognition and decision to exploit it, and thus, helping to distinguish between the cognitive frameworks that play a role in opportunity recognition and exploitation decisions.

As a wide range of entrepreneurship outcomes are resolute from cognitive functioning (Baron, 2013), knowing the basic organization and structure of these two critical stages that allow converting general ideas into reality is an imperative contribution to practice. Clarifying the dimensions of opportunity and decision prototypes contributes also to maximize decision accuracy. Having more information about the opportunity and decision prototypes would allow the entrepreneur to properly identify hits (i.e., correct identification) and correct rejections of opportunities and decisions (e.g., Swets, 1992). Similarly, it also allows to accurately avoid misses (i.e., unable to recognize the actual presence) and false alarms (i.e., recognition of false events). As the perception of hits, correct rejections, misses and false alarms are mostly based on subjective criteria (Baron, 2013), knowing the basic dimensions of these prototypes can reduce the subjectivity of decision criteria, as they are the objective thresholds that contribute to maximize the effectiveness of “opportunity” and “decision to exploit” detection.

Recent literature employing a cognitive perspective has contributed greatly to increased understanding of the nature of these cognitive frameworks, and has done so by addressing diverse theoretical issues, such as explaining how this process unfolds (e.g., Shane, 2000; Baron & Ensley, 2006; Corbett, 2007; Grégoire, Barr, & Shepherd, 2010) as well as empirical and methodological suggestions concerning its measurement (Grégoire, Shepherd, & Lambert, 2010). We seek to contribute to this expanding literature by defining more clearly the basic cognitive dimensions involved in both the identification of opportunities prototype and in the prototype employed in subsequent

decisions to pursue or exploit them. To put it in slightly different terms, we seek to determine the key dimensions that underlie the “*connect-the-dots*” process described by pattern recognition. Basically, we seek to enhance current understanding of how entrepreneurs make these two important decisions: “*This is, or is not an opportunity?*” and “*Should I proceed with efforts to develop it?*”.

5.1.1. The cognitive processes and structures underlying the identification of business opportunities and the decision to launch a venture

Cognitive science is a powerful lens through which to understand various aspects of entrepreneurship (Baron & Ward, 2004; Dimov, 2011; Grégoire & Shepherd, 2012). Important contributions to the business opportunity research field using the cognitive approach include studies on the definition of opportunities (*c.f.* Gartner, Carter, & Hills, 2003), the idiosyncrasy of the process of opportunity recognition (Dimov, 2011) and the cognitive processes involved in opportunity recognition (Baron & Ensley, 2006; Grégoire, Barr, & Shepherd, 2010; Cornelissen & Clarke, 2010).

Grégoire, Barr, and Shepherd (2010) and Grégoire and Shepherd (2012) have recently applied structural alignment to the process of opportunity recognition following an approach developed by Gentner (1983). They reported evidence suggesting that entrepreneurs make use of structural alignment processes to identify meaningful relations between new technologies and markets where business opportunities will be applied. Moreover, the process of business opportunity recognition differed with respect to various characteristics of opportunities and is also contingent on individual differences (Grégoire & Shepherd, 2012).

The pattern recognition perspective of business opportunity identification (e.g., Baron, 2006) suggests that individuals who recognize business opportunities do so because they are able to perceive connections between apparently unrelated events or trends - for example, changes in technology, demographics, markets, or government policies. These connections then suggest the existence of meaningful patterns which, in turn, can serve as the basis for business opportunities. Within this general approach, entrepreneurs' existing cognitive frameworks (i.e., prototypes), acquired through past experience, enable them to “*connect-the-dots*” between perceived but seemingly unrelated environmental changes, so as to recognize these emergent patterns as possible venture opportunities. For instance, when an entrepreneur finds that the environmental patterns fit one of his/her existing cognitive frameworks (e.g., prototypes) the

entrepreneur might conclude that she or he has identified a viable business opportunity, and then, depending on additional factors, might make the decision to exploit this opportunity through the launch of a new venture (Baron, 2006).

We believe that the prototype or pattern recognition perspective (Baron & Ensley, 2006) and the structural alignment approach (Grégoire, Barr, & Shepherd, 2010) are complementary. According to Markman and Gentner (2001), “*as Goldstone (1994) points out, structural alignment provides constraints on which commonalities among items are relevant for categorizing them. In particular, systematic relational structures are likely to be important for categorization. This point helps to bridge the gap between theory-based and similarity-based categorization.*” (p. 236). Moreover, in Markman and Gentner’s (2001) review, the authors describe several findings which “*suggest that structural alignment influences the representations of new categories.*” (p.236). Overall, though, both recognize the central importance of cognition in the identification and/or creation of viable business opportunities. Thus, structural alignment is presented as a domain specific aspect of categorization, an integral part of general reasoning theory.

Additionally, both Baron and Ensley (2006) and Grégoire et al. (2010) results were consistent with the classical ecological theory of perception or direct perception (Gibson, 1966) which considers that the environment contains all of the information needed - *structures* - to determine the properties of a perception. The Gibson ecological (1986) theory of perception highlights the reciprocity among the perceiver and the environment, in which there are continuous transactions between both. Thus, there is an individual active effort to generate a meaningful pattern from the perceived features of the environment in its structural characteristics.

The findings from perception studies indicated that recognizing a complex pattern involves a feature analysis in which the global pattern is broken into a set of features, and these features are recognized and combined to allow the recognition of a pattern (e.g., Palmer, 1977). Overall, the perception, attention and information processing literatures (see Anderson, 1980 for a revision) can help to integrate the views represented in pattern recognition and structural alignment theories. Applying these propositions to entrepreneurship research, we suggest that the active role of the individual - *the entrepreneur* -, in perceiving opportunities, includes reciprocity and developing a meaningful interpretation of the environmental features and structure.

In their initial research, Baron and Ensley (2006) identified key features of the business opportunity prototype, and the prototype relevant to the decision to launch a venture. With regard to the business opportunity prototype, the authors identified a five-feature structure: (1) solving a customer's problems, (2) the ability to generate a positive cash flow, (3) manageable risk, (4) superiority of the product/service and (5) potential to change the industry. These five prototypical features, together, appeared to constitute the prototype (i.e., the most typical instance) of business opportunities. Business opportunity itself is conceived as the latent variable that cannot be directly measured (MacCallum & Austin, 2000; Dimov, 2011), but which is expressed through these five basic features. Thus, Baron and Ensley (2006) viewed the business opportunity prototypes a uni-dimensional model which encompassed all five underlying dimensions.

For the decision to launch a venture prototype, the authors also identified a five-feature structure: (1) a favorable financial model, (2) positive assessment or advice from others (friends, financial advisors and industry experts), (3) the novelty of the idea, (4) a large untapped market and (5) intuition or gut feeling (Baron & Ensley, 2006). Similarly, these five prototypical features were encompassed by Baron and Ensley (2006) in a uni-dimensional model—that is, all five features were combined to constitute this prototype.

We suggest that in fact, the prototypes of business opportunity and decision to launch a venture are not uni-dimensional in nature. Rather, they reflect distinct underlying dimensions that combine, each encompassing several of the features identified by Baron and Ensley (2006). Below, we describe the rationale for this suggestion, the specific dimensions of these prototypes that we suggest are central to them.

5.1.2. Prototype characteristics and pattern recognition theory

As noted above, prototypes are defined as the most typical member of a concept (Rosch, 1973, 1978) and refer to the best example of that category or concept. The role of prototypes in human perception processes is important in the sense that they guide information processing, attention, and information- especially ambiguous information (e. g., Baldwin, 1995; Fehr, 2005). Generally, prototype theory (Rosch, 1973, 1978) is included among meaning-based knowledge representations as opposite to perception-based representations (Anderson, 1980) since the relations among prototypical features are organized in accordance to the meaning rationales.

Previous research has established that prototypical features are often organized in clusters in terms of meaning similarity (e.g., Aron & Westbay, 1996). Indeed, several theories of pattern classification are based on the concept of similarity (Duda, Hart, & Stork, 2001; Reed, 1972), stressing that similar patterns are assigned to the same class. These theories suggest that the prototypical features are organized by similarity, into groups or clusters. In this context, a study by Liu, Jiang, and Kot (2009) proposed a multi-prototype clustering algorithm, in which prototypical features are organized into clusters. In sum, pattern recognition theory and investigations of the nature of prototypes (e.g., Duda, Hart, & Stork, 2001; Fayed, Hashem, & Atiya, 2007; Liu, Jiang, & Kot, 2009) indicate that human information processing flows through pattern-like information, and thus, is based on the similarity of prototypical features.

On the basis of literature on prototype structure and the organization of clusters relating to meaning similarity (*c.f.*, Reed, 1972; Duda, Hart, & Stork, 2001; Fayed, Hashem, & Atiya, 2007; Liu, Jiang, & Kot, 2009) and also on business opportunity recognition as involving pattern recognition (*c.f.*, Baron & Ensley, 2006; Grégoire, Barr & Shepherd, 2010; Cornelissen & Clarke, 2010) we suggest that the features of the cognitive prototypes for business opportunity and the decision to launch a venture prototypes will also be organized in subgroups in terms of similar content. Research about mental models as one of the processes involved in the human reasoning (Gentner & Stevens, 1983; Johnson-Laird, 1983) includes both the superficial elements of a unit (i.e., the prototypical features) and also the structural relationships between them, based on meaning proximity and similarity. As Grégoire and Shepherd (2012) showed, the structural and superficial similarities of environmental characteristics shape the construction of opportunity beliefs.

Following this reasoning, we suggest that the prototypes for opportunity and decision to launch a venture will not be uni-dimensional in nature; rather, they will involve the combined impact of several distinct factors. In other words, since prototypes refer to an organizational feature of cognitive associations, we suggest that the five features of opportunity prototype and the five features of decision to launch a venture prototype identified in previous research (e.g., Baron & Ensley, 2006), will, in fact, reduce to a smaller number of dimensions, organized in terms of similarity of information.

5.1.3. Basic dimensions of the business opportunity prototype: Utility and distinctiveness

As mentioned previously, Baron and Ensley (2006) identified five features of the business opportunity prototype: (1) solving a customer's problems, (2) the ability to generate a positive cash flow, (3) manageable risk, (4) superiority of the product/service and (5) potential to change the industry. Careful examination of these five dimensions suggests that logically and also on the basis of extant theory, three of them refer to what in economic theory, is known as utility (e.g., Menger, 1994). Utility, in turn, reflects the need for a given product or service. The greater this need, the greater the utility. These three dimensions are: (1) solving a customer's problems, (2) the ability to generate a positive cash flow, and (3) manageable risk.

Next we will discuss each one of the prototypical features in order to achieve a theoretical argument among them.

The *ability to solve customers' problems* was identified as an important feature for defining opportunity (e.g., Baron, 2004a; Ardichvili, Cardozo, & Ray, 2003). The ability to solve customer's problems is related to the prior knowledge of customers' problems, which was also identified as an important predictor of innovative opportunity identification (Shepherd & DeTienne, 2005). Similarly, entrepreneurs are more likely to explore opportunities when they perceive customer demands for a new product (e.g., Choi & Shepherd, 2004).

In addition to involving the ability to solve customers' problems, defining business opportunity also involves the *ability to generate profit* (e.g., Short, Ketchen, Shook, & Ireland, 2010). Gilad and Levine (1986, p. 46) pointed out that "*the existence of attractive, potentially profitable business opportunities will attract ('pull') alert individuals into entrepreneurial activities.*" Furthermore, the definition of an opportunity as "*the chance to meet a market need (or interest or want) through a creative combination of resources to deliver superior value*" (Ardichvili, Cardozo & Ray, 2003, p.108) also refers to the need of creating value, i.e., create profit.

Furthermore, according to the motivation theory (e.g., Campbell & Pritchard, 1976; Kanfer, 1990; Vroom, 1964) the expectation of potential financial reward could be a motivational driver of opportunity identification. Moreover, there was also a relationship between the potential financial reward and the level of innovation in business opportunities (e.g., Paolillo & Brown, 1978).

The *manageable risk* aspect of business opportunity is strongly related to the ability to solve a customer's problems, and to the potential financial cash-flow (Kreiser & Davis, 2010; Storrud-Barnes, Reed, & Jessup, 2010). The risk and uncertainty role for those who decide to act entrepreneurially is considered as a critical variable in the process of recognizing a business opportunity (McMullen & Shepherd, 2006). An opportunity with a manageable risk means that the perception of risk margin is not significantly great, but is perceived as manageable.

The individual perceives the margins of risk of the business opportunity which are related to the ability to solve customers' problems and the ability to generate cash flow. A business opportunity which is perceived with a high capacity to solve a problem can create a higher amount of financial product, i.e., cash flow. Consequently, if the business opportunity includes a high capacity to solve a customer's problem and is able to generate lots of cash, is highly probable that the business opportunity has a manageable risk.

The illustrative descriptions above suggest that the three business opportunity recognition prototypical features (i.e., ability to solve a customer's problems, ability to generate positive cash-flow and manageable risk) refer to interrelated aspects of the business opportunity, share the same meaning content, and may be reciprocally related. Generally, these three characteristics are related to a superordinate category which is related to the utility of the business opportunity, namely to the customer's needs, the cash flow that the business idea will generate and the associated perceived risk.

To further clarify, we define utility based as it is described in traditional economic theory (e.g., Menger, 1994) and involving a need for a given product or service. A business opportunity with a high utility is one perceived to solve a need, increase profit and simultaneously involving small risk margin. Thus, the utility of a business opportunity reflects the overall perceived assessment of how useful, profitable and risky is the business opportunity. A business opportunity will be useful for the entrepreneur if it will solve any problem to the customers, if it will generate cash, and if it has a manageable risk.

In short, any emergent pattern perceived by entrepreneurs will be identified as constituting a business opportunity to the extent that solves a current customer problem, has the potential to generate positive cash flow, and involves moderate rather than excessive levels of risk. On the basis of these suggestions and the findings of previous

research concerning utility, and the logic described above, we offer the following hypothesis:

Hypothesis 1: Three features of business opportunity prototype - ability to solve a customer's problems, ability to generate a positive cash flow and manageable risk — reflect a single underlying dimension, the utility of that business opportunity.

Two additional dimensions, superiority of the product, and its potential to change the industry in which it is introduced, appear, in contrast, to be related to another underlying dimension: that of distinctiveness of the product or service—what sets it apart from other, existing or potential products or services. These two dimensions refer to issues that are distinct from the other three (i.e., dimension related to the utility of business opportunity). Assessing the superiority of the product or service and the potential to change the industry requires making comparisons with the existent products/services in the market, and an evaluation of the distinctiveness of the business opportunity in comparison to current or potential competitors. These two features are both related to the characteristics that make the business idea different and unique to the market.

We define distinctiveness of the business opportunity as the characteristics that make it distinct from other opportunities. A business opportunity high in distinctiveness is one involving a product or a service with a superior quality, significant impact on the industry in which it exists, and capable of altering the existing paradigm in this industry. On the basis of this reasoning, we suggest the following hypothesis:

Hypothesis 2: Two features business opportunity prototype - superiority of the product/service and the potential to change the industry, reflect a single underlying dimension, the distinctiveness of that opportunity.

In sum, we hypothesize that the business opportunity prototype employed by entrepreneurs to identify opportunities rests on two basic dimensions: utility and distinctiveness. In other words, we propose that the business opportunity prototype is bi-dimensional rather than uni-dimensional in nature. These two dimensions are logically derived from theory. For instance, Grégoire and Shepherd (2012) suggested that opportunities require cognitive effort to develop matches between new means of

supply and new markets. New means of supply are related to the generation of new products, services or business models and thus require solving a customer's problems, generating a positive cash flow and having manageable risk. New markets are related to the introduction of products or services that can cause changes in the current market situation. The superiority of the product/service and the potential to change the industry are two examples of characteristics of business opportunities that are at the basis of the creation of new markets. Respectively, new means of supply and new markets correspond to utility and distinctiveness dimensions of business opportunity as we define it.

The present reasoning and model can also be viewed as consistent with effectuation theory (Sarasvathy, 2001, 2008), which suggests that entrepreneurial thinking relies on effectual reasoning rather than on causal reasoning. Effectual reasoning proposes that entrepreneurs make use of the given means to fabricate opportunities, i.e., from different given means entrepreneurs can achieve several imagined ends (Sarasvathy, 2008). The principles of effectuation are affordable loss, strategic partnerships and leverage of contingencies. The two dimensions of business opportunity prototypes described above-utility and distinctiveness-are consistent with the basic proposals of effectuation theory. More specifically, the utility dimension presumes that entrepreneurs should determine what they have and what they can, perhaps, do with it-*effectuation process*-, and includes manageable risk which is consistent with affordable loss (*effectuation principle*). Strategic partnership, another principle of effectuation, includes the concept of building the market necessary for exploitation of the opportunity. Thus, superiority of the product/service and the potential to change the industry make it possible to build the market and to control the future. In short, the two basic dimensions of business opportunity prototype identified earlier (utility and distinctiveness), can be integrated both with effectuation theory (Sarasvathy, 2001, 2008) and with Grégoire and Shepherd's (2012) definition of the business opportunity beliefs process.

5.1.4. Basic dimensions of the exploitation decision prototype: Feasibility and motivational factors

Decision makers in business contexts are often required to make rapid decisions on the basis of limited information (Eisenhardt, 1989; Ocasio, 1997). Similarly, entrepreneurs are often required to make decisions in uncertain environments, replete

with incomplete and unstable information (e.g., Baum & Wally, 2003). The decision to act entrepreneurially with respect to a business opportunity (McMullen & Shepherd, 2006) is involved in the process of opportunity identification and development (Ardichvili, Cardozo, & Ray, 2003). Opportunity evaluation includes the informal investigation focused on the preliminary assessment of business opportunity penetration in the market. The opportunity evaluation is related to the decision to launch, or not launch, the venture to develop an identified opportunity.

The Baron and Ensley (2006) study reported five features that are essential to the decision to launch a new venture prototype: (1) a favorable financial model, (2) positive assessment or advice from others (friends, financial advisors and industry experts), (3) the novelty of the idea, (4) a large untapped market and (5) intuition or gut feeling.

Once again, we suggest that the prototypical features that underlie a decision to launch a new venture are organized in terms of content similarity. McMullen and Shepherd's (2006) model of entrepreneurial action assumes that the decision to exploit an opportunity includes two main features: feasibility assessment (which is related to knowledge), and desirability (related to the motivation).

The decision to launch a new venture includes both motivational factors, related to subjective perceptions and individual concerns, and knowledge based factors related to environment constraints and influences (Liang & Dunn, 2007). Following this logic, we assume that the five prototypical features on the decision to launch a venture include both these two aspects of the decision to launch a venture, which reflect both perceptions from the individual point of view, and environmental and technical variables.

Successful decision-making with regard to launching a new venture requires an accurate understanding of the environment in which that decision would develop. The decision environment is related to the collection of information, alternatives, values, and preferences available at the time of the decision. Thus, the entrepreneur must collect information about the viability of the financial model, the existence and extension of the market and the novelty or innovative characteristics of the idea (e.g., Duarte & Sarkar, 2011).

Assessment of the financial model of a new venture, as Baron and Ensley (2006) defined it, refers to the evaluation of margins of the business, quick cash-flow, short cycle and the relationship between low investment / high return. This prototypical

feature is related to the evaluation of the financial indicators that could verify the existence of a reliable and worthwhile financial model. The financial model assessment is also at the basis of venture capitalists' decision-making on whether to support new businesses (McGrawth & Keil, 2007).

The introduction of new methods of production or innovations (product or market novelties) create economic growth and market diversification, and those changes influence rational decision-making (Ivanova & Gibcus, 2003). The existence of a large market is generally associated with a greater potential and, consequently, with the decision to pursue launching a venture (e.g., Fiet & Patel, 2008).

The prototypical characteristics related to the financial model, the idea's novelty and the large market are associated and share the same meaning about the factual and knowledge-based information on the decision or not to launch the venture. In general, these three prototypical features are most related with the perception of the feasibility, following McMullen and Shepherd (2006) model about the decision to exploit the opportunity.

In accordance with the argument put forward, and with regard to the favorable financial model, the idea's novelty and the existence of a large untapped market, could be conceptualized as the feasibility related factors of the decision to launch a venture process since they are related to the environmental context and are the knowledge based aspects that influences the decision.

Examination of the five features identified by Baron and Ensley (2006) suggest that a favorable financial model, an idea's novelty, and a large untapped market, are all related to the feasibility of the opportunity. In other words, they relate to entrepreneurs' perception that they, personally, can, or cannot, develop this opportunity- a decision that involves reliance on metacognitive knowledge- understanding of what they know, and do not know, what they can do and cannot do, and so on (e.g., Haynie, Shepherd, Mosakowski, & Early, 2010). On the basis of this reasoning, we offer the following hypothesis:

Hypothesis 3: A favorable financial model, an idea's novelty, and a large untapped market, are all related to the feasibility dimension of the prototype used by entrepreneurs for reaching an initial decision to launch a new venture; hence, feasibility will constitute a basic dimensions of this prototype.

Other potential dimensions of the decision making process were not identified by Baron and Ensley (2006). However, growing research suggests that such features may also exist and be of importance. One is intuition-based cues, tacit information that has been acquired by individuals through job-specific experience, and that experts in a given field or task have developed to a very high level (Prietula & Simon, 1989). The McMullen and Shepherd's (2006) model of entrepreneurial action assumes also that the decision to exploit an opportunity includes motivational aspects related to desirability assessment.

On the basis of the dimension of motivation and desirability suggested by McMullen and Shepherd (2006), we suggest that the prototypical features of intuition and positive assessment or advice from others (friends, financial advisors and industry experts) are strongly related to the entrepreneurs' beliefs, gut feeling, network, and other internal factors, that refer to the entrepreneur himself / herself. In general, all these aspects refer to the motivation that is also explicitly needed to generate entrepreneurial action. Thus, positive assessment or advice from others (friends, financial advisors and industry experts) and intuition are involved in a motivational based decision to launch a venture reasoning path. This suggestion is reflected in Hypothesis 4:

Hypothesis 4: Positive assessment or advice from others and intuition or gut feeling, are all related to the motivational aspects that influence the decision to launch a venture; hence, motivation will constitute a basic dimensions of the prototype employed by entrepreneurs to make their initial exploitation decision.

The motivational aspects of the decision making considered here refer to the mechanisms that gear the action process, and in the specific decision to exploit, or not, the opportunity, refer to the social approval from the network and to the individual intuition, gut feeling, and *sixth* sense.

In sum, in accordance with the theoretical reasoning of the characteristics of the decision to launch a venture, we hypothesize that there are two basic dimensions to the prototype for deciding to launch a new venture: one referring to feasibility, including the assessment of the financial model, the market size and the innovation on the business concept, and the other referring to motivation, encompassing the assessment from experts and friends and intuition or gut feeling. Thus, we predict a bi-dimensional model of the prototype for the decision to launch a venture including both a feasibility

dimension to launch a venture and a motivational dimension. This is the same as suggesting that this bi-dimensional model, provides a more accurate representation of the nature of this prototype than a uni-dimensional model. These dimensions are not mutually exclusive and the entrepreneur does not have to choose between the feasibility and the motivational aspects to decide to launch a venture' nor does the entrepreneur need to be aware of these two dimensions. We argue that the decision to launch a venture includes both the feasibility and the motivational aspects. The entrepreneur uses both aspects of the decision making process, as they are both part of the decision to launch a venture prototype.

We further suggest that this bi-dimensional model, provides a more accurate representation of the nature of this prototype than a uni-dimensional model. To test the bi-dimensional model of business opportunity and decision to launch a venture, we conducted a study with a sample of entrepreneurs who responded to a survey adapted from the one employed by Baron and Ensley (2006).

5.2. Method

5.2.1. Sample

224 entrepreneurs, founders of new ventures, participated in the study. The entrepreneurs involved in the study were invited through a national entrepreneurship association to participate in this research project. The entrepreneurs were mainly male (64 percent) and their ages ranged from 19 to 73 years old ($M = 34.31$; $SD = 11.37$). 30 percent of the entrepreneurs had a university degree, 24 percent had completed high school, 12 percent had attended technical courses, 34 percent had a masters or higher degree. The entrepreneurs had an educational background in management sciences (31 percent), social sciences (31 percent), health sciences (18 percent) and engineering (20 percent). About 45 percent of the entrepreneurs founded their ventures in under a year, and for all the entrepreneurs this was their first-time entrepreneurial experience.

All the participants were founders of their ventures. The entrepreneurial businesses were in a wide variety of different areas such as: design, marketing and communication services, mechanical and car services, health, optical and medical services, education, children and elderly services, software technology, building construction firms, leisure and experiences services, quality and security engineering.

5.2.2. Procedure and measures

We developed a forty-eight-item questionnaire including all the items listed in the Baron and Ensley (2006) research, [*“items describing the idea on which the new venture was based”* (p. 1337) and *“items describing what made the idea a good one, worth pursuing”* (p. 1338)]

The business opportunity items were preceded by the following instruction *“Having in mind your business idea, indicate to what extent each one of the following aspects was important to you in identifying your business opportunity”*. The decision to launch a venture items were preceded by the following instruction *“Having in mind your business idea, indicate to what extent each one of the following aspects was important to your decision to implement your project / business”*.

We used the prototypical features described by Baron and Ensley (2006) as statements. The participants were asked to classify the importance of each aspect for the identification of the business opportunity and for the decision to implement their projects/business, respectively. All the items were measured on a seven point importance scale, ranging from 1 *“not important at all”* to 7 *“very much important”*.

Table 5.1. presents the prototypical features of business opportunity and decision to launch a venture, the original items from Baron and Ensley (2006), and the writing of each item in our questionnaire.

Table 5.1. *Measures included in the study*

Prototypical dimension	Items listed in Baron and Ensley (2006), p. 1337 and 1338	Items used in the present study
1. Solving a customer's problems	Meets needs Long-term demand Relieves pain Life improved Customers want it	1.1. The business idea meets needs 1.2. Is demanded by customers for a long-term 1.3. It relieves any painful situation 1.4. The idea can improve people's life 1.5. The customers want it
2. Ability to generate a positive cash flow	Profitable Lots cash Take home cash Quick cash Short cash burn	2.1. It is profitable 2.2. It can generate lots of cash 2.3. It will allow to take cash home 2.4. It can generate quick cash 2.5. It has short cash burn
3. Manageable risk	Customer accept Less technological change Less liability Production Risk	3.1. Customer's will accept it 3.2. Requires less technological changes 3.3. It requires less liability 3.4. It does not involve production risks
4. Superiority of the product/service	Greater features Better Improve functioning Faster Does more	4.1. It has greater features 4.2. It is a better option 4.3. It can improve the functioning 4.4. It allows to make things faster 4.5. It can do more
5. Potential to change the industry	Change market Big player No. 1 seller Dominate	5.1. It can change the market 5.2. It can be a big player product 5.3. It can be the number one seller 5.4. It can dominate the industry
6. Favorable financial model	Favorable financial model High margins Quick cash flow Short sales cycle High return / low investment	6.1. It has a favorable financial model 6.2. it can generate high profit margins 6.3. It can create quick cash flow 6.4. It has a short sales cycle 6.5. it has high return and low investment
7. Positive assessment or advice from the others	Friends told me Financial advisor Consultant Legal council	7.1. My friends told me it was a good idea 7.2. I had positive assessment from financial advisors 7.3. I had positive assessment from a consultant 7.4. I had positive assessment from a legal council
8. Idea's novelty	Unique Nothing like it Different than others New technology Different application	8.1. The idea is unique 8.2. There is nothing like it 8.3. The product / service is different from others 8.4. It involves new technology 8.5. It allows different applications
9. Large untapped market	Large market Unmet need Easy market entry Few competitors Mass market	9.1. It has a large market 9.2. It is an unmet need 9.3. It is easy to enter the market 9.4. There are few competitors 9.5. There is a mass market
10. Intuition or gut feeling	Very logical It will work Good deal No doubt Gut feel	10.1. This opportunity is very logical 10.2. I am sure that it will work 10.3. It is a good deal 10.4. There is no doubt about this opportunity 10.5. I have a gut feeling about this idea

Table 5.2. presents the descriptive statistics and the Cronbach's alpha of the measures.

Table 5.2. *Descriptive statistics and Cronbach alpha of the measures*

	Mean	Std. Deviation	Alpha
Solving a customer's problems	5,93	0,95	0.78
Ability to generate a positive cash flow	5,08	0,96	0.76
Manageable risk	4,60	1,12	0.65
Superiority of the product/service	5,97	0,93	0.79
Potential to change the industry	5,41	1,31	0.86
Favorable financial model	4,72	1,05	0.79
Positive assessment or advice from others	4,08	1,63	0.88
Large untapped market	5,04	1,02	0.81
idea's novelty	5,12	1,29	0.64
Intuition or gut feeling	5,87	0,81	0.69

We used structural equation confirmatory factor analysis to test our hypothesis. Confirmatory factor analysis is the appropriate empirical strategy to test the structure of theoretical constructs. Moreover, it allows comparing different solutions on the same construct. The analytical strategy to test our hypothesis included the following. First, we tested a five factor confirmatory factor analysis as suggested by Baron and Ensley's (2006) model (Models A and C). Second, we conducted a second order confirmatory factor analysis model, including the two dimensions identified in our model and hypothesis stressed (Models B and D). We tested our hypotheses by comparing the model fit between both models (*c.f.*, Rigdon, 1999). If the bi-dimensional model of business opportunity showed a better fit to the data than the uni-dimensional model, our hypothesis one and two would be supported. Similarly, if the bi-dimensional model of decision to launch a venture showed a better fit to the data than the uni-dimensional model, our hypothesis three and four would be supported.

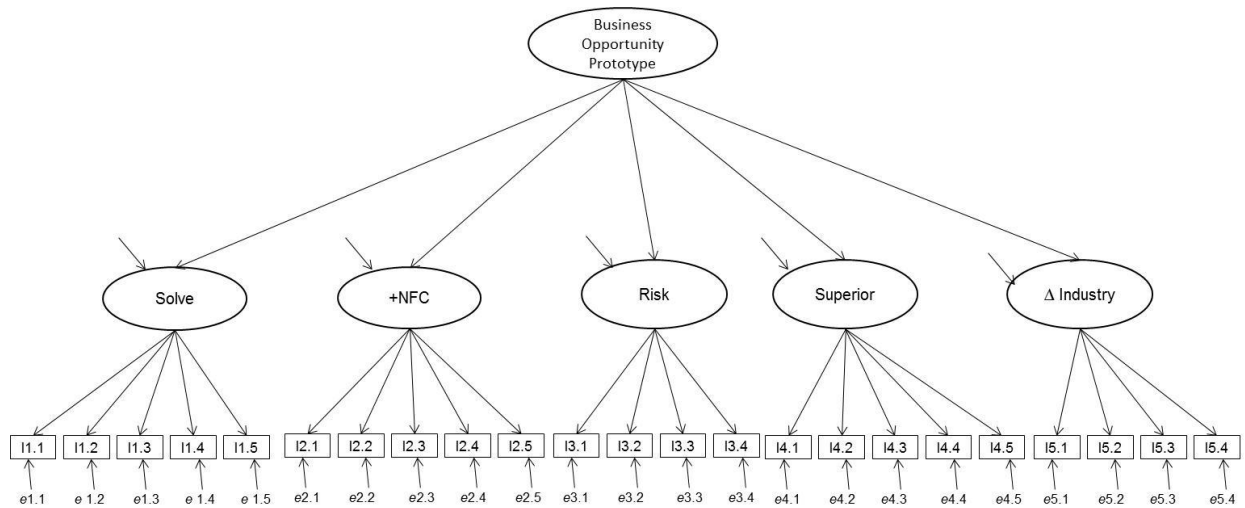
5.3. Results

5.3.1. Business opportunity prototype

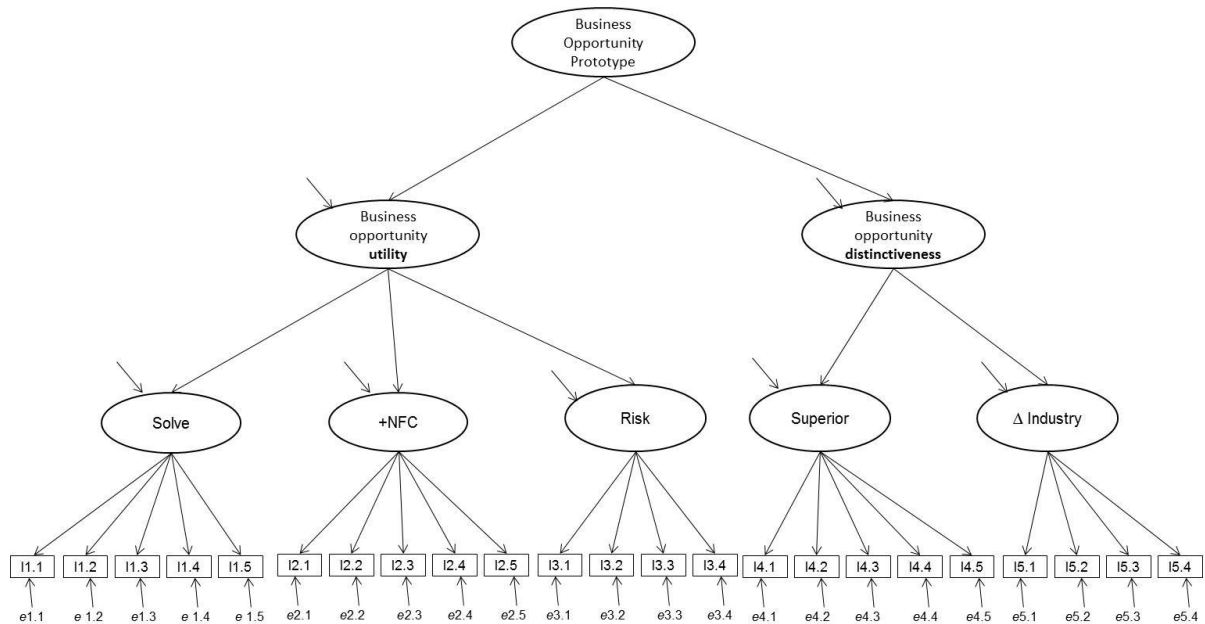
Before testing our hypotheses using structural equation modelling, we conducted exploratory factor analysis to uncover the underlying structure and to have a first glance at the internal reliability of the variables used to assess the business opportunity and decision to launch a venture prototypes. The exploratory factor analysis on business opportunity prototype features showed five factors, as Baron and Ensley (2006) reported. The exploratory factor analysis of the decision to launch a venture prototype features also showed five factors as suggested by Baron and Ensley (2006). Both rotated

component matrices evidenced eigenvalue loading above 0.50 on the expected factors. We do not present the rotated component matrices here for reasons of parsimony.

Model A refers to the uni-dimensional business opportunity prototype, suggested by Baron and Ensley (2006), and includes the five prototypical features. More specifically, the confirmatory factor analysis model included the five prototypical dimensions suggested by Baron and Ensley (2006): (1) solving a customer's problems, (2) the ability to generate a positive cash flow, (3) manageable risk, (4) superiority of the product/service and (5) potential to change the industry. Model B refers to the bi-dimensional model of the business opportunity prototype: business opportunity utility—including solving a customer's problems, the ability to generate a positive cash flow, and manageable risk (H1)—and business opportunity distinctiveness—including the superiority of the product/service and potential to change the industry (H2). Thus, the hypothesis one and two are tested on the model B which represents the bi-dimensional model of business opportunity. We used the structural equation modelling software AMOS, and confirmatory factor analysis was computed to test both models. Figure 5.1. presents the measurement models A and B. We used the structural equation modelling software AMOS, and confirmatory factor analysis was computed to test both models.



Model A - Uni-dimensional business opportunity prototype model (Baron and Ensley, 2006)



Model B - Bi-dimensional business opportunity prototype model

Figure 5.1. The business opportunity prototype models under testing

The fit indices of both models are presented in table 5.3. Results showed that model B provided a better fit. According to the goodness of fit values suggested by the CFI, SRMR and RSMEA (Byrne, 2004; Hu & Bentler, 1999), model B was more adequate to the data ($\chi^2 = 420.42$; $df = 215$; $\chi^2/df = 1.96$; $p < 0.001$; $CFI = 0.92$; $RMSEA = 0.06$; $SRMR = 0.08$) than model A.

More specifically, CFI assesses the extent to which the tested model is superior to an alternative model in reproducing the observed covariance matrix (Bentler, 1990;

McDonald & Marsh, 1990; Hu & Bentler, 1999). The *CFI* index varies from 0 to 1. A value between 0.92 and 0.95 is considered an acceptable fit (Byrne, 2004; Hu & Bentler, 1999) and performs well in small samples (Hu & Bentler, 1998). The *RMSEA* introduces a correction for lack of parsimony, with an *RMSEA* value smaller than 0.08 being a reasonable error of approximation of the population (Hu & Bentler, 1998; Byrne, 2004). For *SRMR*, a rule of thumb is that values smaller than 0.10 may be interpreted as acceptable (Schermelleh-Engel, Moosbrugger, & Müller, 2003).

To further analyse the significant test of the incremental fit of the bi-dimensional model over the uni-dimensional model, the results of the χ^2 -difference test (Steiger, Shapiro, & Browne, 1985; Rigdon, 1999; Bryant & Satorra, 2012) indicated that the bi-dimensional model was a significantly better representation of the data than the uni-dimensional model ($\Delta \chi^2 = 263.80$; $p < 0.05$). Despite the importance of the χ^2 -difference test for testing the comparison of model fit among two nested models (*c.f.*, Steiger, Shapiro, & Browne, 1985) there are other procedures that can contribute to further compare two models (e.g., Rigdon, 1999). The Akaike Information Criterion (AIC) is a measure that has been proposed for model comparison purposes (Akaike, 1987), and generally the model with the lowest AIC value is the most suitable. Thus, the analysis of the *AIC* on the Model B was smaller than in Model A ($AIC_{\text{Model A}}=784.22$; $AIC_{\text{Model B}}=542.42$), reinforcing that Model B had a better fit to data and, consequently, suggested a closer alignment with data.

Thus, this analytical strategy provides evidence regarding data adjustment to both the suggested models and according to the results, Model B was more adjustable. These results support the bi-dimensional model and thus offer support for both hypothesis one and two.

Table 5.3. *Fit indexes on the uni-dimensional business opportunity prototype model (Model A) and on the bi-dimensional business opportunity prototype model (Model B)*

	χ^2	<i>df</i>	<i>p</i>	χ^2 / df	<i>CFI</i>	<i>RMSEA</i>	<i>RMSEA confidence interval 90 percent</i>	<i>AIC</i>	<i>SRMR</i>
Model A -									
Uni-dimensional business opportunity prototype model (Baron and Ensley, 2006)	684.22	226	0.00	3.03	0.81	0.09	0.08-0.10	784.22	0.12
Model B - Bi-dimensional business opportunity prototype model	420.42	215	0.00	1.96	0.92	0.05	0.04-0.07	542.419	0.08

Additionally, the data showed that the standardized estimates (table 5.4) of the relationship between the business opportunity prototype and business opportunity utility was 0.85 ($p < 0.01$) and business opportunity distinctiveness was 0.76 ($p < 0.01$). Furthermore, results showed that the standardized estimate of “solving a customer’s problems” was 0.59 ($p < 0.01$), for “ability to generate a positive cash flow” it was 0.75 ($p < 0.01$), and for “manageable risk” it was 0.82 ($p < 0.01$). The standardized estimate of “superiority of the product/service” was 0.62 ($p < 0.01$) and of the “potential to change the industry” it was 0.89 ($p < 0.01$). Furthermore, the item loadings are adjustable to the criteria.

Table 5.4. *Standardized regression weights of the uni-dimensional business opportunity prototype model (Model A) and of the bi-dimensional business opportunity prototype model (Model B)*

Items	Factors	Standardized Regression Weights – Loadings	
		Model A	Model B
Solve the customer's problems	Business opportunity prototype	0.51**	
Positive net cash flow	Business opportunity prototype	0.72**	
Manageable risk	Business opportunity prototype	0.66**	
Superiority of the product/service	Business opportunity prototype	0.69**	
Potential to change the industry	Business opportunity prototype	0.78**	
Business opportunity utility	Business opportunity prototype		0.85**
Business opportunity distinctiveness	Business opportunity prototype		0.76**
Solve the customer's problems	Business opportunity utility		0.59**
Positive net cash flow	Business opportunity utility		0.75**
Manageable risk	Business opportunity utility		0.82**
Superiority of the product/service	Business opportunity distinctiveness		0.62**
Potential to change the industry	Business opportunity distinctiveness		0.89**
1.1. The business idea meets needs	Solve the customer's problems	0.84**	0.78**
1.2. Is demanded by customers for a long-term	Solve the customer's problems	0.77**	0.71**
1.3. It relieves any painful situation	Solve the customer's problems	0.63**	0.56**
1.4. The idea can improve people's life	Solve the customer's problems	0.66**	0.58**
1.5. The customers want it	Solve the customer's problems	0.80**	0.58**
2.1. It is profitable	Positive net cash flow	0.62**	0.60**
2.2. It can generate lots of cash	Positive net cash flow	0.82**	0.77**
2.3. It will allow to take cash home	Positive net cash flow	0.68**	0.72**
2.4. It can generate quick cash	Positive net cash flow	0.72**	0.76**
2.5. It has short cash burn	Positive net cash flow	0.30*	0.32*
3.1. Customer's will accept it	Manageable risk	0.47**	0.39**
3.2. Requires less technological changes	Manageable risk	0.53**	0.55**
3.3. It requires less liability	Manageable risk	0.70**	0.69**
3.4. It does not involve production risks	Manageable risk	0.58**	0.58**
4.1. It has greater features	Superiority of the product/service	0.74**	0.72**
4.2. It is a better option	Superiority of the product/service	0.89**	0.90**
4.3. It can improve the functioning	Superiority of the product/service	0.92**	0.92**
4.4. It allows to make things faster	Superiority of the product/service	0.40**	0.38**
4.5. It can do more	Superiority of the product/service	0.50**	0.45**
5.1. It can change the market	Potential to change the industry	0.53**	0.53**
5.2. It can be a big player product	Potential to change the industry	0.75**	0.75**
5.3. It can be the number one seller	Potential to change the industry	0.93**	0.93**
5.4. It can dominate the industry	Potential to change the industry	0.88**	0.88**

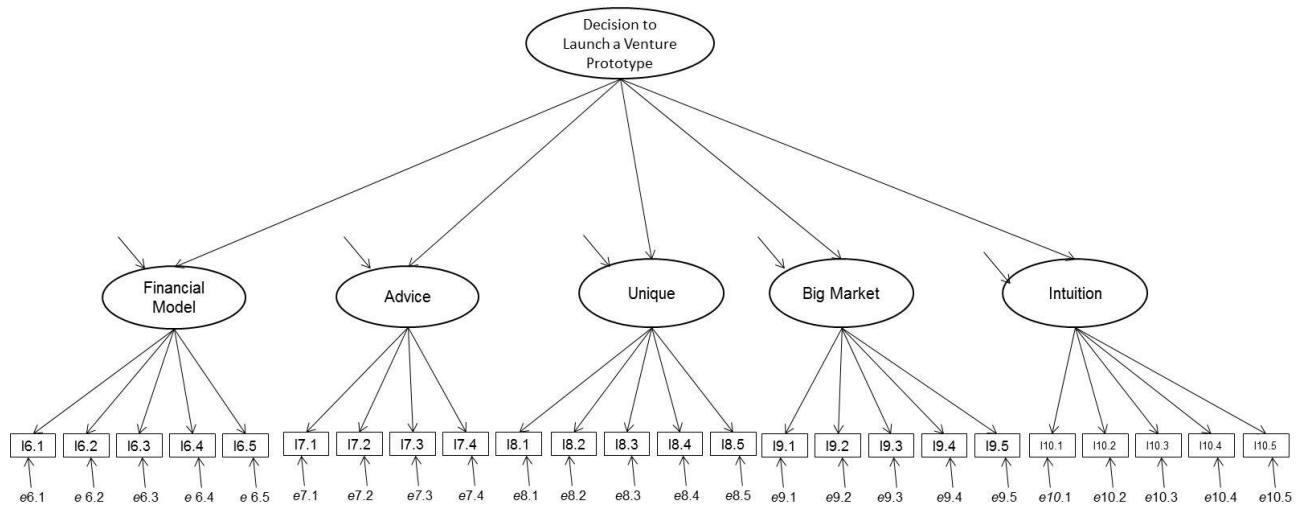
** , p < 0.01;

5.3.2. Decision to launch a venture prototype

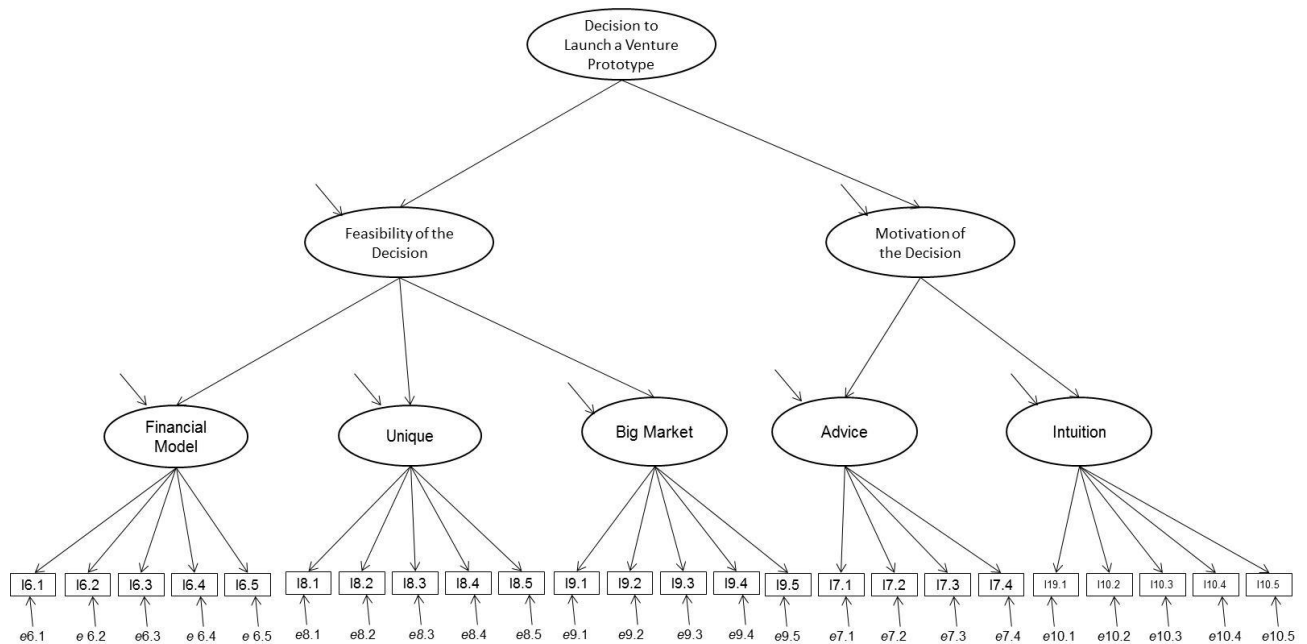
To test the prototype models for the hypotheses concerning the decision to launch a venture, we followed similar procedures. First, we compared the fit indexes of the two models, to test hypothesis three and four, and our general suggestion that the

decision to launch a venture prototype model includes both feasibility and motivational components.

Model C refers to the uni-dimensional decision to launch a venture prototype, suggested by Baron and Ensley (2006), and includes the five prototypical features: (1) a favorable financial model, (2) positive assessment or advice from others, (3) the idea's novelty, (4) a large untapped market and (5) intuition or gut feeling (Baron and Ensley, 2006). Model D refers to the bi-dimensional decision to launch a venture prototype, including two dimensions: feasibility of the decision to launch a venture— including a favorable financial model, the idea's novelty, and a large untapped market (H3)— and motivation of the decision to launch a venture— including positive assessment or advice from others and intuition or gut feeling (H4). Thus, the hypothesis three and four are tested on the model D which represents the bi-dimensional model of decision to launch a venture. Figure 5.2. presents the two models, C and D.



Model C - Uni-dimensional decision to launch a venture prototype model (Baron and Ensley, 2006)



Model D - Bi-dimensional decision to launch a venture prototype model

Figure 5.2. Decision to launch a venture prototype models under testing

The fit indices of model C and model D are presented in table 5.5. Results showed that model D yielded better fit indexes. According to the good fit values suggested in *CFI*, *SRMR* and *RSMEA* (Hu & Bentler, 1999; Byrne, 2004), model D is more adequate to the data ($\chi^2 = 456.82$; $df = 236$; $p < 0.001$; $\chi^2/df = 1.92$; $CFI = 0.91$; $RMSEA = 0.06$; $SRMR = 0.06$) than model C.

The significant χ^2 -difference test (Steiger, Shapiro, & Browne, 1985; Rigdon, 1999; Bryant & Satorra, 2012) showed that the bi-dimensional model is a significantly better representation of the data than the uni-dimensional model ($\Delta \chi^2=238.81$; $p<0.05$). Moreover, the smaller Akaike Information Criterion (AIC) showed in model D, reinforces that this model is more adjustable to the data ($AIC_{ModelC}=803.63$; $AIC_{ModelD}=584.82$). These results support hypothesis three and four.

Table 5.5. *Fit indexes of the uni-dimensional decision to launch a venture prototype model (Model C) and the bi-dimensional decision to launch a venture prototype model (Model D)*

	χ^2	<i>df</i>	<i>p</i>	χ^2/df	<i>CFI</i>	<i>RMSEA</i>	<i>RMSEA confidence interval 90 percent</i>	<i>AIC</i>	<i>SRMR</i>
Model C - One-factor decision to launch a venture prototype model	695.63	246	0.000	2.83	0.81	0.09	0.08-0.10	803.63	0.09
Model D - Bi-dimensional decision to launch a venture prototype model	456.82	236	0.000	1.92	0.91	0.06	0.05-0.08	584.819	0.06

The results indicated that the standardized estimates of the relationship between decision to launch a venture prototype and feasibility of the decision was 0.92 ($p<0.01$) and motivation of the decision was 0.97 ($p<0.01$). The results further indicated that the “favorable financial model” standardized estimate was 0.71 ($p<0.01$), the “large untapped market” standardized estimate was 0.51 ($p<0.01$), and the “idea’s novelty” standardized estimate was 0.57 ($p<0.01$). The standardized estimate of “positive assessment or advice from others” was 0.45 ($p<0.01$) and of “intuition or gut feeling” was 0.53 ($p<0.01$). Generally, these results support the metric requirements in model D, indicating that the standardized estimates were adequate. Furthermore, the item loadings are adjustable to the criteria (Table 5.6.). Thus, once again, a bi-dimensional model provided a better fit to the data than a uni-dimensional model.

Table 5.6. *Standardized regression weights of the uni-dimensional of the decision to launch a venture prototype model (Model C) and of the bi-dimensional of the decision to launch a venture prototype model (Model D)*

Items	Factors	Standardized Regression Weights – Loadings	
		Model C	Model D
Favorable financial model	Decision to launch a venture prototype	0.71**	
Positive assessment or advice	Decision to launch a venture prototype	0.49**	
Idea's novelty	Decision to launch a venture prototype	0.63**	
Large untapped market	Decision to launch a venture prototype	0.75**	
Intuition	Decision to launch a venture prototype	0.67**	
Feasibility of the decision	Decision to launch a venture prototype		0.92**
Motivation of the decision	Decision to launch a venture prototype		0.97**
Financial model	Feasibility of the decision		0.71**
Idea's novelty	Feasibility of the decision		0.57**
Large untapped market	Feasibility of the decision		0.51**
Positive assessment or advice	Motivation of the decision		0.45**
Intuition	Motivation of the decision		0.53**
6.1. It has a favorable financial model	Favorable financial model	0.56**	0.46**
6.2. it can generate high profit margins	Favorable financial model	0.75**	0.69**
6.3. It can create quick cash flow	Favorable financial model	0.80**	0.84**
6.4. It has a short sales cycle	Favorable financial model	0.56**	0.54**
6.5. it has high return and low investment	Favorable financial model	0.62**	0.64**
7.1. My friends told me it was a good idea	Positive assessment or advice	0.48**	0.47**
7.2. I had positive assessment from financial advisors	Positive assessment or advice	0.93**	0.93**
7.3. I had positive assessment from a consultant	Positive assessment or advice	0.97**	0.97**
7.4. I had positive assessment from a legal council	Positive assessment or advice	0.80**	0.80**
8.1. The idea is unique	Idea's novelty	0.79**	0.77**
8.2. There is nothing like it	Idea's novelty	0.89**	0.92**
8.3. The product / service is different from others	Idea's novelty	0.70**	0.69**
8.4. It involves new technology	Idea's novelty	0.58**	0.48**
8.5. It allows different applications	Idea's novelty	0.46**	0.42**
9.1. It has a large market	Large untapped market	0.55**	0.56**
9.2. It is an unmet need	Large untapped market	0.52**	0.48**
9.3. It is easy to enter the market	Large untapped market	0.40**	0.29**
9.4. There are few competitors	Large untapped market	0.50**	0.47**
9.5. There is a mass market	Large untapped market	0.66**	0.70**
10.1. This opportunity is very logical	Intuition	0.41**	0.27**
10.2. I am sure that it will work	Intuition	0.70**	0.72**
10.3. It is a good deal	Intuition	0.70**	0.66**
10.4. There is no doubt about this opportunity	Intuition	0.62**	0.56**
10.5. I have a gut feeling about this idea	Intuition	0.60**	0.69**

** , p < 0.01

5.4. Discussion

The current study was designed to obtain additional information on the nature of the cognitive frameworks (i.e., prototypes), that entrepreneurs employ in identifying new opportunities and deciding whether to develop them. Findings indicate that these prototypes involve specific, distinctive dimensions. Uncovering the cognitive functioning of opportunity recognition and decision to exploit it, allow individuals to

recognize opportunities easier and successfully; and to make more accurate and effective decisions.

As a development of Baron and Ensley (2006) model, this study embraces a conceptual contribution, proposing a different model of the business opportunity and decision to exploit prototypes, and also an empirical contribution, as it is able to demonstrate the adequacy of the proposed theoretical models. Findings indicate that these prototypes involve specific and distinctive dimensions, as reasoning strategies of entrepreneurs are based on simpler cognitive structures

In other words, in making these important decisions (“*Is this an opportunity?*”; “*Should I develop it?*”) entrepreneurs rely on specific forms of information which are then compared with existing prototypes they have developed through past experience. The closeness of fit they observe between available information and existing prototypes then strongly determines the decisions they reach. For instance, if currently available information provides a close match to the utility and distinctiveness dimensions of the opportunity prototype, the entrepreneurs are likely to conclude “This is an opportunity.” Similarly, if currently available information provides a close match to the feasibility and motivation dimensions (e.g., intuition) of the exploitation decision prototype, entrepreneurs are likely to conclude that they should in fact proceed with development of this opportunity.

Support for this reasoning was provided by the present data. Evidence was consistent with the prediction that the business opportunity prototype employed by entrepreneurs included two distinct dimensions: business opportunity utility and business opportunity distinctiveness. The bi-dimensional model of the business opportunity prototype gave support to hypotheses one, as the business opportunity utility includes solving the customer’s problems, generating positive net cash flow and having a manageable risk. Similarly, it also supported the hypothesis two, as the business opportunity distinctiveness includes the superiority of the product or service and the potential to change the industry.

The bi-dimensional model of the decision to launch a venture also supported hypotheses three as the feasibility aspect of the decision making included a favorable financial model, an idea’s novelty, and a large untapped market. Hypothesis four was also supported as the motivational aspect of the decision included the positive assessment or advice from others and intuition or gut feeling. These results corroborated

our prediction that the decision to launch a venture prototype includes two dimensions: feasibility and motivation of the decision to launch a venture.

Overall, these findings go beyond the current knowledge and serve to expand the findings of previous research (e.g., Baron & Ensley, 2006), indicating that (a) the business opportunity prototype employed by entrepreneurs reflects two key underlying dimensions: business opportunity utility and business opportunity distinctiveness; and (b) the prototype underlying the decision to launch a new venture, too, rests on two dimensions: feasibility of the decision and motivation of the decision to launch a venture.

We tested our hypothesis through the comparison of model fit between the baseline models (the uni-dimensional models suggested by Baron and Ensley, 2006) and the bi-dimensional models we developed. Generally, the model fit indices supported our hypothesis suggesting that the bi-dimensional model of business opportunity and decision to launch a venture are more adequate to the data than the uni-dimensional models. Furthermore, the fit indices of both bi-dimensional models contribute to the construct validity and measurement models of business opportunity prototype and decision to launch a venture prototype.

Nevertheless, the measures we used for the comparison of fit indexes and measures ($\Delta \chi^2$ and AIC) are not the unique options discussed in the structural equation modelling literature and they are not without problems (e.g., Rigdon, 1999; Bryant & Satorra, 2012). The AIC measure is quite a descriptive measure, not inferential, and is dependent of the sample size; the Friedman approach is a promising strategy to overcome such limitations (*c.f.*, Rigdon, 1999).

We are also aware that our fit indices in Models B and D are somewhat below the standards commonly advocated in Hu and Bentler (1999), and more recently established standards (Marsh, Wen, & Hau, 2004). However, the type of measurement that we used in our study is quite different from the Monte Carlo simulation in which the “golden rules” for fit indices were defined. Psychological measurement is different and is frequently associated to lower fit indexes and factor loadings (see, Heene, Hilbert, Draxler, Ziegler, & Bühner, 2011). Focusing on the factor loadings, our results are quite promising and generally acceptable as all the standardized regression weights are significant. Nevertheless, “solving customer’s problems” has a low factor loading (0.58) in Model B and “positive advice from the others” has also a low factor loading

(0.45) in Model D. These two results suggest that these two prototypical features should be investigated further, with special attention to the items used to assess them.

5.4.1. Theoretical contributions and relationship to the structural alignment perspective

The present study contributes both to current theory in entrepreneurship (i.e., with respect to the role of pattern recognition in opportunity recognition), and to integrating this theory with current findings concerning the development and impact of prototypes (e.g., Aron & Westbay, 1996; Liu, Jiang, & Kot, 2009; Rosch, 1978). In addition, it extends this previous work (Baron and Ensley, 2006) to another important step in the entrepreneurial process—the decision to develop an identified opportunity through the launch of a new venture.

Our findings revealed that the prototypical features of business opportunities are better represented by a two-dimensional model reflecting both utility and distinctiveness than by a uni-dimensional model which includes all five dimensions reported by Baron and Ensley (2006). When entrepreneurs perceive patterns among unrelated events, they appear to assess two main characteristics of these patterns: their utility and their distinctiveness. The utility of perceived opportunities relates to the capacity to solve customer's problems or meet their needs, the capacity to generate cash, and the associated risk. The distinctiveness aspect of perceived opportunities refers to the analysis of the business idea compared to existing products or services, namely with regard to its superiority and potential to change the industry. The analysis of both the utility and distinctiveness of a business opportunity appear to lie close to the foundations of the recognition process.

The present results also contribute to current knowledge concerning the cognitive dimensions and processes associated with entrepreneurs' efforts to identify opportunities (e.g., Baron & Ensley, 2006; Grégoire, Shepherd, & Lambert, 2010; Dimov, 2011; Costa, Santos & Caetano, in press) and can be interpreted as consistent with the structural alignment perspective described by Grégoire, Barr, and Shepherd (2010). These researchers applied structural alignment to the process of opportunity recognition following an approach developed by Gentner (1983). Their research involved executive entrepreneurs who were challenged to describe business opportunities based on brief technology descriptions they received. Grégoire, Barr, and Shepherd's (2010) results strongly suggest that entrepreneurs use structural alignment to

develop meaningful connections between technologies and markets in which opportunities will emerge. Grégoire and Shepherd (2012) also applied structural alignment of technology–market to the process of opportunity formation, and showed that the differences among opportunities affect the formation of opportunity beliefs. Furthermore, Grégoire and Shepherd (2012) defined entrepreneurial opportunities as a combination involving new supplies and new demands. The supply-demand conceptualization of opportunities is consistent with the two dimensions of business opportunity prototype that we proposed in the present study. In fact, utility of business opportunity is related to the supply side of opportunities, as it refers to a new product/service; and distinctiveness of business opportunity is related to the demand side, as it allows opening and making a difference in a new market.

Further in describing the theoretical basis for structural alignment, Grégoire, Shepherd and Lambert (2010) also developed a methodology for assessing the opportunity recognition processes. This procedure for measuring opportunity recognition includes three dimensions: (a) the degree of alignment between means of supply and target market, (b) the opportunity general feasibility perception and (c) the general desirability perception.

Our findings can be viewed as consistent with the findings reported by Grégoire and colleagues (2010; 2012) in several respects. First, there are complementarities between the dimensions that we identify and those described by Grégoire and colleagues (2010, 2012). The first dimension (*a*) degree of alignment between means of supply and target markets, is related, conceptually, to the business opportunity utility and distinctiveness dimensions as we defined them. More specifically, the degree of means of supply of an opportunity is related to its utility; and the ability to cover a target market is related to the distinctiveness of an opportunity. The second and third dimensions can also be viewed as “*aligned*” with the two dimensions of the decision to launch a venture: feasibility and motivation or desirability. Thus, utility and distinctiveness dimensions of business opportunity are congruent with the new supply-demand combinations suggested by Grégoire and Shepherd’s (2012) deeper analysis of structural alignment.

Following the analysis of business opportunity, the entrepreneur enters a subsequent stage of the entrepreneurial process: decision to launch, or not launch, a venture (Bhave, 1994; Baron & Shane, 2008). In line with the prototype literature, our findings reveal that prototypical features of the decision to launch a venture are also

organized according to two main dimensions: feasibility and motivation. When making a launch decision, entrepreneurs focus both on technical and specific information regarding the financial viability of the business idea, the market size and potential. These are feasibility dimensions of decision making, since they refer to information relating to the context and environment. Simultaneously, the entrepreneur also takes into account his or her intuition and feelings about the potential for success, failure or growth. In addition to intuition, the assessments and advice from friends, family, consultants, tutors and experts are also critical to the motivational dimension of the decision-making. This refers to the motivation aspect of decision making. Our study indicates that the decision to launch a venture involves both dimensions: feasibility and motivation. These two dimensions are compatible with the two dimensions suggested by Grégoire, Shepherd and Lambert (2010), although it is important to note that Grégoire, Barr, and Shepherd (2010) associate them to the opportunity recognition stage and we link them to the decision to launch a venture; they can also be viewed as compatible with McMullen and Shepherd's (2006) model of entrepreneurial action.

5.4.2. Limitations, future research, and practical implications

Although this study contributes to the further development of theory concerning the cognitive foundations of opportunity recognition, it nevertheless involves several limitations. First, due to sample size, it was not possible to compute a structural equation model reflecting the relationship between the prototypes of business opportunity and decision to launch a venture.

Second, this research is based on entrepreneurs who are experienced in starting new ventures, and consequently may be influenced, in complex ways, by their previous experience (e.g., Simon, Houghton, & Aquino, 2000) and past memory recalls (Golden, 1992). We studied opportunity retrospectively and our sample included individuals who decided to launch a venture (as opposite to the individuals who decided not to launch a venture).

Despite the fact that this aspect is considered as critical to define the aim of the present paper, these are the same characteristics of the sample and procedure used by Baron and Ensley (2006). The authors used a sample of entrepreneurs who recalled the moment of business opportunity recognition and that were all entrepreneurs, and thus also had a positive decision to launch a venture. However, to create simulation and to use verbal protocol procedures (e.g., Shane, 2000; Grégoire, Barr, & Shepherd, 2010;

Grégoire & Shepherd, 2012) is also a valuable epistemological and methodological research avenue for studying business opportunities in a prospective sense. In general, to study opportunities from a retrospective or a prospective approach can lead to different results (Dimov, 2011), as there can be some cognitive processes that *a posteriori* can rationalize the process of opportunity and exploitation.

Moreover, and focusing on the relation between business opportunity recognition and decision to launch a venture, it will be important to study the case of individuals who have declined to launch a venture. This is a future path for research which would also contribute to integrate the internal and the external opportunity recognition processes (Bhave, 1994).

Third, the prototypical features of business opportunity and decision to launch a venture were not culturally validated, and the possibility exists that these prototypes differ considerably across various societies or cultures. However, since the present research, conducted in Portugal, confirmed several of the findings reported by Baron and Ensley (2006) in research conducted in the United States, some minimal evidence for cultural generality does exist. However, future research should extend the present framework to additional cultures to fully establish such generality.

Fourth, we should note that our research did not seek to propose either a methodological approach or a validated scale. Rather, we used items employed in previous research (Baron & Ensley, 2006) and did not seek to conduct a formal scale validation. Future research is necessary to fully accomplish the task of validating the measures employed here, and thus the underlying structure of the business opportunity and “launch” prototypes that were of primary interest here.

In addition, it is important to include, in future research, other important determinants of opportunity recognition not investigated here, such as prior knowledge, entrepreneurial passion and interests that can condition the business opportunity recognition.

Turning to practical contributions of the present study, the present findings embrace important cues for entrepreneurs. First, a real opportunity includes in its essence two dimensions: utility and distinctiveness. Thus, when recognizing an opportunity entrepreneurs might engage on assessing in which form that opportunity is high in utility and distinctiveness. Second, the decision to launch the opportunity embraces aspects related to the financial feasibility of the opportunity, and also aspects related to the individual motivation to exploit it. Thus, when deciding to move forward

to the takeoff, entrepreneurs might engage on a deep reflection about the feasibility and motivational aspects of that opportunity. Our results clearly showed that these dimensions are part of the discovery, evaluation and exploitation of opportunities.

Third, knowing the basic dimensions of opportunity and decision making prototypes contributes to develop effective skills with respect to business opportunity recognition among students enrolled in university entrepreneurship programs (or in equivalent non-degree, “outreach” programs). Such training would focus on the two dimensions identified here: business opportunity utility and business opportunity distinctiveness. Certainly, such training in opportunity recognition should be broader in scope. Furthermore, to the extent that utility and distinctiveness are two relevant and basic characteristics of opportunity identification prototypes training in their recognition and use might well be beneficial to nascent entrepreneurs.

We should note that the questionnaire based on the Baron and Ensley (2006) study, and employed here, can be used for self-assessment of the business opportunity recognition process, in order to validate the business opportunity and to avoid “false alarms”—erroneously identifying opportunities that, in fact, do not exist (e.g., Baron, 2004a). Similarly, the questionnaire can also be used for investors, tutors, and entrepreneurship agents in order to help evaluate features of business opportunities and decision to launch a venture.

Our research indicates that business opportunity prototypes include the assessment of both utility and distinctiveness, and that the decision to launch a venture prototype includes the assessment of both feasibility and motivational components. We assume that entrepreneurs identify opportunities in various ways, employing information relating to these dimensions. Thus, they can identify opportunities that appear to be useful, distinctive, or both. Similarly, they can decide to launch a new venture on the basis of feasibility aspects or motivational variables. We suggest that on many occasions, entrepreneurs ground their decisions on combinations of these factors, thus expanding the scope and content of patterns that are identified and then considered for actual development.

5.4.3. Conclusions

The importance of business opportunity recognition and subsequent decisions to develop them through the launch of a new venture have been emphasized by many previous scholars, and appropriately so: in essence, they refer to two crucial, early

stages of the entrepreneurial process—stages in which identification of opportunities, and the key decision as to whether to pursue/exploit them, take place. In a sense, there is, in most instances, no entrepreneurship without business opportunity recognition, and even if such identification occurs, nothing further is likely to occur unless a decision to actively develop the perceived opportunity is taken. Thus, uncovering the basic aspects of these two crucial stages contributes to the scientific understanding of the phenomena, and contributes to a more accurate practice of entrepreneurial activities. Moreover, focusing on the processes involved in these activities is very close to the heart (or at least, the cognitive heart) of entrepreneurship — the complex and creative process through which enterprising individuals, drawing on their own energy, creativity, knowledge, and skills, seek to transform the *possible* into *real* (Baron, 2013; Shane, 2012).

General discussion and conclusions of Part II

General discussion and conclusions of Part II

In Part II we addressed the opportunity part of the nexus (Shane, 2003), focusing on business opportunities, decision to launch a venture and entrepreneurial motives, using a cognitive approach. The study 1 “*Cognitive maps in the early entrepreneurship stages: From motivation to implementation*” showed that individuals with a different entrepreneurial experience also had different cognitive maps on entrepreneurial motivation, business opportunity, and decision to exploit it. More experienced individuals presented clearer, richer and more experience-based cognitive maps. These results supported the fact that cognitive maps in “*the minds of individuals, is shaped over time based on prior experience*” (Carsrud, Brännback, Nordberg, & Renko, 2009, p. 5).

The study 2 was entitled “*Prototype models of opportunity recognition and the decision to launch a new venture: Identifying the basic dimensions*” and showed that the prototypical features of business opportunity and decision to launch a venture were organized in two main dimensions. Business opportunity prototype included business opportunity utility and business opportunity distinctiveness. Decision to launch a venture prototype involved also two dimensions: feasibility of the decision and motivational aspects of decision-making.

Both studies were based in the cognitive theory, and enhanced the knowledge about the processes occurring during the early stages of entrepreneurship process. As Mitchell, Busenitz, Lant, McDougall, Morse, and Smith (2002) stressed “*research that contributes to a better understanding of information processing and entrepreneurial cognition has an important role to play in the development of the entrepreneurship literature*” (p. 94). Therefore, the findings of both studies appear to contribute to the development of entrepreneurship literature.

Results from study 1 and 2 relate to the fundamental processes in the cognitive system of entrepreneurs in the business opportunity stage and subsequent decision to exploit it. Nevertheless, they contribute to different key features of the cognition research (Grégoire, Corbett, & McMullen, 2011).

The study about the cognitive maps refers to the *mentalism* feature of cognition research, as Grégoire, Corbett and McMullen (2011) defined it. Mentalism refers to “*a focus on studying the mental representations of the self, of others, of events and*

contexts, and of other mental states and constructs” (Grégoire, Corbett, & McMullen, 2011, p.1445). In this first study we examined the cognitive elements of human action in the early stages of entrepreneurship process, and our results showed that cognitive maps are in fact a summative result from individuals’ idiosyncratic knowledge, experiences, acquisition strategies and attitudes. Thus, the changes observed in cognitive maps from entrepreneurship students to novice entrepreneurs showed the dynamic associated to these structures. Furthermore, the changes observed on the cognitive maps suggested that the cognitive dynamics are related to specific attitudes and behaviours towards entrepreneurship. Individuals with clearer cognitive maps about business opportunity recognition process were, in fact, entrepreneurs, and thus expressed entrepreneurial behaviour and attitudes.

In its turn, study 2 about the organization of the prototypical features refers to the *process orientation* feature of cognition research, as Grégoire, Corbett and McMullen (2011) defined it. Process orientation refers to the “*concern for studying the development, transformation, and use of these mental representations and constructs*” (Grégoire, Corbett, & McMullen, 2011, p.1445). Through uncovering the basic organization of the prototypical features, we are contributing to the description of information-processing models (Anderson, 1983; Anderson & Nichols, 2007), and to further understand the organization of reasoning and pattern recognition processes.

There are three main conclusions that we can draw based on the results and evidences from both studies. Firstly, cognitive frameworks, including both cognitive maps and prototypes, seemed to play an important role in many decisions and processes, such as business opportunity recognition and the decision to exploit it. Both studies 1 and 2 contributed to this general conclusion, which corroborates previous evidences (e.g., Baron & Ensley, 2006; Bingham, Eisenhardt, & Furr, 2007).

Secondly, the results also showed that these cognitive frameworks are dynamic and change as a result of individuals’ experience and prior knowledge. Individuals with higher experience and prior knowledge had simpler, clearer and richer cognitive frameworks about entrepreneurship early stages. Thus, entrepreneurs have clear cognitive frameworks and are keener on pattern recognition. They are people who have acquired these frameworks through experience, and compared new information with them to see if any "match" emerges. The closer the match between the information perceived in the environment and the prototype acquired through experience, the clearer the pattern. These are new contributions to entrepreneurship theory.

Thirdly, there are prototypes related to the early stages of entrepreneurship, such as business opportunity and subsequent decision to exploit it. These prototypes include several characteristics, found previously by Baron and Ensley (2006). These prototypical features are organized in simpler structures, in such a way that business opportunity prototype integrates two key dimensions: utility and distinctiveness; and decision to launch a venture includes other two key dimensions: motivation and feasibility. These conclusions were based on the study 2: “*Prototype models of opportunity recognition and the decision to launch a new venture: Identifying the basic dimensions*”, and contribute to understand the basic cognitive structures of entrepreneurship.

These results bring us closer to understanding how entrepreneurs make these important decisions. Entrepreneurs answer to the question “*Is this or not an opportunity?*” based on utility and distinctiveness characteristics. These two key characteristics of business opportunity recognition were also present in the cognitive maps of would-be entrepreneurs and novice entrepreneurs interviewed in study 1. Our studies also contribute to understand further how entrepreneurs answer to the question “*Should or should I not develop and exploit this new venture?*”. Our results suggested that entrepreneurs base their decisions on motivational and feasibility aspects.

The motivational aspects are part of the decision to exploit the new venture, as we suggested in study 2. However, previously in study 1 we proposed that entrepreneurial motivation is at the origin of entrepreneurship early stages and has a bidirectional effect in business opportunity recognition, and has a moderation effect between business opportunity recognition and decision to launch a venture. Both evidences are not incompatible. Actually, they complement one to each other. Entrepreneurial motivation is clearly related to the business opportunity recognition and to the decision to exploit the venture, as Bhave (1994) suggested, and as the Global Entrepreneurship Monitor (GEM) model had differentiated.

In sum, the part II of this thesis focused on business opportunity recognition, decision and motivation to exploit a new venture. The two studies showed that entrepreneurs have clear, rich and simple cognitive maps about opportunity recognition, decision to launch a venture and entrepreneurial motivation. We also found that business opportunity and decision to launch a venture prototypes have a bi-dimensional structure.

In the next Part of this thesis will examine the individual side of the opportunity-individual nexus. Part III is entitled “*Entrepreneurs: The individual characteristics*” and includes three empirical studies. After a brief introduction, we present study 3 (chapter 6). It is focused on the “*Psychosocial aspects of entrepreneurial potential*” and presents a theoretical model regarding the entrepreneurial potential construct, and the main psychosocial aspects that contribute towards an individual’s preparedness to engage in activities typically associated with entrepreneurship. We ground the theoretical model of entrepreneurial potential on the main evidences from previous research about the main motives, skills, competencies, knowledge and personal characteristics of entrepreneurs. This study presents the development of the Entrepreneurial Potential Assessment Inventory (EPAI) that can be used to measure the entrepreneurial potential construct. The main theoretical question to which this study tries to answer is: *what skills, competencies, motives and personal characteristics do entrepreneurs need to succeed?* To answer to this question and to develop the Entrepreneurial Potential Assessment Inventory we conducted six research steps, using different samples and analysing the characteristics of the scale.

Study 4 (chapter 7) is entitled “*Socio-psychological characteristics of entrepreneurial teams: Profiling the entrepreneurial potential*” and aims to analyse the predictive capacity of entrepreneurial potential profiling among entrepreneurial teams, in start-up launching, conceiving their performance as the financial investment assigned in the finals of a venture competition. The main theoretical question to which this study tries to answer is: *the socio-psychological characteristics of entrepreneurial teams contribute to identify the more successful entrepreneurial projects?* To answer this question we used the entrepreneurial potential construct in teams engaged in a venture competition, following a *proxy* for a longitudinal research.

Study 5 (chapter 8) is entitled “*Entrepreneurs selection method for entrepreneurship promotion programs*”. This study includes the entrepreneurial potential model integrated in a method for the selection of entrepreneurs, considering both entrepreneurs individual characteristics and the business opportunity viability. The main question that underlines this study is *what entrepreneurial potential dimensions and business opportunity characteristics are critical to the selection of successful entrepreneurs?* To answer this question, we tested the entrepreneurs selection method on an entrepreneurship program, through a longitudinal design.

PART III.
ENTREPRENEURS: THE INDIVIDUAL CHARACTERISTICS

Introduction to Part III

As we showed in Study 1 and 2, the cognitive frameworks of individuals are at the basis of the process of business recognition and decision to exploit it. Moreover, beside the cognitive features of the individual, there are motivational, psychological, personality and sociological aspects that are also relevant for the explanation of entrepreneurship. This Part is focused on the individual side of the entrepreneurship nexus.

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

In fact, research about the individual's characteristics in entrepreneurship is one of the most frequent and popular topics in entrepreneurship research. Despite that, research lacks a comprehensive model about the psychosocial characteristics associated with entrepreneurship success. Entrepreneurs, as a specific type of people expert in recognizing, launching and running businesses, possess a number of characteristics that are more related to the entrepreneurial activity. Generally, there is a central role of entrepreneurs in new venture creation, and in entrepreneurship in general, wherever it occurs and in whatever specific form.

In this part of the thesis, we present three empirical studies focused on the individual side of entrepreneurship. The study 3 is entitled "*Psychosocial aspects of entrepreneurial potential*" and presents a theoretical model for the entrepreneurial potential construct, and the main psychosocial aspects that contribute towards an individual's preparedness to engage in activities typically associated with entrepreneurship. Our main contribution resides in the development of an integrative model about the personal characteristics related to successful entrepreneurship, and an inventory to assess it.

Study 4 is called "*Socio-psychological characteristics of entrepreneurial teams: Profiling the entrepreneurial potential*" and uses the entrepreneurial potential model to describe teams' entrepreneurial potential profile. This study shows the richness of using

the entrepreneurial potential construct and inventory among teams, as tool to add value to the investments decisions.

Study 5 is entitled “*Entrepreneur selection method for entrepreneurship promotion programs*”. This study includes the entrepreneurial potential model integrated in a method for the selection of entrepreneurs, taking into account both the individual characteristics of entrepreneurs, and the viability of the business opportunity. Furthermore, we contribute to show the relevance of entrepreneurial potential dimensions and subdimensions, integrated in an entrepreneurs selection method.

Chapter 6. Psychosocial aspects of entrepreneurial potential (Study 3)

6.1. Introduction

More than eighty years after the seminal contributions of Schumpeter (1934), entrepreneurship research is becoming a more established field with its own theoretical, empirical and methodological debates (e.g., Blackburn, & Kovalainen, 2009). However, there are still theoretical, empirical and applied aspects that require more in-depth attention. One such aspect has to do with explaining the individual psychosocial dimensions that are related to the preparedness to engage in entrepreneurial activities.

The present study will approach the entrepreneurship phenomena from an individual perspective. We propose that individuals have a latent potential to become entrepreneurs. This potential is the summative result of a set of distinctive competencies and motivations that are the manifest aspects of every individual's preparedness to become an entrepreneur.

This study aims to make a contribution to the development of the theoretical and empirical field of entrepreneurship by presenting a model of entrepreneurial potential and its measurement. The main question underpinning this research is: *“How to explain the entrepreneurial potential construct theoretically, and how to assess it empirically”*. We propose a theoretical model of entrepreneurial potential that builds on the main previous evidences from empirical and descriptive studies. The entrepreneurial potential construct includes four main dimensions: entrepreneurial motivations, management competencies, psychological competencies, and social competencies. These four main dimensions, in turn, include a total of eleven subdimensions.

Theoretically, this study contributes to the development of a model about entrepreneurial potential. Methodologically, we present a scale with reliable characteristics to measure this entrepreneurial potential. This measure can be used as a self-assessment tool for future entrepreneurs, and also can contribute to diagnose

⁵ Based on the data generated for this study three articles published in peer reviewed journals have been prepared.

Santos, S. C., Caetano, A., & Curral, L. (2013). Psychosocial aspects of entrepreneurial potential. *Journal of Small Business and Entrepreneurship*. *in press*

Curral, L., Santos, S. C., & Caetano, A. (2013). Theoretical foundations on the entrepreneurial potential. *Amity Business Journal*, 2(1), 1-11.

Santos, S. C., Caetano, A., & Curral, L. (2010). Atitude dos estudantes universitários face ao empreendedorismo: Como identificar o potencial empreendedor? *Revista Portuguesa e Brasileira da Gestão*, 9 (4), 2-14.

specific training needs. Moreover, entrepreneurial potential assessment can also be relevant for investors in the funding decision making.

6.1.1. Entrepreneurial potential

Krueger and Brazeal (1994) developed theoretical propositions on a model of entrepreneurial potential based on three critical constructs: perceived desirability; perceived feasibility, and propensity to act. The authors conceptualized potential entrepreneurs as those with an entrepreneurial potential. This was defined as a process of interaction between perceived desirability (including social norms and attitudes), perceived feasibility (i.e., self-efficacy) and propensity to act. The entrepreneurial potential, as Krueger and Brazeal (1994) conceptualized it, is anterior to entrepreneurial intentions, such that an individual can have a high entrepreneurial potential but does not consider engaging in an entrepreneurial activity, or the other way around.

Despite the relevance of Krueger and Brazeal (1994) theoretical model, the theme of entrepreneurial potential has been quite fuzzy in the literature. For instance, it is absent (a) a consensual definition of entrepreneurial potential, (b) a conceptualization of its manifestation, measurement, and (c) level of analysis. We explain these aspects in detail on the following paragraphs and show why they need clarification.

Krueger and Brazeal (1994) described the process based on Ajzen's theory of planned behaviour and on Shapero's model of the entrepreneurial event. However, the authors did not present a definition of entrepreneurial potential. One definition of entrepreneurial potential was offered by Raab, Stedham, and Neuner (2005) arguing that it "*is the extent to which an individual possesses the characteristics that are associated with successful entrepreneurs*" (p. 72).

Focusing on its manifestation and measurement, Krueger and Brazeal (1994) assumed theoretically that the entrepreneurial potential is a latent expression of the perceived desirability, perceived feasibility and propensity to act. Other empirical approaches (Raab, Stedham, & Neuner, 2005) suggested that the entrepreneurial potential was expressed by seven characteristics: need for achievement, locus of control, propensity to take risks, problem solving, willingness to assert oneself, tolerance of ambiguity and emotional stability. The "enterprise potential", in turn, was assessed among university students using a scale comprising four main attitudes towards characteristics associated with entrepreneurship: leadership, creativity, achievement, and personal control scale (Athayde, 2009).

Entrepreneurial potential has been defined both at the individual level (e.g., Krueger & Brazeal, 1994; Raab, Stedham, & Neuner, 2005; Wong, Cheung, & Venuvinod, 2005; Athayde, 2009) and at the country level (e.g., Muller & Thomas, 2000; Mueller & Goić, 2002; Mueller, 2004; Harada, 2005; Nguyen, Bryant, Rose, Tseng, & Kapasuwan, 2009).

In the present paper, we aim to clarify the definition, measurement and level of the construct of entrepreneurial potential. We next present our theoretical proposal reasoning of the entrepreneurial potential construct.

6.1.2. Theoretical positioning for the construct

The entrepreneurship process is deeply linked to an individual's characteristics (Baum, Frese, Baron, & Katz, 2007) given that he/she is the main agent in the process of deciding to implement entrepreneurial initiatives, and to assume responsibility for the consequences. This perspective is then focused on the cognitions, actions, decisions, aspirations and emotions of the entrepreneur (Venkataraman, Sarasvathy, Dew, & Forster, 2012). Our focus on the individual level is strengthened by the importance individual characteristics have on the entrepreneurial process (e.g., Baum & Locke, 2004; Baron & Shane, 2008).

We support the choice of the individual perspective based on the evidence that entrepreneurship is a human based practice and intrinsically dependent on the individuals' decisions and actions. There is no entrepreneurship without the individual. Or, as McMullen and Shepherd (2006) stated "*Entrepreneurship requires action.*" (p.132) and action requires individuals. Following this argument, we position the entrepreneurial potential construct at the individual level of analysis.

Entrepreneurial intention (e.g., Ajzen, 1991; Krueger, Reilly, & Carsrud, 2000; Liñán & Chen, 2009) is one of the most cited constructs at the individual level in the pre-emergence stage, and is also one of the best predictor of behaviour (Ajzen, 2002). Krueger and Brazeal (1994) suggested that the entrepreneurial potential is antecedent to the entrepreneurial intentions. In fact, having the potential to be an entrepreneur does not imply that the individual wishes to make use of it, or that the environment and context are favourable for it. Thus, an individual can have a high potential to be an entrepreneur, but may not consider to launch a venture (i.e., does not have an entrepreneurial intention). We share this vision about the relation between entrepreneurial potential and intentions. The former refers to the individual perception

about its capacity and the later refers to the wish to engage in entrepreneurship activities.

Generally, research has focused on identifying and describing the psychosocial characteristics that differentiate entrepreneurs from managers (e.g., Chen, Greene, & Crick, 1998; Brandstätter, 2011), the characteristics that are associated with venture growth (Baum, Locke, and Smith, 2001) and attitudes towards entrepreneurship in students (Athayde, 2009), among others.

Previous research at the individual level focused mainly on attitudes (Athayde, 2009), personality traits (Brandstätter, 2011), skills (Baum & Locke, 2004), and motivations (Shane, Locke, & Collins, 2003). The entrepreneurship context provides a wide range of freedom to choose and change tasks according to personal preferences and goals. The personality traits and cognitive ability of entrepreneurs are obviously important when it comes to successfully performing varied activities and tasks in a complex and uncertain environment. However, they are not the only aspects that enable entrepreneurs to successfully respond to the socio-economic circumstances they have to face. Other competencies, since they are specifically related to the performance criteria of job tasks, go beyond personality traits and cognitive ability. Competencies complement personality traits and cognitive ability, and contribute to explain the entrepreneurship process.

Thus, we argue that the construct of entrepreneurial potential is more accurately represented through a competency based model that expresses the dynamics involved in entrepreneurial activities. We propose a competency based model for entrepreneurial potential and have adopted the definition suggested by Spencer and Spencer (1993, p.9): "*A competency is an underlying characteristic of an individual that is causally related to criterion-referenced effective and/or superior performance in a job or situation*".

Based on the Krueger and Brazeal (1994) assumptions and Spencer and Spencer's (1993) competency definition, we consider that *entrepreneurial potential* refers to *an individual's preparedness to engage in typical entrepreneurial activities*. Our definition captures the construct of entrepreneurial potential as a competency that can be developed and that is not only associated with successful entrepreneurs. Thus, the definition we propose is more integrative and has a broad scope than previous ones (e.g., Raab, Stedham, & Neuner, 2005). By focusing on "*entrepreneurial potential*", we intend to highlight the developmental process of typical entrepreneurial skills.

In accordance to our definition, the entrepreneurial potential is the latent construct that expresses the most distinctive characteristics associated with the performance in entrepreneurial activities. In other words, we propose that entrepreneurial potential is the combined result of several individual entrepreneurial characteristics. The theoretical reasoning underpinning the conceptualization of entrepreneurial potential is that individuals have a psychosocial profile that can be compared with the psychosocial profile of the majority of entrepreneurs.

Thus, by bringing together the most relevant and discriminative characteristics in the entrepreneur literature, we can put together a compilation of the psychosocial characteristics most shared among entrepreneurs. This compilation is at the essence of the entrepreneurial potential of individuals, once that it enunciates the multiple dimensions that express an individual's preparedness to engage in activities that typify entrepreneurship. In other words, entrepreneurial potential, at the individual level, could express the essence of the entrepreneur.

Connecting prior research evidence from entrepreneur literature, theoretical developments and the predicted relationships between the constructs and variables, we next present a summary organized according to the main dimensions of the construct domain: entrepreneurial motivations; management competencies; psychological competencies and social competencies. The literature shows that these main dimensions are made up of subdimensions that are considered more distinguishing of entrepreneurial behaviour, or entrepreneurial identity (Anderson & Warren, 2011). However, it is not our purpose here to develop a systematic literature review of the characteristics of entrepreneurs because good state of the art overviews of psychological entrepreneurship research by Chell, Haworth and Brearly (1991), and meta-analysis (Schwenk & Shrader, 1993) have already been provided.

We propose that the entrepreneurial potential construct is the latent expression of these four main dimensions (entrepreneurial motivations, management competencies, psychological competencies, and social competencies). We present next a revision organized by these four dimensions, including the main subdimensions.

Entrepreneurial motivations

By *entrepreneurial motivations* we mean the motives that drive individuals towards typical entrepreneurial activities. Human motivation is one of the strongest predictors of entrepreneurial success. It is the main driver in pursuing entrepreneurial opportunities, assembling resources and engaging in the entrepreneurial process (Shane, Locke, & Collins, 2003).

The entrepreneurial motivations highlighted in the literature include general and task-specific levels, with different impacts on the entrepreneurial process (Shane, Locke, & Collins, 2003) and venture growth (Baum, Locke, & Smith, 2001). The rich complexities of motivations were engaged as a critical role in entrepreneurial behaviours. According to the literature, three main drivers can express entrepreneurial motivation: desire for independence, economic motivation and entrepreneurial self-efficacy.

Desire for independence

Entrepreneurs frequently acknowledge that they are driven by a desire for independence, showing that they want the authority to take the important decisions: “*Independence entails taking the responsibility to use one’s own judgement as opposed to blindly following the assertions of others. It also involves taking responsibility for one’s own life rather than living off the efforts of others.*” (Shane, Locke, & Collins, 2003, p.268).

Hisrich (1985) found that one of the prime motivations for starting a business was a desire for independence. Hornaday and Aboud (1971) showed that founders scored significantly higher than the general population on measures of independence.

Economic motivation

The desire to pursue entrepreneurial opportunities to generate economic profit, that is, the *economic motivation*, has been cited as one of the characteristics most shared by successful entrepreneurs: the need to make money. In general, entrepreneurs perceived their work as more profitable than working for others (e.g., Brice & Nelson, 2008).

Entrepreneurial self-efficacy

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

Individuals with high self-efficacy were likely to persist when problems arose, and actively sought out challenges and, by extension, challenging opportunities (Bandura, 1997). Self-efficacy has been related to business venture launch and success (Chen, Greene, & Crick, 1998), and dynamics around business performance (Hmieleski & Baron, 2008).

Management competencies

Entrepreneurs also need to possess the hard skills that enable them to manage a business—the *management competencies*. Across the entrepreneurial process, individuals must have the specific skills they need to manage a venture. The *management competencies* are defined by the basic and specific competencies in business management (e.g., Baum, Locke, & Smith, 2001), and mostly they refer to the individual's ability to manage the business strategy, business resources and human resources.

Vision

Despite the diversity of definitions for vision, it is nevertheless generally acknowledged to be an idealised goal to be achieved in the future or an ideal and unique image of the future (Kirkpatrick, Wofford, & Baum, 2002). Greenberger and Sexton (1988, p.5) argued that “*entrepreneurs are likely to have some abstract image in mind about what they intend to accomplish*”, and this vision serves as a guide for their own actions.

Empirically, vision capacity has been shown to be a predictor of entrepreneurial venture development (Baum, Smith, & Locke, 2001). Baum, Locke and Kirkpatrick (1998) found direct and indirect causal effects of vision attribute, vision content, and vision communication on small venture performance.

Resource mobilisation capacity

The ability to gather the (financial and material) resources to manage a venture has been identified as an important predictor of entrepreneurial success, given that resources are an essential component of new venture development and make it easier for new ventures to adjust to complex environments (e.g., Tan & Peng, 2003). Financial resources serve to acquire other resources in such a way that provides a venture with strategic flexibility and facilitates its adjustment to complex environments (Tan & Peng, 2003). Accordingly to Chell, Haworth and Brearley (1991), a prototypical entrepreneur is alerted to business opportunities regardless of resources currently controlled, is innovative, and uses a variety of sources of finance.

Leadership capacity

Entrepreneurial leadership has been identified as important and has been described as the ability to influence others, to manage resources strategically in order to emphasise both opportunity-seeking and advantage-seeking behaviours (Ireland, Hitt, & Simon, 2003; Todorovic & Schollosser, 2007).

Psychological competencies

There is a broad set of characteristics that can be included among the *psychological competencies*, and they refer to the wide group of skills and attributes that characterise entrepreneurial individuals (e.g., Chell, 2008). Within that set are situational characteristics that are often common to all entrepreneurs: an absence of other people giving orders; the need for emotional stability; demand for social contact and a readiness to respond to change and try out new ideas. In the group of psychological competencies we include three main individual traits that are distinctive among entrepreneurs.

Innovation capacity

The capacity for innovation is one of the main characteristics of the entrepreneurial human capital (e.g., Marvel & Lumpkin, 2007). While innovativeness can be defined as a characteristic of an individual, innovation implementation effectiveness depends on a group of persons, and, as such, is a characteristic of an entrepreneurial venture (Klein & Sorra, 1996; Kreiser & Davis, 2010). It is possible to distinguish entrepreneurs from non-entrepreneurs based on achievement, self-esteem, personal control, and innovation (Robinson, Stimpson, Huefner, & Hunt, 1991).

Emotional intelligence

Mayer, Salovey and Caruso (2000) defined emotional intelligence as an ability to express emotions, to use emotions to facilitate thinking, to understand and argue by means of emotions, and to manage them internally while communicating with others effectively.

Previous research has shown that entrepreneurs get relatively high scores for emotional intelligence (Baron & Markman, 2000). The Zampetakis, Kafetsios, Bouranta, Dewett and Moustakis (2009) model showed that emotional components were expressed by feelings and emotions, determining attitude towards entrepreneurial intentions.

Resilience

In entrepreneurship, the uncertainty level is generally higher than in other organisational settings, and entrepreneurs have to know how to design and implement adaptable behaviours.

Empirical research evidenced that entrepreneurs showed greater levels of persistency than non-entrepreneurs (e.g., Friborg, Hjemdal, Rosenvinge, Martinussen, Aslaksen, & Flaten, 2006). Given that entrepreneurship is strictly associated with risk, it was relevant to analyse an entrepreneur's ability to cope with difficulties, threats and unsuccessful projects. We argue that resilience must be an important factor across the entrepreneurship process, as the level of uncertainty faced by entrepreneurs is greater than that of other organisational players. In addition, it was shown that entrepreneurs could develop emotional, cognitive, social and financial resilience that can be harnessed and mobilised for a subsequent venture launch (Hayward, Forster, Sarasvathy, & Fredrickson, 2010).

Social competencies

Since an entrepreneur acts within a social context and therefore has to interact with different players, another dimension of an entrepreneur's characteristics that would denote an individual's ability to interact effectively with others involves social competence. An entrepreneur's effectiveness in interacting with others, (i.e., his / her social competence) may also affect their entrepreneurial success (Baron & Markman, 2000).

Persuasion and communication capacity

The ability to interact effectively with others has a positive effect on entrepreneurial success (Baron & Markman, 2000). Entrepreneurs consider that they have a greater capacity for persuasion (Hoehn-Weiss, Brush, & Baron, 2004). Recent studies showed that the social competencies relate significantly to new venture performance measures, and this relationship was mediated through success in information seeking and resources (Baron & Tang, 2009).

Network development capacity

The ability to develop a network between entrepreneurs and other individuals who can provide resources for business implementation and development was identified as one of the entrepreneurial performance predictors (Baughn, Cao, Le, Lim, & Neupert, 2006). The ability to develop a social network, together with other constructs, has a direct effect on venture creation development (e.g., Lee & Tsang, 2001). The network approach assumes that an entrepreneur's ability to organize and coordinate networks between individuals and organizations was critical for both starting up a company and business success (Birley, 1985).

6.1.3. The entrepreneurial potential construct

Based on the assumption that the same main dimensions that are typical of entrepreneurs are critical in assessing an individuals' preparedness to engage in typical entrepreneurship activities, that is, an individuals' entrepreneurial potential, we suggest that entrepreneurial potential can be explained by the four main dimensions evidenced in the literature on entrepreneur characteristics.

The four main dimensions that can explain entrepreneurial potential are: (a) entrepreneurial motivations; (b) psychological competencies; (c) social competencies; and (d) management competencies. These dimensions allow us to identify and differentiate the entrepreneurial potential. Moreover, and connecting the dots to bring together the most outstanding aspects of previous empirical research and theoretical suggestions, above the review of the literature highlighted eleven subdimensions. These four main dimensions of the entrepreneurial potential include motivations and competencies. Motivations and competencies co-exist in the entrepreneurial potential model because both are individual characteristics that can be developed over time and that capture the dynamics of time, individuals' interests and career paths.

Bearing in mind that entrepreneurial potential is conceptualised as an individual's preparedness to engage in entrepreneurial activities, it is important to develop an assessment inventory based on the proposed theoretical model that would allow us to assess the entrepreneurial potential construct. Furthermore, it is essential to encourage young university students and young employees to develop a flair for entrepreneurship and innovation (e.g., Carey, Flanagan, & Palmer, 2010). Despite extensive entrepreneurial programs and the emphasis on academic entrepreneurship, knowledge about the individuals' preparedness to engage in typical entrepreneurship activities, that is, their entrepreneurial potential, is still scant. It is important that an individual aspiring to be an entrepreneur is able to assess him or herself against an entrepreneurial profile before undertaking the personal and professional risks of a start-up venture (Osborne, 1995).

Frequently, we notice that assessment instruments refer to the operationalization of one specific psychological construct such as entrepreneurial self-efficacy (e.g., McGee, Peterson, Mueller, & Sequeira, 2009), or proactive personality scale (Crant, 1996).

These scales are not sufficient to assess a pattern or a typical entrepreneurial competencies profile (Lumpkin, Cogliser, & Schneider, 2009) due to three main reasons. First, there are different conceptualisations of the same construct. Second, there are different scales developed to assess the same construct and most of them inadequately fulfil the validation and psychometric requirements. Third, the existing assessment scales are not sufficient to be applied to the entrepreneurial activity because they are time expensive, the coding system is difficult, they are not comparable with each other.

To broaden our understanding of the entrepreneurial potential construct, we sought to address the methodological and psychometric shortcomings associated with the entrepreneurial potential measures. To that end, we performed six research steps. Step 1 explains how the items for the inventory were created and presents a description of measures. Step 2 and 3 showed the construct validity using a sample of university students (Step 2) and young employees (Step 3). Convergent validity is assessed using a measure of enterprise potential, and discriminant validity is analysed using measures of locus of control and entrepreneurial intention (Step 4). Step 5 compares the results of the inventory between university students, young employees and entrepreneurs. Step 6 includes the development of the entrepreneurial potential index (EPI).

6.2. Research step 1 - Entrepreneurial Potential Assessment Inventory (EPAI):

Item selection and content validity screening with entrepreneurs

Before creating an initial pool of items for the scale, we conducted twelve semi-structured interviews with first-time entrepreneurs, which aimed at assessing the adjustment between the theoretical dimensions emerging from the literature review and the entrepreneurial context.

Based on the interviews and on previous literature (e.g., Baron & Markman, 2000; Brice & Nelson, 2008; Chen, Greene, & Crick, 1998) we compiled a first version of the inventory with 84 items. To assess the adequacy of this version to the entrepreneurial context, the inventory was discussed with six other entrepreneurs. The entrepreneurs completed the scale and indicated which of the items were ambiguous or confusing.

Following that analysis, we compiled a second version with 46 items including several adapted from the previous version and others specifically created for the Entrepreneurial Potential Assessment Inventory (EPAI).

The pool of 46 items on the EPAI included the following operationalization:

The desire for independence was measured by four items as, for example, “*One of the most important things to me is having a job where I’m my own boss*”.

Economic motivation was measured by four items (for example, “*I will do my best to make as much money as possible*”).

Entrepreneurial self-efficacy was measured by four items, among them were: “*When I decide to start any business project, I know I will see it through*”.

Vision was measured by four items (for example, “*I can see clearly how to implement unlikely initiatives*”).

Resource mobilization capacity was measured by five items like, for example: “*Normally, I can find the resources to implement the initiatives I have*”.

Leadership capacity was measured with five items, as for example “*Usually I can mobilize people for the initiatives I propose*”.

Innovation capacity was measured by four items, as for example, “*People often ask me for help with creative activities*”.

Emotional intelligence was measured by four items (for example, “*I easily recognize my emotions as I experience them*”).

Resilience was measured by four items, as for example, “*In difficult times I tend to focus on what helps me to overcome them*”.

Communication and persuasion capacity was measured by four items (for example, “*In most situations I can make other people to do what I want*”).

Network development capacity was measured by four items, as for example, “*I know people from a variety of different places*”.

These were the pool of items used in research step 2 and 3 in order to test the scale’s psychometric characteristics and its construct validity.

6.3. Research step 2 - Scale psychometric characteristics among university students

This research step aimed to test the psychometric characteristics of the EPAI. More specifically, we intended to test if the four main dimensions and the eleven subdimensions we propose are the expression of the latent construct of entrepreneurial potential. Furthermore, we analysed if the items included in each dimension were the most appropriate.

6.3.1. Sample and method

This step included a sample of 521 university students, all aged between 17 and 30 years old, with a mean age of 22 ($SD = 4.2$). About sixty two percent were female (62.3%). The majority of the students were undergraduates (92%) and 8% were doing a master degree.

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

To test whether the 46 items selected captured the proposed theoretical model of entrepreneurial potential, we began by conducting exploratory factor analysis. The preliminary results evidenced adequacy on the four-factor solution, with 47% of variance explained. The subdimensions considered are the subset of the dimensions addressed by the survey that factored together as part of an exploratory factor analysis. The results of the factor loadings suggested that entrepreneurial self-efficacy loads the management competencies dimension. Thus, we tested the model using confirmatory factor analysis (CFAs) using AMOS software, following the evidences from the exploratory analysis, and including entrepreneurial self-efficacy on the management

competencies. In accordance with the classic model of survey development conducted by factor analysis (Kline, 1993) we performed preliminary factor analyses, although in the interest of economy we have not presented here a detailed description of this. However, the results showed that the loadings of some items were not appropriate and consequently, we have removed them from the final model. Thus, the best confirmatory model for the operationalization of entrepreneurial potential that we have arrived at comprised 33 items.

6.3.2. Main results

Figure 6.1 presents the confirmatory model of the Entrepreneurial Potential Assessment Inventory (EPAI). The model includes the four main dimensions (entrepreneurial motivation, management competencies, psychological competencies, and social competencies) and the eleven subdimensions.

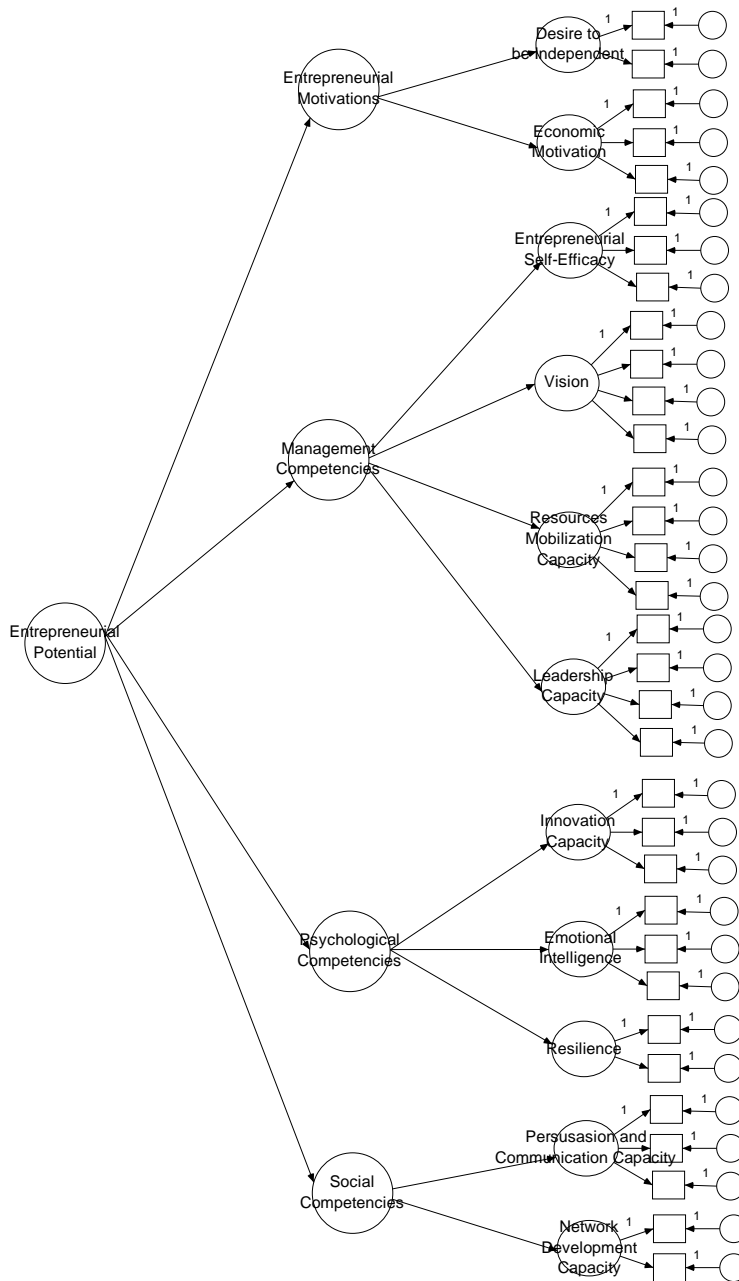


Figure 6.1. Measurement model of the entrepreneurial potential - confirmatory factor analysis

The confirmatory factor analysis of the Entrepreneurial Potential Assessment Inventory (EPAI) was developed in two distinct stages. First, we tested each of the four dimensions' confirmatory models. The results evidenced good fit indexes for the four models tested separately: Model of entrepreneurial motivations $CFI=0.99$; $RMSEA=0.03$; $SRMR=0.02$; Model of management competencies $CFI=0.95$; $RMSEA=0.04$; $SRMR=0.03$; Model of psychological competencies $CFI=0.95$;

$RMSEA=0.03$; $SRM=0.03$; and Model of social competencies $CFI=0.97$; $RMSEA=0.05$; $SRMR=0.04$.

Next, the Entrepreneurial Potential Assessment Inventory (EPAI) model, including the 33 items, was developed (see figure 7.1). The fit indexes for the university student sample ($\chi^2=785.60$; $.d.f.=454$; $p<0.01$; $\chi^2/d.f.=1.73$; $CFI=0.90$; $RMSEA=0.04$; $SRMR=0.05$) evidence an adequate fit of the data to the model. The standardized regression coefficients of the four main dimensions are: $B_{\text{entrepreneurial motivation}}=0.34^{**}$; $B_{\text{management competencies}}=0.97^{**}$, $^{**}p<0.01$; $B_{\text{psychological competencies}}=0.85^{**}$; $B_{\text{social competencies}}=0.62^{**}$.

This result supports the construct validation of the theoretical model proposed for the operationalization of the entrepreneurial potential construct (Byrne, 2004). Thus, there are theoretical and empirical arguments to support the eleven subdimensions.

6.4. Research step 3 - Scale psychometric characteristics among young employees

This step aims to test again the psychometric characteristics of the EPAI in a different sample. By using a sample of young employees we can show how the construct dimensions perform in such a sample.

6.4.1. Sample

A sample of 543 young employees whose ages ranged from 18 to 30 years old, with their mean age being 25 ($SD=2.3$). They had all been involved in the labour market for a maximum on three years, and 56.6 % were male. The great majority were graduates (73 %), 27% had a master degree or higher.

6.4.2. Main results

The confirmatory factor analysis of the Entrepreneurial Potential Assessment Inventory (EPAI) model for the young employee sample ($\chi^2=1090.38$; $d.f.=454$; $p<0.01$; $\chi^2/d.f.=2.40$; $CFI=0.90$; $RMSEA=0.04$; $SRMR=0.04$) evidenced an adequate fit of the data to the model. The standardized regression coefficients of the four main dimensions for the young employee sample were: $B_{\text{entrepreneurial motivation}}=0.44^{**}$; $B_{\text{management competencies}}=0.96^{**}$; $B_{\text{psychological competencies}}=0.90^{**}$; and $B_{\text{social competencies}}=0.67^{**}$; $^{**}p<0.05$.

The multi-groups confirmatory factor analysis, including both university students and the young employees, evidenced good fit indexes ($\chi^2= 1594.32$; $d.f.= 908$;

$p < 0.01$; $\chi^2 / d.f. = 1.76$; CFI=0.89; RMSEA=0.03) suggesting that there is structural invariance in the entrepreneurial potential construct. In other words, the structure of the entrepreneurial potential construct is both suitable for university students and young employees.

The eleven subdimensions mean values and factor intercorrelations among the university students (Research step 2) and the young employees (Research step 3) are presented in table 6.1. For both samples, the network development capacity presents the lowest mean value and the entrepreneurial self-efficacy presents the highest mean value. The reliability, computed for both samples, is shown on the diagonal.

Table 6.1. *Factor intercorrelations, descriptive statistics and Cronbach's alpha for the subdimensions of the entrepreneurial potential in the research step 2 - university students - and research step 3 - young employees*

	University students Mean	Young employees Mean	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Desire for independence [†]	3.5	3.7	0.22 [‡]	0.21**	0.20**	0.12**	0.14**	0.13**	0.14**	0.12**	-0.03	0.16**	0.10**
2. Economic motivation	3.2	3.2	0.35**	0.71	0.15**	0.16**	0.15**	0.13**	-0.01	0.10**	0.03	0.18**	0.04
3. Entrepreneurial self-efficacy [†]	4.0	4.2	0.23**	0.10**	0.66	0.27**	0.20**	0.33**	0.19**	0.15**	-0.09**	0.16**	0.24**
4. Vision [†]	3.2	3.4	0.18**	0.17**	0.45**	0.68	0.37**	0.33**	0.27**	0.19**	-0.03	0.32**	0.22**
5. Resource mobilization capacity [†]	3.6	3.7	0.19**	0.15**	0.51**	0.49**	0.62	0.39**	0.20**	0.30**	-0.10**	0.30**	0.21**
6. Leadership capacity [†]	3.5	3.7	0.16**	0.09**	0.36**	0.40**	0.44**	0.66	0.33**	0.22**	-0.07	0.32**	0.19**
7. Innovation capacity [†]	3.2	3.4	0.14**	0.02	0.26**	0.38**	0.28**	0.35**	0.67	0.15**	-0.09**	0.16**	0.24**
8. Emotional intelligence [†]	3.4	3.6	0.05	0.08	0.28**	0.27**	0.27**	0.25**	0.20**	0.57	-0.11**	0.17**	0.16**
9. Resilience	3.2	3.2	-0.01	-0.01	0.10**	0.05	0.09**	0.06	0.10**	0.14**	0.25 [‡]	-0.07	-0.09**
10. Communication and persuasion capacity [†]	3.4	3.7	0.19**	0.13**	0.35**	0.33**	0.27**	0.42**	0.23**	0.13**	0.04	0.68	0.14**
11. Network development capacity [†]	2.7	3.0	0.17**	0.08	0.21**	0.28**	0.42**	0.30**	0.31**	0.17**	0.01	0.25**	0.35 [‡]

Note: Correlations below the diagonal are from research step 2 and correlations above the diagonal are from research step 3. Cronbach's alphas are shown in the diagonal.

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

** significant, $p < 0.05$

[‡] bivariate correlation; $p < 0.05$

In table 6.2 we present the descriptive analysis, correlation matrix and construct reliability of the four main dimensions of the entrepreneurial potential among the university students and the young employees.

Table 6.2. Mean values, correlations and construct reliability of the four main dimensions of the entrepreneurial potential of the university students (Research step 2) and young employees (Research step 3)

	University students Mean	Young employees Mean	1.	2.	3.	4.
1. Entrepreneurial motivation [†]	3.3	3.4	0.67	0.26**	0.12**	0.20**
2. Management competencies [†]	3.6	3.8	0.25**	0.88	0.31**	0.47**
3. Psychological competencies [†]	3.3	3.4	0.08	0.43**	0.66	0.19**
4. Social competencies [†]	3.1	3.4	0.22**	0.51**	0.28**	0.78

Note: Correlations below the diagonal are from research step 2 and correlations above the diagonal are from research step 3. Cronbach's alpha is shown in the diagonal.

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

** significant differences, $p < 0.05$

The results on the correlation matrixes evidence that there is a significant correlation pattern among the great majority of the subdimensions, as the confirmatory factor analysis suggested. Yet, the resilience is negatively correlated with the others subdimensions on the young employees sample.

6.5. Research step 4 - Convergent and discriminant validity

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

In selecting an approach to assess entrepreneurial potential discriminant validity, we chose an entrepreneurial intention measure and locus of control⁶. In fact,

⁶ “Locus of control refers to subjective appraisal of factors that account for the occurrence of events and outcomes. Specifically, individuals characterized by an internal orientation consider the outcomes of

entrepreneurial intention as used in the study of Zhao, Seibert and Hills (2005) allows us to differentiate individuals with different patterns of intentions to become entrepreneurs. The positive relationship between the internal locus of control to an individual's propensity to engage in entrepreneurial activity has been identified in literature in several studies and can also differentiate entrepreneurial behaviour (e.g., Gartner, 1985).

To conduct the convergent and discriminant validity tests we developed an overall measure on entrepreneurial potential based on the weighted scores of the four dimensions of the EPAI. This composite was used to test the relationships among variables. The composite measure of entrepreneurial potential was calculated as follows:

$$\text{Entrepreneurial potential} = \frac{(\text{factorload ing}_{EM} \times EM) + (\text{factorload ing}_{PC} \times PC) + (\text{factorload ing}_{SC} \times SC) + (\text{factorload ing}_{MC} \times MC)}{4}$$

Where, EM = Entrepreneurial Motivation.
 PC = Psychological Competencies;
 SC = Social Competencies;
 MC = Management Competencies.

We expect that: (a) a high entrepreneurial intention will be more strongly related to the overall measure on the entrepreneurial potential than low entrepreneurial intentions; (b) external locus of control will not be related to the overall measure on the entrepreneurial potential; and (c) internal locus of control will differentiate individuals with high and low levels on the overall measure on the entrepreneurial potential.

6.5.1. Sample

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

events to be contingent upon their own actions, whereas those characterized by an external orientation view event outcomes as largely influenced by outside forces, such as other people and chance (e.g., Levenson, 1981; Rotter, 1966)" (Cheng, Cheung, Chio, & Chan, 2013; p. 152).

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

6.5.2. Main results

The *attitudes towards enterprise for young people* -ATE test- (Athayde, 2009) included 18 items comprising four dimensions. The leadership scale was measured by six items ($\alpha=0.75$; $M=3.69$; $SD=0.52$). The creativity scale was measured by four items ($\alpha=0.67$; $M=4.36$; $SD=0.47$). The achievement scale included four items ($\alpha=0.61$; $M=3.25$; $SD=0.40$). The personal control scale was measured by four items ($\alpha=0.62$; $M=3.78$; $SD=0.52$). The complete scale evidenced an internal consistency of 0.70 ($M=3.77$; $SD=0.31$).

The *entrepreneurial intention* was measured with four items, following Zhao, Seibert and Hills' (2005) operationalization. Participants had to rate how interested they were in engaging in typical entrepreneurial activities: *starting a business*, *acquiring a small business*, *starting and building a high-growth business*, and *acquiring and building a company into a high-growth business* ($\alpha=0.81$; $M=3.85$; $SD=0.84$).

The *internal locus of control* was measured with four items, following the Levenson (1973) measurement ($\alpha=0.68$; $M=4.06$; $SD=0.44$). The *external locus of control* was also measured with four items adapted from the Levenson (1973) scale ($\alpha=0.66$; $M=2.42$; $SD=0.66$).

The entrepreneurial potential was measured in accordance with the EPAI. Reliable psychometric characteristics of the scale were again supported, as in the previous studies.

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

To assess discriminant validity, we centred all the variables and then created high and low levels in the discriminant variables. We performed regression analysis to assess the relationship pattern between the discriminant variables and the entrepreneurial potential.

Results evidenced that high and low entrepreneurial intentions are positively associated with the overall measure on the entrepreneurial potential ($\beta_{\text{high Entrep.Intention}}=0.28$; $\beta_{\text{low Entrep.Intention}}=0.16$; $p<0.05$) although, as predicted, the association is stronger with high entrepreneurial intention. The internal locus of control is also positively associated with overall measure on the entrepreneurial potential, at both high and low levels of intention ($\beta_{\text{high internal locus control}}=0.30$; $\beta_{\text{low high internal locus control}}=0.20$; $p<0.05$), and, once again, the association is stronger with high levels of internal locus of control, as predicted. With regard to the external locus of control, results show that there is no association with overall measure on the entrepreneurial potential ($\beta_{\text{high external locus control}}=-0.03$; $\beta_{\text{low external locus control}}=-0.07$).

These results provide evidence of convergent and discriminant validity of the entrepreneurial potential. The overall measure on the entrepreneurial potential was associated with the attitudes towards enterprise test for young people test (ATE test), and with its subscales, supporting the assumption that both scales measure similar constructs (convergent validity). The results from entrepreneurial intention and internal locus of control reveal that the overall measure on the entrepreneurial potential discriminates among participants with high and low levels of both variables. In addition, they show that the external locus of control is not associated with the overall measure on the entrepreneurial potential.

6.6. Research step 5 – Comparing entrepreneurial potential among university students, young employees, and entrepreneurs

In the research step 5 we compared the entrepreneurial potential results among three different samples: university students, young employees and entrepreneurs. We predict the instrument will discriminate between different groups of individuals.

The entrepreneurs have had experience launching and managing successful ventures, so we can expect that they are higher on the entrepreneurial potential measure. Moreover, we expect that entrepreneurial potential is related to performance and, in fact, entrepreneurs' as a group have the highest performance in the entrepreneurship process. Thus, entrepreneurs are considered as a success group in the entrepreneurial potential testing.

The university students are individuals with no entrepreneurial or working experience, and thus we expect that their scores for entrepreneurial potential will be lower. The young employees got their jobs through a competitive selection process and have work experience. We expected that their scores on the entrepreneurial potential measure would be between the university students' and the entrepreneur groups' scores.

6.6.1. Sample and measures

Research step 5 involves three different samples: university students (research step 2); young employees (research step 3) and entrepreneurs. The entrepreneur sample included 92 participants, 72% were male, with ages ranging from 22 to over 73 years old ($M=42$; $SD=12$). 51% were university graduates or had a higher degree, and the others had attended high school or had a college diploma. These entrepreneurs owned start ups from different sectors, such as tourism and leisure services, medical and health care, software technology, marketing and design, cafes and restaurants. A small percentage of the entrepreneurs (5%) had already launched more than one business.

6.6.2. Main results

The measurement model of entrepreneurial potential operationalized through the EPAI was tested on the entrepreneur sample. However, and due to the sample size, only the four main dimensions of the confirmatory model construct were tested. The results evidenced adequate fit indexes. More specifically, the entrepreneurial motivations ($\chi^2=5.69$; $d.f.=4$; $p=0.22$; $\chi^2/d.f.=1.43$; $CFI=0.98$; $RMSEA=0.06$), the management competencies ($\chi^2=88.55$; $d.f.=83$; $p=0.32$; $\chi^2/d.f.=1.07$; $CFI=0.98$; $RMSEA=0.03$), the psychological competencies ($\chi^2=28.51$; $d.f.=23$; $p=0.20$; $\chi^2/d.f.=1.24$; $CFI=0.90$; $RMSEA=0.05$) and the social competencies ($\chi^2=12.22$; $d.f.=8$; $p=0.14$; $\chi^2/d.f.=1.53$; $CFI=0.92$; $RMSEA=0.06$) models fit the entrepreneur sample. This result supported that the entrepreneurial potential model is suitable for entrepreneurs.

We next compared the mean value of the subdimensions of the entrepreneurial potential among the university students, the young employees and the entrepreneurs. There are significant statistical differences between the entrepreneurs and the other groups with regard to the mean values of desire for independence ($F(2;1153)=23.75$, $p<0.01$), innovation capacity ($F(2;1153)=16.63$, $p<0.01$), emotional intelligence ($F(2;1153)=7.09$, $p<0.01$), communication and persuasion capacity ($F(2;1153)=31.87$, $p<0.01$), network development capacity ($F(2;1153)=57.85$, $p<0.01$), vision

($F(2;1153)=37.05$, $p<0.01$), resources mobilization capacity ($F(2; 1153)=42.28$, $p<0.01$), leadership capacity ($F(2;1153)=34.02$, $p<0.01$), and entrepreneurial self-efficacy ($F(2;1153)=30.34$, $p<0.01$) (Table 6.3.)

Table 6.3. *Descriptive statistics for the subdimensions of the entrepreneurial potential among university students, young employees and entrepreneurs*

	Students		Young employees		Entrepreneurs	
	Mean	S. Deviation	Mean	S. Deviation	Mean	S. Deviation
Desire for independence*	3.44	0.87	3.67	0.71	4.00	0.88
Economic motivation	3.19	0.95	3.20	0.95	3.28	1.12
Innovation capacity*	3.17	0.66	3.38	0.60	3.38	0.65
Emotional intelligence*	3.45	0.65	3.58	0.58	3.61	0.68
Resilience	3.19	0.73	3.25	0.73	3.18	0.69
Communication and persuasion capacity*	3.45	0.68	3.71	0.53	3.84	0.65
Network development capacity*	2.73	0.62	3.04	0.55	3.32	0.74
Vision*	3.25	0.58	3.52	0.54	3.61	0.66
Resources mobilization capacity*	3.53	0.54	3.69	0.49	3.99	0.68
Leadership capacity*	3.57	0.50	3.68	0.45	4.06	0.52
Entrepreneurial self-efficacy*	4.01	0.55	4.23	0.50	4.34	0.51

Figure 6.2. shows that the entrepreneurs have a higher mean value than the university students and the young employees.

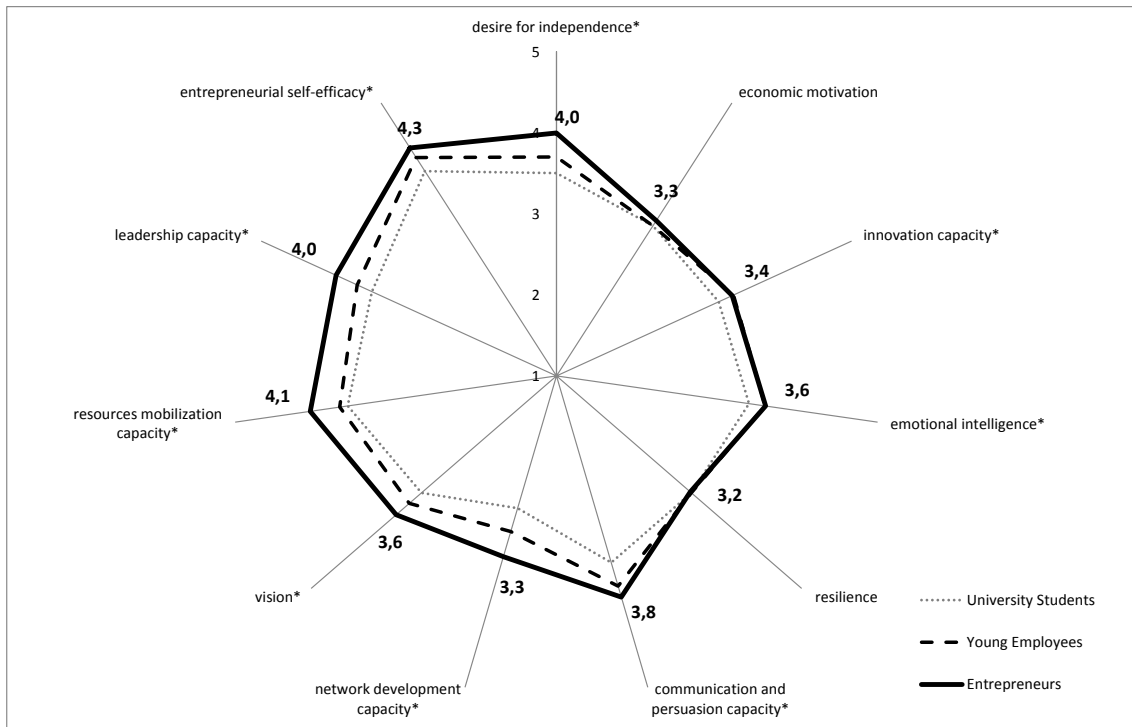


Figure 6.2. Comparison of the mean values in the eleven subdimensions of the entrepreneurial potential of the university students, young employees and entrepreneurs

Note: values in the graph are from entrepreneurs sample

Similarly, the comparison in the four main dimensions of the entrepreneurial potential makes a further contribution to the validity of the EPAI (table 6.4.). There are significant differences between the entrepreneurs and the other groups with regard to entrepreneurial motivation ($F(2;1153)=9.52, p<0.01$), psychological competencies ($F(2;1153)=15.49, p<0.01$), social competencies ($F(2;1153)=72.32, p<0.01$) and management competencies ($F(2;1153)=59.66, p<0.01$).

Table 6.4. *Descriptive statistics for the dimensions of the entrepreneurial potential among university students, young employees and entrepreneurs*

	Students		Young employees		Entrepreneurs	
	Mean	S. Deviation	Mean	S. Deviation	Mean	S. Deviation
Entrepreneurial motivation*	3.31	0.75	3.43	0.65	3.64	0.83
Psychological competencies*	3.27	0.45	3.40	0.36	3.39	0.41
Social competencies*	3.09	0.51	3.38	0.41	3.58	0.54
Management competencies*	3.59	0.41	3.78	0.36	4.00	0.44

Figure 6.3 shows that the entrepreneurs also evidence higher mean values in these dimensions.

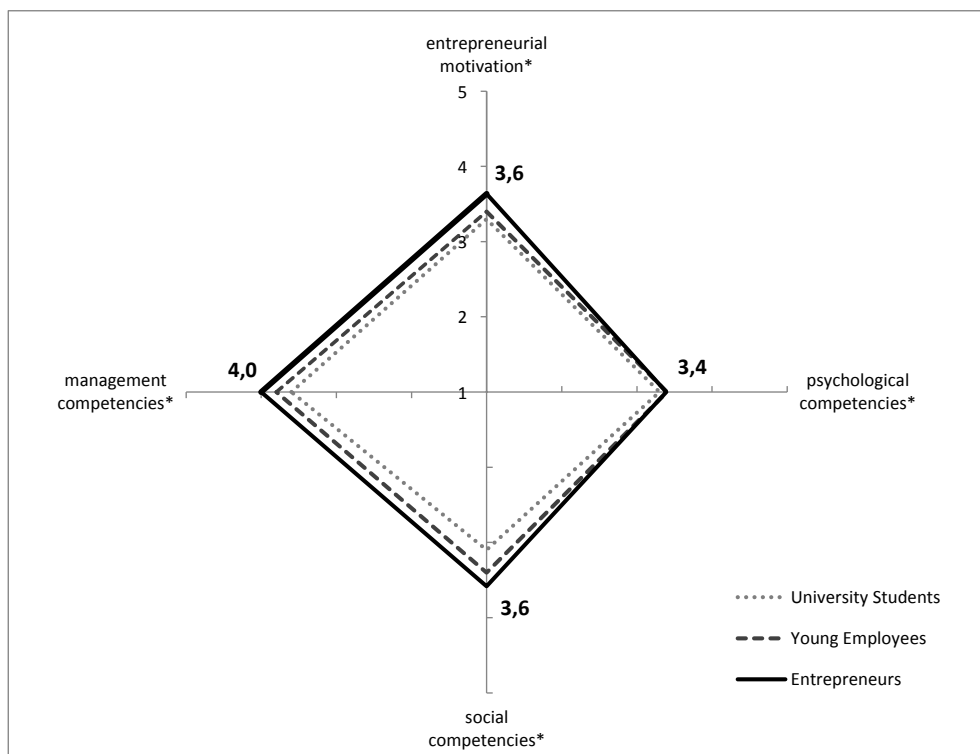


Figure 6.3. Comparison of the mean values in the four main dimensions of the entrepreneurial potential of the university students, young employees and entrepreneurs

Note: values in the graph refer to the entrepreneurs sample

6.7. Research step 6 - Building the entrepreneurial potential index

After validating the entrepreneurial potential construct through the EPAI, we operationalized the Entrepreneurial Potential Index (EPI). This index is composed of the four entrepreneurial potential dimensions: psychological competencies (PC), social competencies (SC), management competencies (MC) and entrepreneurial motivation (EM).

In accordance with the literature, *entrepreneurial motivation* (EM) has a direct effect on venture launch development (Baum, Locke, & Smith, 2001) and is suggested as the main catalyst of the entrepreneurial process (e.g., Shane, Locke, & Collins, 2003; Wainer & Rubin, 1969). In this line of reasoning, we consider that entrepreneurial motivations as the greatest weight component. Thus, entrepreneurial motivation contributes to the Index IPE as a squared component (EM^2).

Management competencies (MC) were also identified in the literature review as crucial to venture launch, especially as these include vision and leadership competencies (e.g., Baum, Locke, & Kirkpatrick, 1998). In the present study, management competencies also included entrepreneurial self-efficacy, which has been evidenced as an important predictor of successful entrepreneurial initiatives (e.g., Bandura, 1982, 1997; McGee, Peterson, Mueller, & Sequeira, 2009). So, management competencies are a relevant contribution to the entrepreneurial potential construct. Consequently, management competencies also have a higher weight, although smaller than that of entrepreneurial motivation. This weight of the management competencies is mathematically translated by the simple multiplication of management competencies with the other variables.

The *psychological competencies* (PC) and *social competencies* (SC) are two essential and complementary pillars of entrepreneurial initiatives (e.g., Baum & Locke, 2004). Research has evidenced entrepreneurs' individual traits, including both psychological and social characteristics, stressing the importance of both competencies (e.g., Chell, 2008). Consequently, the Index EPI includes both the psychological and social competencies, attributing to both the same weight, translated by the arithmetic sum of both.

Based on these theoretical and empirical evidences and the rationale presented, the Index EPI was computed using the following formula:

$$EPI = (PC + SC) \times MC \times EM^2$$

Where, EPI = Entrepreneurial Potential Index;
 PC = Psychological Competencies;
 SC = Social Competencies;
 MC = Management Competencies;
 EM = Entrepreneurial Motivation.

As previously highlighted, due to theoretical and empirical reasons, management competencies and entrepreneurial motivation have different weights on the index EPI computation. This index proves to be a relevant tool for the quantification and measurement of entrepreneurial potential. According to the psychometric rules, the gross results of the measurement sample should be transformed into standardized results for ease of comprehension (e.g., Laveault & Grégoire, 2002; Kline, 1993).

The gross results of the measurement sample were transformed into standardized results with mean 50 and standard deviation 10 (Cronbach, 1976). Thus, the EPI transformed was computed with mean 50 and standard deviation 10. This transformation allowed the creation of five categories for the distribution of the EPI values. The transformed values and category identification of the EPI distribution are presented in table 6.5.

Table 6.5. *Transformed values of the EPI and categories identification*

EPI	Class identification
0 – 19	Far below the average
20 - 39	Below the average
40 - 59	Average
60 – 79	Above average
80 – 100	Far above the Average

We computed the EPI in the sample of university students, young employees and entrepreneurs, from step 2, 3 and 5 respectively. The data analysis of the index, the mean values comparison and the distribution of categories among the university students, the young employees and the entrepreneurs samples are presented in table 6.6.

Table 6.6. Means, standard deviations and percentage distributions of EPI

	Entrepreneurial Potential Index (EPI)					
	Mean	S. Deviation	Below average percent	Average percent	Above average percent	Far above the average percent
University students sample – Research step 2	48.5	9.9	19.0	67.4	12.9	0.7
Young employees sample – Research step 3	51.6	9.8	8.2	71.6	18.9	1.3
Entrepreneurs - Research step 5	56.8	13.1	6.5	56.5	30.4	6.6

The results showed that the entrepreneurs presented a higher mean EPI (M=56.8), than the young employees (M=51.6) and the university students (M=48.5). The results also showed that a higher percentage of participants were in the average category for all the three samples. At the same time, there was a lower percentage of young employees with a below average EPI (8.2%), and even a lower percentage of entrepreneurs with a below average EPI (6.5%). In the category far above the average, entrepreneurs had a higher percentage (6.6%), than young employees (1.3%) and finally university students (0.7%). The distribution of the percentage in the categories of the EPI in the entrepreneurs sample followed our predictions. There was a higher percentage of entrepreneurs with an EPI above the average, and a lowest percentage of entrepreneurs with a below the average EPI.

6.8. General Discussion

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

The proposed entrepreneurial potential theoretical model comprised four main dimensions - entrepreneurial motivation, management competencies, psychological competencies, and social competencies – and eleven subdimensions - desire for independence, economic motivation, entrepreneurial self-efficacy, vision, mobilization resources capacity, leadership capacity, innovation capacity, emotional intelligence, resilience, communication and persuasion capacity, and network development capacity.

Our studies indicated that the proposed new measure for assessing entrepreneurial potential - the Entrepreneurial Potential Assessment Inventory (EPAI) - had good psychometric properties.

Research step 4 analyzed the relationship between the entrepreneurial potential measure and the attitude towards enterprise scale, showing the convergent validity of the proposed measure. This study also showed that the entrepreneurial potential scale successfully discriminated among individuals with high and low entrepreneurial intention and internal locus of control. Furthermore, it showed that entrepreneurial potential was not related to the external locus of control.

To assess its strength in distinguishing among different groups with regard to diverse entrepreneurship stages, research step 5 compared the scores of the entrepreneurial potential scale among university students, young employees and entrepreneurs. Results showed that the three groups reported significant differences in the four main dimensions, and entrepreneurs scored higher in all four.

Research step 6 presented the entrepreneurial potential index (EPI), which is a tool for the quantification and comparison of different individuals' entrepreneurial potential. This index makes it possible to position individuals on a continuum of entrepreneurial potential, and thus allows for comparisons among them. The results showed that entrepreneurs reported a greater mean value of EPI than young employees and university students. Moreover, there are a greater percentage of entrepreneurs with a far above average EPI.

Generally these results support the premise that entrepreneurial potential is related to entrepreneurial activity, suggesting that this tool can predict entrepreneurial intention: the higher an individual scores on entrepreneurial potential, the greater their probability of being an entrepreneur, and to engage in entrepreneurial activities (i.e., to have an entrepreneurial intention).

Entrepreneurial intention is related to the will and wish of considering the creation of a new venture (e.g., Bird & Jelinek, 1988), and is closer to the actual behaviour. The individual forms his or her entrepreneurial intention based on a conjunction of perceptions (e.g., Liñán & Chen, 2009) and a positive or a negative intention might result from them. Entrepreneurial potential, as we conceive it, refers to a latent construct that is the expression of a developmental profile of the most typical competencies and motives among successful entrepreneurs. Nevertheless, entrepreneurial potential and intention are not competitive constructs, and they are both

needed in entrepreneurship theory. An individual should need to assess his or her entrepreneurial potential before engaging in an entrepreneurial intention.

6.8.1. Theoretical and methodological contributions

The present study offers a contribution to the theoretical development of the literature on the characteristics of entrepreneurs, a matured research field in entrepreneurship research (Blackburn & Kovalainen, 2009). Research on the entrepreneurial personality (Chell, 2008) has progressively changed its focus from simply describing personality or psychological characteristics to predicting entrepreneurial behaviour and assessing potential. Despite the relevance of personality traits (Brandstätter, 2011) in explaining how entrepreneurs think, act and move, they do not exhaust all the determinants of entrepreneurial behaviour. This is mainly because of the varied activities and tasks that entrepreneurs face. Thus our study goes beyond personality traits and is focused on the competencies because they represent the flexible, learnable, and dynamic criteria of entrepreneurship activity.

In this sense, this study also provides a contribution to the operationalization of the entrepreneurial potential construct, with the validation of an inventory. Moreover, previous studies on entrepreneurial potential did not present a theoretical model of convergence, but only a description of the various psychological and social dimensions (Raab, Stedham, & Neuner, 2005).

This study enhances the importance of individual characteristics and skills included in the entrepreneurial potential model, reinforcing prior empirical results and strengthening comparisons with theoretical propositions. For example, Baron and Markman (2000) argued that social skills were highly important in the effectiveness of the behaviour of the entrepreneur, and the present data supports that proposition.

Moreover, the development of a model of entrepreneurial potential such as the one we propose, sustains the argument that motivational aspects (McClelland, 1965), competencies and attitudes can be integrated because they all seem to be instrumental in the entrepreneurial potential.

Other typical characteristic that is generally associated with entrepreneurs is risk taking, or the propensity of the entrepreneur to take risks (Brockhaus, 1982). Schumpeter (1934) also suggested that risk-taking is a characteristic that is associated with business owners or capital investments. An entrepreneur assumes controlled risks, and the ability to take calculated risks is associated with the strategic behaviour of

entrepreneurs (Chell, 2008). In a meta-analytic review, Stewart and Roth (2001) showed that entrepreneurs were more likely to take risks than managers and small business owners. However, later on Miner and Raju (2004) argued that Stewart and Roth (2001) based their conclusions on insufficient evidence. Actually, Miner and Raju (2004) performed 14 studies and found that entrepreneurs were less likely to take risks than other participants, not involved in entrepreneurial activities. This result suggested that entrepreneurs avoid risk. More specifically, they argue that *“it looks as if managers tend to believe in their ability to exercise post decisional control and thus avoid risk (...) (Whereas) the research on entrepreneurs (...) suggests a belief in pre-decisional control, which means that risk is removed in a completely different manner”* (Miner & Raju, 2004, p.10). Furthermore, the authors speculated that there can be differences due to different measurement approaches. Thus, risk taking propensity is still an individual characteristic that needs further investigation, and this justified our decision to not include risk taking in the entrepreneurial potential model.

Our theoretical approach does not argue that these four dimensions capture all important aspects of entrepreneurial potential. The cognitive approach to the study of entrepreneurship points to the possibility that entrepreneurial competency may also be related to intelligence. Cognitive abilities, such as general mental ability, have been identified as the strongest predictors of performance (Ones, Viswesvaran, & Dilchert, 2005a). Thus, we suggest that it is important to include cognitive ability measures such as those used during job recruitment, when assessing an individual’s potential to be an entrepreneur. Moreover, it is suggested that typical entrepreneurial traits like opportunity recognition, proactive personality, self-efficacy, social competence and intuition are primarily related to the cognitive capability (Chell, 2008).

Despite the fact that our model and theoretical argument are based on the individual level, we do not minimize the influence of the environmental factors in the process of emergence of the entrepreneurial potential for potential entrepreneurs (e.g., Krueger & Brazeal, 1994). The environment is determinant for creating a setting that is more favourable for the development of an increasing entrepreneurial activity. In fact, an entrepreneurship phenomenon is a by-product of multilevel interactions and systems (e.g., Shepherd, 2011). Thus there are top-down level effects (i.e., influence of higher-level contextual factors on lower-levels of the phenomena) in such a way that the environmental context characteristics influence the individual’s entrepreneurial potential. Similarly, we expect that there are bottom-up level effects in such a way that

the lower-level properties aggregate to form collective phenomena (i.e., the individual's entrepreneurial potential can be translated in higher level of analysis variables such as organizational entrepreneurial potential or country level entrepreneurial potential).

6.8.2. Limitations and practical implications

Despite the contributions, there are nevertheless some limitations. First, we have some concerns about our samples as the young employee sample, only included young people and left the patterns of entrepreneurial potential for workers with greater experience still to be explored. It is also crucial to analyze the results of a greater sample of entrepreneurs, which could then be used as a baseline for other groups. Moreover, the characteristics of the samples may have promoted a maturation effect on the results among entrepreneurs, young employees and university students.

Validation is a long process and further tests should be developed focusing on incremental and differential validity, which is particularly critical in the assessment procedures (Kline, 1993; Spector, 1992). Moreover, it is critical to develop predictive validity tests where the EPAI should assess exactly the same individuals in a longitudinal design, following individuals from the would-be entrepreneurs stage to the effective start-up launch.

To address the limitations referred to above, and to continue developing the validity of the entrepreneurial potential scale, there is a long succession of studies to be conducted. Future research should focus on predictive validity, following entrepreneurs, would-be entrepreneurs, and entrepreneurship students over time. Another route research could take concerns cross-cultural research on the entrepreneurial potential scale and try to compare scores in different countries.

As far as practical implications are concerned, the EPAI can become a tool of high value to the community, since it allows every individual who is thinking about beginning an entrepreneurial career to assess the level of entrepreneurial potential as well as those dimensions that need to be developed. EPAI can be a self-assessment tool to be used by future entrepreneurs and students to assess their psychosocial profile in these four main dimensions that are critically related to entrepreneurship activity. After completing the survey and results are generated, the individuals can have access to their entrepreneurial potential profile and identify in which areas they need more training. Individuals who exhibit a high profile among the competencies and motives included on the entrepreneurial potential model, have a greater chance to become successful

entrepreneurs. Individuals who express some weakness in certain competencies or motives can have the chance to engage in training programmes in order to develop them. By doing this self-assessment, it is possible to increase entrepreneurial intentions and to ensure a greater chance for success and survival rates.

As argued before, entrepreneurial potential is prior to entrepreneurial intentions, and if we look to the pre-emergence stages of the entrepreneurship process, it is important to clarify the role, distinctiveness and usefulness for practitioners of both constructs. For those individuals who have some weaknesses in the entrepreneurial potential dimensions, it is critical that they train and develop those competencies or motives before they construct a positive entrepreneurial intention. Thus, the EPAI is also a good tool for practitioners to guide future entrepreneurs to the adequate training programmes before they are actively engaged in entrepreneurial tasks.

Over the last decade, much attention has been paid to competency-based education, and its relevance to entrepreneurship education and training at the university level as well as other training venues has become apparent (Redford, 2008; Redford, 2013). A basic premise of this movement is that an educational position based on competency development can facilitate learning in a society characterized by complexity and rapid changes. Thus, our focus on the assessment of a preparedness to engage in typical entrepreneurship activities may also be relevant for entrepreneurship education debates. In an educational setting the interest is in individual-level competency as we attempt to help students become more skilled and motivated to start and succeed in new ventures (Bird, 1995). Furthermore, the nature of competencies and motivational aspects included in the entrepreneurial potential construct is committed to the possibility to train, change, and develop the competencies and motives that are associated with the entrepreneurial potential. More specifically, desire for independence and economic motivation are two entrepreneurial motives that can be stimulated at training settings, as well as asking for the individuals to reflect on other motivations associated to entrepreneurship. As motivation is one of the best predictors of entrepreneurial activity, it is crucial to include in training programs and courses actions that make individuals be aware of their motivations and how determinant they will be.

Since entrepreneurial potential is mostly composed of competencies, it follows that specific training can be designed to develop these competencies. In this sense, the EPAI helps to identify skills and competencies requiring development and training in a group of students. Thus, the EPAI can become important in designing or adjusting the

curriculum, for diagnosing the dimensions in which students have the greatest difficulty, and in signalling the need for skills development. Thus, making it possible to compare different potential entrepreneurs, and help in investment decision-making and/or the formation of entrepreneurial teams.

Against a background of economic and social crisis, entrepreneurship presents itself increasingly as a solution for self-employment (De Nardi & Villamil, 2009). In this sense, the Entrepreneurial Potential Assessment Inventory (EPAI) can play a critical role in the early stages of the entrepreneurial process: assessing the main skills necessary to develop entrepreneurial business success.

Chapter 7. Socio-psychological characteristics of entrepreneurial teams: Profiling the entrepreneurial potential (Study 4)

7.1. Introduction

Individual-opportunity nexus has been considered as the core of entrepreneurship (Venkataraman, 1997; Shane, 2003). Opportunities and individuals are interdependent in the entrepreneurship process. Besides the process of recognizing valuable, profitable and feasible opportunities, there are motivational, psychological, personality and sociological aspects from the individual that are also relevant for the explanation of entrepreneurship. In the context of venture competitions, the nexus individual-opportunity becomes evident, as investors are looking for profitable and innovative opportunities developed by highly potential individuals, i.e., entrepreneurs.

The entrepreneurship process is deeply associated to the individuals' characteristics (Baum, Frese, Baron, & Katz, 2007) given that he or she is the main agent in the decision making process to implement entrepreneurial initiatives and to assume the recurrent consequences. Furthermore, entrepreneurs *“are not interchangeable parts of a complex economic system or mechanism in which they play only a limited role; rather, their skills, knowledge, motives, values, personal characteristics, and actions do matter in the sense that they strongly shape both the process and its ultimate outcomes - which can range from the tremendous success to total failure”* (Baron, 2013, p.2).

Thus, research has focused on the identification and description of the psychological characteristics, traits or personality characteristics that differentiate entrepreneurs (e.g., Baum & Locke, 2004; Brandstätter, 2011) and that are related to the success or failure of entrepreneurial activities. In fact, the individual characteristics is one of the most frequent and *“hot”* topics in entrepreneurship research. Entrepreneurs represent a specific group of people who are keen on recognizing, launching and running businesses, own a number of skills, knowledge, motives, interests, and self-regulation processes that are more related to the entrepreneurial activity.

Nevertheless, research has been progressively taking into account that many entrepreneurial initiatives are founded by teams rather than individual entrepreneurs

⁷ Part of this study was submitted to a chapter in an international book and is under review: Santos, S. C., Caetano, A., & Costa, S. F. (under review). Socio-psychological characteristics of entrepreneurial teams: Profiling the entrepreneurial potential. In *European Research in Entrepreneurship Series*. Edward Elgar.

alone (e.g., Schjoedt, Monsen, Pearson, Barnett, & Chrisman, 2013), including combined and coordinated efforts between several persons. This is mainly due to the fact that entrepreneurial initiatives require several information, knowledge and resources that are rarely combined in only one individual, but that may be accessible by a group of individuals. Thus, a high proportion of start-ups are launched by founding teams. A team enhances the capability to deal with several critical aspects of entrepreneurship, such as for example decision making (West, 2007), innovation (Bantel & Jackson, 1989), functional processes (Boone & Henriks, 2009) and leadership processes (Ensley, Pearson, & Pearce, 2003).

Nevertheless, research has not been paying deep attention to the role of individual characteristics in team performance and start up initiatives (Wood & Michalisin, 2010). Research lacks a comprehensive model about the socio-psychological characteristics associated to team entrepreneurial success. Here, we attempt to contribute to entrepreneurial team literature, following the recent call for research to understand team formation, composition, and performance (Schjoedt, Monsen, Pearson, Barnett, & Chrisman, 2013).

The present study is focused on the team entrepreneurial potential construct, which considers the main socio-psychological aspects that contribute towards team members' preparedness to engage in activities typically associated with entrepreneurship. This study aims to analyse the predictive capacity of entrepreneurial potential profiling among entrepreneurial teams, in a context of start-up launching.

We analysed eighteen entrepreneurial teams who were competing for financial investment in a venture competition. For each entrepreneurial team member, we assessed the socio-psychological aspects of entrepreneurial potential and team productivity. In the next section, we elaborate on the theoretical roots of the entrepreneurial potential construct in teams.

7.1.1. Entrepreneurial potential: From the individual to team

Despite the individualistic view of entrepreneurship, mainly in the economic theories of entrepreneurship (e.g., Casson, 1982), research is now aware that the process of entrepreneurship is often a team effort (e.g., Gartner, Shaver, Gatewood, & Katz, 1994; Cooney, 2005; Harper, 2008).

An entrepreneurial team is a "*group of entrepreneurs with a common goal which can only be achieved by appropriate combinations of individual entrepreneurial*

actions” (Harper, 2008; p.617). The increasing attention to teams in entrepreneurship was based on the evidence that entrepreneurial teams were more likely to succeed as fast growth than firms founded by individual entrepreneurs (Cooper and Bruno, 1977). Later on, this evidence was expanded in such a way that “*entrepreneurial teams are responsible for many (or perhaps most) of the major start-ups today*” (Kamm, Shuman, Seeger, & Nurick, 1990, p. 7–8).

Consequently, if most of the new entrepreneurial activities are developed by a group of entrepreneurs, which form the entrepreneurial team, it is important to understand how teams influence the process. In general, research has evidenced that teams perform a crucial role in venture creation and organizational development, in both small and medium enterprises (e.g., Clarkin & Rosa, 2005). More specifically, two or more people, as a team, constitute a unit characterized as an agglomeration of resources and knowledge (Timmons, 1994; Cooper & Daily, 1997), and thus represent additional value to the entrepreneurial firm.

Research on entrepreneurial teams has focused on the compositional characteristics of teams, and the relation with new venture creation, growth, and team performance (Roure & Maidique 1986; Ancona & Caldwell, 1992; Watson, Steward, & BarNir, 2003; Chandler, Honig, & Wiklund, 2005; Chowdhury, 2005; Costa, Graça, Marques-Quinteiro, Santos, Caetano, & Passos, 2013). Moreover, there was also an effort to analyse the characteristics of entrepreneurial teams, such as social capital (Aldrich & Zimmer, 1986; Dominginhos, Pereira e Silveira, 2007), human capital (Pennings, Lee & van Witteloostuijn, 1998; Baum & Silverman, 2004; Hmieleski, Cole, & Baron, 2012), financial capital (Cooper, Gimeno-Gascon, & Woo, 1994; Gimeno, Folta, Cooper, & Woo, 1997), and prior experience (Chandler, 1996). In general, the characteristics and process of teams affect performance (Bunderson & Sutcliffe, 2002).

The characteristics of an entrepreneurial team is also related to the new member addition process, once that teams include new members in order to fill some resources or knowledge needs. In fact, the lead entrepreneur can invite new members to the team in order to complement their own competencies or knowledge (Sandberg, 1992). The decision making process about who can integrate the team is based on the perceived needs of the team, based on a self-assessment between the actual resources of the team, and the desired resources (Kamm & Nurick, 1993; Larson & Starr, 1993). This decision making process for the acquisition of new members in the team is based on a competency driven search, given that individuals are integrated in the team as they are

perceived as the best option regarding their resources. In sum, new member addition may imply the enhancement of human capital and social psychological needs that can strategically contribute to the venture goals (Ucbasaran, Lockett, Wright, & Westhead, 2003; Sapienza, Herron, & Menendez, 1991).

The characteristics of the entrepreneurial team are also considered as relevant criteria to venture capitalists investment and funding decisions (MacMillan, Siegel, & Narasimha, 1985; Zacharakis & Meyer, 1998). Gathering more information about team members, how they met, how long do they work together, how their skills, competencies, knowledge and network complement each other is also critical to venture capitalists decision.

Transposing the entrepreneurial potential from the individual level to the team level is one of the theoretical and empirical themes that can be integrated in multilevel approach that promises new avenues in entrepreneurship research (Shepherd, 2011). In fact, new venture creation process in general would benefit greatly from a multilevel process, including an integrated influence approach between the founder, the founding team and the venture (Ford & Sullivan, 2008). Thus, the traditional individual-opportunity nexus (Shane, 2003) can also be conceptualized as a team-opportunity nexus (Ford & Sullivan, 2008) in which team members characteristics influence opportunity discovery, assessment and exploration process. How a team's mix of motivations, social cognition, self-regulation, social competencies, personal characteristics, decision making processes and management strategies can influence entrepreneurial initiatives, or start-up creation? This question reports to the relation and nature of constructs at different levels: individual and team level.

Grounded on the arguments we exposed above and on the relevance that entrepreneurial teams gain in entrepreneurship activities, it is important to know and understand the socio-psychological characteristics of teams in terms of their entrepreneurial potential profile. Entrepreneurial teams as a unit may be represented as the composite result of each member characteristics. Entrepreneurial potential at the team level is the result of the aggregation of motivational, social and psychological characteristics of each individual.

Thus, this study aims to describe the entrepreneurial potential profiles among entrepreneurial teams who were competing in a venture competition. We predict that the teams which show higher scores in the socio-psychological characteristics of entrepreneurial potential are the ones with a greater potential to become successful.

Moreover, as the entrepreneurial potential is related to the success, we expect that teams with a higher entrepreneurial potential profile would be awarded in the venture competition. Next, we describe the venture competition program in which we conducted this study designed as a proxy for a longitudinal study.

7.1.2. The present research

In this study we used the entrepreneurial potential profile in a venture competition context. This venture competition was one of the most relevant international start-up programs in Portugal, and was on its fourth edition. This competition was developed for a period of ten months, since the applications period to the grand finalist announcement. During this period teams were selected and received training and support on how to develop their business ideas. Gradually, during several stages of the contest, teams were selected to continue whereas others were eliminated. The program was promoted by a national university, in a partnership with a university from the United States of America, award partners, strategic partners and sponsors.

This venture competition aimed to identify and reward projects at an early stage with a global value proposition. The projects were organized in four tracks: life sciences; sustainable energy and transportation systems; information technology and the web; consumer products and services. Most of the projects competing in the venture competition were developed in entrepreneurial teams.

The venture competition included a well-structured process, including more than one hundred hours of training and coaching strategies in the selection stage, and also in the venture stage, helping to allocate the start-ups in an international catalyst ecosystem.

The venture competition started with the submission of a two page executive summary and a presentation. Next, a jury choose five semi-finalists per track, who were invited to participate in the training. This training program lasted for three days, and was an interactive crash course on entrepreneurship tools and skills in order to be ready for a pitch event about their value propositions with investors, entrepreneurs and companies and teams.

Three months after the training, there was a track finalist event and an international panel of judges assessed and interviewed all the semi-finalists. In a pitch session during a public event, the jury awarded a finalist and honourable mention from each track. The finalists projects received a financial support of 100,000 euros each.

After the awards session, the track finalists and honourable mentions participated in a two day training program, including a program based on one-to-one mentoring with international mentors and focused on go-to-market activities.

The track finalists and honourable mentions entered then in a catalyst program, which lasted up to nine months. During this period, the track finalists and honourable mentions received support from volunteers with experience in surrounding innovation, technology commercialization, legal aspects and entrepreneurship aiming to accelerate the process of commercialization of their technologies for the benefit of public stakeholders.

The finalists were then invited to the grand finale session for a public pitch session. Candidates were evaluated by another international panel of judges, experts in each track area, involving one to one interviews. The winner of the grand finale was start-up awarded with an additional 100.000 euros for financial support. This amount could be doubled during over the next 3 to 5 years if it met the agreed milestones. In the venture competition context, to be successful meant to be awarded as track finalist and to be awarded as grand finalist.

The entrepreneurial teams involved in the venture competition were competing for the financial award which would be assigned by the international judge. Thus, in our study to be awarded in the venture competition was considered as a success measure. In the next section we describe the sample characteristics and the measures of the entrepreneurial potential profile.

7.2. Method

7.2.1. Participants

A total of 44 participants, members of the 18 semi-finalists entrepreneurial teams, participated in this study. The participants were mainly male (77.2 %), and their ages ranged from 21 to 56 years old. Most of the participants were from Portugal (72.5%), but there were also entrepreneurs from Brazil, Iran, Italy and Russia. Most of the entrepreneurs (59.1%) had a master's degree, 19.1% a bachelor degree and 18.2% completed their doctoral studies. Most of the entrepreneurs had no previous entrepreneurial experience (58.1%). Teams had an average of 2.75 members, ranging from 1 to 5 members. There were two teams with one member participating in this study. Table 7.1. shows the demographic characteristics of the sample.

Table 7.1. *Demographic characteristics of the sample*

		Percentage N=44
Sex	Masculine	77.2
	Female	22.8
Nationality	Brazil	2.0
	Iran	2.0
	Italy	3.9
	Portugal	72.5
	Russia	7.8
	No answer	11.8
Highest education level	Secondary school	6.8
	Bachelor (completed) Bsc	15.9
	Masters (Msc)	59.1
	PhD	18.2
Previous entrepreneurial experience	Yes	41.9
	No	58.1

7.2.2. Measures

During the training program, the participants of the venture competition completed a reduced version of the entrepreneurial potential assessment inventory (EPAI) (Santos, Caetano, & Curral, in press) and additional measures of risk propensity, creativity capacity and team productivity.

The reduced version of the entrepreneurial potential assessment inventory included 26 items from the EPAI, and measured the desire for independence, economic motivation, innovation capacity, resilience, entrepreneurial self-efficacy, communication and persuasion capacity, leadership capacity, resources mobilization capacity and vision. Similar to previous studies (Santos, Caetano, & Curral, in press), EPAI measures showed adequate reliability indexes (table 8.2).

Risk propensity was measured by four items adapted from Hung and Tangpong (2010) (e.g., “*I believe that higher risks are worth taking for higher rewards.*”; “*I like to take chances, although I may fail.*”; and “*To earn greater rewards, I am willing to take higher risks.*”)

Creativity capacity was measured by four items adapted from Athayde (2009) (e.g., “*Being creative is one of my advantages*”; “*I believe that a good imagination helps me do well at work.*”).

Team productivity was measured by three items adapted from the original version of De Jong and Elfring (2010) and used in Zheng (2012): “*I perceive the*

amount of work my team produces as really good”; “*The quality of work my team produces is highly satisfying*”; and “*My overall evaluation of my team’s effectiveness is very good*”.

For all measures, participants were asked to indicate the extent to which they agreed or disagreed with each statement, using a five point Likert scale, ranging from 1 (*disagree completely*) to 5 (*agree completely*). Table 7.2. reports the reliability indices for all measures.

7.3. Results

All the measures included in the entrepreneurial potential profile of entrepreneurial teams showed mean values higher than 3.26. In fact, economic motivation presented the lowest mean value (M=3.26) and entrepreneurial self-efficacy reported the highest mean value (M=4.48). The correlation matrix (Table 7.2) showed that resilience was not significantly correlated to any of the others variables.

Table 7.2. Descriptive statistics

	Mean	Std. Deviation	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. Entrepreneurial self-efficacy	4.48	0.43	0.78											
2. Communication and persuasion capacity	3.79	0.46	0.45**	0.72										
3. Leadership capacity	4.09	0.59	0.47**	0.43**	0.85									
4. Creativity capacity	3.99	0.55	0.53**	0.47**	0.58**	0.33 [†]								
5. Desire for independence	3.83	0.65	0.62**	0.46**	0.44**	0.50**	0.67							
6. Economic Motivation	3.26	0.72	0.26**	0.06	-0.11	-0.10	0.24	0.69						
7. Resources mobilization capacity	3.96	0.48	0.47**	0.27*	0.34**	0.26	0.57**	0.04	0.39 [†]					
8. Vision	4.14	0.47	0.55**	0.45**	0.69**	0.49**	0.51**	0.14	0.50**	0.63				
9. Innovation capacity	4.56	0.40	0.64**	0.34**	0.63**	0.60**	0.46**	0.23	0.42**	0.76**	0.65			
10. Resilience	3.78	0.86	0.22	0.24	0.09	0.43	0.12	-0.05	0.23	0.13	0.21	0.63		
11. Risk propensity	4.28	0.53	0.55**	0.38**	0.42**	0.67**	0.47**	0.02	0.18	0.34**	0.50**	0.34**	0.75	
12. Team Productivity	4.15	0.67	0.60**	0.10	0.31**	0.38**	0.40**	0.16	0.43**	0.41**	0.66**	0.20	0.53**	0.89

** , p < 0.01; * , p < 0.05; [†] bivariate correlation p < 0.05; Cronbach's alpha is shown in the diagonal.

Based on the results for each team member, the entrepreneurial potential profiles of the teams were depicted, showing that there are different profiles among the entrepreneurial teams involved in the venture competition. We next analyse the entrepreneurial potential profile of some teams. Due to parsimony reasons, we analyse in detail only some teams (Figure 7.1.). The results of the entrepreneurial potential profiles were classified in three levels, following suggestions of previous research on entrepreneurial potential: mean values ≥ 4.00 = *high*; $3.00 \leq$ mean values < 4.00 = *average*; mean values < 3.00 = *low*.

Team A (N=2) showed high scores in all the dimensions of the entrepreneurial potential, except for the economic motivation ($M_{\text{teamA}}=2.50$). Moreover, the team reported high perceived team productivity ($M_{\text{teamA}}=4.83$).

Team B (N=4) exhibited a low score in economic motivation ($M_{\text{teamB}}=2.81$), average scores in most of the dimensions, and high scores in risk propensity ($M_{\text{teamB}}=4.01$), leadership capacity ($M_{\text{teamB}}=4.02$), entrepreneurial self-efficacy ($M_{\text{teamB}}=4.12$) and creativity capacity ($M_{\text{teamB}}=4.45$).

Team D (N=3) showed high scores in entrepreneurial self-efficacy, leadership capacity, innovation capacity, vision, creativity capacity, risk propensity and team productivity. Overall these results were quite promising to the Team D, but the team evidenced average scores in resilience ($M_{\text{teamD}}=3.26$), economic motivation ($M_{\text{teamD}}=3.42$), desire for independence ($M_{\text{teamD}}=3.72$), and communication and persuasion capacity ($M_{\text{teamD}}=3.82$).

Team F (N=3) exhibited average scores in most of the dimensions of the entrepreneurial potential. Nevertheless, the team reported high scores in leadership capacity ($M_{\text{teamF}}=4.00$) and entrepreneurial self-efficacy ($M_{\text{teamF}}=4.11$); and low scores in economic motivation ($M_{\text{teamF}}=2.67$).

Team G (N=4) evidenced high scores in the great majority of the dimensions. Resilience ($M_{\text{teamG}}=3.25$), innovation capacity ($M_{\text{teamG}}=3.50$) and resources mobilization capacity ($M_{\text{teamG}}=3.88$) reported average results.

Team H (N= 4) showed high scores in all the dimensions of the entrepreneurial potential, except in economic motivation, which showed an average score ($M_{\text{teamH}}=3.40$). Moreover, Team H reported also high perceived team productivity ($M_{\text{teamH}}=4.70$).

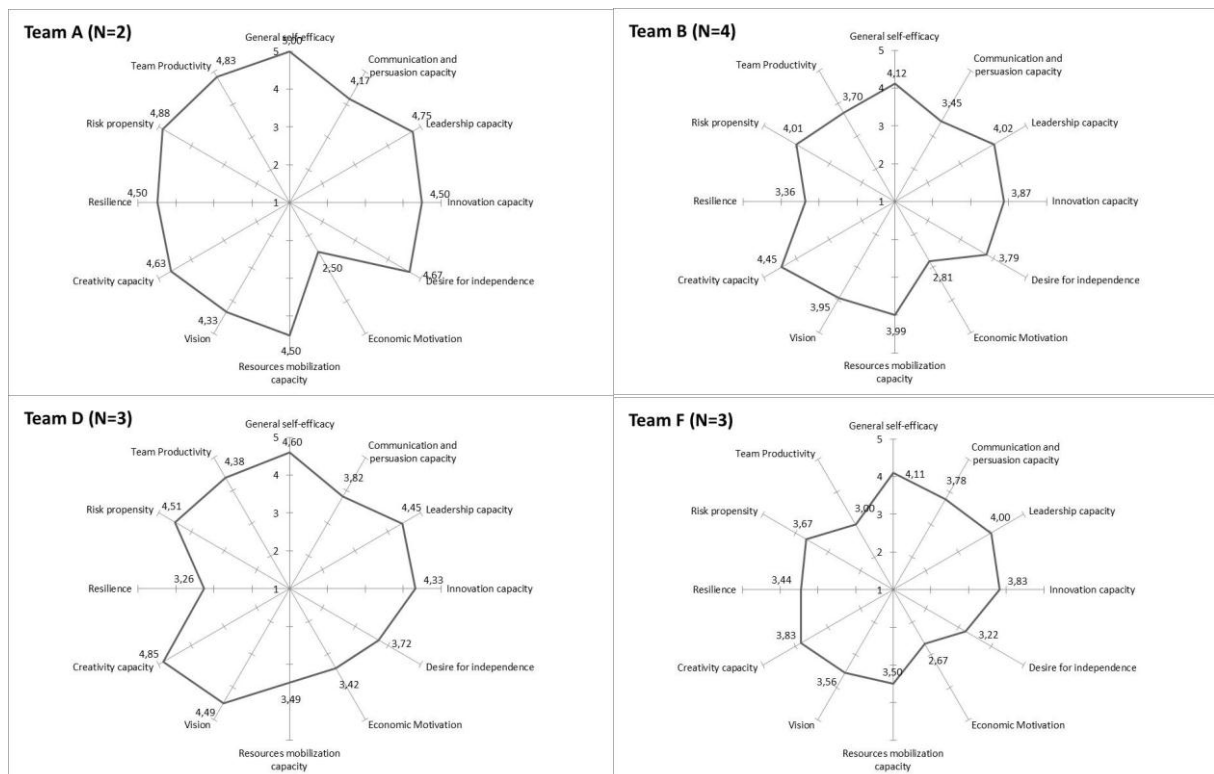
Team J (N=5) evidenced a profile with two main types of results. Half of the dimensions showed average scores; and the other half of the dimensions showed high scores. The average scores were reported in economic motivation ($M_{\text{teamJ}}=3.09$), desire for independence ($M_{\text{teamJ}}=3.49$), resilience ($M_{\text{teamJ}}=3.54$), communication and persuasion

capacity ($M_{teamJ}=3.61$), resources mobilization capacity ($M_{teamJ}=3.78$) and innovation capacity ($M_{teamJ}=3.99$).

Team K (N=3) showed a similar profile, characterized by lowest results economic motivation ($M_{teamK}=2.78$) and average scores in resilience, desire for independence, innovation capacity, communication and persuasion capacity, risk propensity and leadership capacity. The remaining dimensions showed high scores, including perceived team productivity ($M_{teamK}=4.44$).

Team M (N=2) showed high results in most of the dimensions of the entrepreneurial potential, such as leadership capacity, resources mobilization capacity, team productivity, vision, economic motivation, resilience, creativity capacity, and entrepreneurial self-efficacy. Desire for independence ($M_{teamM}=3.67$), innovation capacity ($M_{teamM}=3.75$), communication and persuasion capacity ($M_{teamM}=3.83$) and risk propensity ($M_{teamM}=3.88$) reported average scores.

Team P (N=2) evidenced a profile with high results in most of the dimensions, except for economic motivation ($M_{teamP}=3.83$) and desire for independence ($M_{teamP}=3.83$).



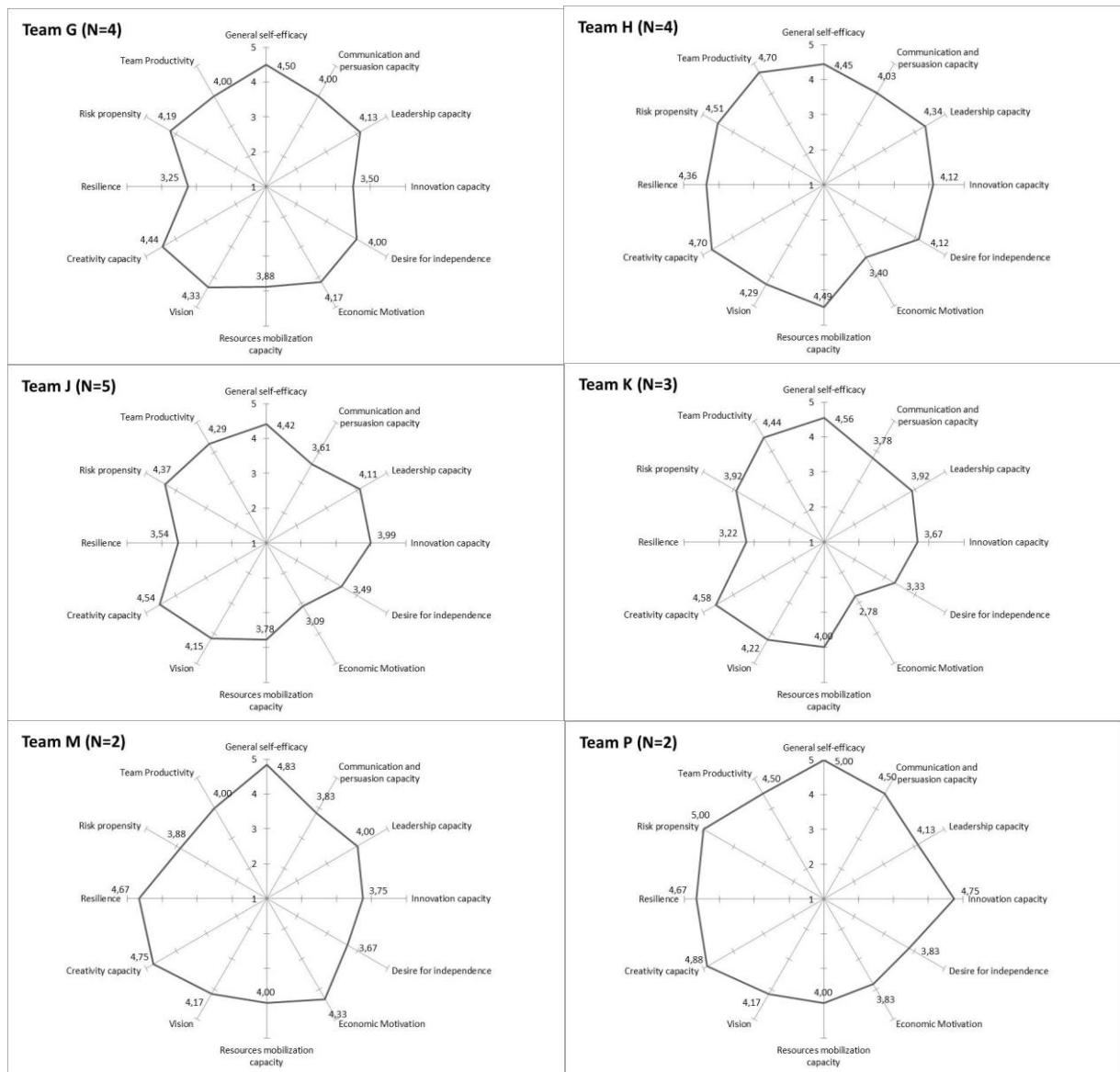


Figure 7.1. Entrepreneurial potential profile of some teams of the venture competition

Following the theoretical argument and rational of the entrepreneurial potential, the teams reporting higher scores in the dimensions of the entrepreneurial potential profile would be the ones with a greater potential to become successful.

Based on the entrepreneurial potential profile analysis, results suggested that the teams with a greater potential to succeed were Team A, Team H, Team M, and Team P. More specifically, Team A and Team H presented a profile with top results in all the dimensions of the entrepreneurial potential, except for economic motivation. Nevertheless, economic motivation items are not free of social desirability. Team M showed an average profile, but it also showed higher results in entrepreneurial self-efficacy and resilience, which are important predictors of success. Team P showed a profile with high scores in all the dimensions of the entrepreneurial potential. Thus, based on the results of the

entrepreneurial potential among team members, we suggested that Team A, Team H, Team M and Team P would be awarded in the track finalists' event.

Furthermore, among the four track finalists that the entrepreneurial potential profiles pointed, we would suggest that team H would be awarded as the grand finalist of the venture competition.

The remaining entrepreneurial teams revealed some weaknesses in their entrepreneurial potential profile. Some of them showed unbalanced profiles, as team K and J for example, with high scores in some dimensions, and average or low scores in others, as resilience. This pattern of resulted suggests that they were teams that needed development and training in some critical aspects of the entrepreneurial potential.

7.4. Discussion

This study presented entrepreneurial potential among entrepreneurial teams, as a result of the socio-psychological characteristics of team members. We tested the entrepreneurial potential construct in teams engaged in a venture competition. Our prediction stated that the teams with higher results in the socio-psychological aspects and on team productivity would be awarded in the final track session as finalists. Based on the entrepreneurial potential profiles of each team, we pointed four teams with a greater potential that would be awarded as track finalists: Team A, Team H, Team M and Team P.

The results of the international panel in the final track session, four months after the data collection, awarded as finalists: Team A; Team H; Team M and Team K. Thus, entrepreneurial potential profile was able to identify three out of the four finalists of the venture competition. Team P was not awarded as a finalist, but received an honourable mention. Despite the fact that the entrepreneurial potential profile of team K was showing average and low results in some critical subdimensions, they were awarded as a finalist by the international panel, due to their entrepreneurial project characteristics. The results of the profile uncovered weakness on the social and human capital of team K, and some months after the awards session, team K was evidencing functioning and leadership problems, and were not able to achieve the required milestones.

Three months later, the four finalists were again submitted to a public session in which they pitched their projects. Among the four finalists, one of them was awarded as the grand finalist. The grand finalist was awarded with an additional 100.000 euros in financial support. This amount could be doubled during over the next 3 to 5 years if it can met the

agreed milestones. The awarded project was Team H. This result suggested that entrepreneurial potential profile was also capable to identify the grand finalist, once that Team H was the one with highest results and evidenced a most promising entrepreneurial potential profile.

The decisions of the international panel were consistent with our predictions based on entrepreneurial potential profile. These results suggested that there is an association between the entrepreneurial potential profile and the decision in the awards session. The awards were attributed based on the entrepreneurial project characteristics, presented through a business plan and a pitch event. Thus, the decision making was mainly based on the opportunity side of the nexus (Shane, 2003). Nevertheless, the entrepreneurial potential profile, which reflects the individual side of the nexus focusing on the socio-psychological characteristics of the entrepreneurial team, was able to predict the success of the awarded teams. These results support also the team-opportunity nexus (Ford and Sullivan, 2008), suggesting that entrepreneurial teams interact constantly in the recognition, evaluation and exploration of opportunities. Teams with higher scores among the socio-psychological characteristics and team productivity are the ones that produced more profitable, new, and valuable start-up opportunities in which financial investors decide to invest resources.

These results suggest that the traditional approach of relying primarily on a business plan and pitching episodes can be improved on by adding the assessment of the entrepreneurial potential profiles. The insights provided by this study will help investors and policy makers to identify which applicants have the highest chance of succeeding in their projects, and thus add value by avoiding misdirected budgets, following the need to assess the characteristics of entrepreneurial teams (MacMillan, Siegel, & Narasimha, 1985; Zacharakis & Meyer, 1998).

Furthermore, our results contribute to the discussion around entrepreneurial teams' characteristics and team performance (e.g., Amason, Shrader, & Tompson, 2006). Entrepreneurial teams as a unit are a rich combination of the human and social capital, knowledge and experience from different individuals. Thus, it is important to analyse the aggregation of each member contribution, as well as the whole team as a unit of analysis (e.g., Forbes, Borchert, Zellmer-Bruhn, & Sapienza, 2006).

This study also contributed to understand the importance for the conceptualization of the entrepreneurial team. When individuals engage in activities and tasks to start-up they frequently join an entrepreneurial team, and it is critical to describe and explain how do team works, and how do their processes can be related to entrepreneurial success. The next

section reflects about the importance of considering entrepreneurship as a multilevel process.

7.4.1. Transferring the analysis to different levels: the relevance of considering entrepreneurship as a multilevel process

In this study, we attempted to contribute to the awareness and richness that is underlying a future approach to entrepreneurial potential as a team level phenomenon. Entrepreneurial teams are generally very common (Kamm, Shuman, Seeger, & Nurick, 1990), are related to venture growth and survival (Cooper and Bruno, 1977), and thus it is important to step to the team level. The individual characteristics of the entrepreneur is a matured topic in entrepreneurship literature, and team's characteristics and diversity started to contribute to this discussion (e.g., Leary & DeVaughn, 2009; Colombo & Grilli, 2005; Schjoedt & Kraus, 2009). The entrepreneurial potential model was firstly conceived at the individual level. But we can ask how the entrepreneurial potential model can be applied at the team level. There are some relevant questions that raise from a multilevel perspective about the relevance of individual characteristics: *Is the entrepreneurial team's potential represented by the same dimensions as the individual entrepreneurial potential?* This question could be answered by a research that addresses aggregation or composition models, that takes into account the bottom-up processes, from individual's to teams, or from the institutional conditions to the national and international environment. And, does entrepreneurial potential at the individual level predict individual performance similarly or differently than entrepreneurial team potential might predict team performance? This question addresses a homologous relation model, which refers to the generalization of constructs across levels. These models aim to understand to what extent relationships are similar, or not, across different levels of analysis (Kozlowski & Klein, 2000). And can entrepreneurial team potential influence individual performance? This question reports to a cross level effects, in which higher-level contextual factors influence lower-levels of the system (Kozlowski & Klein, 2000). Briefly, analysing the entrepreneurship dynamics at team level constitute an interesting research avenue waiting to be travelled.

7.4.2. Limitations and Practical Implications

Despite the contributions this study makes, there are nevertheless some limitations. First, our sample was quite small and did not allow to go further than descriptive analysis. Furthermore, we did not include considerations about the business opportunity that teams

were competing with. However, that was not our purpose in this study. Second, our study is not sufficient to develop a complete validation process of the entrepreneurial potential construct at the team level. Validation is a long process and further tests need to be developed focusing on incremental and differential validity. Moreover, it is critical to develop predictive validity tests where the entrepreneurial potential should assess exactly the same participants in a longitudinal design, from the would-be entrepreneur stage to the effective start-up launch. Nevertheless, in some way our study could be considered as a *proxy* of a longitudinal research, as we accompanied the entrepreneurial teams during a period of seven months.

Considering practical implications, the entrepreneurial potential construct and inventory can become a tool of high value to the community, since it allows students, teachers, academics and financial funders of projects to assess the level of entrepreneurial potential as well as those dimensions that need to be developed.

This study demonstrated the advantage that entrepreneurial potential can represent in a venture competition context. The profile results of each team represent an addition element to include in the investment decision making process. It was possible to signal strengths and weaknesses in team's functioning. It was clear that teams with problems in critical dimensions such as leadership, resilience or productivity would not be a wise option for investment.

Furthermore, our focus on the assessment of a preparedness to engage in typical entrepreneurship activities as a summative result of dimensions that can be trained and developed, may also be relevant for entrepreneurship education debates. In an educational setting, the interest is in individual-level competency as we attempt to help students become more skilled and motivated to start and succeed in new ventures (Bird, 1995). Moreover, this research can also give interesting insights to teachers' interventions in planning, conducting and combining learning to teaching entrepreneurship (Kyrö, 2008).

Since entrepreneurial potential is mostly focused on competencies, it follows that specific training can be designed to develop these competencies. In this sense, the entrepreneurial potential profile helps to identify skills and competencies requiring development and training in a group of future entrepreneurs. Thus, this information can become important in designing or adjusting the curriculum, for diagnosing the dimensions in which students have the greatest difficulty, and in signalling the need for skills development. Entrepreneurial potential profiles make it possible to compare different potential entrepreneurs, and help in investment decision-making. Furthermore, this tool can contribute

to answering to one of the key questions asked by many individuals who are considering starting a business: “*Do I have what it takes to be an entrepreneur?*”.

Facing a context of economic and social crisis, entrepreneurship presents itself increasingly as a solution for self-employment (De Nardi & Villamil, 2009). In this sense, the entrepreneurial potential profiles can play a critical role in the early stages of the entrepreneurial process: assessing the main skills necessary to develop entrepreneurial business success. Furthermore, our results showed how practice can benefit from an evidenced-based approach in entrepreneurship that can help to turn *ideas* into real (Baron, 2012, 2013).

Chapter 8. Entrepreneur selection methodology for entrepreneurship promotion programmes (Study 5)

8.1. Introduction

The personnel selection procedures research has increased over the past century (Society for Industrial and Organizational Psychology, 2003), and the need to choose the best person to perform a specific job has been dominating the research issues (e.g., Rynes & Cable, 2003) among organizational psychology and human resources literature. The relation between validated selection practices and performance outcomes was recently referred as one of the six topics with agreement among work and organizational psychology experts (Guest & Zijlstra, 2012). There are diverse evidences (e.g., Borman, Hanson, & Hedge, 1997) that personnel selection procedures has an impact on employee performance, and consequently on organizational performance.

In deciding which individual to hire for a specific job or position, the personnel selection process is an invaluable aid to choosing the person with the most adequate profile and potential to contribute to the success of the organization (e.g., Schmidt & Chan, 1998; Schmidt & Hunter, 1998). It is therefore quite surprising that in the field of entrepreneurship research, personnel selection theories, methods and procedures seem to be absent. There is a call for evidence-based management (Rousseau, 2006) and evidence-based entrepreneurship (Baron, 2012), but it seems that the evidences from personnel selection have been kept apart from entrepreneurship practices. Markman and Baron (2003) stressed that “*additional research is needed to empirically assess concerns regarding the utility of selection procedures (...)*” (p.295) in entrepreneurship. In this study, we aim to make a contribution towards bridging the gap in the knowledge between the field of personnel selection and the field of entrepreneurship. We describe here the development and application of a personnel selection methodology for entrepreneurial activities in their pre-emergence stage. The entrepreneur selection method includes the assessment of the individual based on the entrepreneurial potential dimensions and subdimensions, and the assessment of the business opportunity characteristics.

⁸ Based on the data generated for this study, we published a chapter in an international book and one working paper is under review:

Santos, S. C. & Caetano, A. (2010). Entrepreneur Selection Methodology in Social Entrepreneurship Programmes, in A. Surdej, K. Wach (Eds.), *Exploring the Dynamics of Entrepreneurship*. Toruń: Adam Marszałek Publishing House.

Santos, S. C., & Caetano, A. (under review). Entrepreneur selection methodology for entrepreneurship promotion programmes.

This study contributes to the theoretical development and technical application of the entrepreneurial potential, once that it integrates the construct with the personnel selection methods, to entrepreneurship field. We also contribute to the practice of entrepreneurship because we propose a methodology to select the individuals and business opportunities with a higher potential to be successfully implemented. This methodology can be used in programs which support entrepreneurship initiatives, and might also be a tool for business angles, risk capital venture investors, or incubation processes. Whenever is included to investment of resources in an individual and a business opportunity, it is a *sine qua non* condition to have evaluation criteria to assess the probability of success, this means, to have criteria to select entrepreneurs.

How do venture capitalists and business angels select the potential entrepreneurs remains a largely unexplored topic (see exceptions, Chen, Yao, & Kotha, 2009; Cardon, Sudek, & Mitteness, 2009). Although there are some studies on the selection process of franchisees (e.g., Kaufmann & Rangan, 1990; Jambulingham & Nevin, 1999; Clarkin & Swavelly, 2006), the selection process of entrepreneurs has been out of scrutiny. Consequently, there is a theoretical and empirical gap concerning the criteria and methodologies for the selection of potential entrepreneurs. This study is an attempt to shed some light on the criteria for entrepreneur selection. More specifically, we present and test a methodology for the selection of potential entrepreneurs on a program for entrepreneurship promotion. Through three-research steps in a longitudinal design we aim to test the predictive capacity of the entrepreneur selection methodology.

8.1.2. The entrepreneur selection research field

There is a tendency to promote the entrepreneurial activities through entrepreneurship programs, training courses and institutional funding. This kind of programs opens a *potential entrepreneurs market* – this means, a pool of potential entrepreneurs that are seeking for an investment on their business ideas. These potential entrepreneurs markets are extremely attractive to risk venture investors, business angles, entrepreneurship programs and incubators promoters. In such entrepreneurship stimulation devices there is a critical need to select the individuals and projects with a greater likelihood of success in order to avoid misdirected budgets.

Research on the individual characteristics of entrepreneurs (e.g., Schwenk & Shrader, 1993) assumed that personal competencies do indeed play an important role in the entrepreneurial process, as new ventures are also to a great extent a product of individual

action (e.g., McMullen & Shepherd, 2006; Baum, Frese, Baron, & Katz, 2007). In addition, research about knowledge, skills and abilities showed that the stronger the competencies, the greater the success of the enterprise (Bird, 1988; Baum, Locke, & Smith, 2001; Markman & Baron, 2003). Furthermore, competencies, in contrast to personality traits (Brandstätter, 2011), are the individual differences dimensions that are open to training, education and change (Markman & Baron, 2003).

Despite the efforts to identify the main personal characteristics that are associated with the entrepreneurial success, literature is still looking for a holistic model that can empirically evidence a relation with the entrepreneurial success. Markman and Baron (2003) defined the person-entrepreneurship fit as the match between entrepreneurs' individual characteristics and the requirements of the activity of being an entrepreneur. The authors argued that there is a relation between person-entrepreneurship fit and success: the greater the person-entrepreneurship fit, the highest the probability of entrepreneurial success. At our best knowledge, Markman and Baron's (2003) paper is the unique to call for the need to develop selection procedures based on the personal characteristics.

The personnel selection processes emerge from the empirical evidences on the relation between the skills, abilities and knowledge and the job performance. Although the research on personnel selection is significantly developed (e.g., Judge, Higgins, & Cable, 2000; Cortina, Goldstein, Payne, Davison, & Gilliland, 2000; Salgado & Moscoso, 2002) and the practical implications to the organizational context are quite evidenced (Guest & Zijlstra, 2012), there is a clear absence of the knowledge transference to the entrepreneurship research. Given that the predictive capacity of the personnel selection on the individual performance is highly recognized (e.g., Schmidt & Chan, 1998) it is surprisingly how entrepreneurship research and practice did not apply the knowledge to entrepreneur selection.

In our study we attempt to make the interception of two well developed literatures: the personnel selection literature and the entrepreneurship literature. The evidences from personnel selection are broad and great tested (Hunter & Schmidt, 1996) showing that we can select the individuals who are more able and fit in one certain position or task. Entrepreneurship literature is broadly defined around the individual-opportunity nexus (Shane, 2003), defining the process as an interaction between the individual attributes and the entrepreneurial opportunities. There is an evident theoretical gap concerning the confluence from these two fields and there is a need to develop a scientific-based measure that can help in the promotion of entrepreneurial performance. Gathering the main, shared

and corroborated evidences from both personnel selection and individual-opportunity entrepreneurship characteristics fields, we are able to start working on the entrepreneur selection research field.

In the following section we propose an entrepreneur selection method. Next, we present a longitudinal study where we tested this methodology.

8.1.3. The entrepreneur selection method

The entrepreneur selection method attempts to design a methodology for the selection of potential entrepreneurs. We include in this methodology the suggestions of both personnel selection and individual-opportunity entrepreneurship characteristics. The entrepreneur selection method includes two steps (Table 8.1). Step 1 refers to the individual characteristics and step 2 refers to the opportunity characteristics, covering both sides of the nexus of entrepreneurship theory: individual-opportunity (Shane, 2003).

In step 1 – *individual characteristics* – we included four main aspects: cognitive competencies, personality characteristics, psychosocial competencies and specific entrepreneurial competencies. These individual characteristics include some dimensions of the entrepreneurial potential construct and other constructs that are also relevant for a selection method.

Cognitive competencies as the general mental ability is the strongest predictor performance (e.g., Hunter & Schmidt, 1996; Ones, Viswesvaran, & Dilchert, 2005a), and thus it is fundamental to include in any personnel selection procedure. Moreover, it is suggested that the typical entrepreneurial traits as opportunity recognition, proactive personality, self-efficacy, social competence and intuition, are primarily related to the cognitive capability of the entrepreneur (Chell, 2008). As main cognitive competencies we included general intelligence, practical intelligence and logical reasoning. Baum, Bird and Singh (2011) presented a model including practical intelligence antecedents, and its role in the exploitation phase of entrepreneurship. The model suggests that practical intelligence is particularly relevant to entrepreneurs (Baum, Bird, & Singh, 2011), as practical intelligence is an experience based accumulation of skills, dispositions and tacit knowledge (Sternberg, Wagner, & Okagaki, 1993).

Personality characteristics are also relevant for personal selection and entrepreneurship activities (for a revision see, Chell, 2008; Zhao, Seibert, & Lumpkin, 2010; Brandstätter, 2011). We selected as main personality characteristics warmth, emotional

stability and self-confidence (see Brandstätter, 1997; Zhao, Seibert, & Lumpkin, 2010; Brandstätter, 2011).

Psychosocial competencies include some subdimensions of the entrepreneurial potential that were considered to be the more critical for the development of an entrepreneurial activity. We included resilience, self-efficacy, social support and persuasion capacity as the more relevant psychosocial competencies.

Management competencies in the entrepreneurial potential model, as we have seen before, refer to a set of basic and specific competencies in business management (e.g., Baum, Locke, & Smith, 2001). In the entrepreneur selection method we decided to include the resources mobilization capacity and vision subdimensions.

Step 2 – *opportunity characteristics* – aims to assess the business idea of the individual. This stage does not intend to make financial and economic analysis of the business idea. Rather, it aims to make a first general evaluation of the business idea potential to become a real profitable opportunity. The opportunity characteristics include the evaluation on three main aspects: business idea potential, business opportunity prototype and decision to launch a venture prototype.

Business idea potential refers to the project relevance, economic viability and resources acquisition. *Business opportunity prototype* was described by Baron and Ensley (2006) as including five features: (1) solving a customer's problems, (2) ability to generate positive cash-flow, (3) manageable risk, (4) superiority of product/ service, and (5) potential to change the industry. In the entrepreneur selection method we included the assessment of the potential to change the industry, positive net cash flow and manageable risk.

Regarding a *decision to launch a venture prototype*, Baron and Ensley (2006) also identified five features: (1) a favourable financial model, (2) positive assessment or advice from others (friends, financial advisors, and industry experts), (3) the idea's novelty, (4) a large untapped market, and (5) intuition or gut feeling. We included the assessment of the overall financial model, intuition, unique product and big potential market. We predict that the clearer the participants are able to identify the prototypical features on their business idea and decision to launch a venture the greater potential the business idea possesses.

Table 8.1. *Measures included in the entrepreneur selection method*

Step 1	Step 2
<i>Individual characteristics</i>	<i>Opportunity characteristics</i>
Cognitive competencies	Business idea potential
General intelligence	Project relevance
Practical intelligence	Economic viability
Logical reasoning	Resources acquisition
Personality characteristics	Business opportunity prototype
Warmth	Change industry
Emotional stability	Positive net cash flow
Self-confidence	Manageable risk
Psychosocial competencies	Decision to launch a venture prototype
Resilience	Overall financial model
Self-efficacy	Intuition
Social support	Unique product
Persuasion capacity	Big potential market
Management competencies	
Resources mobilisation capacity	
Vision	

The entrepreneur selection method we described above is based on a multi-source approach. The assessment instruments include cognitive ability tests, personality tests, semi-structured interview, and surveys. The entrepreneur selection method aims to select the dyad (individual and opportunity) with greater potential to be entrepreneurial. We tested the entrepreneur selection method on an entrepreneurship promotion program following a longitudinal design with three research steps.

8.1.4. Description of the entrepreneurship promotion program

The entrepreneurship promotion program was developed by a local government agency, and was integrated in their policies for youth and social development. This program aimed to select the best entrepreneurial projects and then to support them with pecuniary prizes and incubation resources and facilities.

The entrepreneurship promotion program targeted local residents, aged between 18 to 40, who were finding it hard to access the labour market and who were willing to launch their own business. The individuals applied for the entrepreneurship promotion program with an entrepreneurial idea. The entrepreneurship promotion program took place over seven months and included three main stages: *Stage 1 - Assessment and selection of the would-be entrepreneurs and projects*; *Stage 2 – Training*, and *Stage 3 – Implementation* (Figure 8.1).

The *assessment and selection of the would-be entrepreneurs and projects* stage was accomplished in the two first months. During this period, the program used the entrepreneur selection method below described. By the end of this stage, and based on the results of all

the measures included in the selection methodology, the individuals who scored highest during entrepreneur selection progressed to the second stage. This selection was made by two independent experts who analysed the results from the entrepreneur selection method and the entrepreneurial project. In accordance with the rules of the program, a maximum of 35 participants could be selected to go through to the second stage.

The *training* stage lasted a further two months and the selected entrepreneurs attended 36 hours of training lectures from entrepreneurship university professors on the following entrepreneurship subjects: (a) fundamentals of the entrepreneurship process, (b) innovation and strategy, (c) marketing planning, (d) leadership, (e) human resources and negotiation, (f) basic financial notions, (g) basic technological notions, (h) business and organization laws, and (i) business plan writing. After their training, the entrepreneurs prepared business plans which were assessed by a panel of experts. Based on the opportunity evaluation process, those individuals with the highest scores were selected to go on to the next stage.

During the *implementation* stage, which occurred over the following three months, experts provided technical support, mentoring and coaching. At the end of this stage, the best entrepreneurial projects were given prizes by a different panel of judges during a public awards ceremony.

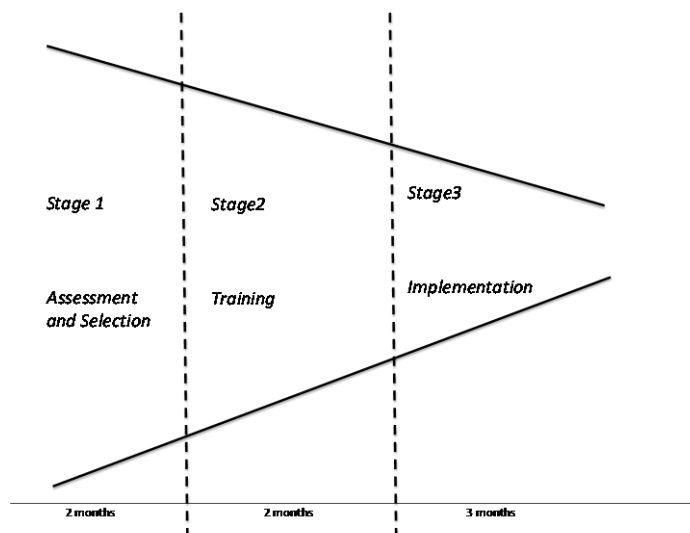


Figure 8.1. The three stages of the entrepreneurship promotion program

Following the three stages of the entrepreneurship promotion program, we were able to develop a longitudinal study with three research steps.

8.2. Research step 1 –The selection criteria to the training stage

The entrepreneurship promotion program started with 74 would-be entrepreneurs. The aim of the first stage of the program was to select those individuals with the greatest chance of successfully completing the training program, and implementing the entrepreneurial project.

8.2.1. Participants

A total of 74 participants were involved in the assessment and selection step. There were 40 women and 34 men, aged 18 to 38 years ($M=26.16$; $SD=3.58$). More than half of the participants had a university degree (54.1%), and the others had all completed high school. Table 8.2 presents the percentage on the demographic characteristics of the participants.

Table 8.2. *Sex and highest education level: Percentage*

	Percentage N= 74
Sex	
Female	54.1
Male	45.9
Highest education level	
Primary	1.4
Basic	6.8
Secondary	16.2
Professional Training	20.1
University degree	54.1
Master	1.4

8.2.2. Measures of the entrepreneur selection method

We next describe the measures and the psychometric characteristics of the entrepreneur selection method.

In the step 1 (individual characteristics), *cognitive competencies* were measured through three tests validated to the Portuguese population: general intelligence (44 items), logic reasoning (70 items), and practical intelligence (7 items). General intelligence was assessed with a well-known domino test with 44 items. Practical intelligence was assessed with a test through seven exercises which consists in displaying different objects in boxes in accordance with given descriptions. One example of this exercise is: “*You have here 3 boxes of different sizes. One has one ball, the other one pin, and the other one rubber. We don’t know in which box the objects are in. We only know that, if we take the two bigger boxes, the*

other has the rubber. But, the smaller box and the next one, have the ball and the rubber. Please write what is inside of each box". During ten minutes the participants were invited to solve similar problems, with a growing difficulty level.

Logic reasoning was assessed with a test with 40 logic sequence items. The task involved discovering the next element of the sequence, following the presented logic. The sequences were formed by letters and numbers. The test had a time limit of ten minutes, and the participants were asked to fill the maximum number of possible exercises.

The results of all tests were standardized in a 5 points classes scale in accordance to the Portuguese norms. The means, standard deviations (SD) and percentage of responses are presented in table 8.3.

Table 8.3. *Means, standard deviations and percentage of responses of the cognitive competencies test*

	General intelligence	Practical intelligence	Logical reasoning
Mean	3.05	2.62	3.29
SD	1.28	1.02	1.01
Percentage (N=74)			
1,00	14.9	18.9	6.7
2,00	18.9	18.9	12.2
3,00	27.0	47.3	36.5
4,00	24.3	12.2	36.5
5,00	14.9	2.7	8.1

The correlations were all positive and statistically significant ($p < 0.05$). General intelligence and practical intelligence correlation was 0.43; logical reasoning and general intelligence correlation was 0.68; and logical reasoning and practical intelligence correlation was 0.35. The internal consistency of the three measures of cognitive competencies was adequate ($\alpha = 0.74$).

Personality characteristics included warmth, emotional stability and self-confidence and were measured using Cattell's Personality Inventory. Data was normalized in accordance to Portuguese population norms. The means, standard deviations and the distribution of the percentage of answers, are depicted on table 8.4.

Table 8.4. Means, standard deviations and percentage of responses of the personality test

	Warmth	Emotional stability	Self-confidence
Mean	6.40	7.03	6.80
SD	2.07	2.56	2.08
Percentage (N=74)			
1.00	-	2.7	-
2.00	5.4	4.1	-
3.00	1.4	4.1	5.4
4.00	8.1	4.1	5.4
5.00	13.5	12.2	13.5
6.00	24.3	17.4	17.7
7.00	21.6	6.7	18.9
8.00	10.8	12.2	13.6
9.00	5.4	12.2	14.9
10.00	9.5	24.3	10.6

The three personality characteristics showed positive and significant correlations among them ($p < 0.05$). Warmth and emotional stability correlation was 0.26; self-confidence and emotional warmth was 0.24; and self-confidence and emotional stability correlation was 0.44.

Psychosocial competencies and management competencies were measured by a reduced and adapted version of the entrepreneurial potential assessment inventory (EPAI) presented in the study 3. We adapted the items corresponding to the subdimensions under evaluation in the entrepreneur selection method and we also integrated measures of social support.

Social support was measured using four items, adapted from Baughn, Cao, Le, Lim and Neupert (2006), such as “*In difficult periods my family and friends encourage me facing the future*”; “*Generally, I am supported by my family and friends.*”

The psychosocial competencies variables included a total of 13 items which assessed resilience, self-efficacy, social support and persuasion capacity. The items were rated on a five point Likert scale ranging from 1 (totally disagreement) to 5 (totally agreement).

Exploratory factor analysis with varimax rotation (Table 8.5) was conducted to analyse the behaviour of the psychosocial competencies in the entrepreneur selection method context. Results showed a four factor solution: social support (4 items); resilience (4 items); self-efficacy (2 items); and persuasion (3 items).

Table 8.5. *Varimax rotated component matrix on psychosocial competencies: Exploratory factor analysis*

	Factor 1 Social support	Factor 2 Resilience	Factor 3 Self-efficacy	Factor 4 Persuasion
In difficult periods my family and friends encourage me facing the future.	0.89	0.03	0.03	0.12
I have always family / friends to whom I can discuss my personal issues.	0.86	-0.05	-0.03	0.18
Generally, I am supported by my family and friends.	0.85	0.06	0.08	-0.09
When I need, I have always someone who helps me.	0.73	0.25	0.20	-0.12
When something unexpected happens to me I generally find the solution.	0.06	0.79	-0.02	0.24
Even when my present activities are not very successful, I keep working hard and I feel that my future looks like highly promise.	0.09	0.77	-0.16	0.10
When I need to solve hard problems I prefer to focalize my attention on them	-0.02	0.76	0.11	-0.02
When things look like to be working badly, I do not give up.	0.12	0.57	0.35	-0.23
I truly trust on my decisions.	0.04	-0.04	0.90	0.07
I truly trust on my capacities and competencies.	0.13	0.09	0.88	-0.01
Normally I can persuade the others in several things.	0.07	0.04	-0.18	0.82
In the majority of the situations, I can make that the other people do what I want.	-0.04	0.03	0.17	0.64
When I want that someone change his / her point of view, I normally am well succeed.	0.15	0.55	0.05	0.59
KMO = 0.,69				
Bartlett's Test of Sphericity – g.l.= 78; $\chi^2 = 262.62$; $p < 0.01$				

The descriptive statistics and correlation matrix of psychosocial competencies are presented on table 8.6. Resilience and persuasion capacity show a positive and significant correlation ($r=0.31^{**}$). Social support shows the highest mean value (M=4.52) and persuasion capacity exhibit the lowest mean value (M=3.84).

Table 8.6. *Descriptive statistics and correlation matrix of psychosocial competencies*

	Mean	SD	1	2	3	4
1. Social support	4.52	0.50	0.85			
2. Persuasion capacity	3.84	0.71	0.12	0.66		
3. Resilience	4.11	0.44	0.15	0.31 ^{**}	0.72	
4. Self-efficacy	4.36	0.57	0.22	-0.02	0.12	0.58 [†]

^{**}, $p \leq 0.05$; [†] bivariate correlation $p < 0.05$; Cronbach's alpha is shown in the diagonal

Management competencies were similarly assessed using the items adapted from the entrepreneurial potential assessment inventory (EPAI). Resources mobilization capacity was assessed using four items ($\alpha=0.79$; $M=3.92$; $SD=0.70$), and vision was assessed using two items ($r=0.54$, $p<0.01$; $M=3.42$; $SD=0.87$). There was a positive and statistically significant correlation between resources mobilization capacity and vision ($r=0.30$, $p<0.05$).

Opportunity characteristics (Step 2) included the assessment of business idea potential, business opportunity prototype and decision to launch a venture prototype. These dimensions were developed in accordance to the definition of business opportunity which includes the three characteristics: potential economic value, newness, and perceived desirability (Baron, 2006). Participants were required to describe their business idea during an individual interview and to fill a form describing their business opportunity and decision to launch a venture prototypes.

Business idea potential was assessed by two independent experts based on a semi-structured interview and a written document where the individuals described their business idea. The experts were asked to rate the idea on the following dimensions: *project relevance*, *economic viability* and *resources acquisition* in a five points scale (1=completely inadequate; 5=completely adequate). Project relevance was measured by three items referring to the relevance of the project to the community (e.g., “*The project presents social relevance*”; “*The project presents relevance on promoter’s life*”). Economic viability of the project was measured with three items (e.g., “*The project is economically sustained*” or “*The promoter developed studies on the project sustainability*”). Resources acquisition was measured with three items, such as “*The promoter refers reliable resources acquisition sources for his Project*” or “*The business presents a reliable initial investment for the promoters’ possibilities*”. The inter-rater agreement showed an adequate value for all the dimensions. The descriptive statistics, correlation matrix and Cohen Kappa of business idea potential are presented in table 8.7.

Table 8.7. *Descriptive statistics and correlation matrix of business idea potential*

	Mean	SD	1	2	3
1. Project relevance	3.36	0.95	0.84		
2. Economic viability	3.25	1.07	0.93**	0.81	
3. Resources acquisition	3.32	1.13	0.90**	0.91**	0.79

** , $p \leq 0.05$; Cohen Kappa for each dimension is shown in the diagonal

Business opportunity prototype was measured using eleven items adapted from by Baron and Ensley (2006) to measure three dimensions: change industry; positive net cash flow; and manageable risk. The participants were required to assess the importance level of each item to the identification of the business opportunity. All items were rated on a scale ranging from “*minimum importance*” (1) to “*maximum importance*” (7). The exploratory factor analysis with rotation varimax (Table 8.8) presented the three factor solution for the business idea prototype: manageable risk; change industry; and positive net cash flow.

Table 8.8. *Varimax rotated component matrix on business idea prototype: Exploratory factor analysis*

	Factor 1 Manageable risk	Factor 2 Change industry	Factor 3 Positive net cash flow
Customer accept	0.89	0.18	0.11
Less technological change	0.86	0.32	0.11
Quick cash	0.82	-0.08	0.18
Less liability	0.79	0.32	0.15
Big player	0.23	0.85	0.06
Change market	0.10	0.83	0.07
No. 1 seller	0.03	0.80	0.24
Dominate	0.29	0.71	0.11
Lots cash	0.02	-0.06	0.82
Take home cash	0.26	0.23	0.71
Profitable	0.17	0.28	0.57

KMO = 0,814
Bartlett's Test of Sphericity – g.l.=55; $\chi^2 = 340.30$; p<0.01

Based on the exploratory factor analysis results, we computed three composite measures. Change industry was measured with four items: big player, number one seller, change market and dominate ($\alpha=0.85$). Positive net cash flow was measured with four items: lots cash, take home cash, profitable and quick cash ($\alpha=0.61$). Manageable risk was measured with three items: less technological change, less liability, customer accept ($\alpha=0.89$). The descriptive analysis and the correlation matrix are presented on table 8.9. All correlations are positive and statistically significant.

Table 8.9. *Descriptive statistics and correlation matrix of business idea prototype dimensions*

	Mean	SD	1	2
1. Change industry	5.31	0.95		
2. Positive net cash flow	5.30	0.86	0.33**	
3. Manageable risk	5.39	1.44	0.48**	0.53**

** , $p \leq 0,05$

Decision to launch a venture prototype was measured by the prototypical features overall financial model; intuition; unique product and big potential market using the items from Baron and Ensley (2006). All the items were rated in a scale ranging from “*minimum importance*” (1) to “*maximum importance*” (7). The exploratory factor analysis with Varimax rotation (table 8.10) revealed a four-factor solution for the business idea prototype: overall financial model; intuition; unique product; and big potential market.

Table 8.10. *Varimax rotated component matrix on decision to launch a venture prototype: Exploratory factor analysis*

	Factor1 Overall financial model	Factor 2 Intuition	Factor 3 Unique product	Factor 4 Big potential market
High margins	0.84	0.31	0.17	-0.11
Quick cash flow	0.81	0.26	0.05	0.10
Favorable financial model	0.80	0.16	-0.07	-0.04
High return/low investment	0.73	0.11	0.19	0.40
Short sales cycle	0.60	0.06	0.17	0.16
Gut feel	0.21	0.77	0.10	0.07
It will work	0.17	0.76	-0.04	0.26
No doubt	0.12	0.73	0.22	0.02
Good deal	0.45	0.62	0.10	-0.08
Unique	0.06	0.03	0.90	0.06
Nothing like it	0.08	0.16	0.88	0.18
Different than others	0.18	0.13	0.77	0.12
Large market	0.05	-0.06	0.05	0.77
Unmet need	-0.04	0.29	0.07	0.69
Few competitors	0.23	0.06	0.23	0.66

KMO = 0,731

Bartlett’s Test of Sphericity – g.l.=;105 $\chi^2 = 439,393$; $p < 0,01$

Based on the exploratory factor analysis results, we computed four composite measures. Overall financial model was measured with five items: quick cash flow, high margins, high return/low investment, favourable financial model, short sales cycle. Intuition was measured with four items: it will work, gut fell, no doubt, good deal. Unique product was measured with three items: unique, nothing like it, and different than others. Big

potential market was measured with three items: large market, unmet need, and few competitors. The descriptive analysis and the correlation matrix are presented on table 8.11. All the correlations are positive and statistically significant.

Table 8.11. *Descriptive statistics and correlation matrix of decision to launch a venture prototype dimensions*

	Mean	SD	1	2	3	4
1. Overall financial model	4.81	1.15	0.85			
2. Intuition	5.34	1.11	0.29**	0.71		
3. Unique product	5.37	0.96	0.36**	0.43**	0.64	
4. Big potential market	6.22	0.76	0.52**	0.30**	0.34**	0.72

** , $p \leq 0.05$; Cronbach's alpha is shown in the diagonal

Table 8.12 evidences the correlation matrix between all the variables involved on the entrepreneur selection methodology.

Table 8.12. Correlation matrix between all the variables involved on the entrepreneur selection methodology

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1. Practical intel.																					
2. Logical reasoning	.35**																				
3. General intel	.43**	.68**																			
4. Warmth	-.01	.01	.01																		
5. Emotional stability	.18	.28*	.17	.26*																	
6. Self-confidence	.22	.26*	.28*	.24*	.43**																
7. Resilience	-.11	.13	-.05	.06	.03	.01															
8. Self-efficacy	-.02	-.17	-.10	-.01	.01	-.07	.12														
9. Persuasion	.24*	.30**	.20	.06	.05	.04	.31*	-.02													
10. Social support	-.04	-.08	-.13	.26*	.22	.15	.15	.22	.12												
11. Resources mobilization cap.	-.01	.29*	.10	.07	.05	.06	.22	-.03	.65**	.26**											
12. Vision	.09	.01	.02	.04	-.10	-.26*	.05	.01	.40**	-.08	.32**										
13. Project relevance	.14	.42**	.38**	-.07	.03	.10	.12	-.24	.56**	-.15	.40**	.33**									
14. Economic viability	.13	.48**	.41**	-.04	.02	.10	.18	-.24*	.54**	-.16	.40**	.37**	.93**								
15. Resources acquisition	.19	.41**	.34**	.02	.03	.07	.14	-.28*	.53**	-.24*	.36**	.38**	.90**	.91**							
16. Change industry	-.17	-.02	-.04	.04	-.04	-.03	.06	.02	.13	-.07	.12	.12	.12	.16	.11						
17. Positive net cash flow	-.32**	-.04	-.24*	.18	.11	-.11	.36**	-.04	.12	.10	.21	-.01	.07	.11	.08	.33**					
18. Manageable risk	-.24*	-.20	-.21	.24*	-.11	-.04	.10	-.07	-.16	.06	-.03	-.03	-.13	-.10	-.06	.47**	.54**				
19. Financial model	-.38**	-.39**	-.22	.13	-.11	-.17	.11	-.03	-.11	.02	-.04	.01	-.12	-.13	-.13	.59**	.63**	.63**			
20. Intuition	-.18	.09	.08	.10	.16	.01	.18	.08	-.16	.06	.10	.01	-.03	.02	-.02	.04	.35**	.31**	.29*		
21. Unique	-.16	-.25*	-.15	-.09	-.14	-.16	.13	.04	-.14	-.16	.05	-.01	-.09	.01	-.05	.18	.35**	.24*	.36**	.43**	
22. Big potential model	-.31**	-.34**	-.36**	.08	.08	.09	.41**	-.04	-.12	.03	-.40	.02	-.13	-.10	-.06	.37**	.49**	.42**	.52**	.30**	.35*

* , $p \leq 0,05$; ** , $p \leq 0,01$

8.2.3. Results

The goal of the assessment and selection stage was to select the participants with greater potential to become entrepreneurs. The research purpose was to understand whether the entrepreneur selection method could differentiate individuals with low and high potential. Of the 74 participants that were involved in the first stage, 34 were selected to the training stage, accordingly to the results in the entrepreneur selection method.

Table 8.13 presents the means and standard deviations of all the measures included on the entrepreneur selection method, for the individuals who were selected to the training stage, and those who were not selected to the training stage. Groups were tested for differences using t-tests.

Table 8.13. *Mean and standard deviations: Selected vs. non selected individuals to the training stage*

	Selected to the training stage		Not selected to the training stage	
	M	SD	M	SD
General intelligence*	3.47 ^a	1.02	2.70 ^b	1.38
Practical intelligence	2.74	0.99	2.50	1.04
Logical reasoning*	3.68 ^a	0.77	2.93 ^b	1.07
Warmth	6.44	2.56	6.35	1.56
Emotional stability	7.15	2.34	6.93	2.76
Self-confidence	6.82	2.15	6.78	2.04
Social support	4.45	0.42	4.57	0.56
Persuasion capacity*	4.28 ^a	0.40	3.46 ^b	0.70
Resilience	4.15	0.37	4.07	0.49
Self-efficacy	4.37	0.37	4.35	0.70
Resources mobilization capacity*	4.33 ^a	0.41	3.57 ^b	0.74
Vision*	3.99 ^a	0.66	2.95 ^b	0.79
Project relevance*	3.97 ^a	0.69	2.83 ^b	0.83
Economic viability*	3.99 ^a	0.74	2.62 ^b	0.89
Resources acquisition*	4.07 ^a	0.78	2.68 ^b	0.98
Change industry	5.44	0.85	5.19	1.02
Positive net cash flow	5.30	0.81	5.31	0.96
Manageable risk	5.11	1.46	5.63	1.40
Overall financial model	4.63	1.12	4.97	1.17
Intuition	5.39	1.05	5.31	1.17
Unique product	5.35	1.01	5.39	0.91
Big potential market	6.09	0.74	6.33	0.77

*, $p < 0,05$

Data analysis evidenced that there are statistically significant differences between the following dimensions: general intelligence ($t(72) = -2.68, p < 0.01$), logic reasoning ($t(71) = -3,28, p < 0.01$); persuasion capacity ($t(68) = -5.91, p < 0.01$), resources mobilization capacity ($t(66) = -5.16, p < 0.01$), vision ($t(71) = -6.03, p < 0.01$), project

relevance ($t(72)=-6.36$, $p<0.01$), economic viability ($t(72)=-7.11$, $p<0.01$), and resources acquisition ($t(72)=-6.69$, $p<0.01$). As these variables differentiate significantly the participants they were established as selection criteria to the training stage.

Thus, the individuals who were selected to the second stage were characterized by a higher score on general intelligence, logical reasoning, persuasion capacity, resources mobilization capacity, vision, project relevance, economy viability and resources acquisition.

Logistic regression

Logistic regression is a log-linear model which uses maximum likelihood to estimate the regression's response function and allows for the use of both qualitative and quantitative predictor variables (Neter, Kutner, Nachtsheim, & Wasserman, 1996). Unlike standard multiple linear regression, the dependent variable in logistic regression is an *odd ratio* which indicates the changes on the estimated proportion of successful cases due to the changes on one unity of the independent variables.

Therefore, logistic regression is useful for predicting a criteria variable (being selected to the training stage) on the basis of independent variables. The criteria variable takes the value 2 if the respondent group was selected to the training stage; otherwise it takes the value 1, representing a non-selected candidate to training stage (Hair, Anderson, Tatham, & Black, 1998; Gong, 2003; Hitt, Bierman, Uhlenbruck, & Shimizu, 2006).

Thus, we used logistic regression as our selection criteria validation analysis technique because it is appropriate for use with a criteria variable having two categories (selected vs. not selected). Furthermore, logistic regression adds understanding about the data by providing a unique partitioning of the total variance explained by variables of interest and is one of the most powerful tools for extracting unique variance (Cohen & Cohen, 1983). Based on the classification of successful and unsuccessful cases in the two samples, binary logistic regression analyses were performed in order to examine and compare the effects of the predictors on success in the selection to the second stage.

We performed three models: Model 1—cognitive competencies and personality characteristics; Model 2—psychosocial competencies and management competencies; and Model 3—business idea potential, business opportunity prototype and decision to launch a venture prototype. This aggregation option was due to the impossibility to

compute logistic regression analysis with the seven dimensions, because of the sample size. Table 8.14 presents the results of logistic regression analysis. For all models developed, we present the effect size of the model (Nagelkerke R^2 measure) the goodness of fit measure (Log likelihood) and the Chi-Square (χ^2) test.

Results for model 1, which assumed the cognitive competencies and the personality as predictors of being selected to training stage, showed a significant fit ($\chi^2(6)=12.25$; $p<0.05$), explaining 20.4% of the variation of the selection to the training stage (Nagelkerke $R^2=0.21$). The effect of logical reasoning was statistically significant (Wald test=4.112, $p<0.05$), and logical reasoning, general intelligence and emotional stability odd ratios were greater than one, indicating positive effects on the selection to training stage. The strongest of these effects was logical reasoning. This result meant that participants with higher logical reasoning were more likely to be selected to the second stage than participants with levels of logical reasoning.

Model 2 evidenced a significant fit ($\chi^2(6)=40.68$; $p<0.01$) and explained 70.6% of the variation on the selection to the training stage (Nagelkerke $R^2=0.71$). The effect of social support and vision were statistically significant (Wald test_{social support}=4.32, $p<0.01$; Wald test_{vision}=7.54, $p<0.05$). Although the persuasion Wald test statistics was not significant, the persuasion odd ratio was the highest, indicating that participants with higher results on persuasion were more likely to be selected to the second stage than the lower result ones.

The third model included the opportunity characteristics: business idea potential, business opportunity prototype and decision to launch a venture prototype. The model evidenced significant fit ($\chi^2(10)=43.65$; $p<0.01$) and explained 71% of the variation of the selection to the training stage (Nagelkerke $R^2=0.71$). Resources acquisition, change industry, manageable risk and big potential model presented both a significant statistic (Wald test_{resources acquisition}=3.91, $p<0.05$; Wald test_{change industry}=4.09, $p<0.05$; Wald test_{manageable risk}=4.79, $p<0.05$; Wald test_{big potential model}=4.44, $p<0.05$). The correspondent odd ratios were all greater than one, indicating positive effects on the selection to the training stage. This suggests that participants with greater results on the resources acquisition, the change industry, the manageable risk and the big potential model were more likely to be selected to the training stage.

Table 8.14. *Results of logistic regression analysis on section to the training stage*

		Wald	Odds ratio	p
Model 1				
-2 Log likelihood = 89.853; Nagelkerke $R^2 = 0.21$; $\chi^2 = 12.25$; $df = 6$; $p = 0.05$				
Cognitive competencies	Practical intelligence	0.09	0.92	0.77
	Logical reasoning	4.11	2.16	0.04
	General intelligence	0.53	1.23	0.46
Personality characteristics	Warmth	0.07	0.90	0.79
	Emotional stability	0.02	1.05	0.89
	Self-confidence	0.44	0.91	0.51
Model 2				
-2 Log likelihood = 34.11; Nagelkerke $R^2 = 0.71$; $\chi^2 = 40.68$; $df = 6$; $p = 0.01$				
Psychosocial competencies	Resilience	0.24	0.57	0.62
	Self-efficacy	0.01	1.06	0.93
	Persuasion	2.57	6.25	0.11
	Social support	4.32	0.12	0.04
Management competencies	Resources mobilization capacity	2.84	5.28	0.09
	Vision	7.54	4.47	0.01
Model 3				
-2 Log likelihood = 36.69; Nagelkerke $R^2 = 0.71$; $\chi^2 = 43.65$; $df = 10$; $p = 0.01$				
Business potential assessment	Project relevance	0.01	0.87	0.93
	Economic viability	0.51	2.72	0.47
	Resources acquisition	3.91	8.28	0.04
Business opportunity prototype	Change industry	4.09	6.35	0.04
	Positive net cash flow	0.25	1.52	0.62
	Manageable risk	4.79	0.35	0.03
Decision to launch a venture prototype	Overall financial model	0.07	1.22	0.78
	Intuition	1.29	1.59	0.25
	Unique	1.16	1.99	0.28
	Big potential model	4.44	0.13	0.03

8.2.4. Discussion

The entrepreneurship promotion program involved 74 potential entrepreneurs. The stage 1 – *assessment and selection* - aimed to select a maximum of 35 participants to the second stage, the training stage. The entrepreneur selection method suggested the selection of 34 participants. This selection was based on the entrepreneur selection method including psychological tests, surveys, an individual interview and the assessment of the business idea.

Logic reasoning, general intelligence, persuasion, resources mobilization capacity, vision, project relevance, economic viability, and resources acquisition were the selection criteria to the selection to the training stage. The individuals selected to the training stage were significantly higher on these dimensions.

Logistic regression corroborated the decision based on the entrepreneur selection method, and evidenced that the predictors included in the logistic regression equation (i.e., the measures of the entrepreneur selection method) explained the probability of being selected for the training stage.

More specifically, the logistic regression results showed that logical reasoning, social support, vision, resources acquisition, change industry, manageable risk and big potential model have a statistical significant effect on the probability to be selected to the training stage. The odd ratios analysis suggested that all the variables which presented an odd ratio greater than one had a positive effect on the success probability. Thus, for the model 1 (cognitive competencies and personality), logical reasoning, general intelligence and emotional stability presented an odd ratio greater than one, suggesting that they had a positive effect on the probability to be selected to the training stage. Concerning model 2, the critical psychological competencies, self-efficacy and persuasion showed an odd ratio greater than one, suggesting a positive effect on the success probability, despite persuasion was the most expressive. Concerning the specific entrepreneurial competencies, both the resources mobilization capacity and vision had an odd ratio greater than one, as well as in the model 3 the economic viability, resources acquisition, change industry, positive net cash flow, overall financial model, intuition and unique.

8.3. Research step 2 –The selection criteria to the implementation stage

The second step of the entrepreneurship promotion program included a 36 hours training program, along with two months. Entrepreneurship training provides the knowledge, skills and motivation to encourage entrepreneurial success in a variety of settings. High quality training interventions are associated with reduced failure rates and increased profits (Bernard, 1990). The major benefit of entrepreneurship education is that it decreases the chances of failure by emphasizing a consistent and proven set of practices. Training contributes to make entrepreneurs capable of developing and managing the new ventures (Ladzani & Van Vuuren, 2002).

8.3.1. Participants and measures

The second stage involved the 34 participants who were selected from the stage 1. The participants age ranged from 20 years old to 31 years old ($M=26.56$; $SD=2.71$).

Half of the participants were male (50%). The majority of the participants have an university degree (58.8%) and 20.6% of them have occupational training. After the training program, the participants were required to develop a business plan which was then evaluated by a three judge expert panel. These experts were an entrepreneurship university lecturer, a venture capitalist, a CEO from a sponsor firm. The panel assessed the potential of each business opportunity based on information obtained from an oral presentation and from the business plan document, which encompassed the same dimensions as in stage 1: project relevance, economic viability and resource acquisition. Results showed an adequate value for the inter-judges agreement for the three dimensions (Cohen Kappa_{project relevance}=0.73; Cohen's Kappa_{economic viability}=0.71; Cohen Kappa_{resources acquisition}=0.69). Table 8.15 describes the mean, standard deviation of business idea potential variables on the stage 1 and stage 2, and the correlation matrix.

Table 8.15. *Mean, standard deviation (SD) and correlation matrix of business potential assessment*

	M	SD	1	2	3	4	5
1. Project relevance (Stage 1)	3.36	0.95	-				
2. Economic viability (Stage 1)	3.25	1.07	0.93**	-			
3. Resources acquisition (Stage 1)	3.32	1.13	0.90**	0.91**	-		
4. Project relevance (Stage 2)	3.40	1.06	0.42*	0.34*	0.23	-	.
5. Economic viability (Stage 2)	3.32	1.18	0.45**	0.38**	0.30	0.79**	-
6. Resources acquisition (Stage 2)	3.27	1.13	0.42*	0.31	0.21	0.86**	0.89**

** , $p \leq 0.01$; * , $p \leq 0.05$

8.3.2. Results

There were significant statistical differences between project relevance ($t(31)=6.75$, $p < 0.01$), economic viability ($t(31)=-11.38$, $p < 0.01$), and resources acquisition ($t(31) = -10.56$, $p < 0.01$) at the end of the second stage, indicating that they were adequate selection criteria (Table 8.16). The individuals who were selected to the implementation stage were characterized by having higher scores on project relevance, economic viability, and resources acquisition.

Table 8.16. *Mean values differences and standard deviation of business idea potential*

	Selected to implementation stage		Not selected to implementation stage	
	M	SD	M	SD
Project relevance**	4.29	0.60	2.67	0.75
Economic viability**	4.47	0.55	2.37	0.51
Resources acquisition**	4.36	0.43	2.37	0.61

** , $p \leq 0.01$

Concerning the entrepreneur selection method dimensions, collected at stage 1, there were statistically significance differences between the following variables: persuasion capacity ($t(68)=-3.18$; $p < 0.05$); resources mobilization capacity ($t(66)=-2.91$, $p < 0.05$); and vision ($t(71)=-4.35$; $p < 0.05$). Thus, it is suggested that these dimensions were also selection criteria to the implementation stage (Table 8.17). The participants who were selected to the implementation stage were characterized by having greater scores on persuasion, resources mobilization capacity and vision.

Table 8.17. *Mean and standard deviations: Selected vs. not selected individuals to the implementation stage*

	Selected to the implementation stage		Not selected to the implementation stage	
	M	SD	M	SD
General intelligence	3.53	1.06	2.93	1.31
Practical intelligence	2.67	1.05	2.59	1.02
Logical reasoning	3.47	0.83	3.22	1.05
Warmth	6.27	2.52	6.42	1.96
Emotional stability	7.53	2.33	6.90	2.62
Self-confidence	6.13	2.67	6.97	1.89
Social support	4.52	0.44	4.52	0.52
Persuasion capacity *	4.33 ^a	0.25	3.72 ^b	0.74
Resilience	4.09	0.38	4.11	0.45
Self-efficacy	4.42	0.40	4.34	0.60
Resources mobilization capacity*	4.38 ^a	0.46	3.81 ^b	0.72
Vision *	4.23 ^a	0.53	3.22 ^b	0.85
Change industry	5.30	0.79	4.09	0.71
Positive net cash flow	5.02	1.16	5.23	1.02
Manageable risk	4.99	0.77	5.31	0.92
Overall financial model	5.47	0.89	5.50	1.49
Intuition	5.64	0.83	4.76	1.24
Unique product	6.18	0.64	5.31	1.17
Big potential market	3.53	1.06	5.30	0.98

*, $p < 0.05$

To validate our criteria selection to the implementation stage we performed logistic regression analysis. At this research stage, we used as predictor variables the entrepreneur selection method measures (collected at stage 1), and as criteria variable we used the “*selection to the implementation stage*”. There was a seven months temporal distance between the data collection of the predictors and the criteria variable data collection. Similarly to the research stage 1, we also computed three logistic regression models (Table 8.18).

Results of model 1, including the cognitive competencies and personality characteristics as predictors, evidenced a non-significant fit ($\chi^2(6)=9.07; p>0.05$). The result indicated that the included variables do not explain the probability to be selected to the implementation stage. Model 2 included as predictor variables the psychosocial competencies and the management competencies. Results showed an adequate fit ($\chi^2(6)=17.69; p<0.05$). Self-efficacy, persuasion, resources mobilization capacity and vision present odd ratios greater than one, suggesting that the participants with greater scores on these dimensions were more likely to be selected to the implementation stage. Model 3 included the business idea prototype and the decision to launch a venture prototype. The model evidenced a non significant fit ($\chi^2(7)=8.64; p>0.01$) and any of the included variables evidence a statistically significant Wald test.

Table 8.18. *Results of logistic regression analysis on selection to the implementation stage*

		Wald	Odds ratio	p
Model 1				
-2 Log likelihood = 65.54; Nagelkerke R ² = 0.18; $\chi^2 = 9.07$; <i>df</i> = 6 ; p = 0.17				
Cognitive competencies	Practical intelligence	0.05	0.92	0.82
	Logical reasoning	0.27	0.79	0.61
	General intelligence	3.124	1.92	0.07
Personality characteristics	Warmth	0.27	0.78	0.60
	Emotional stability	1.99	2.03	0.16
	Self-confidence	4.49	0.70	0.03
Model 2				
-2 Log likelihood = 36.91; Nagelkerke R ² = 0.44; $\chi^2 = 17.69$; <i>df</i> = 6; p = 0.01				
Psychosocial competencies	Resilience	1.16	0.28	0.28
	Self-efficacy	1.32	4.81	0.25
	Persuasion	0.26	1.93	0.61
	Social support	0.04	0.79	0.83
Management competencies	Resources mobilization capacity	0.83	2.98	0.36
	Vision	3.19	3.382	0.07
Model 3				
-2 Log likelihood = 57.66; Nagelkerke R ² = 0.20; $\chi^2 = 8.64$; <i>df</i> = 7; p = 0.28				
Business Idea Prototype	Change industry	1.73	1.99	0.19
	Positive net cash flow	0.05	0.89	0.83
	Manageable risk	3.59	0.54	0.06
Decision to Launch a Venture Prototype	Overall financial model	1.07	1.59	0.30
	Intuition	0.43	1.28	0.51
	Unique Big potential model	1.13	1.56	0.29
		1.38	0.50	0.19

8.3.3. Discussion

At the end of the second stage, 15 participants were selected to the implementation stage in accordance to the evaluation on the business idea plan conducted by a panel of three judge expert.

Accordingly to the results on project relevance, economic viability and resources acquisition, 15 participants were selected to the implementation stage. Nevertheless, there were also significant differences on persuasion, resources mobilization capacity and vision. Thus, these dimensions were considered as selection criteria to the implementation stage. Moreover, the results of the logistic regression analysis suggested that psychosocial competencies explained the probability of selection to the implementation stage.

8.4. Research Stage 3 – The implementation stage

The implementation stage comprised a three-month incubation period during which the entrepreneurs received technical support and mentoring as they accomplished several tasks. The business plans were reformulated and consequently were more accurately described. Some of the business plans were developed in teams so, to this end, the 15 entrepreneurs were put into nine entrepreneurial teams.

At the end of the implementation stage, the entrepreneurs presented the finished business plans during a public session before an expert panel of judges composed by one member of the local government, one entrepreneurship university lecturer, a CEO from a sponsor firm, a venture capitalist and three mentors. Three types of awards were granted: the 3rd prize was monetary; the 2nd prize was an island-place on the entrepreneurship incubator program; the 1st prize was a store fully stocked with the necessary equipment.

The judging panel assessing the entrepreneurial business plans decided to award prizes to all nine entrepreneurial projects in competition. The first prize was awarded to a molecular biology and microbiology analysis laboratory project, and a restaurant project promoting healthy eating and nutritional food received the third prize. The other seven entrepreneurial projects were awarded the second prize (an island in an entrepreneurship incubator). Table 8.19 describes the entrepreneurial projects and the awards.

Table 8.19. *Entrepreneurial Projects: Activity area, brief business idea description, number of entrepreneurs involved on the project and awards received*

Activity Area	Brief business idea description	N. of entrepreneurs involved	Award received
1. Molecular biology and microbiology analysis laboratory	The firm will aim to conduct quality control analysis, more specifically, microbiology and biology molecular analysis in agro-alimentary products. The service will allow quickly and efficiently check the quality of our customers' products through Microbiological Analysis and Molecular Biology.	3	A store completely equipped with the necessary equipment material
2. Domestic and specialized cleaning services	The main objective is to enhance the quality of life of its customers by providing them with longer periods of time to develop their leisure activities that would normally be spent in house cleaning activities. The idea is based on the creation and implementation of a firm oriented to house specialized cleaning services, such as couches, carpets, mattresses and so on. Moreover, the firm would have an irony service.	1	Island on the social entrepreneurship incubator
3. Cleaning services for SME's	The SME's cleaning is an essential service, mobile, non-seasonal and it is a safe industry, as independently to the economy, the buildings need to be cleaned. The firm presents a client-focused approach, with specialized services.	1	Island on the social entrepreneurship incubator
4. Internal and external communication services	To produce informative pieces for local government agencies, cultural associations and SEM's, so that the internal and external communication is more accurate.	2	Island on the social entrepreneurship incubator
5. Business communication consultancy	Communication consultancy on SME, through business communication, training and space enhancement. Provides advisory services to SMEs in the areas of corporate communication, training and remodelling spaces. These services are aimed at improving the communication of our clients, improving all points of contact between customers and the brand, space, corporate image, employees, among others. The mission is to use the communication to enhance the business of its customers.	2	Island on the social entrepreneurship incubator
6. Computer services at home	Computer "doctor" to repair and assist computer related problems. The service is performed at clients' house. The services include diagnosis, repair and maintenance of computers, virus removal, networking and internet installation, data recovery.	1	Island on the social entrepreneurship incubator
7. Low-cost urban rehabilitation and architecture	Architectural and rehabilitation low-cost solutions to urban rehabilitation. For its mode of action in the market and services, constitutes itself as an innovative project, being developed by a team of credentialed architects and external collaborators in different valences complementary techniques estate. The mission is to create synergies between different actors in the housing market. It is intended as a reference in the housing market and the rehabilitation	2	Island on the social entrepreneurship incubator
8. Consultancy and accountability services for SME's	Creating a service business in accountability area, documents and consultancy. The core business will be focused on the non-organized accountability and organized accountability to SME's. Include also fiscal and human resources management consultancy.	2	Island on the social entrepreneurship incubator
9. Healthy and nutritional restaurant	The idea is the creation of a restaurant with healthy food, offering a broad set of natural meals and menus in a cosy space, near schools. It intends to meet the need for a healthy lifestyle,	1	Monetary award

essentially based on a balanced diet that many people end up neglecting. We offer our customers a variety of natural foods, fresh and prepared in a healthy way.

15
entrepreneurs

8.4.1. Results and discussion

All the participants who were selected on the implementation stage were able to accomplish an entrepreneurial business plan, which was successfully assessed by a judge expert panel. The fact that all the participants selected by the proposed entrepreneur selection method successfully completed the entrepreneurship program and were ready to start up entrepreneurial projects is a strong indication that this method could be a useful selection tool for use in future entrepreneurship programs.

The differences between the implementation awards received are very slight. Only one entrepreneurial team was distinguished with the highest prize, and similarly only one entrepreneurial team was distinguished with the lowest prize. Due to the small number of the entrepreneurs on the implementation stage (N=15) and due to the small variance on the implementation awards received, no more data analysis can be computed.

8.5. General discussion

This study offered an empirically tested proposal for an entrepreneur selection method. Surprisingly, although a considerable amount of research has been carried out both on individual entrepreneurial characteristics and personnel selection, they have not yet been integrated. Thus entrepreneurship activity has gained no practical advantage from the knowledge amassed in these research fields. The idea for the entrepreneur selection method was based on this lack of integration between the literature on personnel selection and the literature on entrepreneurial characteristics. It included some subdimensions of the entrepreneurial potential construct, and allowed to test the adaptability of the construct to other contexts.

We aimed to present an entrepreneur selection method conducted on an entrepreneurship promotion program, including three stages. The program started with 74 participants, and in accordance to the results from the entrepreneur selection method, 34 participants were selected to the second stage. At the end of the second stage, the participants presented their business idea plan and based on its assessment, 15 participants were selected to the implementation stage. During the implementation

stage, the 15 entrepreneurs were integrated in nine entrepreneurial projects which were awarded on a public session by a judge expert panel. Thus, all the entrepreneurs selected during the three stages of the entrepreneurship program were successful on the implementation of entrepreneurial business.

In sum, the results of the this longitudinal study with three research stages showed that: (a) the inclusion of an entrepreneur selection method on a entrepreneurship program is relevant to the program success, as allows the selection of the participants with a highest potential; (b) the entrepreneur selection method was successfully able to select the highest potential participants, as all the participants selected were able to accomplish a business plan which was successfully rated by an expert judge panel; (c) the criteria selection to the training stage were general intelligence, logic reasoning; persuasion, resources mobilization capacity, vision, project relevance, economic viability, and resources acquisition; (d) the selection criteria to the implementation stage were the project relevance, economic viability, resources acquisition, persuasion, resources mobilization capacity and vision.

8.5.1. Theoretical contributions

The entrepreneur selection research is based on the theoretical gap between the integration of personnel selection literature and entrepreneurs' characteristics literature. Although the shared assumption on the strong interdependence between the entrepreneurial activity and the human performance (e.g., Baum, Frese, Baron, & Katz, 2007), there was a clear absence on the research on the entrepreneur selection.

We developed the framework for entrepreneur selection by designing an entrepreneur selection method for entrepreneurship promotion programs. Thus, the main theoretical contribution of this research resides in the enlargement of a research topic that gathers evidences from two already well-developed literatures: personnel selection and entrepreneurial characteristics. The entrepreneur selection method is an assessment tool which integrates the main characteristics that the literature has evidenced to be related to the person-entrepreneurship fit (Markman & Baron, 2003).

One of the characteristics of this methodology is that it includes multi-source assessment instruments. More specifically, data were collected through cognitive tests, personality tests, self-reported measures, interviews, and three different judging panels.

8.5.2. Practical implications, limitations and future research

This study presented some limitations. First, there were dimensions that were not included in the selection method as for example motivational aspects (Shane, Locke, & Collins, 2003). We hope that future research can improve this. Second, the methodology was tested on an entrepreneurship promotion program. The particular characteristics of such a program and participants could have a biased effect on the selection criteria. Thus, it is suggested that the entrepreneur selection method should also be tested in other entrepreneurship promotion contexts, such as technology-based ventures or university-entrepreneurship. The present research presents clear advantages and opens new research ways to the entrepreneur selection process. However, as any personnel selection process (e.g., Schmidt & Chan, 1998) the entrepreneurial potential selection methodology requires some adjustments.

This study produces different practical implications to different targets. Public policymakers interested in promoting greater entrepreneurial activity can now use the entrepreneur selection method we described. The business angels, risk investors, entrepreneurship promoters, public institutes, universities and any entity intending to promote and support entrepreneurs can now adapt the entrepreneur selection method to their purposes. These agents can now assess the potential of all the would-be entrepreneurs seeking their support through a theoretically based and empirically tested methodology. As a consequence, the reliability rate of their investment choices can increase.

The traditional approach of relying primarily on business plan submission and qualitative assessment can be improved on by adding the entrepreneur selection method set out in this study. These new insights will help incubators and policy makers identify which incubatee applicants have the highest chance of succeeding in their project proposals, and thus add value by avoiding misdirected budgets.

We also offered practical-based knowledge to show how it can be implemented in entrepreneurship programs. In future programs, it could be of interest to include mentoring whereby successful and unsuccessful entrepreneurs involved in previous entrepreneurship programs would help by advising others how to overcome certain obstacles. Additionally, formal work experience such as mentoring serves to strengthen feelings of self-efficacy for the tasks associated with owning and managing a business and achieving organizational goals (Scherer, Brodzinski, & Wiebe, 1990).

The entrepreneur selection method we implemented is an example of how practice can benefit from empirical evidences. If you are looking for potential entrepreneurs and if you have to decide in whom to invest your resources, you can add value to your decision-making by using this entrepreneur selection method. In general, entrepreneurship practice will improve significantly when theoretical models and empirical evidences become interconnected.

General discussion and conclusions of Part III

General discussion and conclusions of Part III

In Part III we addressed the individual part of the nexus (Shane, 2003) focusing on the characteristics that make entrepreneurs one of a kind. If everyone would be able to become a successful entrepreneur, truly almost everyone would intend to do it. However, entrepreneurs are not everyone, thus there are singular and idiosyncratic characteristics that are more related to the excellence and success in entrepreneurship. Part III addressed these characteristics and aspired to contribute to the theoretical development of entrepreneurs' characteristics literature.

Study 3 was entitled "*Psychosocial aspects of entrepreneurial potential*" and departed from the general question "*Which shared characteristics make entrepreneurs so special?*". The answer to this question generated a theoretical based model with the most relevant psychosocial characteristics related to the entrepreneurial success, i.e., the entrepreneurial potential. Consequently, based on this model and in the premise that entrepreneurial competencies can be developed and stimulated, we were able to identify which specific competencies future entrepreneurs needed to train and develop. Thus, we presented a theoretical model regarding the entrepreneurial potential construct, and the main psychosocial aspects that contribute towards an individual's preparedness to engage in activities typically associated with entrepreneurship. Building on previous evidences, we presented the theoretical model of entrepreneurial potential, including four main dimensions: entrepreneurial motivation, psychological competencies, social competencies and management competencies. Afterwards, we developed an instrument to assess the construct of entrepreneurial potential: the Entrepreneurial Potential Assessment Inventory (EPAI). Through several research steps, we were able to show that the EPAI is a tool with potential, by itself. In addition, we proposed an index – Entrepreneurial Potential Index (EPI) - which allowed to identify the relative positioning of an individual regarding his/her entrepreneurial potential. Considering the practical implications, this study presented two important outputs: the EPAI and the EPI. These tools are important to include on training and entrepreneurship promotion programs.

Study 4 reported the "*Socio-psychological characteristics of entrepreneurial teams: Profiling the entrepreneurial potential*". We focused on the entrepreneurial potential construct in entrepreneurial teams competing in a venture competition,

following a *proxy* for a longitudinal research. We assessed the entrepreneurial potential profile of entrepreneurial teams, and based on the results we were able to predict four track finalists and the grand finalist of the venture competition. The results based on the socio-psychological aspects of entrepreneurial potential profiles and team productivity of each team allowed to, seven months earlier, predict the grand finalist of the venture competition awarded by an international expert judge panel. Our results showed that the entrepreneurial potential profile can be a useful tool to point out successful and highly potential teams. Thus, in this study we presented the entrepreneurial potential model and inventory in a different context.

Study 5 entitled “*Entrepreneurs selection method for entrepreneurship promotion programs*” described a method for the selection of entrepreneurs, considering the entrepreneurs’ individual characteristics and the business opportunity viability. The methodology we described can help with making investment decisions by selecting those entrepreneurs most likely to succeed. The methodology involved two steps: the first focuses on the assessment of individual characteristics, using some dimensions of the entrepreneurial potential; and the second focuses on the evaluation of the business opportunity. We conducted a longitudinal study involving 74 would-be entrepreneurs, from which 15 were selected using the criteria established in the entrepreneur selection method. The results showed that the selected participants were successful in the implementation of their start-ups. This methodology we proposed can be a useful tool for policymakers interested in promoting entrepreneurial activity. Business angels, risk investors, entrepreneurship promoters, public institutes, universities and any entity intending to promote and support entrepreneurs can assess the potential of all the would-be entrepreneurs seeking their support through a theoretically based and empirically tested methodology. As a consequence, the reliability rate of their investment choices will be greater.

Results from study 3, 4 and 5 focus both on the psychosocial characteristics of entrepreneurs, and they are based on the general idea that entrepreneurial success is associated with a set of individual characteristics that can be evaluated and developed. More specifically, we presented the development of an empirical and technical tool - the Entrepreneurial Potential Assessment Inventory - which we then tested in two different contexts and settings: as a team profile in a venture competition; and as part of the entrepreneurs selection method.

There are four general conclusions on which we can reflect based on the evidences from these three studies. First, entrepreneurial potential exists and is a construct that combines common but distinctive characteristics of successful entrepreneurs. Entrepreneurial potential is the result of motives, competencies and capabilities, and is related to the success of entrepreneurial activities.

Second, entrepreneurial potential can be assessed by a specific instrument that allows to trace the profile of individuals, or teams, following their tendency to become, or not, future entrepreneurs.

Third, entrepreneurial potential is a theoretical model and instrument that can be a valuable tool to be used in different contexts. Here we shed some light on its use in two different contexts: in entrepreneurial teams and integrated in an entrepreneur selection method.

Fourth, entrepreneurship should borrow theories and empirical knowledge from personnel selection. It is possible to select would-be entrepreneurs based on their individual and business opportunity characteristics.

We do not have the pretension to assume that the entrepreneurial potential and entrepreneur selection method captures the entrepreneur in its entire and complete essence. There are idiosyncratic characteristics and individual differences, in such a way that no model can be absolute. Furthermore, we assume that entrepreneurial behaviours may be learned, developed and trained during life course. Entrepreneurial potential is not the result of a conjugation of personality traits (Zhao, Seibert, & Lumpkin, 2010; Brandstätter, 2011) but is the expression of a constellation of attributes that can be developed through life.

In summary, the EPAI and the entrepreneur selection methodology are two tools that can contribute to answer the question *Is this the right person to undertake this entrepreneurial activity?* Despite their limitations and need to further development, both studies 3, 4 and 5 present a ground for future research developments.

In Part IV, “*General Conclusions*”, we reflect about the main conclusions of this thesis. We also include reflections about the theoretical, methodological and practical contributions of the empirical studies.

PART IV.
GENERAL CONCLUSIONS

Entrepreneurship is on the worldwide agenda. The media highlights cases of successful entrepreneurs, promising business ideas and a broad range of activities that aim to catalyse entrepreneurship. National and international policy decision-makers refer to entrepreneurship as one of the main mechanisms driving economical development, as demonstrated by research on this topic (e.g., Acs & Szerb, 2007; Acs, 2006; Martin, Picazo, & Navarro, 2010; Stel, Carree, & Thurik, 2005; Wong, Ho, & Autio, 2005).

In the present context of social and economic in Portugal, specifically, and in Europe, in general, entrepreneurship appears as a *ray of light*. It is believed as a solution to countries' main socio-economic problems such as unemployment, economic downturn and deep changes in employment patterns that prevailed in the second half of the 20th century.

Although entrepreneurship can be an important mechanism for economic and social growth, expectations concerning its ability to miraculously overcome current difficulties are somewhat exaggerated and largely the result of "*wishful thinking*". In fact, entrepreneurship will certainly not be able to deliver on its promise if we continue conceptualizing it as an isolated entity with no connection to social, group and individual levels of analysis.

An attempt to do so is to assume that entrepreneurship is a process that occurs over time. It involves distinct but closely interrelated phases, and it is affected by factors of different levels of analysis. It starts with the generation of an idea for a new product or service, which can occur at an individual level; then the necessary resources to launch the business must be found, at a team level and, finally, there is the actual development of a successful entrepreneurial activity, which occurs naturally in a social context.

In this sense, there are two critical variables to the development of entrepreneurial activity and these constitute the entrepreneurship nexus: business opportunities and the individual entrepreneur. In other words, successful entrepreneurship is the combination of a profitable and innovative business opportunity, and an individual with specific psychosocial characteristics and motivational patterns.

Because the entrepreneurial business idea should, in principle, comprise three fundamental characteristics: innovation, desirability and profitability (Baron, 2006), it becomes essential to understand *how* and *why* the recognition process of these opportunities occurs. The information (Kirzner, 1973) and changes (Baron, 2004a) that

occur in the environment are key to this process, as are the cognitive structures developed by individuals through life experience (e.g., Baron and Ensley, 2006; Grégoire and Shepherd, 2012). Thus, the process of business opportunity recognition is presented as the assignment of a typical opportunity pattern to perceived changes in the environment.

To recognize a business opportunity, it is necessary that the individual is aware of the changing environment and realises that each situation is a potential source of opportunity. Alertness (Kaish and Gilad, 1991; Gaglio and Katz, 2001), observation, and prior knowledge (Lee, Herr, Kardes and Kim, 1999; Shane, 2000; Shepherd and DeTienne, 2005) are important constraints and conditions for the generation of opportunities. Thus, this process is idiosyncratic. Different individuals exposed to the same information, may recognize different business opportunities. In addition to individual differences in knowledge, experience, and alertness, the diversity of interests and passions (Cardon, 2008; Cardon, Wincent, Singh and Drnovsek, 2009; Chen, Yao and Kotha, 2009) are also determinants of business opportunity recognition. There is a greater tendency for the recognition of opportunities in areas of greater interest, passion or vocation.

The psychosocial characteristics of entrepreneurs have also been studied, and their idiosyncrasies show that they have a distinctive profile and critical motivational patterns. In general, entrepreneurs are characterized as individuals with high motivational levels. They are clearly focused and oriented towards their objective (Shane, Locke and Collins, 2003; Baum and Locke, 2004), and they have high self-efficacy (Chen, Greene and Crick, 1998; Zhao, Seibert and Hills, 2005). Moreover, these individuals have a particular pattern of social, psychological, and management skills, allowing them to interact more effectively with others, to manage businesses with a critical and flexible strategy, and to design and implement alternative plans for unanticipated events.

Main theoretical and empirical contributions

Focusing on the opportunity side of the nexus and on the early stages of entrepreneurship process we aimed: (a) to explore the role of experience on the development of cognitive maps in business opportunities, decision to launch a venture and motivation; and (b) to understand the organization of business opportunity and

decision to launch a venture prototypes. These two objectives were addressed in study 1 and 2, respectively. Focusing on the individual side of the nexus at pre-entrepreneurial stages, we aimed: (c) to build a theoretical model on the entrepreneurial potential, and a measurement instrument that assesses this theoretical construct; and (d) to build and test a procedure for selection of future entrepreneurs. These objectives were accomplished in studies 3, 4 and 5.

This thesis focuses on the individual level and on the early stages of the entrepreneurship process. We studied some aspects from the individual-opportunity nexus (Venkataraman, 1997; Shane and Venkataraman, 2000; Shane, 2003; Shane, 2012), using cognitive theory and the literature on entrepreneurs' characteristics. In chapter 6 we raised four questions that were specifically answered in the four empirical studies.

The first question was "*how do different entrepreneurial experience levels influence the structure and evolution of cognitive maps in the early entrepreneurship stages?*". To answer to this question we interviewed three different samples which allowed to perceive a *proxy* longitudinal scope over the cognitive maps in the early entrepreneurship stages. Study 1 suggested that individuals with greater entrepreneurial experience have richer, clearer and simpler cognitive maps for entrepreneurial motivation, business opportunity recognition, and decision to launch a venture - than individuals with less experience. Study 1 was based on motivational, opportunities, and decision making theories. We argued that our approach can capture the dynamic processes of entrepreneurship early stages and we justified that based on our sample, which included three different groups at different stages. This argument was suitable, but the dynamic of early entrepreneurship stages could be captured more accurately using other approaches, such as longitudinal studies. Nevertheless, this research shows that the cognitive structures of business opportunity, decision to launch a venture and entrepreneurial motivations are dynamic, experience and knowledge related, thus contributing to cognitive theory about the early stage of the entrepreneurial process., These findings suggest that entrepreneurship education and learning, for instances, shall take into consideration the development of trainees' cognitive structures (Santos, Curral & Caetano, 2010).

The second question was "*what are the basic perceptual and cognitive structures in opportunity recognition and decision to exploit it?*". To answer this question we integrated theoretical inputs from cognitive theory and information

processing strategies, with the pattern recognition theory in opportunities. We used a sample of founder entrepreneurs who retrospectively identified the important characteristics to recognize the business idea and the decision to exploit it. The results indicated that the basic perceptual and cognitive structures of opportunity recognition are business opportunity utility and business opportunity distinctiveness. In the decision to launch a venture, the basic perceptual and cognitive structures are the motivational and feasibility aspects of the decision (Santos, Ceatano, Baron & Curren, under review). Study 2 was a development of Baron and Ensley (2006) paper, one of the pioneer contributions about cognitive processes underlying business opportunity and decision making processes. Simply put, our study aimed to uncover possible dimensions in the prototype items suggested by Baron and Ensley (2006). We also discussed our theoretical approach and results in light of the structural alignment view. However, our data is not able to test the structural alignment view and to compare both results. As a future step, it would be important to collect data that could be able to compare both approaches. The study would also benefit from a bigger sample, that would allow to carry out the sophisticated analytical procedures, such as multi-groups factor analysis which would allow to test models between different samples (nascent vs. established entrepreneurs), for example.

The third question was “*what skills, competencies, motives and personal characteristics do entrepreneurs need to succeed?*”. Study 3 suggested that successful entrepreneurs need entrepreneurial motivations together with psychological, social and management competencies. These four main dimensions include the following sub dimensions: desire for independence, economic motivation, innovation capacity, emotional intelligence, resilience, communication and ability to persuade, network development capacity, vision, resource mobilization capacity, leadership capacity and entrepreneurial self-efficacy (Santos, Caetano & Curren, 2010). Taken together, they constitute what we defined as the entrepreneurial potential construct (Santos, Caetano & Curren, in press). The entrepreneurial potential model would benefit from multi source data, preventing from source and recall bias. We did not discuss explicitly the role of prior knowledge and experience in the entrepreneurial potential model. Both prior knowledge and previous experience have to be considered as assumptions of entrepreneurial potential, as they are related to entrepreneurial outputs (Shane, 2000; Shepherd & DeTienne, 2005).

The fourth question was “*the socio-psychological characteristics of entrepreneurial teams contribute towards identifying the most successful entrepreneurial projects?*”. Our results suggested that entrepreneurial teams have different socio-psychological profiles. More specifically, in a context of a venture competition contest, teams with higher results in the socio-psychological aspects and on team productivity were the finalists in the final track session of the competition. Thus, our results suggest that the answer to our question is positive. The socio-psychological characteristics of entrepreneurial teams do contribute towards identifying the most successful entrepreneurial projects (Santos, Caetano & Costa, under review). This study leaves some relevant questions without answer, though. For example, the entrepreneurial potential construct needs further clarification at the team level. Moreover, we used a composition model and in future studies it would be interesting to use compilation models, testing the evolution over time.

The fifth question was “*what individual and business opportunity characteristics are critical to the selection of entrepreneurs?*” Based on a longitudinal design, study 5 showed that the entrepreneur selection method of future entrepreneurs involves the assessment of the individual and business opportunity characteristics. On the individual characteristics side, the selection criteria for would-be entrepreneurs were general intelligence, logical reasoning; ability to persuade, resource mobilization capacity and vision. On the opportunity characteristics side, the selection criteria for would-be entrepreneurs were: the project’s relevance, economic viability, and resources acquisition (Santos & Caetano, 2010). Despite the fact that we can justify and argument the relevance of each one of the characteristics we used, it is true that this study would benefit from the comparison with other measures. So, we could have compared our methodology and model with others, so that we could more strongly prove that the one we proposed is more accurate in predicting successful entrepreneurial activities. Furthermore, when we compare the results between the individuals that were selected to continue in the entrepreneurship program with those individuals who were not selected, we can evidence that there were many factors that had no predictive power. To some extent, there were quite similar values for selected and non-selected individuals.

Table 9.1. presents an overview of the main research questions and main theoretical, empirical and practical contributions obtained in this thesis.

Table 9.1. *Synopsis of the empirical studies and results*

Study	Main research question	Main theoretical and empirical contributions	Main practical contributions
Study 1 - Cognitive maps in the early entrepreneurship stages: From motivation to implementation	How do different entrepreneurial experience levels influence the structure and evolution of the cognitive map at the early entrepreneurship stages?	Individuals with a greater entrepreneurial experience have richer, clearer and simpler cognitive maps for the early entrepreneurship stages: entrepreneurial motivation, business opportunity recognition and decision to launch a venture	Academic programmes shall take into account the developmental characteristics of trainees' cognitive structures
Study 2 - Prototype models of opportunity recognition and the decision to launch a new venture: Identifying the basic dimensions	What are the basic perceptual and cognitive structures in opportunity recognition and decision to exploit it?	The basic perceptual and cognitive structures of opportunity recognition are business opportunity utility and business opportunity distinctiveness. In the decision to launch a venture, the basic perceptual and cognitive structures are the motivational and feasibility aspects of the decision	Business opportunity utility, business opportunity distinctiveness and the motivational and feasibility aspects of the decision can be a self-evaluation tool for would-be entrepreneurs.
Study 3 - Psychosocial aspects of entrepreneurial potential	What skills, competencies, motives and personal characteristics do entrepreneurs need to succeed?	Successful entrepreneurs need entrepreneurial motivations together with psychological, social and management competencies. The entrepreneurial potential can be assessed by an Inventory (EPAI)	The Entrepreneurial Potential Assessment Inventory (EPAI) is a tool that can facilitate assessment of an individual potential to be engaged in entrepreneurial activities.
Study 4 - Socio-psychological characteristics of entrepreneurial teams: Profiling the entrepreneurial potential	The socio-psychological characteristics of entrepreneurial teams contribute towards identifying the most successful?	Teams with higher results in the socio-psychological aspects and on team productivity contribute towards identifying the most successful entrepreneurial projects	The Entrepreneurial Potential Assessment Inventory (EPAI) is a valuable tool to be used with entrepreneurial teams, in order to indicate the teams with a greater potential to succeed.
Study 5 - Entrepreneurs selection method for entrepreneurship promotion programs	What entrepreneurial potential dimensions and business opportunity characteristics are critical to the selection of successful entrepreneurs?	On the individual characteristics side, the selection criteria for would-be entrepreneurs were general intelligence, logic reasoning; ability to persuade, resources mobilization capacity and vision. On the opportunity characteristics side, the selection criteria for would-be entrepreneurs were the project relevance, economic viability, and resources acquisition	Individual characteristics and business opportunities characteristics are critical dimensions to be included in an entrepreneur selection method. Entrepreneurial potential dimensions and business opportunity utility are critical criteria for success.

Practical implications: Tools and strategies to enhance entrepreneurship in Portugal

The empirical studies in this thesis include also some tools and strategies that can be used to enhance entrepreneurship, specifically in the context of Portugal. In general, entrepreneurship practices and initiatives can benefit from empirical evidences based on scientific studies. In this sense, we believe that our studies offer relevant contributions to the practice of entrepreneurship in Portugal, which can be integrated in different entrepreneurship agents: business angels, venture competitions, policy makers and educational settings.

The study “*Prototype models of opportunity recognition and the decision to launch a new venture: Identifying the basic dimensions*” concludes that the process of business opportunity recognition is guided by two main dimensions: business opportunity utility and business opportunity distinctiveness. Additionally, the decision to launch a venture is guided by two aspects: motivational and feasibility aspects of the decision making.

These are contributions that are valuable to entrepreneurship training, and that can be introduced in workshops and lectures that aim to stimulate students in the early stages of entrepreneurship. Teachers and facilitators in entrepreneurship can now guide future entrepreneurs to recognise business opportunities based on their utility and distinctiveness, and to decide to exploit it based on motivational and feasibility criteria (e.g., Sarkar, 2010). Training in entrepreneurship is frequent among the Portuguese Universities, but there is a need to increase the relation between training, incubators, and research centers (Redford, 2006; Santos, Pimpão, Costa & Caetano, 2013).

Second, this study presents also a survey that allows assessing an opportunity and the characteristics of the decision. In other words, an individual who wants to assess his or her opportunity can use the opportunity recognition survey and analyse their scores as Baron and Ensley (2006) did with mature entrepreneurs. The same is true for the assessment of the decision to launch or not the venture. These tools are quite relevant to would be entrepreneurs, teachers, participants in entrepreneurship programs, and venture capitalists. Would-be entrepreneurs and external advisors can now benefit from one additional input to increase validity to the decision inherent to early stages of entrepreneurship.

The three studies of Part III of this thesis offer tools and methods focused on the individual characteristics of the entrepreneur. More specifically, the *Entrepreneurial Potential Assessment Inventory* (EPAI) allows to portrait the entrepreneurial potential profile of an individual. Against a background of economic and social crisis, entrepreneurship presents itself increasingly as a solution for self-employment (De Nardi and Villamil, 2009). In this sense, the EPAI can play a critical role in the early stages of the entrepreneurial process: assessing the main skills necessary to develop a successful entrepreneurial business. This is useful for would-be entrepreneurs, who want to know their specific psychosocial strengths and weakness. Furthermore, the entrepreneurial potential profile is an useful output to include in the assessment of individuals and teams who want to become entrepreneurs. If the individual part of the nexus is so relevant for entrepreneurial success, it is really critical to specify the psychosocial profile of an individual.

The use of the entrepreneurial potential profile among entrepreneurial teams was also demonstrated in study 4. There are several venture competitions in Portugal nowadays and most of them rely mostly on the entrepreneurial project. The entrepreneurial potential profile is a relevant tool that can add value among teams, and be used as one other criteria to decision making processes. The methodology for the selection of future entrepreneurs is also a valuable tool that can be used in entrepreneurship promotion settings. One of the highest risks in entrepreneurship promotion is to invest resources in individuals and opportunities that are not as successful. Thus, it is critical to be able to select those individuals and projects with the greatest likelihood of success in order to avoid misdirecting budgets.

Recommendations for future research

This thesis started with a quote from Kirzner (1973): “*There is little I will say that has not been said somewhere by someone*” (p. 3). We decided to include this quotation because this thesis is focused on the two most relevant, and consequently, most researched topics in entrepreneurship: opportunities and individuals. Considering the limitations of our studies, we suggest that future research on the opportunity side of the nexus tests the relation between pattern recognition theory, structural alignment and effectuation theory. On the scope of cognitive processes, these are the three theoretical

arguments that are more relevant nowadays, and it is needed to uncover how they complement each other, or the specific conditions under which they prevail.

Moreover, as a methodological approach, cognitive maps could be assessed by different strategies that are less sensitive to researchers' bias, such as quasi-experiments based on survey and quantitative methods. For example, Carsrud, Brännback and Nordberg and Renko (2009) used an exploded logit model based on ranking answers to present cognitive models about the perception of growth and critical success factors related to management experience. A kind of an approach similar to this could complement the interview content analyse.

In the individual side of the nexus, the entrepreneurial potential model is a construct that is open to a broad range of future research paths. It is relevant to investigate entrepreneurial potential in different contexts, such as social entrepreneurship, intrapreneurship, academic entrepreneurship, for example. The entrepreneurial potential model would also benefit from multi source data, avoiding source and recalling bias. Future research can also integrate the prior knowledge and experience in the model, as they are related to entrepreneurial outputs. Furthermore, it is critical to analyse entrepreneurial potential at different levels of analysis. In study 5 we designed the entrepreneurial potential profile of teams, but the measures were at the individual level. To achieve the team level, we would have to transform questions so that they refer to the team level, changing the "I" wording (referring to the entrepreneur) to the "we" (referring to the entrepreneurial team). This is a suggestion for future research, including both the specification of the theoretical model at the team level, and the adaptation of the instrument.

The process of selection of future entrepreneurs is also an open field to new research paths. We based the methodology in the more robust criteria evidenced in personnel selection (i.e., cognitive competencies and personality characteristics), in psychosocial characteristics of entrepreneurs and in business opportunity characteristics. Future research could test the entrepreneur selection method in different settings, such as technology-based ventures or university-entrepreneurship, and follow-up of the finalists of the entrepreneurship promotion program. Thus, the criteria variable of future research could consider the financial performance of start-ups.

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APPENDICES

Appendix 1. Interview guide - Study 1

Guião da entrevista

Objectivos: Identificar como é que processa a identificação de uma oportunidade de negócio; Identificar quais são as motivações subjacentes à criação de um negócio; Identificar como se decide lançar o negócio; Identificar o hetero-conceito percebido do empreendedor de referência.

Introdução: explicação do objectivo e importância da colaboração, garantir a confidencialidade e agradecer a colaboração. Exemplo:

“Muito obrigado por ter aceite participar nesta entrevista. A entrevista que lhe vou fazer destina-se a uma investigação no âmbito de uma tese de Doutoramento sobre a forma como as pessoas identificam oportunidades de negócio. As suas respostas são confidenciais.”

P1. Pode-me falar um pouco do seu percurso profissional até aqui?

P2. Neste momento têm alguma ideia para a criação de um negócio?

a) Em que área de negócio se insere?

P3. Já tinha alguma experiência prévia na área do negócio?

P4. Até que ponto considera que a sua experiência profissional anterior é diferente / ou está próxima desta oportunidade de negócio?

P5. Fale-me do que o levou a criar esse negócio? Ou seja, qual é a motivação subjacente à criação do seu negócio?

P6. Descreva a ideia para o seu novo negócio (Baron & Ensley, 2006).

P7. Como identificou essa oportunidade de negócio?

b) Que factores foram determinantes para a identificação desse negócio?

c) Quando é que lhe surgiu a ideia para a oportunidade de negócio?

d) Quais foram os principais passos que deu?

P8. Porque é que sentiu que essa era uma ideia que valesse a pena? (Baron & Ensley, 2006)

P9. Quem foi a primeira pessoa com quem falou sobre o seu negócio?

a) Com quem mais trocou ideias e pediu conselhos?

b) Até que ponto essas pessoas tiveram influência na sua decisão?

P10. Em que factores baseará a sua decisão para a concretização desse projecto?

P11. Quais são as principais características que considera importante para um empreendedor? (Referir pelo menos 3).

P12. Conhece alguém que já tenha criado o seu próprio negócio?

P13. Como lida com o risco subjacente à criação de uma empresa?

P14. Já houve momentos ao longo da sua vida em que teve necessidade de recomeçar / redireccionar energias?

Fim da entrevista: agradecer novamente a colaboração do entrevistado

Exemplo: *“Muito obrigado pela sua colaboração. Não sei se gostaria de colocar alguma pergunta ou acrescentar alguma informação em relação às questões que lhe coloquei?”*

Appendix 2. Business opportunity and decision to launch a venture - survey with items used in study 2

INSTRUÇÕES

1. Não há respostas certas ou erradas. O que nos interessa é exclusivamente a sua opinião pessoal.
2. Seleccione com uma cruz (X) a sua resposta. Pode utilizar qualquer ponto da escala desde que o considere adequado.
3. Procure, por favor, responder a todas as questões.
4. As suas respostas são confidenciais.

A sua participação neste estudo é muito importante!

Obrigado pela sua colaboração!

Nota: Qualquer esclarecimento sobre este estudo deve ser remetido para susana.santos@iscte.pt

P1. Tendo em atenção o seu caso concreto, indique, por favor, em que medida cada um dos seguintes aspectos foi importante para ter conseguido identificar a sua oportunidade de negócio. Assinale, por favor, com uma cruz (X) a sua resposta na célula correspondente.

	Escala de resposta							
	Nenhuma Importân- -cia 1	2	3	Importân- -cia Média 4	5	6	Importân- -cia Máxima 7	Não Sei
1. Ir ao encontro das necessidades do cliente	1	2	3	4	5	6	7	NS
2. Ser capaz de responder às exigências de longo-prazo dos meus clientes	1	2	3	4	5	6	7	NS
3. Resolver as chatices dos meus clientes	1	2	3	4	5	6	7	NS
4. Melhorar a qualidade de vida dos meus clientes	1	2	3	4	5	6	7	NS
5. Os meus potenciais clientes quererem o que eu tenho para oferecer	1	2	3	4	5	6	7	NS
6. Ser rentável	1	2	3	4	5	6	7	NS
7. Gerar muito dinheiro	1	2	3	4	5	6	7	NS
8. Permitir-me levar dinheiro para casa	1	2	3	4	5	6	7	NS
9. Possibilidade de gerar dinheiro rapidamente	1	2	3	4	5	6	7	NS
10. Requerer pouco investimento	1	2	3	4	5	6	7	NS
11. Aceitação por parte dos potenciais clientes	1	2	3	4	5	6	7	NS
12. Requerer pouca mudança na tecnologia	1	2	3	4	5	6	7	NS
13. Ter poucas consequências negativas	1	2	3	4	5	6	7	NS
14. Implicar risco na produção	1	2	3	4	5	6	7	NS
15. Fornecer melhores características do produto / serviço oferecido	1	2	3	4	5	6	7	NS
16. Melhorar a qualidade do produto / serviço	1	2	3	4	5	6	7	NS
17. Melhorar o funcionamento do produto / serviço	1	2	3	4	5	6	7	NS
18. Permitir ganhar tempo	1	2	3	4	5	6	7	NS
19. Fazer mais do que outros produtos / serviços	1	2	3	4	5	6	7	NS
20. Possibilitar mudar o mercado	1	2	3	4	5	6	7	NS
21. Tornar-se um produto campeão	1	2	3	4	5	6	7	NS
22. Ter hipótese de ser o mais vendido	1	2	3	4	5	6	7	NS
23. Ter capacidade de dominância	1	2	3	4	5	6	7	NS

P2. Tendo em atenção o seu caso concreto, indique por favor até que ponto cada um dos aspectos que se apresentam foi importante para a sua decisão de implementar o seu projecto / negócio. Assinale, por favor, com uma cruz (X) a sua resposta na célula correspondente.

	Escala de resposta							
	Nenhuma Importân- -cia 1	2	3	Importân- -cia Média 4	5	6	Importân- -cia Máxima 7	Não Sei
1. Ter um modelo financeiro favorável	1	2	3	4	5	6	7	NS
2. Possibilitar largas margens de lucro	1	2	3	4	5	6	7	NS
3. Gerar rápido fluxo de dinheiro	1	2	3	4	5	6	7	NS
4. Ter pequenos ciclos de vendas	1	2	3	4	5	6	7	NS
5. Permitir um elevado retorno de dinheiro / baixo investimento	1	2	3	4	5	6	7	NS
6. Ser aconselhado por amigos	1	2	3	4	5	6	7	NS
7. Ter um conselho de um Consultor financeiro	1	2	3	4	5	6	7	NS
8. Ter um conselho de um Consultor	1	2	3	4	5	6	7	NS

Early stages in the entrepreneurship nexus: Business opportunities and individual characteristics

9. Ter um conselho legal	1	2	3	4	5	6	7	NS
10. O produto / serviço é único	1	2	3	4	5	6	7	NS
11. Nada é semelhante	1	2	3	4	5	6	7	NS
12. Ser diferente dos outros	1	2	3	4	5	6	7	NS
13. Ter uma nova tecnologia	1	2	3	4	5	6	7	NS
14. Permitir aplicações diferentes	1	2	3	4	5	6	7	NS
15. Existir um mercado grande	1	2	3	4	5	6	7	NS
16. Ser uma necessidade desconhecida	1	2	3	4	5	6	7	NS
17. Ter uma entrada fácil no mercado	1	2	3	4	5	6	7	NS
18. Existirem poucos concorrentes	1	2	3	4	5	6	7	NS
19. Ter um mercado maciço	1	2	3	4	5	6	7	NS
20. Ser muito lógico	1	2	3	4	5	6	7	NS
21. Acreditar que vai funcionar	1	2	3	4	5	6	7	NS
22. Ser um negócio bom	1	2	3	4	5	6	7	NS
23. Não ter qualquer dúvida	1	2	3	4	5	6	7	NS
24. Ter um sentimento positivo	1	2	3	4	5	6	7	NS

3.1.	Sexo <input type="checkbox"/> ₁ Masculino <input type="checkbox"/> ₂ Feminino
3.2.	Idade _____ anos
3.3. Área de Especialização...	<input type="checkbox"/> ₁ Matemática <input type="checkbox"/> ₉ Química e Bioquímica <input type="checkbox"/> ₁₇ Ciências e Tecnologias do Ambiente <input type="checkbox"/> ₂ Física <input type="checkbox"/> ₁₀ Ciências da Saúde <input type="checkbox"/> ₁₈ Ciência Animal e Veterinária <input type="checkbox"/> ₃ Engenharia <input type="checkbox"/> ₁₁ Economia <input type="checkbox"/> ₁₉ Gestão <input type="checkbox"/> ₄ Ciências Jurídicas <input type="checkbox"/> ₁₂ Ciências Políticas <input type="checkbox"/> ₂₀ Sociologia e Demografia <input type="checkbox"/> ₅ Geografia <input type="checkbox"/> ₁₃ Ciências da Educação <input type="checkbox"/> ₂₁ Psicologia <input type="checkbox"/> ₆ Linguística <input type="checkbox"/> ₁₄ Ciências da Comunicação e Informação <input type="checkbox"/> ₂₂ Filosofia <input type="checkbox"/> ₇ História e Antropologia <input type="checkbox"/> ₁₅ Arquitectura e Urbanismo <input type="checkbox"/> ₂₃ Ciências do Desporto <input type="checkbox"/> ₈ Ciências da Terra e Espaço <input type="checkbox"/> ₁₆ Ciências Biológicas <input type="checkbox"/> ₂₄ Outra
3.4.	Tem um negócio empreendedor? <input type="checkbox"/> ₁ Sim <input type="checkbox"/> ₂ Não
3.5.	Se Sim, por favor diga o nome da(s) sua(s) empresa(s):
3.6.	Diga a área de negócio:
3.7.	Descreva o seu negócio:
3.8.	Há quanto tempo fundou o seu negócio?
3.9.	Considera que nos próximos 6 meses haverá boas oportunidades para começar um novo negócio na área em que reside? <input type="checkbox"/> ₁ Sim <input type="checkbox"/> ₂ Não
3.10.	Está a tentar começar um novo negócio, sozinho ou com colegas? <input type="checkbox"/> ₁ Sim <input type="checkbox"/> ₂ Não
3.11.	Nos últimos 12 meses, fechou, descontinuou ou desistiu de algum negócio? <input type="checkbox"/> ₁ Sim <input type="checkbox"/> ₂ Não
3.12.	No meu telemóvel tenho aproximadamente o seguinte número de contactos: <input type="checkbox"/> ₁ até 249 <input type="checkbox"/> ₂ 250-499 <input type="checkbox"/> ₃ 500-699 <input type="checkbox"/> ₄ 700-999 <input type="checkbox"/> ₅ 1000 ou mais
3.13.	No meu computador, entre contactos de email, Messenger, Facebook, ou Skype, tenho aproximadamente o seguinte número de contactos <input type="checkbox"/> ₁ até 249 <input type="checkbox"/> ₂ 250-499 <input type="checkbox"/> ₃ 500-699 <input type="checkbox"/> ₄ 700-999 <input type="checkbox"/> ₅ 1000 ou mais

Appendix 3. Entrepreneurship individual characteristics survey - compilation of items used in study 3

INQUÉRITO

INSTRUÇÕES

1. Este questionário tem como objectivo saber a sua opinião acerca de um conjunto de questões sobre o empreendedorismo.
2. **Não há respostas certas ou erradas.** O que nos interessa é **exclusivamente a sua opinião pessoal, utilizando qualquer ponto da escala de resposta que considere adequado.**
3. Por favor, assinale com uma cruz (X) a célula que corresponde à sua resposta.
4. **Procure, por favor, responder a todas as questões.**
Responda a todo o questionário de seguida, sem interrupções.

A sua participação neste estudo é muito importante!
Obrigado pela sua colaboração!

Nota: Qualquer esclarecimento sobre este estudo deve ser remetido para susana.santos@iscte.pt

	Disco rdo compl etamente	Disco rdo em parte	Não discor do, nem concor rdo	Conc ordo em parte	Conc ordo compl etamente	Não sei
1. Tendo em conta a sua maneira de ser habitual, indique por favor em que medida discorda ou concorda com cada uma das seguintes afirmações. Assinale, por favor, com uma cruz (X) a sua resposta na célula correspondente.						
1. Na maioria das situações consigo que as outras pessoas façam o que eu quero.....	1	2	3	4	5	NS
2. Quando quero que alguém mude o seu ponto de vista sobre um assunto, normalmente sou bem sucedido(a).....	1	2	3	4	5	NS
3. Normalmente, sou capaz de persuadir os outros em muitas coisas.....	1	2	3	4	5	NS
4. As pessoas conseguem sempre ler as minhas emoções, mesmo quando eu as tento esconder.....	1	2	3	4	5	NS
5. Conheço pessoas de sítios muito variados.....	1	2	3	4	5	NS
6. No último mês não acrescentei ninguém à minha rede de contactos no telemóvel.....	1	2	3	4	5	NS
7. Tenho dificuldade em mobilizar as outras pessoas a superarem os obstáculos no trabalho.....	1	2	3	4	5	NS
8. Lidero facilmente pessoas que têm ideias divergentes relativamente às iniciativas que procuramos concretizar.....	1	2	3	4	5	NS
9. Frequentemente surpreendo as pessoas com as minhas ideias novas.....	1	2	3	4	5	NS
10. Consigo fazer com que as pessoas tenham uma posição crítica nas iniciativas em que eu quero que elas se empenhem comigo.....	1	2	3	4	5	NS
11. Geralmente consigo mobilizar as pessoas para as iniciativas que proponho.....	1	2	3	4	5	NS
12. As pessoas frequentemente pedem-me ajuda para actividades criativas.....	1	2	3	4	5	NS
13. Normalmente continuo a fazer o meu trabalho exactamente da forma como aprendi.....	1	2	3	4	5	NS
14. Não sou uma pessoa muito criativa.....	1	2	3	4	5	NS
15. Gosto mais de um trabalho que exige aptidões específicas e práticas do que um trabalho que requer invenções.....	1	2	3	4	5	NS
16. Tenho controlo sobre as minhas emoções.....	1	2	3	4	5	NS
17. Eu reconheço facilmente as minhas emoções tal qual como as experiencio.....	1	2	3	4	5	NS
18. Eu sei muito bem o que as outras pessoas estão a sentir só de olhar para elas.....	1	2	3	4	5	NS
19. Uma das coisas que é mais importante para mim é ter um trabalho em que sou patrão de mim próprio(a).....	1	2	3	4	5	NS
20. Em períodos difíceis tenho tendência a focalizar-me naquilo que me ajuda a superá-los.....	1	2	3	4	5	NS
21. Em termos profissionais gostaria de vir a ter um emprego em que me digam claramente o que devo fazer.....	1	2	3	4	5	NS
22. Quando alguma coisa negativa me acontece fico sem vontade de reagir.....	1	2	3	4	5	NS
23. Um dos principais lemas que me tem orientado tem sido procurar ter uma vida independente.....	1	2	3	4	5	NS
24. Geralmente consigo resolver os problemas que tenho que enfrentar.....	1	2	3	4	5	NS
25. Quando decido iniciar algum projecto, sei que consigo levá-lo até ao fim.....	1	2	3	4	5	NS
26. Sei que de uma maneira ou de outra, geralmente consigo o que pretendo.....	1	2	3	4	5	NS
27. Consigo melhorar resultados quando as exigências do meu trabalho são muito difíceis.....	1	2	3	4	5	NS
28. Se alguma coisa é realmente importante para mim, invisto o que for necessário para a alcançar.....	1	2	3	4	5	NS
29. Corro riscos moderados e aplico-me para ter sucesso no trabalho.....	1	2	3	4	5	NS

P3. Por favor, responda agora a algumas questões sobre si e sobre o seu projecto / negócio. Estas perguntas têm como objectivo a caracterização global da amostra. Preencha os espaços em branco e seleccione a sua resposta com uma cruz (x)

1. Sexo..... ₁ Masculino ₂ Feminino

2. Idade _____ anos

3. Formação Académica

₁ Primário ₃ Secundário ₅ Mestrado Pré-Bolonha ₇ Doutoramento

₂ Básico ₄ Licenciatura ₆ Mestrado Pós-Bolonha

4. Área de Especialização...

₁ Matemática ₉ Química e Bioquímica ₁₇ Ciências e Tecnologias do Ambiente

₂ Física ₁₀ Ciências da Saúde ₁₈ Ciência Animal e Veterinária

₃ Engenharia ₁₁ Economia ₁₉ Gestão

₄ Ciências Jurídicas ₁₂ Ciências Políticas ₂₀ Sociologia e Demografia

₅ Geografia ₁₃ Ciências da Educação ₂₁ Psicologia

₆ Linguística ₁₄ Ciências da Comunicação e Informação ₂₂ Filosofia

₇ História e Antropologia ₁₅ Arquitectura e Urbanismo ₂₃ Ciências do Desporto

₈ Ciências da Terra e Espaço ₁₆ Ciências Biológicas

5. Situação profissional actual

₁ Empresário / Patrão ₃ Trabalhador por conta de outrem ₅ Trabalhador por contra própria

₂ Desempregado ₄ Estudante ₆ Outra

6. Estado Civil: ₁ Solteiro ₂ Casado ₃ Divorciado ₄ União de Facto ₅ Viúvo

7. No meu telemóvel tenho aproximadamente o seguinte número de contactos:

₁ até 249

₂ 250-499

₃ 500-699

₄ 700-999

₅ 1000 ou mais

8. No meu computador, entre contactos de email, Messenger, Hi5, ou Skype, tenho aproximadamente o seguinte número de contactos

₁ até 249

₂ 250-499

₃ 500-699

₄ 700-999

₅ 1000 ou mais

9. Quantas oportunidades de negócio concretizáveis já lhe ocorreram?... _____

10. Quantas dessas oportunidades de negócio pretende implementar? _____

11. Quantas oportunidades de negócio já implementou mesmo?.. _____

12. Quantas oportunidades de negócio gostaria de implementar nos próximos 2 anos? _____

Obrigado pela sua participação!

Appendix 4. Entrepreneurial team characteristics survey - items used in study 4

Instructions

This is a project that collects data for research purposes on the topic of entrepreneurship.

There are no right or wrong answers. You should answer according to your opinion using the points of the scale.

Please answer individually (according to your own opinion) and to all questions. The answers are confidential and you will not be identified individually in this study.

Your participation is very important. Thank you very much!

If you have any question, please contact us: susana.santos@iscte.pt; silvia_fernandes_costa@iscte.pt; antonio.caetano@iscte.pt

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree	Don't know
P1. Please indicate in what extent you agree with each statement.						
1. I am strong enough to overcome life's struggles.	1	2	3	4	5	DK
2. I can handle the situations that life brings.	1	2	3	4	5	DK
3. I often feel that there is nothing I can do well.	1	2	3	4	5	DK
4. I feel competent to deal effectively with the real world.	1	2	3	4	5	DK
5. I often think that I'm a failure.	1	2	3	4	5	DK
6. I usually feel I can handle the typical problems that come up in life.	1	2	3	4	5	DK

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree	Don't know
P2. Having in mind your usual way of acting, please point out the level of agreement or disagreement with the following sentences.						
1. Mostly, I am able to influence people in doing things which I want.	1	2	3	4	5	DK
2. I am able to convince people in changing their opinion.	1	2	3	4	5	DK
3. I am easily able to persuade people.	1	2	3	4	5	DK
4. I know people from different geographical locations/regions.	1	2	3	4	5	DK
5. I am easily able to lead people having different ideas than mine.	1	2	3	4	5	DK
6. People are frequently surprised by my new ideas.	1	2	3	4	5	DK
7. I can make people have a critical position on the activities they have to develop with me.	1	2	3	4	5	DK
8. I am easily able to mobilize people in my proposed activities.	1	2	3	4	5	DK
9. People frequently take my help in creative activities.	1	2	3	4	5	DK
10. I prefer doing jobs requiring specific and practical skills rather than innovations.	1	2	3	4	5	DK
11. I am able to identify my emotions easily as I experience them.	1	2	3	4	5	DK
12. I am easily able to recognize other's feelings by looking at them.	1	2	3	4	5	DK
13. The most important thing for me is to be my own boss.	1	2	3	4	5	DK
14. The main goal of my life is to lead an independent life.	1	2	3	4	5	DK
15. My main focus will be to make money.	1	2	3	4	5	DK
16. I can extend my financial resources for a project when required	1	2	3	4	5	DK
17. I do not encounter difficulties to adapt the aims (Objectives) of a project dependent on knowledge and resources.	1	2	3	4	5	DK
18. I can foresee what I want to achieve in two years	1	2	3	4	5	DK
19. One of the goals is to maximize my finances.	1	2	3	4	5	DK
20. Mostly, I am able to find necessary resources to complete the projects.	1	2	3	4	5	DK
21. I am able to accomplish unimaginable(extraordinary) activities.	1	2	3	4	5	DK
22. I can easily establish efficient strategies to accomplish my goals.	1	2	3	4	5	DK
23. Mostly, I am able to organize my resources to complete the projects.	1	2	3	4	5	DK
24. I believe it is important to have more money than needed to live.	1	2	3	4	5	DK
25. I am able to foresee and accomplish difficult tasks and take initiatives.	1	2	3	4	5	DK
26. I want to take my decisions over my personal and professional future.	1	2	3	4	5	DK
27. I like situations that really stretch my imagination.	1	2	3	4	5	DK
28. I tend to bounce back quickly after hard times .	1	2	3	4	5	DK
29. I usually take the initiative on any project I'm involved in.	1	2	3	4	5	DK
30. Being creative is an advantage in projects.	1	2	3	4	5	DK
31. I enjoy talking responsibility for things in the project.	1	2	3	4	5	DK
32. I usually take the initiative on any project I'm involved in.	1	2	3	4	5	DK
33. It is hard for me to snap back when something bad happens.	1	2	3	4	5	DK

34. It does not take me long to recover from a stressful event .	1	2	3	4	5	DK
35. I usually come through difficult times with little trouble .	1	2	3	4	5	DK
36. I think I can easily carry my team members with me when I have an idea.	1	2	3	4	5	DK
37. I tend to take a long time to get over set-backs in my life.	1	2	3	4	5	DK
38. I believe that a good imagination helps me do well at work.	1	2	3	4	5	DK
39. I like projects that really stretch my imagination.	1	2	3	4	5	DK

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree	Don't know
P3. Please indicate in what extent you agree with each statement.						
1. I believe that higher risks are worth taking for higher rewards.	1	2	3	4	5	DK
2. To me, the best possible plan is the plan that is risk-free.	1	2	3	4	5	DK
3. I like to take chances, although I may fail.	1	2	3	4	5	DK
4. When I have to make a decision for which the consequence is not clear, I like to go with the safer option although it may yield limited rewards.	1	2	3	4	5	DK
5. I like to try new things, knowing well that some of them will disappoint me.	1	2	3	4	5	DK
6. To earn greater rewards, I am willing to take higher risks.	1	2	3	4	5	DK
7. I seek new experiences even if their outcomes may be risky.	1	2	3	4	5	DK
8. I perceive the amount of work my team produces as really good.	1	2	3	4	5	DK
9. The quality of work my team produces is highly satisfying.	1	2	3	4	5	DK
10. My overall evaluation of my team's effectiveness is very good	1	2	3	4	5	DK

P4. Please answer some questions about yourself. These questions aim to provide a description of our sample.	
1. Sex	<input type="checkbox"/> ₁ Masculine <input type="checkbox"/> ₂ Feminine
2. Year of Birth	_____
4. Where are you from? (Please write the country)	_____
5. Highest education level	<input type="checkbox"/> ₁ Secondary school <input type="checkbox"/> ₃ Masters (Msc) <input type="checkbox"/> ₂ Bachelor (completed) Bsc <input type="checkbox"/> ₄ PhD
6. Did you have previous entrepreneurial experience?	<input type="checkbox"/> ₁ Yes <input type="checkbox"/> ₂ No
7. Please write the name of your Team.	_____
8. Please write your email	_____

Appendix 5. Compilation of some materials used on study 5

Guião da Entrevista

Introdução

Obrigado pela sua inscrição no _____ e por estar a colaborar agora na segunda fase do processo de selecção. Esta entrevista tem como objectivo conhecê-lo um pouco melhor, e sobretudo conhecer o seu projecto de negócio.

Então o seu projecto de negócio é sobre...

P1. Já têm uma ideia de negócio para desenvolver?

Se tem uma ideia de projecto de negócio:

P2. Em que consiste esse projecto? Pode desenvolver-me um pouco o seu conceito de negócio?

P3. Como identificou essa oportunidade de negócio?

P5. Quais serão os seus principais concorrentes que identifica para o seu negócio?

P6. Em que aspectos acha que a sua vida vai mudar depois de abrir o seu negócio?

P9. Quais são os seus principais motivos para montar o seu projecto de negócio?

P10. Quais são as principais dificuldades que vai encontrar?

P11. Quais são os principais pontos fortes que o podem ajudar a ter êxito no negócio?

P12. A sua equipa é de X membros. Quem vai chefiar? (No caso de ser o próprio o chefe de equipa: porque é que é você a liderar a equipa? Por que razão é Y a chefiar a equipa?)

P13. Então e se o projecto falhar 6 meses depois, o que vai fazer da sua vida? Como vai reagir?

P14. Como tem sido o seu percurso escolar e profissional até agora?

P15. Porque é que se candidatou ao Programa _____?

P16. Como sabe há muitos candidatos, alguns deles vão ficar de fora. Se não for admitido na fase seguinte, o que vai fazer? Como irá reagir?

P17. Indique-me três razões que justifiquem que o senhor/a senhora fique na lista dos seleccionados para a fase seguinte.

P18. Ao longo da sua vida, já tentou implementar algum projecto?

NOME: _____
 IDADE: _____ NºBI / Nº AUTORIZAÇÃO RESIDÊNCIA: _____
 NOME DA EQUIPA A QUE PERTENCE: _____
 NOME DO PROJECTO QUE QUER DESENVOLVER: _____

INSTRUÇÕES

1. Não há respostas certas ou erradas. O que nos interessa é exclusivamente a sua opinião pessoal.
2. Para as respostas abertas, escreva a sua resposta no rectângulo indicado para o efeito. Para as respostas fechadas, seleccione com uma cruz (X) a sua resposta. Pode utilizar qualquer ponto da escala desde que o considere adequado.
3. Procure, por favor, responder a todas as questões. Responda a todo o questionário de seguida, sem interrupções.

P1. Tendo em atenção o seu caso concreto, indique, por favor, em que medida cada um dos seguintes aspectos foi importante para ter conseguido identificar a sua oportunidade de negócio. Assinale, por favor, com uma cruz (X) a sua resposta na célula correspondente.

	Escala de resposta							
	Nenhuma Importância 1	2	3	Importância Média 4	5	6	Importância Máxima 7	Não Sei 8
1. Ir ao encontro das necessidades do cliente	1	2	3	4	5	6	7	8
2. Ser capaz de responder às exigências de longo-prazo dos meus clientes	1	2	3	4	5	6	7	8
3. Resolver as chatices dos meus clientes	1	2	3	4	5	6	7	8
4. Melhorar a qualidade de vida dos meus clientes	1	2	3	4	5	6	7	8
5. Os meus potenciais clientes quererem o que eu tenho para oferecer	1	2	3	4	5	6	7	8
6. Ser rentável	1	2	3	4	5	6	7	8
7. Gerar muito dinheiro	1	2	3	4	5	6	7	8
8. Permitir-me levar dinheiro para casa	1	2	3	4	5	6	7	8
9. Possibilidade de gerar dinheiro rapidamente	1	2	3	4	5	6	7	8
10. Requerer pouco investimento	1	2	3	4	5	6	7	8
11. Aceitação por parte dos potenciais clientes	1	2	3	4	5	6	7	8
12. Requerer pouca mudança na tecnologia	1	2	3	4	5	6	7	8
13. Ter poucas consequências negativas	1	2	3	4	5	6	7	8
14. Implicar risco na produção	1	2	3	4	5	6	7	8
15. Fornecer melhores características do produto / serviço oferecido	1	2	3	4	5	6	7	8
16. Melhorar a qualidade do produto / serviço	1	2	3	4	5	6	7	8
17. Melhorar o funcionamento do produto / serviço	1	2	3	4	5	6	7	8
18. Permitir ganhar tempo	1	2	3	4	5	6	7	8
19. Fazer mais do que outros produtos / serviços	1	2	3	4	5	6	7	8
20. Possibilitar mudar o mercado	1	2	3	4	5	6	7	8
21. Tornar-se um produto campeão	1	2	3	4	5	6	7	8
22. Ter hipótese de ser o mais vendido	1	2	3	4	5	6	7	8
23. Ter capacidade de dominância	1	2	3	4	5	6	7	8

P2. Tendo em atenção o seu caso concreto, indique por favor até que ponto cada um dos aspectos que se apresentam foi importante para a sua decisão de implementar o seu projecto / negócio. Assinale, por favor, com uma cruz (X) a sua resposta na célula correspondente.

	Escala de resposta							
	Nenhuma Importância 1	2	3	Importância Média 4	5	6	Importância Máxima 7	Não Sei 8
1. Ter um modelo financeiro favorável	1	2	3	4	5	6	7	8
2. Possibilitar largas margens de lucro	1	2	3	4	5	6	7	8
3. Gerar rápido fluxo de dinheiro	1	2	3	4	5	6	7	8
4. Ter pequenos ciclos de vendas	1	2	3	4	5	6	7	8
5. Permitir um elevado retorno de dinheiro / baixo investimento	1	2	3	4	5	6	7	8
6. Ser aconselhado por amigos	1	2	3	4	5	6	7	8
7. Ter um conselho de um Consultor financeiro	1	2	3	4	5	6	7	8
8. Ter um conselho de um Consultor	1	2	3	4	5	6	7	8

9. Ter um conselho legal	1	2	3	4	5	6	7	8
10. O produto / serviço é único	1	2	3	4	5	6	7	8
11. Nada é semelhante	1	2	3	4	5	6	7	8
12. Ser diferente dos outros	1	2	3	4	5	6	7	8
13. Ter uma nova tecnologia	1	2	3	4	5	6	7	8
14. Permitir aplicações diferentes	1	2	3	4	5	6	7	8
15. Existir um mercado grande	1	2	3	4	5	6	7	8
16. Ser uma necessidade desconhecida	1	2	3	4	5	6	7	8
17. Ter uma entrada fácil no mercado	1	2	3	4	5	6	7	8
18. Existirem poucos concorrentes	1	2	3	4	5	6	7	8
19. Ter um mercado maciço	1	2	3	4	5	6	7	8
20. Ser muito lógico	1	2	3	4	5	6	7	8
21. Acreditar que vai funcionar	1	2	3	4	5	6	7	8
22. Ser um negócio bom	1	2	3	4	5	6	7	8
23. Não ter qualquer dúvida	1	2	3	4	5	6	7	8
24. Ter um sentimento positivo	1	2	3	4	5	6	7	8

P3. Pensando agora na sua maneira de ser habitual, indique por favor em que medida discorda ou concorda com cada uma das seguintes afirmações.

Assinale, por favor, com uma cruz (X) a sua resposta na célula correspondente.

	Discordo muito 1	Discordo 2	Discordo pouco 3	Não concordo nem discordo 4	Concordo pouco 5	Concordo 6	Concordo muito 7	Não Sei 8
1. Normalmente sinto que sou uma pessoa com sucesso.	1	2	3	4	5	6	7	8
2. Considero-me geralmente uma pessoa forte.	1	2	3	4	5	6	7	8
3. Sou capaz de gerir as situações que a vida impõe.	1	2	3	4	5	6	7	8
4. Normalmente sinto que faço tudo bem.	1	2	3	4	5	6	7	8
5. Sinto-me competente para lidar de maneira positiva com a vida real	1	2	3	4	5	6	7	8
6. Geralmente, sou suficientemente forte para ultrapassar as dificuldades impostas pela vida.	1	2	3	4	5	6	7	8
7. Sinto frequentemente que sou um sucesso.	1	2	3	4	5	6	7	8
8. Geralmente sinto que consigo gerir os problemas triviais da vida.	1	2	3	4	5	6	7	8
9. Desde que criei o meu negócio / projecto sinto que a minha qualidade de vida melhorou.	1	2	3	4	5	6	7	8
10. Desde que criei o meu projecto / negócio sinto que a minha vida social melhorou.	1	2	3	4	5	6	7	8

P4. Pensando ainda na sua maneira de ser habitual, indique por favor em que medida discorda ou concorda com cada uma das seguintes afirmações. Assinale, por favor, com uma cruz (X) a sua resposta na célula correspondente.

	Discordo muito 1	Discordo 2	Discordo pouco 3	Não concordo nem discordo 4	Concordo pouco 5	Concordo 6	Concordo muito 7	Não Sei 8
1. Os meus planos para o futuro são difíceis de atingir.	1	2	3	4	5	6	7	8
2. Quando alguma coisa imprevista me acontece geralmente encontro a solução.	1	2	3	4	5	6	7	8
3. Sinto que o meu futuro parece muito promissor.	1	2	3	4	5	6	7	8
4. Não estou seguro de que consiga realizar os meus objectivos no futuro.	1	2	3	4	5	6	7	8
5. Tenho sempre amigos / familiares com quem posso discutir assuntos pessoais.	1	2	3	4	5	6	7	8
6. Sinto-me muito feliz com a minha família.	1	2	3	4	5	6	7	8
7. As relações entre os meus amigos são muito fortes.	1	2	3	4	5	6	7	8
8. Não sei como resolver os meus problemas pessoais	1	2	3	4	5	6	7	8
9. Para mim é importante ser flexível nos contextos sociais.	1	2	3	4	5	6	7	8
10. Geralmente sou apoiado pelos meus amigos / família.	1	2	3	4	5	6	7	8
11. Em períodos difíceis os meus amigos / família encorajam-me relativamente ao futuro.	1	2	3	4	5	6	7	8
12. Acredito fortemente nas minhas capacidades.	1	2	3	4	5	6	7	8
13. Confio plenamente nas minhas decisões.	1	2	3	4	5	6	7	8
14. Tenho facilidade em criar novas amizades.	1	2	3	4	5	6	7	8
15. Quando preciso, tenho sempre alguém que me ajude.	1	2	3	4	5	6	7	8
16. Sinto-me óptimo quando tenho um objectivo claro a atingir.	1	2	3	4	5	6	7	8
17. Tenho dificuldade em lidar com novas pessoas.	1	2	3	4	5	6	7	8
18. Quando estou com outras pessoas raramente me divirto.	1	2	3	4	5	6	7	8

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19. Quando inicio novos projectos raramente tenho um plano bem definido.	1	2	3	4	5	6	7	8
20. Os meus amigos / família apreciam o meu modo de ser.	1	2	3	4	5	6	7	8
21. Geralmente organizo bem o meu tempo.	1	2	3	4	5	6	7	8
22. As regras e as rotinas simplificam muito a minha vida quotidiana.	1	2	3	4	5	6	7	8
23. Em períodos difíceis tenho tendência a focalizar-me naquilo que me ajuda a superá-los.	1	2	3	4	5	6	7	8
24. Os meus objectivos para o futuro estão ainda pouco claros.	1	2	3	4	5	6	7	8
25. Os acontecimentos que não consigo controlar na minha vida são uma constante preocupação.	1	2	3	4	5	6	7	8
26. Esforço-me sempre ao máximo.	1	2	3	4	5	6	7	8
27. Quando as coisas parecem correr mal, não desisto.	1	2	3	4	5	6	7	8
28. Quando estou sobre pressão consigo focalizar-me e pensar claramente.	1	2	3	4	5	6	7	8
29. Quando é preciso resolver problemas prefiro assumir a liderança.	1	2	3	4	5	6	7	8
30. Não sou uma pessoa fácil de desanimar perante o fracasso.	1	2	3	4	5	6	7	8
31. Consigo lidar bem com sentimentos desagradáveis.	1	2	3	4	5	6	7	8
32. Gosto de desafios difíceis.	1	2	3	4	5	6	7	8
33. Perante um fracasso procuro focalizar-me em mudar o que é preciso.	1	2	3	4	5	6	7	8

