

Expectation vs. Reality in the Field of Entrepreneurship

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Abstract

Cognitive elements are some of the most influential features characterizing the “entrepreneurial mind,” yet dominant explanatory frameworks have struggled to clarify how and why entrepreneurs’ behaviors vary so widely from others. Even individuals who come from similar conditions and share the same environment as entrepreneurs differ greatly in their perceptions and behaviors compared to their entrepreneur counterparts. Drawing on and contributing to the theoretical work in social cognitive theory, this research aims to improve the understanding of entrepreneurs’ cognitive processes by exploring Global Entrepreneurship Monitor data, which is the most comprehensive comparative database for entrepreneurship.

The first essay analyzes how different experts in entrepreneurship perceive their surrounding environment and opportunities. More specifically, this study discusses how experts who are entrepreneurs perceive their entrepreneurial ecosystem and opportunities differently than non-entrepreneur experts. It is suggested that people act the way they do not only because of different interpretations of the environment but also because of the relative importance they give to context and themselves in their mental frameworks.

The second essay analyzes the relationship between optimism about the emergence of future entrepreneurial opportunities and the length of entrepreneurial experience and the ways internal and external motivations can condition this relationship. Results suggest that although entrepreneurs are more optimistic about future business opportunities than non-entrepreneurs, experienced entrepreneurs tend to be less optimistic than novice and potential entrepreneurs.

Finally, based on evidence suggesting that entrepreneurs are likely to consider that fostering an innovative orientation is the best approach to increasing firm performance independent of the circumstances, the third study proposes a moderated mediation model of the effect of subjective valuations of innovation on entrepreneurs' strategic orientation and growth expectations. Entrepreneurs involved in innovative entrepreneurship are more likely to have higher growth expectation, with subjective valuations playing a direct and indirect role in their expectations.

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Chapter 1. Introduction

Introduction

1.1. Chapter Overview

Starting as a meme, “expectation vs. reality” has become a widespread joke across the internet, reflecting the disparity between mental images (i.e., expectations) and the current reality. In other words, this internet meme humorously shows the low representativeness of prior beliefs regarding some activities or concepts by contrasting them with facts, thereby providing evidence of the ironic difference between them.

In the field of entrepreneurship, theoretical studies and empirical evidence suggest that something similar appear to happen among entrepreneurs independently of their personal features and firm's characteristics. On one hand, studies in the field of entrepreneurship have explored a phenomenon called “entrepreneurial euphoria” (e.g., Cooper et al., 1988), which describes the excessive expectations of success that entrepreneurs have about their ventures. While psychological studies have observed that individuals tend to have optimistic bias, entrepreneurs are more likely to present it, both in absolute (i.e. underestimation of the likelihood of experiencing negative events and to an overestimation of the probability of experiencing positive events) and comparative terms (i.e. when is predicted that their personal outcome will be more favorable than the outcomes of their peers). On the other hand, there is statistical evidence showing high rates of new venture failure. For example, Shane (2009) noted that in the United States, the correlation across industries between start-up rates and failure rates is 0.77. Headd (2003) observed that 34% of new ventures did not survive the first two years, 50% did not survive four years, and 60% did not survive six years. Further, studies have pointed out

that, on average, nine out of 10 new businesses close in their first year (e.g., Phillips & Kirchoff, 1989). In a similar vein, analyzing the manufacturing sector, Dunne et al. (1989) observed that 62% to 80% of firms exited within 5 to 10 years, with most exits being failures.

With these high venture failure rates, Hayward et al. (2006) found it intriguing that so many ventures decide to start in the first place. Some studies have suggested that promoting entrepreneurship and small business development is indeed a bad policy since only more confident individuals move to entrepreneurship, and they frequently err about the optimum way to allocate resources (e.g., Shane, 2009). This argument is supported by evidence suggesting that most entrepreneurs are very bad at picking industries since they commonly choose the easiest industry to enter instead of the best industry for their start-ups (Johnson 2004). Hayward et al. (2006) suggested that entrepreneurs' cognitive biases are the drivers of venture formation and failure.

As a result, the catchphrase "expectation vs. reality" applied to the field of entrepreneurship tries to expose the inconsistencies between entrepreneurs' (overly) optimistic expectations and macro-level entrepreneurial activity (i.e., the high rates of business failures). Specifically, this research focuses on the way entrepreneurs perceive external signals of the environment and process that information in order to elaborate on their predictions about the future and on their expectations about their ventures.

The following three chapters focus on dealing with some of the inconsistencies suggested under a cognitive stream. This study is going to be based on GEM database, which define entrepreneurship as “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” (Bosma et al., 2012). GEM's methodology puts a special focus on the phases that combine the stage before the start of a new firm, called nascent entrepreneurship, and the stage directly after the start (owning-managing a new firm). Together these phases are defined as the early-stage entrepreneurial activity (TEA), where nascent entrepreneurs are the ones involved in setting up a business (first three months) and new business owners are firms up to 3.5 years old. When firms reach more than 3.5 years old, are defined as established business (Reynolds et al, 2005).

The first study (chapter 2) compares experts in the field of entrepreneurship by dividing them into two groups: experts who are also entrepreneurs and those who are not. These experts were asked to respond to several questions regarding the environment directly related to the entrepreneurial activity, such as government programs, entrepreneurial education, and commercial infrastructure, among others. Moreover, experts provided their level of agreement to several statements about their perceptions of business opportunities. Interestingly, the results suggest that while non-entrepreneur experts conceive the surrounding entrepreneurial environment more enhanced than entrepreneur experts, this last group tend to perceive more opportunities. It is important to mention that statistical differences are observed in both cases (i.e., environment and opportunities). In this sense, this first study is a first step, empirically confirming what theoretical studies have partially suggested before.

The second study (chapter 3) evaluates whether entrepreneurs, compared to non-entrepreneurs, are more optimistic in terms of their perceptions of a future with good business opportunities. Entrepreneurs were divided based on the specific entrepreneurial stage they were in, which, in turn, depended on the length of their entrepreneurial experience. Specifically, the classification included the following: non-entrepreneurs, intentional entrepreneurs, nascent entrepreneurs (up to 3 months), new business owners (from 3 months until 3.5 years), and established business owners (more than 3.5 years). This classification allowed me to observe in detail how each group evaluates the future in terms of promising business opportunities and its relationship with experience. The results suggest an inverse U-shaped relationship, where the groups of entrepreneurs with less entrepreneurial experience showed more optimism, whereas experienced entrepreneurs were less likely to perceive a future with good business opportunities. This study provides new empirical evidence about the relationship between optimism and entrepreneurial experience.

The third study (chapter 4) proposes a model for how growth expectations are constructed. Specifically, the model suggests that entrepreneurs' managerial decision to become an innovator or imitator will determine how high their aspirations are. Further, this decision to act as innovator or imitator will affect entrepreneurs' subjective evaluations of innovation: namely, innovative entrepreneurs are more likely to consider the benefits of innovation as being greater than entrepreneurs who decide not to undertake innovative entrepreneurship. However, this relationship is moderated by entrepreneurial experience since experienced innovative entrepreneurs have fewer expectations regarding

the benefits of innovation than novice imitator entrepreneurs. Further, subjective valuations of innovation also directly and indirectly determine entrepreneurs' growth aspirations, working as a mediation variable between the prior strategic decision to become an innovator or an imitator and growth aspirations. This study contributes to the entrepreneurship literature by detailing how innovation may act as a motivating force that increases entrepreneurs' aspirations.

The alignment of these three individual studies relies on the notion that having different cognitive structures and processes alters several decisions in the entrepreneurial process. The first study provides a broad big picture of the way entrepreneurs and non-entrepreneurs differ in their perceptions of reality. The second study suggests that, at least regarding optimism about future business opportunities, over-optimism is reduced when more entrepreneurial experience is acquired. Finally, the third study suggests that differences in entrepreneurs' subjective valuations will determine their strategic decisions and growth expectations.

1.2. Research Questions and Research Objectives

1.2.1. Research Questions

Despite that the main research question about entrepreneurial cognitions relies on the difference between entrepreneurs and non-entrepreneurs about how and why entrepreneurs act the way they do (Baron, 1998), and so as a whole, in this project is pointed to a similar vein, in particular, each study responds to specific research questions:

Study 1: Do entrepreneurs and non-entrepreneurs differ in the way they conceive their environment?

Study 2: How do optimistic entrepreneurs compare to non-entrepreneurs in terms of their perceptions of future business opportunities? What role does experience play in this context? Are novice entrepreneurs or experienced entrepreneurs more optimistic about future business opportunities? How do internal and external stimuli affect these perceptions?

Study 3: Are innovative entrepreneurs more optimistic than imitative entrepreneurs regarding their growth expectations? How do subjective valuations of innovation directly and indirectly determine entrepreneurs' expectations? Are innovative entrepreneurs more confident than imitative entrepreneurs regarding the benefits of innovation? Does the prior relationship depend on entrepreneurial experience?

1.2.2. Study Objectives

Building on the research questions stated above, this dissertation intends to contribute to the field of entrepreneurship by providing information about how entrepreneurs in different entrepreneurial stages conceive several important aspects of the venture-creation process. Specifically, under the framework of social cognition, the three essays contribute

to the field by providing new and novel information for a more comprehensive understanding of entrepreneurs by focusing on differences regarding perceptions of (1) their surrounding environment, (2) business opportunities, and (3) growth expectations.

The first study provides empirical evidence about how even among experts in the field of entrepreneurship, entrepreneurs and non-entrepreneurs differ in their perceptions of both the surrounding environment, which is directly related to entrepreneurial activity, and the business opportunities that exist therein. The second study builds on the first by adding evidence about how perceptions of future business opportunities are significantly different in non-entrepreneurs and entrepreneurs and by showing that over-optimism is reduced when entrepreneurs have more experience. Finally, the third study complements the first two as it provides a deeper look at entrepreneurs based on their managerial decisions by classifying them into two groups: innovative entrepreneurs and imitative entrepreneurs. In this case, a model is proposed suggesting that entrepreneurs' expectations are shaped by their subjective valuations and that entrepreneurial experience moderates this relationship.

Overall, these studies are not only interrelated under Mitchell et al.'s (2002) definition of cognitive entrepreneurship since they analyze decision making and behavior but also they add new evidence about how entrepreneurs create their assessments and judgments of business opportunities, venture creation, and growth. Therefore, although the next three chapters have their own literature reviews, the next section broadly outlines the main theoretical framework of this dissertation in order to elaborate intelligible studies. All three studies use data from the Global Entrepreneurship Monitor (GEM) database. The

GEM database was chosen because it provides the most comprehensive global comparative data about attitudes toward entrepreneurs, start-up business activities, and plans for starting and building businesses by geographic region and by country, thereby closely coinciding with reality.

1.3. Research Agenda

1.3.1. Theoretical Underpinnings

Entrepreneurs, like any other people, come from different areas, possess varied backgrounds, and have diverse personalities. Evidence suggests that they do not differ from non-entrepreneurs in any personality aspects, since diverse theories that analyze human behavior fail to explain why some people are entrepreneurs and others are not. Concretely, psychological research, mainly based on traits theories has attempted to describe the entrepreneurial personality as the key component in new venture formation, but efforts to isolate psychological or demographic characteristics that are common to all entrepreneurs, or are unique to entrepreneurs, have generally met with failure (Mitchell et al., 2002). Economic theories of entrepreneurship have been useful in helping to identify what entrepreneurship is and when it occurs, but they have been less beneficial in helping to explain the more micro questions of how and why. Even though business creation may be characterized as a masculine activity (Gupta et al., 2009), others aspects beyond gender have been shown to influence entrepreneurial intentions more directly (Krueger, 2000), such as social capital (Kor et al., 2007; Liñan, 2008; Liñan & Santos, 2007), level of information (Shane, 2000), and perceptions (Arenius & Minniti, 2005; Koellinger et al., 2007), among others. However, according to Shane et al. (2003), it is still is not clear

why entrepreneurs act the way they do. Mainly based on the fact that practitioners and venture capitalists have continued to consider the individual who forms the venture to be critical to its success, new approaches that explain the contribution of the entrepreneur to new venture formation continue to be needed, and as a result, several scholars have called for a re-examination of the people side of entrepreneurship (Grégoire et al., 2011; Mitchell et al., 2002).

According to Baron (2004), a cognitive approach is likely to be useful in explaining most of the main questions the field of entrepreneurship still cannot answer. Cognitive elements relate to the perceptions, analyses, and interpretations of the circumstances surrounding when and where action takes place (Baron, 1998; Busenitz & Barney, 1997; Grégoire et al., 2011). Theoretical studies have suggested that entrepreneurs possess cognitive processes that are different in certain occasions, such as regret over missed opportunities (e.g., Baron, 1998). Empirically, several studies have provided evidence suggesting that entrepreneurs tend to process and evaluate information differently than non-entrepreneurs (Allison et al., 2000; Boucknooghe et al., 2005). Consequently, it has been suggested that entrepreneurs think, analyze, and interpret the information differently than others individuals (Baron, 1998; Busenitz & Barney, 1997; Krueger, 2005).

This mainstream research focuses its attention on the way people process information. Mitchell et al. (2002, p. 97) defined entrepreneurial cognitions as “the knowledge structures that people use to make assessments, judgments, or decisions involving opportunity evaluation, venture creation, and growth”; is the mental model that people use to transform, reduce, elaborate, store, recover, and use information (Acedo & Florin,

2007; Neisser, 1967). Grégoire et al. (2011) pointed out that cognitive theory can be separated into two streams: cognition structures and cognition processes. Cognition structures refer to the knowledge achieved, whereas cognition processes refer to the manner in which that knowledge is received and used. Studies have suggested that there are several aspects of cognition that may play a key role in certain stages of the entrepreneurial process, thereby explaining some differences between entrepreneurs and non-entrepreneurs (Baron, 1998; Douglas, 2009; Douglas & Shepherd, 2002).

Cognitive research is not limited to understanding individuals and their behavior but also addresses the environment in which mental processes take place (Mitchell et al., 2002). Hence, cognition not only helps to understand the entrepreneurial mindset but also helps explain how entrepreneurs make sense of their world (Baron, 2004; Cope & Down, 2010; Krueger, 2005). Considering that the essence of entrepreneurship falls in different readings of the environment (Casson, 1982), understanding entrepreneurial cognition is imperative to understanding the essence of entrepreneurship, particularly how it emerges and evolves (Krueger, 2005, p. 105). In this regard, the aim of this project is to identify some of the key cognitive elements that may explain differences between entrepreneurs and non-entrepreneurs.

Accordingly, cognitive entrepreneurship theories provide some insights that might be helpful since this mainstream research focuses on the ways people process information. These studies suggest that people live their lives based on what they perceive in terms of their self-efficacy and scripts. Specifically, both particular knowledge and previous experiences, among other aspects, are key elements that explain why people behave the

way they do. Although this research stream has increased significantly over the last two decades, there is still a need to compare empirically the way entrepreneurs and non-entrepreneurs perceive reality in order to disentangle conflicting theories. This is the starting point of this study.

1.3.2. Methodological Approach

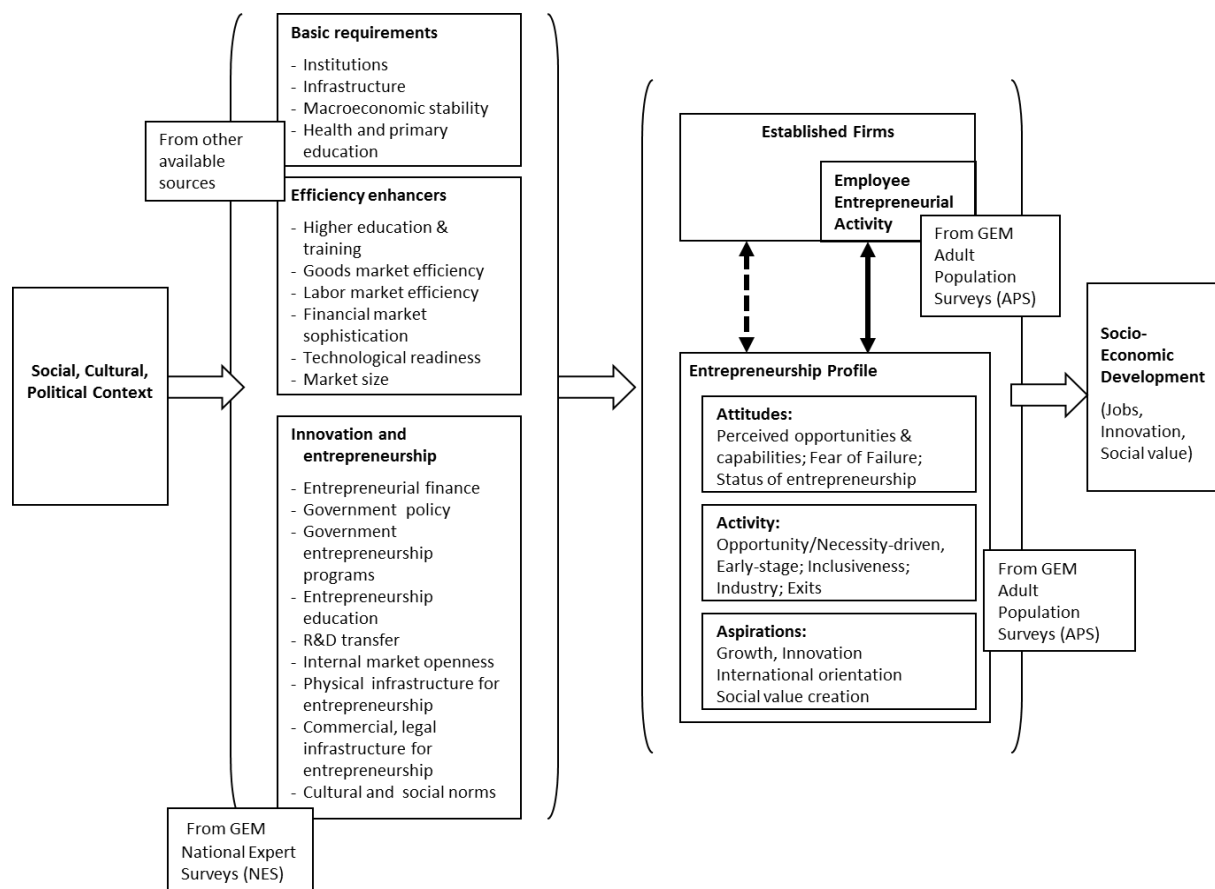
The three empirical studies were tested using the GEM database. The GEM project was conceived in 1997 by the London Business School and Babson College through researchers Michael Hay and Bill Bygrave. The first study was conducted in 1999, and ever since, more than 80 countries have been participating in the GEM consortium. The main focus of GEM is to provide harmonized data across countries on the levels and types of entrepreneurial activity (Bosma et al., 2012).

As Figure 1 depicts, the GEM model is based on the relationship between social, political, and cultural contexts and three sets of framework conditions, which are modeled as impacting the population's attitudes toward entrepreneurship as well as entrepreneurs' activities and aspirations. In turn, entrepreneurship contributes to economic growth by providing more competence in markets, more products and services, and more job positions.

Different from others initiatives, the GEM measures individual involvement in venture creation instead of firm-level data. In this sense, the GEM captures individuals formally

registered and also those who are involved informally. Accordingly, individuals who are entrepreneurially active include those adults active in the process of setting up a business they will (partly) own and/or those who currently own and manage an operational business (Reynolds et al., 2005, p. 209).

Figure 1: GEM Model



Source: Amorós & Bosma (2013) GEM Global Report

The GEM's methodology establishes two instruments to measure key elements of national entrepreneurial activity. One of them is the Adult Population Survey (APS), which provides the main and more distinct variables, such as the TEA index (which is the total early-stage entrepreneurial activity), among others. The survey's procedure requires

that at least 2,000 individuals between 18 and 64 years old should be surveyed by each participant country. APS provides information about attitudes toward entrepreneurship, entrepreneurial activity, and entrepreneurial aspirations.

The second instrument—the National Expert Survey (NES)—provides insights into particular factors impacting entrepreneurship in each country. The GEM’s methodology defined nine entrepreneurial framework conditions (EFCs), which are detailed in Table 1. These EFCs are the necessary oxygen of resources, incentives, markets and supporting institutions to the growth of new firms (Bosma et al., 2012). Therefore, it is expected that different countries and regions have different EFCs or different “rules of the game,” and that these affect the inputs and outputs of entrepreneurial activity. Every national team must select at least 36 experts, which are key informants regarding the status of EFCs in their own economies. Based on the responses, the GEM provides harmonized single- and multiple-item measures of these EFCs, which represent the aggregate national perceptions of the chosen experts.

From the collected data, global reports are created annually as well as other complementary reports focused on specific topics related to entrepreneurship, such as entrepreneurial education, women entrepreneurship, and innovation, among others. Moreover, each participant country creates its own national report and even regional reports if applicable.

Table 1: GEM Entrepreneurial Framework Conditions

Dimension	Description
Entrepreneurial Financial	The availability of financial resources—equity and debt—for small and medium enterprises (SMEs) (including grants and subsidies).
Government Policies	The extent to which public policies give support to entrepreneurship. This EFC has two components: 2a. entrepreneurship as a relevant economic issue and 2b. taxes or regulations are either size-neutral or encourage new SMEs.
Government Entrepreneurship Programs	The extent to which taxes or regulations are either size-neutral or encourage SMEs.
Entrepreneurial Education	The extent to which training in creating or managing SMEs is incorporated within the education and training system at all levels (primary, secondary, and post-school).
R&D Transfer	The extent to which national research and development will lead to new commercial opportunities and is available to SMEs.
Commercial and Legal Infrastructure	The presence of property rights and commercial, accounting, and other legal services and institutions that support or promote SMEs.
Entry Regulations	Contains two components: (1) market dynamics—the level of change in markets from year to year—and (2) market openness—the extent to which new firms are free to enter existing markets.
Physical Infrastructure	Ease of access to physical resources—communication, utilities, transportation, land, or space—at a price that does not discriminate against SMEs.
Cultural and Social Norms	The extent to which social and cultural norms encourage or allow actions leading to new business methods or activities that can potentially increase personal wealth and income.

Source: Amorós & Bosma (2013) GEM Global Report

Despite the fact that I used to coordinate the GEM Chile project during the years 2010 to 2014, and so because of my personal background I am familiarized with the data, the collection, and the analysis; both databases are available online and can be found at www.gemconsortium.org.

1.4. Motivation

1.4.1. Challenges

Most of the studies that use the GEM database have focused on institutional theory (cf. Alvarez & Urbano, 2011; Alvarez et al., 2014). In this sense, with these three studies, I try to think “outside the box” by exploring the research questions using a different perspective (i.e., social cognitive framework).

More concretely, the availability of a multi-country data contributed to the evaluation of two of the three studies by providing results that can be considered transversals since local differences are controlled. The first study, which was not used as a comparative analysis between countries, relies on the opportunity to deeply study why some differences are observed while others are not in a specific environment that I know well.

1.4.2. Gaps

When the entrepreneurial context is analyzed, it is important to note the distinction that although context is essential when representing the person-in-situation requirements of social cognition, not all contexts that affect entrepreneurial cognition are themselves entrepreneurial (Grégoire et al., 2011).

Much of the venture-creation process involves seeking and processing information, and as such, it is a critical activity in entrepreneurship (Kirzner, 1978). Currently, there is a debate related to the process of gathering information among entrepreneurs. While some studies have argued that experienced entrepreneurs—given their exposure to customers, competitors, and suppliers, among others—tend to have a more external orientation as they are more aware of external pressures and challenges (e.g., Cooper et al., 1995), others studies have suggested that entrepreneurs lack the ability to incorporate external information into their decision-making process since they believe that they can successfully pursue an opportunity independent of the environment (e.g., Mitchell & Shepherd, 2010). This is intensified for entrepreneurs who had prior successful ventures, such as serial entrepreneurs (Ucbasaran et al., 2010). Consequently, the understanding of how entrepreneurs balance their personal attitudes and external environment signals as the drivers of their behavior seems to be incomplete at least in regard to the role experience plays in influencing each one.

It is important to note that the literature has already noted that the processing of external information—and thus the personal reading of the environment—is different among novice and experienced entrepreneurs as well as among entrepreneurs and non-entrepreneurs. However, there is a lack of studies comparing different types of experts in the field of entrepreneurship. Moreover, there could be observed differences among entrepreneurs themselves. Indeed, the motivation that drives entrepreneurial activity—whether it is opportunity-driven or necessity-driven entrepreneurship—is totally different. A similar case occurs with innovative and imitative entrepreneurs: their particular managerial strategy influences the decisions they make as they attempt to fulfill their expectations. It is not clear how and whether growth expectations depend on the specific

business strategy entrepreneurs pursue or what influence subjective valuations and entrepreneurial experience have on them.

The entrepreneurial cognition research is distinctive and inclusive in nature. It is distinctive because researchers in this field create their own questions, concepts, relationships, and theories; however, it is also inclusive since it attracts the attention of scholars from other fields (Mitchell et al., 2004). This dissertation comprises three essays that respond to sub-questions from prior studies (see Table 2). These extensions point to further stages in the attempt to completely understand the entrepreneurial mind.

Table 2: Unanswered Questions Derived by Prior Studies

Study	Questions Answered in Entrepreneurial Cognition Research	Authors	Research Question's Extension
1	Do entrepreneurs think differently than other business people?	Busenitz & Barney 1997; Gaglio & Katz, 2001; Mitchell et al., 2002	Do entrepreneurs think differently than other business people regardless of having similar expertise?
2	Does over-optimism encourage individuals to perceive business opportunities?	Cooper et al., 1988; Hayward et al., 2006; Ucbasaran et al., 2010	Are entrepreneurs more optimistic than non-entrepreneurs in conceiving a future with promising business opportunities?
3	How do entrepreneurs think and make strategic decisions?	Busenitz & Barney, 1997; Mitchell et al., 2002	How do entrepreneurs' mental representations affect their strategic decisions and expectations?

The entrepreneurial cognition literature has already provided evidence that entrepreneurs think and perceive things differently than non-entrepreneurs. It has also identified that prior knowledge and experience can favorably influence individuals' ability to identify opportunities. Further, studies have suggested that since growth intentions are a function of the desirability and feasibility of growth, growth-oriented entrepreneurs are associated with positive attitudes toward income, negative attitudes toward work enjoyment, and high entrepreneurial self-efficacy. However, it is not known what factors influence the acquisition and development of cognitive aptitude, knowledge, or representations that appear to aid individuals in their entrepreneurial endeavors. By extension, does entrepreneurs' entrepreneurial experience contribute to reinforcing or restricting any of these cognitive biases, such as over-optimism? In addition, does the development of mental simulations or representations encourage entrepreneurs' optimism about their growth ambitions?

1.4.3. Limitations

One overall limitation of these studies is that the use of the GEM database may induce the belief that the studies were driven by the available data. Regarding this point, it is important considering that, on the one hand, each study is focused on a specific phase of the entrepreneurial process; however, altogether, they point to different stages. Therefore, a congruent sequence of key elements in entrepreneurship was studied. On the other hand, the GEM database is a well-recognized and academically reliable database that has been contributing to the field since its conception. Considering that not every field possesses a

comparable worldwide survey, the availability of GEM data should be viewed as a strength instead of a weakness.

A second overall limitation may be the absence of controlled experiments that specifically test cognitive processes, such as the amount and type of information each individual processes, instead of providing speculations about these processes. In the same line, it may be argued that the GEM is not a good fit for studying the cognitive and psychological processes theorized about in this work. However, each aspect studied was cautiously selected in order to avoid over-generalization and promote straightforward findings. For example, the first paper only provides a comparison between entrepreneurs and non-entrepreneurs in terms of environment framework conditions and their perceptions of opportunities, providing the initial groundwork for the study of differences in optimism. This is the first study that provides evidence suggesting that entrepreneurs and non-entrepreneurs differ not only in terms of their opportunity perceptions but also in terms of their broad visions of the surrounding environment.

Although each subsequent chapter includes the respective study's limitations, the following paragraphs will highlight the main limitations from the point of view of the author. Further, I put forth counter-arguments for each limitation, thereby countering attempts to revoke the studies or nullify their findings and implications.

One of the main limitations that the first study may have is its singular focus on Chile. Although one of the key strengths of the GEM is that it allows research to make national

comparisons and while centering the study only on the Chilean context may limit the findings, it is important to consider that this study's focus is on individuals' "reading of the context" instead of looking at a certain context. In this sense, centering the study on only one country provides a clearer understanding of each dimension—although the subject of the study relies on entrepreneurs' personal perceptions of the environment. In addition, in Chile, a representative sample of both groups (i.e., entrepreneurs and non-entrepreneurs) is available, making it particularly useful to the main purpose of this study.

Regarding the second study, one of the main limitations is that single variables were used in order to evaluate complex terms, such as optimism, self-efficacy, and social capital, among others. Despite this issue, every variable included in this study has previously been used in prior research. In this sense, they have academic support and reliability, but it may certainly be more fruitful to capture more aspects involved in each construct.

As for the third study, one of the major limitations relates to the absence of detailed information on the specific innovation undertaking for each entrepreneur. No category was explicitly introduced to the statistical model regarding the characteristics of each innovation (i.e., whether it was a radical or incremental innovation). Instead, a categorical variable was introduced based on subjective elements distinguishing between imitative and innovative entrepreneurship since innovation is by nature a locally dependent concept.

1.4.4. Dissertation Focus

This dissertation consists of three interrelated essays with social cognitive entrepreneurship as the main framework. Based on literature supporting the arguments presented in each study, the focus is first on perceptions of the surrounding environment. Secondly, the focus is on optimism about future business opportunities. Finally, this dissertation takes a deeper look at entrepreneurs' managerial decisions and aspirations.

The present studies, rather than evaluate cognitive processes directly, focuses on the consequences of these processes. For example, instead of directly evaluating the level of information that every individual has, these studies focus on the decisions made from that information, assuming that the genesis of different behaviors is the result of the interaction between personal attitudes and the environment.

The importance of this dissertation relies on the fact that cognitive biases affect the decision-making process directly as well as indirectly through perceptions of situations, concepts, and the reality itself (Simon et al., 2000). Overall, this approach was chosen since everything individuals think, say, or do is influenced by mental processes (Baron, 2004); through cognitive mechanisms, individuals acquire, transform, and use information to accomplish a wide range of tasks (e.g., making decisions, solving problems) (Sternberg, 1999). As Baron (2004) mentioned, this perspective is not the whole story but only a "useful tool" that could provide a fresh angle to the field.

1.5. Research Scope

The following paragraphs are detailed by study and specify what each study intends to accomplish in order to explicitly avoid over-extending the findings and reduce the possibility of taking the arguments too far. In this sense, the purpose of this section is to define, not only the scope of each study, but also their boundaries.

The first study compares (but does not infer directly) the effect EFCs have on perceptions of opportunities. Considering that EFCs provide general information about some of the most important aspects related to a specific environment in relation to entrepreneurial activity but omit details about industries, motivations that drive entrepreneurship, and opportunity costs for individuals (among other aspects directly related to opportunity recognition and venture start-up), it is not appropriate to assume there is any direct relationship between EFCs and opportunity recognition as a regression does. Indeed, as the results show, compared to non-entrepreneurs, entrepreneurs perceive a worse environment even when they perceive more business opportunities. This implies that the relationship between opportunity recognition and EFCs is more complex and should be analyzed at the micro-level instead of the macro-level of the local environment.

The second study provides a better understanding about the likelihood of over-optimism about perceptions of future business opportunities during several entrepreneurial phases. However, it is not possible to speculate about any change (i.e., increase or decrease) in the degree of optimism in different entrepreneurial stages nor about how entrepreneurs

increase or decrease their over-optimism as they go through different entrepreneurial phases. It is important to consider that optimism was evaluated using a dichotomous variable. As a result, there is no information about the degree of the measured construct. Further, since this study does not use panel data but randomly collected data as the GEM methodology requires, it is not possible to infer about individuals' progress through the entrepreneurial process.

The third study compares innovative and imitative entrepreneurs' growth expectations. Since there is no distinction between incremental or radical innovation nor among innovation at different levels, the implications should be evaluated cautiously. Indeed, it should be noted that performance is not evaluated, so optimistic expectations are not measured in absolute terms but only at a comparative level. Consequently, although the study provides information about how entrepreneurs may "cognitively feed" themselves between their subjective valuations and strategy, there is no way to determine whether this is a vicious or a virtuous circle until a certain operational outcome is measured.

1.6. Chapter Summary

This introductory chapter intended to provide the reader a clear understanding of the studies. On the one hand, this introduction provides a macro-level view of the overall purpose of this dissertation, focusing on the reasons it was conducted as well as the contributions stemming from each study individually and together as a whole. On the other hand, at the micro-level of, this introduction outlined the target audience and overall

message. In order to do so, a brief theoretical framework was given that complements the frameworks provided in each chapter.

1.7. Dissertation Organization

The remainder of this dissertation is organized according to the following outline. Chapter 2 includes the first of three interrelated studies. As it was stated, this chapter focuses on the differences between entrepreneurs and non-entrepreneurs not only in terms of their ability to recognize business opportunities but also in terms of the nine dimensions evaluated in the NES. Chapter 3 presents a study about perceptions of opportunities among entrepreneurs and non-entrepreneurs and among entrepreneurs in different stages of the entrepreneurial process. This chapter argues that there is an inverted U-shaped relationship between optimism about future business opportunities and length of entrepreneurial experience. Chapter 4 includes a study on growth expectations, comparing innovative entrepreneurs and imitative entrepreneurs as well as exploring the role of subjective valuations of innovation and length of entrepreneurial experience. A model of mediated-moderation is proposed, which was tested and supported empirically. Finally, Chapter 5 discusses and concludes the dissertation by summarizing the key findings and further implications for academics and practitioners. The dissertation concludes by adding all the references used in each chapter as a bibliography in order to present each essay as a self-contained feature without reducing the conjoint characteristic of the whole PhD dissertation¹.

¹ Similar logic applies to explain the appendices after each respective chapter instead of after the bibliography.

References

- Acedo, F. J., & Florin, J. (2007). Understanding the risk perception of strategic opportunities: a tripartite model. *Strategic Change*, 16(3), 97-116.
- Allinson, C. W., Chell, E., & Hayes, J. (2000). Intuition and entrepreneurial behaviour. *European Journal of Work and Organizational Psychology*, 9(1), 31-43.
- Alvarez, C., & Urbano, D. (2011). Una Década de Investigación basada en el GEM: Logros y Retos (A Decade of GEM Research: Achievements and Challenges). *Academia Revista Latinoamericana de Administración*, (46), 16-37.
- Alvarez, C., Urbano, D., & Amorós, J. E. (2014). GEM research: achievements and challenges. *Small Business Economics*, 42(3), 445-465.
- Amorós, J. E., & Bosma, N. (2014). *Global Entrepreneurship Monitor, 2013 Global Report*. Babson Park, MA, U.S.: Babson College; Santiago, Chile: Universidad del Desarrollo; Kuala Lumpur, Universiti Tun Abdul Razak and London, U.K.: Global Entrepreneurship Research Association
- Arenius, P., & Minniti, M. (2005). Perceptual variables and nascent entrepreneurship. *Small Business Economics*, 24(3), 233-247.
- Baron, R. A. (1998). Cognitive mechanisms in entrepreneurship: Why and when entrepreneurs think differently than other people. *Journal of Business Venturing*, 13(4), 275-294.
- Baron, R. A. (2004). The cognitive perspective: a valuable tool for answering entrepreneurship's basic "why" questions. *Journal of Business Venturing*, 19(2), 221-239.

Bosma, N., Coduras, A., Litovsky, Y., & Seaman, J. (2012). *GEM Manual. A report on the design, data and quality control of the Global Entrepreneurship Monitor*. Global Entrepreneurship Monitor, 1-95.

Bouckennooghe, D., Cools, E., Van den Broeck, H., & Vanderheyden, K. (2005). In search for the heffalump: An exploration of the cognitive style profiles among entrepreneurs. *Journal of Applied Management and Entrepreneurship*, 10, 58-75.

Busenitz, L. W., & Barney, J. B. (1997). Differences between entrepreneurs and managers in large organizations: Biases and heuristics in strategic decision-making. *Journal of Business Venturing*, 12(1), 9-30.

Casson, M. (1982). *The Entrepreneur: An Economic Theory* (2nd ed.). Oxford: Edward Elgar.

Cooper, A. C., Folta, T. B., & Woo, C. (1995). Entrepreneurial information search. *Journal of Business Venturing*, 10(2), 107-120.

Cooper, A. C., Woo, C. Y., & Dunkelberg, W. C. (1988). Entrepreneurs' perceived chances for success. *Journal of Business Venturing*, 3(2), 97-108.

Cope, J., & Down, S. (2010). I think therefore I learn? Entrepreneurial cognition, learning and knowing in practice. Entrepreneurial Cognition, *Learning and Knowing in Practice* (April 1, 2010).

Douglas, E. (2009). Perceptions - *Looking at the world through entrepreneurial lenses*. In, A. Carsrud & M. Brännback (Eds.), *Understanding the entrepreneurial mind*. New York, NY: Springer. pp. 3-22.

- Douglas, E. J., & Shepherd, D. A. (2002). Self-employment as a career choice: Attitudes, entrepreneurial intentions, and utility maximization. *Entrepreneurship Theory and Practice*, 26(3), 81-90.
- Dunne, T., Roberts, M. J., & Samuelson, L. (1989). The growth and failure of US manufacturing plants. *The Quarterly Journal of Economics*, 671-698.
- Gaglio, C. M. (2004). The role of mental simulations and counterfactual thinking in the opportunity identification process. *Entrepreneurship Theory and Practice*, 28(6), 533–552.
- Grégoire, D. A., Corbett, A. C., & McMullen, J. S. (2011). The cognitive perspective in entrepreneurship: an agenda for future research. *Journal of Management Studies*, 48(6), 1443-1477.
- Gupta, V. K., Turban, D. B., Wasti, S. A., & Sikdar, A. (2009). The role of gender stereotypes in perceptions of entrepreneurs and intentions to become an entrepreneur. *Entrepreneurship Theory and Practice*, 33(2), 397-417.
- Hatten, T.S. (1997). *Small Business: Entrepreneurship and Beyond*. Upper Saddle River, NJ: Prentice-Hall.
- Hayward, M. L., Shepherd, D. A., & Griffin, D. (2006). A hubris theory of entrepreneurship. *Management Science*, 52(2), 160-172.
- Headd, B. (2003). Redefining business success: Distinguishing between closure and failure. *Small Business Economics*, 21(1), 51-61.
- Johnson, P. (2004). Differences in regional firm formation rates: a decomposition analysis. *Entrepreneurship Theory and Practice*, 28(5), 431-445.

Kirzner, I. M. (1978). *Competition and entrepreneurship*. Chicago and London: University of Chicago press.

Koellinger, P., Minniti, M., & Schade, C. (2007). "I think I can, I think I can": Overconfidence and entrepreneurial behavior. *Journal of Economic Psychology*, 28(4), 502-527.

Kor, Y. Y., Mahoney, J. T., & Michael, S. C. (2007). Resources, capabilities and entrepreneurial perceptions. *Journal of Management Studies*, 44(7), 1187-1212.

Krueger, N. F. (2003). *The cognitive psychology of entrepreneurship*. In Handbook of entrepreneurship research (pp. 105-140). Springer US.

Liñán, F. (2008). Skill and value perceptions: how do they affect entrepreneurial intentions?. *International Entrepreneurship and Management Journal*, 4(3), 257-272.

Liñán, F., & Santos, F. J. (2007). Does social capital affect entrepreneurial intentions?. *International Advances in Economic Research*, 13(4), 443-453.

Mitchell, J. R., & Shepherd, D. A. (2010). To thine own self be true: Images of self, images of opportunity, and entrepreneurial action. *Journal of Business Venturing*, 25(1), 138-154.

Mitchell, R. K., Busenitz, L. W., Lant, T., McDougall, P. P., Morse, E. A., & Smith, J. B. (2004). The distinctive and inclusive domain of entrepreneurial cognition research. *Entrepreneurship Theory and Practice*, 28(6), 505-518.

Mitchell, R. K., Busenitz, L.W., Lant, T., McDougall, P. P., Morse, E. A., & Smith, J. B. (2002). Toward a theory of entrepreneurial cognition: Rethinking the people side of entrepreneurship research. *Entrepreneurship Theory and Practice*, 27(2), 93-104.

- Neisser, U. (1967). *Cognitive psychology*. New York: Appleton-Century-Crafts.
- Phillips, B. D., & Kirchoff, B. A. (1989). Formation, growth and survival; small firm dynamics in the US economy. *Small Business Economics*, 1(1), 65-74.
- Reynolds, P., Bosma, N., Autio, E., Hunt, S., De Bono, N., Servais, I., Lopez-Garcia, P. & Chin, N. (2005). Global entrepreneurship monitor: Data collection design and implementation 1998–2003. *Small Business Economics*, 24(3), 205-231.
- Shane, S. (2009). Why encouraging more people to become entrepreneurs is bad public policy. *Small Business Economics*, 33(2), 141-149.
- Shane, S. (2000). Prior knowledge and the discovery of entrepreneurial opportunities. *Organization Science*, 11(4), 448-469.
- Shane, S., Locke, E. A., & Collins, C. J. (2003). Entrepreneurial motivation. *Human Resource Management Review*, 13(2), 257-279.
- Simon, M., Houghton, S. M., & Aquino, K. (2000). Cognitive biases, risk perception, and venture formation: How individuals decide to start companies. *Journal of Business Venturing*, 15(2), 113-134.
- Sternberg, R. J. (1999). *The Nature of Cognition*. MIT Press, Cambridge, MA.
- Ucbasaran, D., Westhead, P., Wright, M., & Flores, M. (2010). The nature of entrepreneurial experience, business failure and comparative optimism. *Journal of Business Venturing*, 25(6), 541-555.

**Chapter 2. Perceptions of Opportunities
and Interpretations of the Rules of the Game**

Perceptions of Opportunities and Interpretations of the Rules of the Game

2.1. Introduction

Intuitively, policymakers rely on the assumption that good conditions may foster entrepreneurship regardless of actual rates of opportunity-based entrepreneurial activity. However, many people have different definitions of what conditions represent “a favorable environment” since the worldview of an actor is different from the worldview of an observer (Brännback & Carsrud, 2008). Applied to the field of entrepreneurship, entrepreneurs may notice their environment in a manner that non-entrepreneurs do not (Baron, 1998; Krueger, 2003; Mitchell et al., 2000). Indeed, entrepreneurial behavior is individuals’ reactions to mental interpretations. In this context, subjectivity plays a key role as the origin of business opportunities emerges from different perceptions of environmental signals (Arenius & Minitti, 2005; Baker & Nelson, 2005; Casson, 1982; Edelman & Yli-Renko, 2010; Gaglio, 2004; Gaglio & Katz, 2001; Kirzner, 1978; Renko et al., 2012).

One of the main pillars of cognitive entrepreneurship rests upon differences between how entrepreneurs and non-entrepreneurs conceive reality. The literature has shown that founders and entrepreneurs “think” differently than other individuals or business executives (e.g., Baron, 1998; Busenitz & Barney, 1997; Grégoire et al., 2011; Mitchell et al., 2000), and so entrepreneurial decision making arises as a response to certain knowledge structures or entrepreneurial scripts (Mitchell et al., 2007; Hindle, 2004; Sarasvathy & Venkataraman, 2011; Shane & Venkataraman, 2000). Understanding entrepreneurs’ perceptions and interpretations is crucial since the subjective evaluations

individuals make are manifestations of their knowledge structures and information processing. As such, these evaluations shed light in explaining how entrepreneurs think (Baron, 1998; Krueger, 2007; Mitchell et al., 2007) within the context of the local entrepreneurial environment. Although some studies have suggested that entrepreneurs have different perceptions in some specific aspects when compared with non-entrepreneurs, such as perceptions of risk and opportunities. Nevertheless, to the best of my knowledge, there are no studies that empirically test whether the “big picture” (i.e., entrepreneurial framework conditions [EFCs]) also differs. Moreover, most of the studies in this have tended to study differences between novice and expert (experienced) entrepreneurs (e.g. Baron & Ensley, 2006), but there is a lack of comparisons between experts in the same field. Consequently, the first goal of this study is related to the ongoing discussion of expert information-processing theory by arguing that differences in ways entrepreneurs and non-entrepreneurs read the environment and their perceptions of opportunities remain even when comparing experts in the field of entrepreneurship. A second goal is to compare empirically the vision of entrepreneurs and non-entrepreneurs regarding several external factors that shape entrepreneurial activity and regarding their perceptions of opportunities, which represent evidence to support the prior argument.

Starting from the argument that the origin of diverse behaviors stems from different readings of the world among individuals, I argue that individuals’ mental images of the environment and opportunities depend on the specific role played by entrepreneurs and non-entrepreneurs in the society, even when only experts in entrepreneurship are analyzed. Specifically, this study proposes that under similar circumstances (i.e., the same context), experts who are entrepreneurs perceive their surrounding external environment and opportunities differently from non-entrepreneurs since their personal readings of the

environment will be determined by tacit knowledge, which is itself nurtured by cognition, experiences, and motivations. Using one of the Global Entrepreneurship Monitor (GEM) databases, the National Expert Survey (NES), which includes a sample of 1,605 key informants in Chile between 2010 and 2012, this study explores how the role played (entrepreneur or non-entrepreneur) to determine the vision of the “rules of the game” (Baumol, 1996; North, 1990). In this context, this study focuses on the EFCs and perceptions of opportunity existence that are evaluated in the GEM project. These EFCs are a set of key factors that directly affect the development of entrepreneurship locally (Reynold et al., 2005). By using non-parametric statistics, this study compares perception differences regarding these EFCs among entrepreneurs and non-entrepreneurs.

I build on the extant literature on expert information-processing theory (Mitchell et al., 2000, Mitchell et al., 2002; Neisser, 1967) by combining it with structural alignment theory (Gentner & Markman, 1994; Grégoire et al., 2010) to explore the nature and development of personal readings of context and perceptions of opportunities, emphasizing “how” differences in perceptions between experts arise. Specifically, the results indicate that six of the nine dimensions analyzed are evaluated less favorably by expert entrepreneurs, so it is possible that entrepreneurs perceive their local contexts as being significantly more unfavorable than other agents involved in the same entrepreneurial ecosystem. In parallel, for the worst and best constructs at the aggregate level (i.e., research and development [R&D] transfer and physical infrastructure), there were no statistical differences between groups, suggesting that only when the results are considered “evident” (i.e. where there is almost no space for discrepancy) do both entrepreneurs and non-entrepreneurs agree. Furthermore, dimensions with fewer “upgrades” perceived at national level (i.e., commercial structure), non-statistical

differences were observed between groups. Despite the above, in the opportunity-identification process, entrepreneurs tend to have significantly more optimistic visions than non-entrepreneurs. These results suggest that even when experienced experts in the field of entrepreneurship are compared, entrepreneurs and non-entrepreneurs differ in the way they process information about the environment and business opportunities since their role schemas are different as well as their motivations, experiences, and cognitions.

In practice, this study makes two contributions to the entrepreneurship research agenda. First, this study provides empirical evidence of how entrepreneurs perceive their entrepreneurial ecosystem, which is important because the starting point of any entrepreneurial intention is the perception of having the right conditions for doing businesses. These perceptions subsequently influence behaviors that are consistent with the previous image (Smith et al., 2009). In this sense, the main objective is not necessarily about analyzing the Chilean context for entrepreneurship. Instead, what matters most is how experts in entrepreneurship perceive a specific context. In other words, this study does not focus on the context per se but on the individuals' reading of the context. To the best of my knowledge, this is the first study that analyzes several aspects of entrepreneurs' surrounding environment, and although it does so descriptively, it compares entrepreneur and non-entrepreneurs expert using a cognitive approach.

Second, this study provides a theoretical explanation, grounded in two cognitive theories, to explain the influence that a number of country-level antecedents (i.e. EFCs) have on entrepreneurs' mental images of local rules of the game and their perceptions of opportunities' existence. Since the relationship between opportunities and environment is

far from being totally understood, this study's results suggest this relationship is not necessarily direct or linear; instead, there is a complex inter-relationship between the environment and business opportunities with individuals' cognition. In this regard, the main aim of this study is to provide evidence for the ongoing discussion regarding the relative malleability of entrepreneurs' scripts. Hence, attention has been drawn to the way entrepreneurs tend to perceive aspects within their range of action, over-valuing their own control over results (i.e., image of "good" opportunities available) and reducing the relative importance of the exterior (i.e., image of the environment).

Before getting into the following, it is necessary to clarify the main definitions within this study. Consistent with Mitchell et al. (2000) experts are defined as individuals who possess knowledge structures about a particular domain that allow them to significantly outperform better and process information comparatively more accurately. It is important to note that experience itself does not necessarily provide expertise, instead only on cases where the experience is nurtured on the successfully accomplishment of the corresponding goals, a status of expert is reached (Lord & Maher, 1990). As Gaglio & Katz (2001) suggest: "to achieve expert status are increasingly complex and hence veridical or realistic mental representations of causal patterns and interacting factors, where experience and education" (p. 102). Consequently experts entrepreneurs are individuals who started at least one business and have succeed on it. Experts' non-entrepreneurs in this case are individuals involved in the entrepreneurial ecosystem, however they did not started a business, such as venture capitalist, bankers, or policy makers.

2.2. Literature Review

2.2.1. Rules of the Game

Although they use different approaches, several theories in entrepreneurship include the interaction between environmental context and the individual. Indeed, venture creation emerges from the interaction between external factors (e.g., the status of the economy, the availability of venture capital, the actions of competitors, and government regulations) and individuals (Shook et al., 2003). As Shane et al. (2003) noted, these factors are characterized by including “political factors (e.g., legal restrictions, quality of law enforcement, political stability, and currency stability); market forces (e.g., structure of the industry, technology regime, potential barriers to entry, market size, and population demographics); and resources (e.g., availability of investment capital, labour market including skill availability, transportation infrastructure, and complementary technology)” (p. 260). Economic, social, and political context represent a set of rules for individuals and social groups (e.g., Busenitz et al., 2000; Roman et al., 2013; Veciana & Urbano, 2008; Wong et al., 2005) and act as a source of opportunities (Baker & Nelson, 2005; Gartner, 1985; Kirzner, 1978, Mitchell & Shepherd, 2010; Sarasvathy, 2001; Shane et al., 2003). Further, these contexts make up the environment where entrepreneurship takes place (e.g., Stenholm et al., 2013; Webb et al., 2013). In this sense, local institutions define the rules of the game in a society (Baumol, 1996; North, 1990).

At the individual level, environmental conditions, including institutions and the policies that shape them, motivate people to act entrepreneurially (Hornsby et al., 2009; Kuratko et al., 1990; Minniti, 2008; Shepherd & Krueger, 2002). Specifically, institutions conform

to the incentives and restrictions of the business environment, from which individuals construct their subjective perceptions and thus entrepreneurial behavior (North, 1994; Veciana & Urbano, 2008; Welter & Smallbone, 2011). For instance, Thai and Turkina (2014) observed that individuals dealing with economically challenged environments and socioeconomic marginalization have to cope with internal dissatisfaction that forces them to make the venture-creation decision in its self-employment form. Similarly, studies like Estrin et al. (2013) and Haynie et al. (2010), among others, have observed that the environment affects entrepreneurial attitudes and growth ambitions. Hence, the interaction between the environment and entrepreneurial motivation is the foundation of managerial strategies. For example, a hostile environment often motivates decision makers to avoid losses, while a munificent environment motivates them to seek gains (Davies & Walters, 2004).

According to Shepherd and Krueger (2002), an environment that fosters entrepreneurial activity is characterized by an appropriate reward systems and top management support (e.g., Hornsby et al., 1993), explicit goals (e.g., Kuratko et al., 1993), and appropriate organizational values (e.g., Zahra, 1991). Furthermore, according to Shane et al. (2003), willingness to engage in entrepreneurial activities depends on such things as the legal system of the country in which the entrepreneur operates, the age of the industry, the availability of capital in the economy (and in the industry in particular), the condition of capital markets, and the state of the overall economy. For high-impact entrepreneurship, Stenholm et al. (2013) stated that it is imperative to have an institutional environment filled with new opportunities created by knowledge spillovers (Acs et al., 2009; Audretsch & Keilbach, 2007) and the capital necessary for such entrepreneurship.

The importance of the external environment for entrepreneurship is irrefutable. The entrepreneurship literature has shown that the rules of the game for individual and business activity—including economic growth—are given by the economic, social, and political context in which individuals are submerged. The external environment is, therefore, crucial for the emergence of opportunities, and at the same time, it determines entrepreneurial behavior.

2.2.2. Internal Representation

According to Grégoire et al. (2011), human behavior is influenced by individuals' information perspective (e.g., environmental factors) and abilities of the mind (i.e., perceptual filters). Sarasvathy et al. (1998) highlighted that internal representations are crucial because not only do they affect how things are perceived but also how they are managed. Therefore, perceived signals of the environment are critical since what individuals perceive is often as important as objective reality (Krueger & Brazeal, 1994). Since people do not have the same traits and relationships, their mental structures are not necessarily activated in the same ways when making sense of any given situation (e.g., a potential business opportunity), so the application of these scripts can vary from one individual to another. In this sense, information processing shapes individuals' representation of reality (Vaghely & Julien, 2010). People (including entrepreneurs) are not fully rational thinkers (Groves et al., 2011; Sarasvathy, 2001), so emotional valuations and subjectivity should differ among individuals.

According to Wood et al. (2014) and Smith et al. (2009), information processing comprises the construction of simplified images of one's current situation and, based on these images, predictions for the future. Individuals create their beliefs and judgments based on this mental template of the environment (Hindle, 2004; Mitchell et al., 2000), which evolves as individuals internalize new experiences and knowledge (Endsley, 2000; Lim & Klein, 2006; Smith et al., 2009). Therefore, how the market environment is represented in the mind affects images of opportunity and entrepreneurial behavior (Gaglio & Katz, 2001; Mitchell & Shepherd, 2010). Indeed, according to Grégoire et al. (2010), "the process of recognizing opportunities involves both objective and subjective dimensions: the objective reality of one's context and the subjective interpretations that one makes of this context and of one's position in it—before the facts can be objectively known" (p. 415). However, even when entrepreneurs process information based on their objective and subjective notions of opportunity (Edelman & Yli-Renko, 2010), evidence suggests that they tend to rely relatively more on subjective perceptions than objective expectations (e.g., Arenius & Minniti, 2005).

In this regards, it is important to note that the paradigms under which this study was developed are based on the scientific principles of nomothetic, empiricism, determinism, and positivism. Ontologically is supported under a base of realism, assuming the outside world as tangible, concrete, and testable. Thus, implicitly is assumed that a sample will allow a reflection of reality, from which the objective existence of truth emerges. In terms of the epistemological assumptions, is constructed under a positivistic approach, since it is assumed that knowledge and truth can be revealed by systematic methods, where reality can be simulated under controlled experiments and statistical samples allow to

demonstrate the truth in probabilistic terms, providing knowledge that can be checkable and ascertainable.

Numerous studies have demonstrated how some aspects of the market environment are represented in the minds of entrepreneurs (e.g., perceived financial barriers) and how, as a consequence of this, their images of business opportunity are affected. Specifically, Kwong et al. (2012) analyzed whether access to financing is perceived as a more adverse process depending on entrepreneurs' gender. Based on their results, they found support to state that women perceive greater financial constraints than men prior to starting a business. Because self-confidence and belief in one's own abilities to achieve goals are often associated with males (Bennet & Dann, 2000; Bruni et al., 2004), a perception of lacking money may explain why women entrepreneurs are more likely to engage in smaller sectors (Carter & Shaw, 2006). Another example come from Hechavarria and Reynolds (2009), who studied how mental representations of the cultural norms impact entrepreneurial motivation. In line with Krueger and Carsrud (1993), who suggested that cultural norms are a crucial predictor of entrepreneurial intention, these authors stated that when a culture is dominated by secular-rational values, it will likely develop as a welfare state. This authors stated that an entrepreneur's "perception of the distinctive environment in which he/she attempts to create a new firm is foundational to developing a framework for understanding the different environmental backgrounds and motivations for entry into the entrepreneurial process" (p. 434). In addition, studies have shown divergences between the support needs identified by entrepreneurs and the actual support received from governmental assistance programs. Specifically, Yusuf (2010) evaluated entrepreneurs' perceptions of the value of support received from assistance programs. In terms of assistance positively impacting the performance of start-ups (Clark et al., 1984;

Krentzman & Samaras, 1960; Robinson, 1982; Solomon & Weaver, 1983), the author found that most entrepreneurs in the study considered assistance programs valuable even when they are not necessarily effective in reaching their original aims. Two reasons are given for this finding. First, assistance programs address entrepreneurs' latent support needs rather than their expressed support needs. Often it has been observed that many entrepreneurs have difficulties in diagnosing the external support required. For example, one entrepreneur may perceive she needs support to technical issues to increase productivity in the chain supply; however the consultant may determine that before any professional advice within the chain supply, the entrepreneur should need to focus on basic accountancy preparation and conceptualization of the assets of the firm. Given this diagnosis, the entrepreneur may consider that the perceived support and the actual support mismatch. Similarly, programs may be ineffective at meeting expressed needs yet effective at meeting entrepreneurs' latent support needs. Second, assuming that only a low percentage of entrepreneurs' support needs are met, these assistance programs may help entrepreneurs identify their actual support needs (as opposed to their perceived support needs) and may therefore also be effective in helping entrepreneurs overcome their deficiencies (Yusuf, 2010).

Individuals make assessments, judgments, and decisions based on mental structures or scripts. These scripts refer to how individuals simplify their mental models to link previous information to give a guideline about a particular concept (Grégoire et al., 2011; Krueger, 2007; Mitchell et al., 2002). These scripts are cognitive processes related to how individuals perceive their internal motives and competences and the way information from the external environment is organized. In relation to this, Corbett and Hmieleski (2007), extending the work of Mitchell et al. (2000), distinguished between role scripts

and event scripts. They suggested that one distinction between entrepreneurs and non-entrepreneurs lies in schemas. The authors defined role scripts as a “cognitive structure or mental framework relating to how one’s knowledge is organized about the set of behaviors expected of a person in a certain job, function or role” (pp.103-104). While social context provides the conditions for individuals to develop expertise, it is important to consider that I am working under the assumption that entrepreneurs’ expert scripts are a construct that may represent the entrepreneurial mindset.

Valliere (2013) argued that entrepreneurial alertness is the application of those entrepreneurial scripts that precede value creation to environmental changes (whether objective or subjective). While most individuals tend to connect information by causality, preliminary studies have shown that entrepreneurs tend to present a more heuristic-based logic. This logic appears to give them a competitive advantage as it allows them to quickly learn about new changes and the implications of those changes for the development of specific discoveries, thereby enabling them to reach conclusions more rapidly (e.g., Alvarez & Busenitz, 2001; Baron, 1998; Simon & Houghton, 2002). In this sense, in order to shape the logic of their networks, entrepreneurs process information in an interpretative way based on their personal reading of the context, which is nurtured by experience, cognition, and motivation (Smith et al., 2009; Vaghely & Julien, 2010). Therefore, I expect that individuals with dissimilar mind structures with respect to entrepreneurial mindset-related constructs (e.g., role schemas) differ in the way they process information since the work and the challenges that they face are substantially different (Corbett & Hmieleski, 2007; Markman et al., 2002).

2.2.3. Expertise in Entrepreneurship and Structural Alignment

Experts are different cognitively, specifically in terms of information processing (Mitchell et al., 2000; Smith et al., 2009). According to expert information-processing theory (Neisser, 1967), individuals are processors of information, and experts are characterized as having better recall of relevant information that is less biased (Gaglio & Katz, 2001; McKeihen et al., 1981). Research on expertise has suggested that as individuals gain experience in a given domain, they learn to develop increasingly refined, well-developed, and useful mental frameworks for performing many tasks (e.g., Davis et al., 2003). In addition, it has been suggested that experts may acquire closer links between working memory and long-term memory and, as a result, be better able to draw on previously acquired information when making judgments (e.g., Ericsson, 2006).

According to expert information-processing theory, an expert script comprises highly developed, sequentially ordered knowledge germane to a specific field (Mitchell et al., 2000, 2002). This knowledge is often acquired in a dynamic process, in which knowledge structures are organized in long-term memory through the iterative interrogation, instantiation, and falsification of cognitions grounded in real-world experience. Furthermore, research on expertise suggests that as individuals gain experience in a given domain, they learn to focus attention primarily on key dimensions. For example, Gaglio and Katz (2001) note that experts have more complex scripts, enabling them to see patterns developing, detect anomalies more quickly, and adapt rapidly to different circumstances. As a result, experts' mindsets become intensively self-reflective and self-regulatory (Haynie, 2012). However, Kirzner (1979) distinguished between

entrepreneurial knowledge and knowledge experts, suggesting that the latter—namely, those who possess specialized knowledge—do not fully recognize the value of their knowledge. This argument represents a crucial difference in the information-processing of experts in entrepreneurship (Alvarez & Busenitz, 2001).

Numerous studies have compared entrepreneurs and managers (e.g., Palich & Bagby, 1995; Stewart & Roth, 2001) and have observed differences, suggesting that the way individuals organize their knowledge is different. Entrepreneurs tend to use heuristics-based logic rather than systematic procession logic (Busenitz & Barney, 1997; Mitchell et al., 2007). Along these lines, structural alignment theory states that mental representations are constructed from certain comparisons (Gentner & Markman, 1994; Grégoire et al., 2010; Williams, 2010); thus, prior knowledge and current information influence individuals' inner beliefs (Shane, 2000; Venkataraman, 1997). These mental representations comprise (superficial) features of objects and connections (i.e., structural relationships) that unite the features between objects. While features refer to a prominent or conspicuous characteristic of an object, connections refer to common dimensions linking two objects (Gentner & Markman, 1994; Markman & Gentner, 1993a, 1993b; Medin et al., 1995). In this sense, when individuals evaluate something (e.g., interpret the environment), their comparisons are based on something already known and through contextual terms (i.e., used as a basis to compare a target and between options).

Structural alignment theory has successfully explained a broad range of cognitive phenomena in such domains as analogy, metaphor, concept, categorization, memory, choice, and similarity and difference judgments (Estes & Hasson, 2004). Although few

studies in the entrepreneurship literature have used this theory, Grégoire et al. (2010) did, finding that opportunity recognition is associated with structural alignment through individuals' use of prior knowledge. In a somewhat similar vein, I argue that experts' mental images of the environment and opportunities are determined by their specific knowledge structures. These knowledge structures are constructed with empirical and theoretical knowledge, causing their information processing to be intensively rooted in their insights. In other words, experts' personal readings of both the environment and opportunities will be based more on tacit knowledge than on explicit knowledge. Consequently, entrepreneurs are more likely to conceive more business opportunities even though non-entrepreneur experts may perceive a less hostile environment.

Although expert scripts dramatically improve an individual's information-processing capabilities, according to Mitchell and Shepherd (2010), expert entrepreneurs tend to believe that they can successfully pursue an opportunity independent of the environment despite their awareness of the environment. Consequently, the formation of a certain mental image of the environment and opportunities is based on different structures. For example, similar to studies observing that some individuals' images of opportunities depend on profitability and feasibility, others tend to focus on newness and uniqueness (Baron & Ensley, 2006; Mitchell & Shepherd, 2010). I suspect that entrepreneurs will identify more opportunities than non-entrepreneurs (Ucbasaran et al., 2009) even though the first group does not necessarily perceive a better environment. The specific role of entrepreneurs in a society is beyond of being providers of new products and services, but also they are suppliers of job offers and promoters of increasing competence in markets, hence having all experts developed self-reflective and self-regulative knowledge structures, which allow them to be constantly cognitively adapting strategies, only the

prior knowledge of entrepreneurs are based on the discovery, evaluating, and exploiting opportunities.

2.3. Methodology

2.3.1. Data

The data used in this study comes from the GEM project. The GEM is the largest international research initiative analyzing the propensity of a country's adult population to participate in entrepreneurial activities and the conditions that enhance these entrepreneurship initiatives (Levie et al., 2014). The GEM model was presented in 1999, and since then, it has been contributing to the understanding of the field (Amorós et al., 2013; Bosma, 2013), so it is a valuable database to use since it possesses academic reliability and also validation from several studies (see Alvarez et al., 2014).

The main aim of the GEM is to define a conceptual model to explain the relationship between entrepreneurship and economic growth (Bosma, 2013; Levie et al., 2012; Reynolds et al., 2005). With the NES, the GEM provides insight into factors that impact the entrepreneurship environment and adds context to explain entrepreneurial activity and economic growth (Reynolds et al., 2005). Hence, the NES captures a critical part of the GEM's theoretical model (Amorós et al., 2013; Bygrave et al., 2003; Reynolds et al., 2005). This survey provides a harmonized approach that allows the comparison between countries, regions, and individuals regarding their EFCs, which are political, economic, and social aspects related to entrepreneurship.

Specifically, the EFCs are exogenous structural conditions that regulate perceptions of opportunity and the availability of entrepreneurial skills in the population (Levie & Autio, 2008). This set of EFCs is based on extensive literature (Bosma et al., 2010; Levie & Autio, 2008; Reynolds et al., 2005); however, basically, they are related to Baumol's (1996) concept of rules of the game, which defines the dynamic of entrepreneurial behavior in societies.

Therefore, the NES is a “qualitative tool that provides the observer with a subjective diagnostic based upon the state of the entrepreneurial framework conditions” (Reynolds et al., 2005). According to Arenius and Minniti (2005), perceptual variables provide useful insights because personal judgments, even though they might be biased, are highly correlated with individuals' behavior. Since our research specifically focuses on concepts like mental interpretations, knowledge structures, and information processing, this database fulfills this study's by comparing EFCs among entrepreneurs and non-entrepreneurs by measuring the subjective view of an expert. A detailed description of what is measured for each EFC is provided in the appendix A.

2.3.2. Sample Characteristics

The NES is exploratory in nature. For subject selection, the procedure requires a non-random sample. The GEM methodology requires that at least 36 experts from each participant country should answer the survey (Reynold et al., 2005). Experts are selected on the basis of reputation and experience, thus making it a convenience sample (Amorós

et al., 2013). The experts should come from different areas related to entrepreneurship, for instance, policymakers, bankers, entrepreneurship professors, or businesspeople who are socially recognized as entrepreneurs because of their trajectory. The GEM methodology recommends that at least 20% of these 36 experts are entrepreneurs or business owners and that 50% are professionals (Reynolds et al., 2005). After all, this database is based on a convenience sample of key individuals.

The sample for this study consists of 1,605 cases collected in the years 2010, 2011, and 2012. Among the experts, 760 (47.4%) of the sample are entrepreneurs, and the others 845 cases (52.6%) are non-entrepreneurs. Table 3 shows the descriptive information for the total sample and each group individually.

As mentioned above, the GEM model defines a set of categories as EFCs: financing for entrepreneurs, governmental policies for entrepreneurs, governmental programs for entrepreneurs, entrepreneurship education and training, R&D transfer, commercial and professional infrastructure for entrepreneurs, internal market openness, physical infrastructure, and cultural and social norms. Nevertheless, according to Levie and Autio (2008), governmental policies, entrepreneurial education, and internal market openness should be split into two groups each; hence, there are 12 dimensions to evaluate in total.

These factors are measured by several questions using a five-point Likert scale (see appendix A). To corroborate if the NES questions are consistent, a reliability analysis was

executed. Table 4 presents the results of the reduction in order to confirm whether the groups of questions for each factor are inter-correlated.

In addition, principal components analysis was performed. This is a technique to obtain a linear transformation of a group of correlated variables. This multivariable technique transforms related variables to a smaller set of uncorrelated variables (Jackson, 2003). By doing this, it is possible to maintain more information and variation for each EFC.

Table 3: Sample Composition

		Entrepreneurs		Non-Entrepreneurs		Total	
Total sample		760	(47%)	845	(53%)	1,605	
Average age		46	years	47	years	47	years
Experience		12	years	10	years	11	years
Gender	Male	563	(74%)	540	(64%)	1,103	(69%)
	Female	197	(26%)	305	(36%)	502	(31%)
Educational Level	Technical training	55	(7%)	28	(3%)	83	(5%)
	Professional training	110	(14%)	68	(8%)	178	(11%)
	University degree	274	(36%)	295	(35%)	569	(35%)
	Postgraduate degree	321	(42%)	454	(54%)	775	(48%)

The GEM also provides a construct focused on perceived opportunities in the NES. Methodologically, this section is a complement to the EFCs. However, for the purpose of this study, it is interesting to analyze in detail each one of the five statements about this topic. Hence, this construct is measured on a five-point Likert scale, for which 1 is “completely disagree” and 5 “completely agree.”

Table 4: Scale Reliability

Factor	Number of Items	Cronbach's Alpha
Financial support	6	0.781
Government policy: general	3	0.773
Government policy: regulation	4	0.601
Government programs	6	0.747
Entrepreneurial education: primary and secondary	3	0.804
Entrepreneurial education: post school	3	0.818
R&D transfer	6	0.799
Commercial infrastructure	5	0.753
Internal market: dynamics	2	0.926
Internal market: openness	4	0.691
Physical infrastructure	5	0.771
Cultural and social norms	5	0.862

2.3.3. Chilean Environment

As was described previously, the EFCs are classified using several dimensions. According to GEM Chile reports, the Chilean context is historically characterized by a strong physical infrastructure. However, the other aspects evaluated usually fall in the mid-level, suggesting that these EFCs are perceived as local constraints to entrepreneurial activity. With information from GEM Chile national reports, Table 5 shows the average value for each of the EFCs. For a more detailed explanation of each variable in the Chilean context, see GEM Chile national reports.

To address the intertemporal dimension of the study, I tested for significant differences in the EFCs between years. The results show no statistical differences at the country level in the analyzed constructs, suggesting that these years can be aggregated in order to analyze the local contextual entrepreneurial environment intertemporally.

At this point, it is necessary to note that the Chilean context is not the subject of this study; instead, this study is focused on individuals' reading of a specific environment. Although other countries could have been included, the choice of Chile as the specific environment does not correspond to any theoretical background but only to the availability of a balanced dataset that provides an appropriate number of experts in both groups (i.e., entrepreneurs and non-entrepreneurs). GEM Chile project has been characterized as one of the countries that include the regional approach into the analysis, such as Spain or Germany, allowing the inclusion of more experts to cover the whole

country. One of the advantages of this feature is the availability of more data as there are at least 36 experts added per each participant region.

Table 5: Chilean Entrepreneurial Framework Conditions, Mean Values by Years

Factor	2010	2011	2012
Financial support	2.61	2.37	2.28
Government policy: general	2.88	2.95	2.91
Government policy: regulation	2.46	2.61	2.63
Government programs	2.73	2.81	2.82
Entrepreneurial education: primary and secondary	1.84	1.87	1.84
Entrepreneurial education: post school	2.86	2.86	2.81
R&D transfer	2.24	2.26	2.25
Commercial infrastructure	2.61	2.66	2.59
Internal market: dynamics	2.58	2.55	2.62
Internal market: openness	2.40	2.39	2.34
Physical infrastructure	3.85	3.82	3.76
Cultural and social norms	2.74	2.77	2.85

Source: Global Entrepreneurship Monitor

2.3.4. Method

The NES questionnaire (appendix A) is designed to obtain the experts' view of a wide range of items, including the EFCs who are core of the questionnaire. Entrepreneurial finance is focused on the availability of financial resources—equity and debt—for small and medium enterprises (SMEs) (including grants and subsidies). Government Policy refers to the extent to which public policies give support to entrepreneurship, and it has two components: how entrepreneurship is viewed as a relevant economic issue and how taxes or regulations are either size-neutral or encourage new and SMEs. Government entrepreneurship programs deal with the presence and quality of programs directly assisting SMEs at all levels of government (national, regional). Entrepreneurship education is focused on the extent to which training in creating or managing SMEs is incorporated within the education and training system at all levels: basic school (primary and secondary) and post-secondary levels (higher education such as vocational, college, business schools, etc.). R&D Transfer refers to the extent to which national research and development will lead to new commercial opportunities and is available to SMEs. Commercial and legal infrastructure points to the presence of property rights, commercial, accounting and other legal and assessment services and institutions that support or promote SMEs. Entry Regulation contains two components: market dynamics at the level of change in markets from year to year, and market openness, which refers to the extent to which new firms are free to enter existing markets. Physical infrastructure measures how easy of access to physical resources—communication, utilities, transportation, land or space—at a price that does not discriminate against SMEs. Finally, cultural and social norms is centered on the extent to which social and cultural norms

encourage or allow actions leading to new business methods or activities that can potentially increase personal wealth and income (Reynolds et al., 2005).

In order to find the best way to test the differences between groups in terms of their reading of the EFCs, I first conducted a Kolmogorov-Smirnov test. This normality test is recommended for samples with more than 50 observations. The technique reveals that this study's variables did not have a normal distribution. Thus, a Mann-Whitney U non-parametric test was conducted to compare entrepreneurs and non-entrepreneurs. This method is useful since it allows one to compare samples but not infer about them. This is a descriptive study that helps clarify whether any disparities exist between types of experts (entrepreneurs and non-entrepreneurs) in terms of their perceptions of EFCs.

2.4. Results and Discussion

Table 6 presents the result of the Mann-Whitney U test. In total, six significant differences were found between the two groups. Government policy, entrepreneurial education, and internal market were subcategorized according to Levie and Autio (2008), and only one subcategory for each construct led to a statistically significant difference. Overall, these results suggest that entrepreneurs possess a more pessimistic perception of the EFCs than non-entrepreneurs. The only variable that entrepreneurs presented a brighter view about is dynamism of the internal market. R&D transfer, commercial infrastructure, and physical infrastructure do not present statistical differences. However, entrepreneurs perceived a slightly better scenario for two of those constructs. Non-entrepreneurs exhibited better associations only for commercial infrastructure.

Even though the entire sample comprises distinguished experts in entrepreneurship, much of the entrepreneurial context is perceived differently by entrepreneurs. The results presented here are in line with the cognitive entrepreneurship literature, which proposed that entrepreneurs' thinking is different than non-entrepreneurs' thinking (Baron, 1998; Grégoire et al., 2011; Krueger, 2003; Mitchell et al., 2002). According to the literature, entrepreneurs tend to overestimate the probability of success (e.g., Arenius & Minniti, 2005; Cooper et al., 1988; Koellinger et al., 2007), so even when entrepreneurs perceive a more adverse environment, their high levels of locus of control and susceptibility to the planning fallacy (Baron, 1998, 2004; Groves et al., 2011; Krueger, 2003; Simon & Houghton, 2002) may lead them to overestimate their own abilities, dedication, and effort. Based on what previous studies have observed, it seems that entrepreneurs may have biases resulting from their overconfidence in their own capabilities (Baron, 1998; Busenitz & Barney, 1997; Koellinger et al., 2007; Simon & Houghton, 2002).

It is important to note that two of the three variables that were not found to have significant differences represent the best and worst dimensions—in comparison to the other EFCs—in the examined years (Poblete & Amorós, 2010). For R&D transfer, entrepreneurs and non-entrepreneurs perceived and recognized that start-ups cannot access the latest technologies and have almost no interaction with universities or any other research centers. An equivalent situation occurs with physical infrastructure, which is the dimension with the best evaluation. For both dimensions, an intuitive explanation could clarify the results. Since there is a lack or evident scarcity of R&D transfer and a visible physical infrastructure, the cognitive variables will not reflect any differences

between those groups. Our findings seem to indicate that in unambiguous situations, it may not be possible to distinguish between entrepreneurs and non-entrepreneurs opinion about external aspects related to entrepreneurship. In this line, Mitchell and Shepherd (2010) suggested that entrepreneurs view the environment more holistically. Thus, I argue that only in extreme situations (i.e., munificence or hostility) is it likely for the mental images of both entrepreneurs and non-entrepreneurs converge.

On the other hand, in order to explain the phenomenon observed regarding commercial infrastructure, it is important to consider the significance that previous information has on mental models (Grégoire et al., 2011; Krueger, 2003; Mitchell et al., 2002). As Jones and Read (2005) suggested, experts tend to rely on historical analysis, which consist of past states, events, goals, and actions. Poblete and Amorós (2010) studied the evolution of the Chilean entrepreneurial context with information-processing theory as their basis. Information-processing theory establishes that experts can store and retrieve information from their long-term memory using highly developed knowledge systems (Lord & Maher, 1990), thus enabling them to immediately recognize things that non-experts struggle to identify and allowing them to overcome complex situations efficiently. According to Poblete and Amorós (2010), this dimension has a particular feature: when compared temporally, commercial infrastructure is evaluated more negatively (Poblete & Amorós, 2010, p.80). As such, it may be possible that the “reputation” gained by this topic explains why it is not possible to perceive differences between the average score observed on entrepreneurs and non-entrepreneurs. Because the evaluation of each construct followed the same pattern for five years consecutively, turning worst, the mental scripts in both groups (entrepreneurs and non-entrepreneurs) seem to be similar.

Consistent with the theory, the results suggest that experts tend to compare each EFC under comparative terms since differences are observed in all the EFCs except for physical infrastructure, R&D transfer, and commercial infrastructure, which are the best, worst, and worst in comparative terms across time respectively. In this sense, since individuals think in terms of a common comparative structure (Gentner, 1983; Markman & Gentner, 1993a; Medin et al., 1995), entrepreneurs and non-entrepreneurs will likely differ in their perceptions unless they are involved in obviously good/bad circumstances.

Regarding perceptions of opportunities, Table 7 presents the results for entrepreneurs and non-entrepreneurs. From here, it is possible to observe that entrepreneurs tend to have more positive perceptions of future opportunities. These results may reinforce other studies suggesting that entrepreneurs use logic and insight to convert problems into opportunities (Sarasvathy, 2011), transforming “as if” situations into “even if” situations. Even though it was not measured directly, our results are in concordance with theoretical studies suggesting that cognitive heuristics, like elaborative counterfactual thinking, precedes entrepreneurial reasoning, especially in negative scenarios (Gaglio, 2004).

Table 6: Mann-Whitney U Test Results for Nine EFCs

Scales	Group	Valid Cases	Mean	Standard Deviation	Mean Ranges	Mann-Whitney U	Z	
Financial support	Non-entrepreneurs	843	2.48	0.72	851.05	278144.50	-4.53	***
	Entrepreneurs	759	2.33	0.68	746.46			
Government policy: general	Non-entrepreneurs	843	3.02	0.89	852.31	277089.00	-4.66	***
	Entrepreneurs	759	2.80	0.94	745.07			
Government policy: regulation	Non-entrepreneurs	840	2.58	0.73	807.96	312936.50	-0.68	
	Entrepreneurs	760	2.57	0.83	792.26			
Government programs	Non-entrepreneurs	843	2.84	0.70	830.64	294507.00	-2.71	***
	Entrepreneurs	758	2.74	0.76	768.03			
Entrepreneurial education: primary and secondary	Non-entrepreneurs	824	1.89	0.71	821.07	279689.00	-3.23	***
	Entrepreneurs	748	1.80	0.74	748.42			
Entrepreneurial education: post school	Non-entrepreneurs	832	2.86	0.80	805.37	297133.00	-1.47	
	Entrepreneurs	746	2.81	0.89	771.80			
R&D transfer	Non-entrepreneurs	842	2.26	0.68	810.28	306675.00	-1.23	
	Entrepreneurs	753	2.24	0.71	784.27			
Commercial infrastructure	Non-entrepreneurs	844	2.62	0.73	806.28	314994.00	-0.48	
	Entrepreneurs	757	2.61	0.75	795.11			
Internal market: dynamics	Non-entrepreneurs	818	2.53	0.97	757.19	284414.50	-2.48	***
	Entrepreneurs	748	2.65	0.99	812.27			
Internal market: openness	Non-entrepreneurs	841	2.41	0.68	826.01	295178.50	-2.48	***
	Entrepreneurs	756	2.33	0.74	768.95			
Physical infrastructure	Non-entrepreneurs	843	3.79	0.73	786.00	306849.00	-1.33	
	Entrepreneurs	757	3.83	0.75	816.65			
Cultural and social norms	Non-entrepreneurs	840	2.84	0.83	828.82	293729.50	-2.68	***
	Entrepreneurs	758	2.74	0.89	767.01			

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ (two tailed)

Table 7: Mann-Whitney U Test Results Regarding Opportunity Existence Perception

Statement	Group	Valid Cases	Mean	Standard Deviation	Mean Ranges	Mann-Whitney U	Z	
There are plenty of good opportunities for the creation of new firms	Non-entrepreneurs	836	3.41	1.04	775	29,8226.50	-1.937	**
	Entrepreneurs	754	3.50	1.09	817			
There are more good opportunities for the creation of new firms than there are people able to take advantage of them	Non-entrepreneurs	834	3.61	1.04	784	30,5813.00	-.655	
	Entrepreneurs	747	3.64	1.11	798			
Good opportunities for new firms have considerably increased in the past five years	Non-entrepreneurs	826	3.72	0.90	755	28,2147.00	-2.574	***
	Entrepreneurs	735	3.82	0.95	810			
Individuals can easily pursue entrepreneurial opportunities	Non-entrepreneurs	835	2.49	0.87	809	30,3584.00	-1.361	
	Entrepreneurs	755	2.44	0.96	780			
There are plenty of good opportunities to create truly high-growth firms	Non-entrepreneurs	825	3.08	1.03	753	28,0755.00	-3.383	***
	Entrepreneurs	752	3.26	1.11	828			

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ (two tailed)

By providing empirical evidence about individuals' image of the environment and the first phase of the opportunity-identification process (McMullen & Shepherd, 2006), I advance that opportunity identification involves pattern recognition (e.g., Baron, 2006) based on one's personal reading of the environment (Haynie et al., 2010), which itself is nurtured by previous knowledge (e.g., Shane, 2000), cognitions (e.g., Groves et al., 2011), and motivations (e.g., Estrin et al., 2013). This research provides empirical evidence suggesting that differences between entrepreneurs and non-entrepreneurs endures even under the restriction that every surveyed individual was an expert in entrepreneurship. Since people encode, process, and use information based on role scripts (Corbett & Hmieleski, 2007), experts could apply different sets of cognitive structures to construct their mental images. Overall, these results show that entrepreneurs perceive more business opportunities in their environment despite perceiving it to be more hostile than non-entrepreneurs do.

2.5. Final Remarks

The entrepreneurship literature agrees on the importance of context since entrepreneurial decisions are influenced by (perceived) context. Individuals are immersed in reality in a sensory manner. Jack and Anderson (2002) argued that new firm creation is not merely an economic process but is embedded in a specific environment. However, individuals process environmental signals based on personal perceptions and judgments, which are often biased (Arenius & Minniti, 2005; Baron, 1998). In this sense, the aim of this study is not to discuss what "reality" is but to explore the mental representations of different

types of experts by comparing entrepreneurs and non-entrepreneurs. Therefore, I analyzed how experts evaluate their surrounding entrepreneurial environment through their ideas, concepts, and information. In this line, I tried to highlight the relative importance of perceptions of the environment rather than the environment itself.

In this study, I found that entrepreneurs' perceptions of the surrounding entrepreneurial environment are different, empirically confirming what theoretical entrepreneurial cognition research has proposed (e.g., Baron, 1998, 2004; Brännback & Carsrud, 2008; Krueger, 2003, 2007). It seems obvious that entrepreneurs and non-entrepreneurs differ in their work experience, and this might explain why they have different readings of the EFCs. Despite the above, it is important to consider that causality is not easy to determine. In fact, differences in cognitive representations may have led subjects to choose different careers in the first place. Even though several studies have argued that how one perceives the world depends on whether that person is an actor or an observer, our understanding of "behavior" as a result of certain "rules" and/or a particular role remains incomplete because of these rules. In other words, it is not clear whether entrepreneurs' cognitive differences are the result of an environmental context that rewards individuals with certain thinking or whether these conditions encourage the development of this type of thinking (Grégoire et al., 2011). Nevertheless, this study contributes to the entrepreneurship literature by adding to the argument that differences between entrepreneurs and non-entrepreneurs regarding how they perceive the environment and business opportunities endure despite the comparison between experts in entrepreneurship.

Our results show that experts who are entrepreneurs perceive the EFCs differently than other experts who play a secondary role but are still involved in the entrepreneurial environment. Considering that entrepreneurs are the “protagonists” and must adhere to the rules of the game (i.e., Chilean EFCs), they bring about a more dramatic criticism regarding most of the evaluated framework, which may suggest that from entrepreneurs’ perspectives, indirect agents do not realize the difficulties that business owners must address. Similar to Mitchell and Shepherd (2010), who focused on the distinction between a first-person opportunities and third-person opportunities, in this case, it is also possible to see the differences that emerge regarding perceptions of the EFCs among actors and observers. As several authors have observed (e.g., Sarasvathy, 2001), entrepreneurs prefer to use effectual processes instead of causal processes (Dew et al., 2009; Murnieks et al., 2011). Thus, although entrepreneurs perceived a more hostile environment than non-entrepreneurs within this study, this perception did not necessarily have a direct impact on the way entrepreneurs act.

Even though the results presented here provide useful information, it is important to consider that there are certain issues that are not covered by this study. In terms of methodology, the GEM project requires that experts should be selected by reputation and experience; indeed, there is a strict protocol for selecting experts (Reynold et al., 2005). Therefore, two issues are immediately eliminated: successfulness and the phase in which entrepreneurs are involved. It may be useful for future studies to incorporate these aspects into their analyses in order to deeply evaluate issues regarding why some entrepreneurs are more successful than others, thus continuing the line of Mitchell et al. (2002) about the scripts of experts and novices. Further, this study did not distinguish between entrepreneurs in different entrepreneurial stages (Reynolds et al., 2005); instead, experts

in the field were compared. Also, this study did not distinguish between business stages. Thus, it may be possible that some (or even most) of the individuals included in the sample are serial entrepreneurs, with each one having already passed through the “valley of death” on to success. Since we grouped all entrepreneurs without distinguishing of their phase, it would be interesting for future research to cover this issue and see how much perceptions change throughout the whole process. Finally, this study did not measure the amount nor type of prior information that each expert had. In this sense, it is important to consider that even though the study is based on the cognitive literature, it did not directly evaluate any cognitive structures nor cognitive processes. Instead, this study evaluated the existence of differences among groups of experts (entrepreneurs and non-entrepreneurs) regarding their personal readings of the context and perceived opportunities.

Despite these issues, I believe that this study’s results are important and provide useful information. This study contributes by providing insights into how experts perceive and evaluate several dimensions of the external environment, focusing empirically on the Chilean context. Starting from the argument that entrepreneurs perceive things differently than non-entrepreneurs, previous research has established the basis of cognition entrepreneurship research. Continuing this framework, this study contends that expert entrepreneurs combine information differently than expert non-entrepreneurs. I believe that combining these elements together contributes to a more complete understanding of how entrepreneurs’ minds work.

References

- Acs, Z. J., Braunerhjelm, P., Audretsch, D. B., & Carlsson, B. (2009). The knowledge spillover theory of entrepreneurship. *Small Business Economics*, 32(1), 15-30.
- Álvarez, C., Urbano, D., & Amorós, J. E. (2014). GEM research: achievements and challenges. *Small Business Economics*, 42(3), 445-465.
- Alvarez, S. A., & Busenitz, L. W. (2001). The entrepreneurship of resource-based theory. *Journal of Management*, 27(6), 755-775.
- Amorós, J. E., Bosma, N., & Levie, J. (2013). Ten years of Global Entrepreneurship Monitor: accomplishments and prospects. *International Journal of Entrepreneurial Venturing*, 5(2), 120-152.
- Arenius, P., & Minniti, M. (2005). Perceptual variables and nascent entrepreneurship. *Small Business Economics*, 24(3), 233-247.
- Audretsch, D. B., & Keilbach, M. (2007). The Theory of Knowledge Spillover Entrepreneurship. *Journal of Management Studies*, 44(7), 1242-1254.
- Baker, T., & Nelson, R. E. (2005). Creating something from nothing: Resource construction through entrepreneurial bricolage. *Administrative Science Quarterly*, 50(3), 329-366.
- Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, 52(1), 1-26.

Baron, R. A. (1998). Cognitive mechanisms in entrepreneurship: Why and when entrepreneurs think differently than other people. *Journal of Business Venturing*, 13(4), 275-294.

Baron, R. A. (2004). The cognitive perspective: a valuable tool for answering entrepreneurship's basic "why" questions. *Journal of Business Venturing*, 19(2), 221-239.

Baron, R. A. (2006). Opportunity recognition as pattern recognition: How entrepreneurs "connect the dots" to identify new business opportunities. *The Academy of Management Perspectives*, 20(1), 104-119.

Baron, R. A., & Ensley, M. D. (2006). Opportunity recognition as the detection of meaningful patterns: Evidence from comparisons of novice and experienced entrepreneurs. *Management Science*, 52(9), 1331-1344.

Baumol, W. J. (1996). Entrepreneurship: Productive, unproductive, and destructive. *Journal of Business Venturing*, 11(1), 3-22.

Bennett, R., & Dann, S. (2000). The changing experience of Australian female entrepreneurs. *Gender, Work & Organization*, 7(2), 75-83.

Bosma, N. (2013). *The Global Entrepreneurship Monitor (GEM) and its impact on entrepreneurship research*. *Foundations and Trends in Entrepreneurship*, 9(2).

Brännback, M., & Carsrud, A. (2008). Do they see what we see?: A critical nordic tale about perceptions of entrepreneurial opportunities, goals and growth. *Journal of Enterprising Culture*, 16(01), 55-87.

Bruni, A., Gherardi, S., & Poggio, B. (2004). Doing gender, doing entrepreneurship: An ethnographic account of intertwined practices. *Gender, Work & Organization*, 11(4), 406-429.

Busenitz, L. W., & Barney, J. B. (1997). Differences between entrepreneurs and managers in large organizations: Biases and heuristics in strategic decision-making. *Journal of Business Venturing*, 12(1), 9-30.

Busenitz, L. W., Gomez, C., & Spencer, J. W. (2000). Country institutional profiles: Unlocking entrepreneurial phenomena. *Academy of Management Journal*, 43(5), 994-1003.

Bygrave, W., Hay, M., Ng, E., & Reynolds, P. (2003). Executive forum: a study of informal investing in 29 nations composing the Global Entrepreneurship Monitor. *Venture Capital: An International Journal of Entrepreneurial Finance*, 5(2), 101-116.

Carter, S., & Shaw, E. (2006). *Womens's Business Ownership: Recent Research and Policy Developments* (pp. 1-96). DTI.

Casson, M. (1982). *The Entrepreneur: An Economic Theory* (2nd ed.). Oxford: Edward Elgar.

Clark, B. W., Davis, C. H., & Harnish, V. C. (1984). Do courses in entrepreneurship aid in new venture creation?. *Journal of Small Business Management*, 2(26), 26-31.

Cooper, A. C., Woo, C. Y., & Dunkelberg, W. C. (1988). Entrepreneurs' perceived chances for success. *Journal of Business Venturing*, 3(2), 97-108.

Corbett, A. C., & Hmieleski, K. M. (2007). The conflicting cognitions of corporate entrepreneurs. *Entrepreneurship Theory and Practice*, 31(1), 103-121.

Davies, H., & Walters, P. (2004). Emergent patterns of strategy, environment and performance in a transition economy. *Strategic Management Journal*, 25(4), 347-364.

Davis, M. A., Curtis, M. B., & Tschetter, J. D. (2003). Evaluating cognitive training outcomes: Validity and utility of structural knowledge assessment. *Journal of Business and Psychology*, 18(2), 191-206.

Dew, N., Read, S., Sarasvathy, S. D., & Wiltbank, R. (2009). Effectual versus predictive logics in entrepreneurial decision-making: Differences between experts and novices. *Journal of Business Venturing*, 24(4), 287-309.

Edelman, L., & Yli-Renko, H. (2010). The impact of environment and entrepreneurial perceptions on venture-creation efforts: bridging the discovery and creation views of entrepreneurship. *Entrepreneurship Theory and Practice*, 34(5), 833-856.

Endsley, M. R. (2000). Theoretical underpinnings of situation awareness: A critical review. *Situation Awareness Analysis and Measurement*, 3-32.

Ericsson, K. A. (2006). The influence of experience and deliberate practice on the development of superior expert performance. *The Cambridge handbook of expertise and expert performance*, 683-703.

Estes, Z., & Hasson, U. (2004). The importance of being nonalignable: a critical test of the structural alignment theory of similarity. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 30(5), 1082-1092.

Estrin, S., Korosteleva, J., & Mickiewicz, T. (2013). Which institutions encourage entrepreneurial growth aspirations?. *Journal of Business Venturing*, 28(4), 564-580.

Gaglio, C. M. (2004). The role of mental simulations and counterfactual thinking in the opportunity identification process. *Entrepreneurship Theory and Practice*, 28(6), 533–552.

Gaglio, C. M., & Katz, J. A. (2001). The psychological basis of opportunity identification: Entrepreneurial alertness. *Small Business Economics*, 16(2), 95-111.

Gartner, W. B. (1985). A conceptual framework for describing the phenomenon of new venture creation. *Academy of Management Review*, 10(4), 696-706.

Gentner, D. (1983). Structure-mapping: A theoretical framework for analogy. *Cognitive Science*, 7(2), 155-170.

Gentner, D., & Markman, A. B. (1994). Structural alignment in comparison: No difference without similarity. *Psychological Science*, 5(3), 152-158.

Grégoire, D. A., Barr, P. S., & Shepherd, D. A. (2010). Cognitive processes of opportunity recognition: The role of structural alignment. *Organization Science*, 21(2), 413-431.

Grégoire, D. A., Corbett, A. C., & McMullen, J. S. (2011). The cognitive perspective in entrepreneurship: an agenda for future research. *Journal of Management Studies*, 48(6), 1443-1477.

Groves, K., Vance, C., & Choi, D. (2011). Examining entrepreneurial cognition: an occupational analysis of balanced linear and nonlinear thinking and entrepreneurship success. *Journal of Small Business Management*, 49(3), 438-466.

Haynie, J. M., Shepherd, D. A., & Patzelt, H. (2012). Cognitive adaptability and an entrepreneurial task: The role of metacognitive ability and feedback. *Entrepreneurship Theory and Practice*, 36(2), 237-265.

Haynie, J. M., Shepherd, D. A., Mosakowski, E., & Earley, P. C. (2010). A situated metacognitive model of the entrepreneurial mindset. *Journal of Business Venturing*, 25(2), 217-229.

Hechavarria, D. M., & Reynolds, P. D. (2009). Cultural norms & business start-ups: the impact of national values on opportunity and necessity entrepreneurs. *International Entrepreneurship and Management Journal*, 5(4), 417-437.

Hindle, K. (2004). Choosing qualitative methods for entrepreneurial cognition research: a canonical development approach. *Entrepreneurship Theory and Practice*, 28(6), 575-607.

Hornsby, J. S., Kuratko, D. F., Shepherd, D. A., & Bott, J. P. (2009). Managers' corporate entrepreneurial actions: Examining perception and position. *Journal of Business Venturing*, 24(3), 236-247.

Hornsby, J. S., Naffziger, D. W., Kuratko, D. F., & Montagno, R. V. (1993). An interactive model of the corporate entrepreneurship process. *Entrepreneurship Theory and Practice*, 17(2), 29-37.

Jack, S. L., & Anderson, A. R. (2002). The effects of embeddedness on the entrepreneurial process. *Journal of Business Venturing*, 17(5), 467-487.

Jackson, J. E. (2005). *A user's guide to principal components*. John Wiley & Sons.

Jones, D. K., & Read, S. J. (2005). Expert-novice differences in the understanding and explanation of complex political conflicts. *Discourse Processes*, 39(1), 45-80.

Kirzner, I. M. (1978). *Competition and entrepreneurship*. Chicago and London: University of Chicago press.

Kirzner, I. M. (1979). *Perception, opportunity, and profit: Studies in the theory of entrepreneurship*. University of Chicago press.

Koellinger, P., Minniti, M., & Schade, C. (2007). "I think I can, I think I can": Overconfidence and entrepreneurial behavior. *Journal of Economic Psychology*, 28(4), 502-527.

Krentzman, H. C., & Samaras, J. N. (1960). *Can small businesses use consultants*. Harvard Business Review, 38(3), 126-136.

Krueger, N. F. (2003). *The cognitive psychology of entrepreneurship*. In Handbook of entrepreneurship research (pp. 105-140). Springer US.

Krueger, N. F. (2007). What lies beneath? The experiential essence of entrepreneurial thinking. *Entrepreneurship Theory and Practice*, 31(1), 123-138.

Krueger, N. F., & Brazeal, D. V. (1994). Entrepreneurial potential and potential entrepreneurs. *Entrepreneurship Theory and Practice*, 18(3), 91-91.

Krueger, N. F., & Carsrud, A. L. (1993). Entrepreneurial intentions: applying the theory of planned behaviour. *Entrepreneurship & Regional Development*, 5(4), 315-330.

Kuratko, D. F., Hornsby, J. S., Naffziger, D. W., & Montagno, R. V. (1993). Implementing entrepreneurial thinking in established organizations. *SAM Advanced Management Journal*, 58(1), 28-39.

Kuratko, D. F., Montagno, R. V., & Hornsby, J. S. (1990). Developing an intrapreneurial assessment instrument for an effective corporate entrepreneurial environment. *Strategic Management Journal*, 11(4), 49-58.

Kwong, C., Jones-Evans, D., & Thompson, P. (2012). Differences in perceptions of access to finance between potential male and female entrepreneurs: Evidence from the UK. *International Journal of Entrepreneurial Behavior & Research*, 18(1), 75-97.

Levie, J., & Autio, E. (2008). A theoretical grounding and test of the GEM model. *Small Business Economics*, 31(3), 235-263.

Levie, J., Autio, E., Acs, Z., & Hart, M. (2014). Global entrepreneurship and institutions: an introduction. *Small Business Economics*, 42(3), 437-444.

Lim, B. C., & Klein, K. J. (2006). Team mental models and team performance: a field study of the effects of team mental model similarity and accuracy. *Journal of Organizational Behavior*, 27(4), 403-418.

Lord, R. G., & Maher, K. J. (1990). Alternative information-processing models and their implications for theory, research, and practice. *Academy of Management Review*, 15(1), 9-28.

Markman, A. B., & Gentner, D. (1993a). Splitting the differences: A structural alignment view of similarity. *Journal of Memory and Language*, 32(4), 517-535.

Markman, A. B., & Gentner, D. (1993b). Structural alignment during similarity comparisons. *Cognitive Psychology*, 25(4), 431-467.

Markman, G. D., Balkin, D. B., & Baron, R. A. (2002). Inventors and new venture formation: the effects of general self-efficacy and regretful thinking. *Entrepreneurship Theory and Practice*, 27(2), 149-165.

McKeithen, K. B., Reitman, J. S., Rueter, H. H., & Hirtle, S. C. (1981). Knowledge organization and skill differences in computer programmers. *Cognitive Psychology*, 13(3), 307-325.

McMullen, J. S., & Shepherd, D. A. (2006). Entrepreneurial action and the role of uncertainty in the theory of the entrepreneur. *Academy of Management Review*, 31(1), 132-152.

Medin, D. L., Goldstone, R. L., & Markman, A. B. (1995). Comparison and choice: Relations between similarity processes and decision processes. *Psychonomic Bulletin & Review*, 2(1), 1-19.

Minniti, M. (2008). The role of government policy on entrepreneurial activity: productive, unproductive, or destructive?. *Entrepreneurship Theory and Practice*, 32(5), 779-790.

Mitchell, J. R., & Shepherd, D. A. (2010). To thine own self be true: Images of self, images of opportunity, and entrepreneurial action. *Journal of Business Venturing*, 25(1), 138-154.

Mitchell, R. K., Busenitz, L. W., Bird, B., Gaglio, C. M., McMullen, J. S., Morse, E. A., & Smith, J. B. (2007). The central question in entrepreneurial cognition research 2007. *Entrepreneurship Theory and Practice*, 31(1), 1-27.

Mitchell, R. K., Busenitz, L., Lant, T., McDougall, P. P., Morse, E. A., & Smith, J. B. (2002). Toward a theory of entrepreneurial cognition: Rethinking the people side of entrepreneurship research. *Entrepreneurship Theory and Practice*, 27(2), 93-104.

Mitchell, R. K., Smith, B., Seawright, K. W., & Morse, E. A. (2000). Cross-cultural cognitions and the venture creation decision. *Academy of Management Journal*, 43(5), 974-993.

Murnieks, C. Y., Haynie, J. M., Wiltbank, R. E., & Harting, T. (2011). 'I Like How You Think': similarity as an interaction bias in the investor-entrepreneur dyad. *Journal of Management Studies*, 48(7), 1533-1561.

Neisser, U. (1976). *Cognition and reality: Principles and implications of cognitive psychology*. WH Freeman/Times Books/Henry Holt & Co.

North, D. C. (1990). *Institutions, institutional change and economic performance*. Cambridge university press.

North, D. C. (1994). *Economic performance through time*. The American economic review, 359-368.

Palich, L. E., & Bagby, D. R. (1995). Using cognitive theory to explain entrepreneurial risk-taking: Challenging conventional wisdom. *Journal of Business Venturing*, 10(6), 425-438.

Poblete, C., & Amorós, J. E. (2010). *Condiciones del contexto para el emprendimiento en Chile: Un análisis de 5 años*. Santiago, Chile: Ediciones Universidad del Desarrollo.

Renko, M., Shrader, R. C., & Simon, M. (2012). Perception of entrepreneurial opportunity: a general framework. *Management Decision*, 50(7), 1233-1251.

Reynolds, P., Bosma, N., Autio, E., Hunt, S., De Bono, N., Servais, I., Lopez-Garcia, P. & Chin, N. (2005). Global entrepreneurship monitor: Data collection design and implementation 1998–2003. *Small Business Economics*, 24(3), 205-231.

Robinson, R. B. (1982). The importance of “outsiders” in small firm strategic planning. *Academy of Management Journal*, 25(1), 80-93.

Román, C., Congregado, E., & Millán, J. M. (2013). Start-up incentives: Entrepreneurship policy or active labour market programme?. *Journal of Business Venturing*, 28(1), 151-175.

Sarasvathy, D. K., Simon, H. A., & Lave, L. (1998). Perceiving and managing business risks: Differences between entrepreneurs and bankers. *Journal of Economic Behavior & Organization*, 33(2), 207-225.

Sarasvathy, S. D. (2001). Causation and effectuation: Toward a theoretical shift from economic inevitability to entrepreneurial contingency. *Academy of Management Review*, 26(2), 243-263.

Sarasvathy, S. D., & Venkataraman, S. (2011). Entrepreneurship as method: open questions for an entrepreneurial future. *Entrepreneurship Theory and Practice*, 35(1), 113-135.

Shane, S. (2000). Prior knowledge and the discovery of entrepreneurial opportunities. *Organization Science*, 11(4), 448-469.

Shane, S., & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *Academy of Management Review*, 25(1), 217-226.

Shane, S., Locke, E. A., & Collins, C. J. (2003). Entrepreneurial motivation. *Human Resource Management Review*, 13(2), 257-279.

Shepherd, D. A., & Krueger, N. F. (2002). An Intentions-Based Model of Entrepreneurial Teams' Social Cognition. *Entrepreneurship Theory and Practice*, 27(2), 167-185.

Shook, C. L., Priem, R. L., & McGee, J. E. (2003). Venture creation and the enterprising individual: A review and synthesis. *Journal of Management*, 29(3), 379-399.

Simon, M., & Houghton, S. M. (2002). The relationship among biases, misperceptions, and the introduction of pioneering products: Examining differences in venture decision contexts. *Entrepreneurship Theory and Practice*, 27(2), 105-124.

Smith, J. B., Mitchell, J. R., & Mitchell, R. K. (2009). Entrepreneurial scripts and the new transaction commitment mindset: Extending the expert information processing theory approach to entrepreneurial cognition research. *Entrepreneurship Theory and Practice*, 33(4), 815-844.

Solomon, G. T., & Weaver, K. M. (1983). Small business institute economic impact evaluation. *American Journal of Small Business*, 8(1), 41-51.

Stenholm, P., Acs, Z. J., & Wuebker, R. (2013). Exploring country-level institutional arrangements on the rate and type of entrepreneurial activity. *Journal of Business Venturing*, 28(1), 176-193.

Stewart Jr, W. H., & Roth, P. L. (2001). Risk propensity differences between entrepreneurs and managers: a meta-analytic review. *Journal of Applied Psychology*, 86(1), 145-153.

Thai, M. T. T., & Turkina, E. (2014). Macro-level determinants of formal entrepreneurship versus informal entrepreneurship. *Journal of Business Venturing*, 29(4), 490-510.

Ucbasaran, D., Westhead, P., & Wright, M. (2009). The extent and nature of opportunity identification by experienced entrepreneurs. *Journal of Business Venturing*, 24(2), 99-115.

Vaghely, I. P., & Julien, P. A. (2010). Are opportunities recognized or constructed?: An information perspective on entrepreneurial opportunity identification. *Journal of Business Venturing*, 25(1), 73-86.

Valliere, D. (2013). Towards a schematic theory of entrepreneurial alertness. *Journal of Business Venturing*, 28(3), 430-442.

Veciana, J. M., & Urbano, D. (2008). The institutional approach to entrepreneurship research. Introduction. *International Entrepreneurship and Management Journal*, 4(4), 365-379.

Venkataraman, S. (1997). The distinctive domain of entrepreneurship research. *Advances in Entrepreneurship, Firm Emergence and Growth*, 3(1), 119-138.

Webb, J. W., Bruton, G. D., Tihanyi, L., & Ireland, R. D. (2013). Research on entrepreneurship in the informal economy: Framing a research agenda. *Journal of Business Venturing*, 28(5), 598-614.

Welter, F., & Smallbone, D. (2011). Institutional perspectives on entrepreneurial behavior in challenging environments. *Journal of Small Business Management*, 49(1), 107-125.

Williams, D. W. (2010). *Why do different new ventures internationalize differently? A cognitive model of entrepreneurs' internationalization decisions*. Dissertation, Georgia State University

Wong, P. K., Ho, Y. P., & Autio, E. (2005). Entrepreneurship, innovation and economic growth: Evidence from GEM data. *Small Business Economics*, 24(3), 335-350.

Wood, M. S., McKelvie, A., & Haynie, J. M. (2014). Making it personal: Opportunity individuation and the shaping of opportunity beliefs. *Journal of Business Venturing*, 29(2), 252-272.

Yusuf, J. E. (2010). Meeting entrepreneurs' support needs: are assistance programs effective?. *Journal of Small Business and Enterprise Development*, 17(2), 294-307.

Zahra, S. A. (1991). Predictors and financial outcomes of corporate entrepreneurship: An exploratory study. *Journal of Business Venturing*, 6(4), 259-285.

Appendix A: Entrepreneurial framework conditions

The following are the specific questions answered by each expert. For each statement experts are asked to respond their level of agreement in a Likert scale, where 1 means totally disagreement and 5 totally agreement. This is a fraction of the National Expert Survey (NES) designed by the Global Entrepreneurship Monitor (GEM).

Financial Support:

1. There is sufficient equity funding available for new and growing firms
2. There is sufficient debt funding available for new and growing firms
3. There are sufficient government subsidies available for new and growing firms
4. There is sufficient funding available from private individuals (other than founders) for new and growing firms
5. There is sufficient venture capitalist funding available for new and growing firms)
6. There is sufficient funding available through initial public offerings (IPOs) for new and growing firms

Government Policy:

1. Government policies (e g , public procurement) consistently favor new firms
2. The support for new and growing firms is a high priority for policy at the national government level
3. The support for new and growing firms is a high priority for policy at the local government level

4. New firms can get most of the required permits and licenses in about a week
5. The amount of taxes is NOT a burden for new and growing firms
6. Taxes and other government regulations are applied to new and growing firms in a predictable and consistent way
7. Coping with government bureaucracy, regulations, and licensing requirements it is not unduly difficult for new and growing firms

Government Programs

1. A wide range of government assistance for new and growing firms can be obtained through contact with a single agency
2. Science parks and business incubators provide effective support for new and growing firms
3. There are an adequate number of government programs for new and growing businesses
4. The people working for government agencies are competent and effective in supporting new and growing firms
5. Almost anyone who needs help from a government program for a new or growing business can find what they need
6. Government programs aimed at supporting new and growing firms are effective

Entrepreneurial Education

1. Teaching in primary and secondary education encourages creativity, self-sufficiency, and personal initiative
2. Teaching in primary and secondary education provides adequate instruction in market economic principles
3. Teaching in primary and secondary education provides adequate attention to entrepreneurship and new firm creation
4. Colleges and universities provide good and adequate preparation for starting up and growing new firms
5. The level of business and management education provide good and adequate preparation for starting up and growing new firms
6. The vocational, professional, and continuing education systems provide good and adequate preparation for starting up and growing new firms

R&D Transfer

1. New technology, science, and other knowledge are efficiently transferred from universities and public research centers to new and growing firms
2. New and growing firms have just as much access to new research and technology as large, established firms
3. New and growing firms can afford the latest technology
4. There are adequate government subsidies for new and growing firms to acquire new technology
5. The science and technology base efficiently supports the creation of world-class new technology-based ventures in at least one area

6. There is good support available for engineers and scientists to have their ideas commercialized through new and growing firms

Commercial Infrastructure

1. There are enough subcontractors, suppliers, and consultants to support new and growing firms
2. New and growing firms can afford the cost of using subcontractors, suppliers, and consultants
3. It is easy for new and growing firms to get good subcontractors, suppliers, and consultants
4. It is easy for new and growing firms to get good, professional legal and accounting services
5. It is easy for new and growing firms to get good banking services (checking accounts, foreign exchange transactions, letters of credit, and the like)

Internal Market

1. The markets for consumer goods and services change dramatically from year to year
2. The markets for business-to-business goods and services change dramatically from year to year
3. New and growing firms can easily enter new markets
4. The new and growing firms can afford the cost of market entry
5. New and growing firms can enter markets without being unfairly blocked by established firms

6. The anti-trust legislation is effective and well enforced

Physical Infrastructure

1. The physical infrastructure (roads, utilities, communications, waste disposal) provides good support for new and growing firms
2. It is not too expensive for a new or growing firm to get good access to communications (phone, internet, etc)
3. A new or growing firm can get good access to communications (telephone, internet, etc) in about a week
4. New and growing firms can afford the cost of basic utilities (gas, water, electricity, sewer)
5. New or growing firms can get good access to utilities (gas, water, electricity, sewer) in about a month

Cultural and Social Norms

1. The national culture is highly supportive of individual success achieved through own personal efforts
2. The national culture emphasizes self-sufficiency, autonomy, and personal initiative
3. The national culture encourages entrepreneurial risk-taking
4. The national culture encourages creativity and innovativeness
5. The national culture emphasizes the responsibility that the individual (rather than the collective) has in managing his or her own life

**Chapter 3. Optimism, Entrepreneurial Experience, and Motivation:
A Cross-Country Analysis Using the Adult Population Survey**

**Optimism, Entrepreneurial Experience, and Motivation:
A Cross-Country Analysis Using the Adult Population Survey**

3.1. Introduction

What is the difference between entrepreneurs and non-entrepreneurs? Some authors have pointed out that the driving force of entrepreneurship is the ability to recognize and exploit opportunities (e.g., Baron, 2004; Keh et al., 2002; Lazear, 2005). If this is the case, why can some individuals recognize entrepreneurial opportunities while others cannot? Over the last decade or so, entrepreneurship research has started to use concepts and tools from cognitive psychology to address this very question. The resulting strand of research has focused on the “mental maps” individuals use to process external information in an attempt to reconstruct how entrepreneurs develop the unique knowledge structures (either scripted or heuristic) they use to assess potential entrepreneurial opportunities (Baron, 1998; Busenitz & Barney, 1997; Busenitz & Law, 1996; Cooper & Saral, 2013; Grégoire et al., 2011; Lazear, 2004; Mitchell et al., 2004, Mitchell et al., 2007). A key insight from this literature is that entrepreneurs tend to be subject to all sorts of biases (including over-optimism and over-confidence) when assessing potential opportunities (Baron, 2000; Gaglio, 2004; Groves et al., 2011; Haynie et al., 2010; Markman et al., 2002; Mitchell et al., 2002; Shook et al., 2003), and unsurprisingly, a large number of papers have found that entrepreneurs tend to be more optimistic about the future prospects of existing opportunities than non-entrepreneurs (e.g., Cooper et al., 1988; Keh et al., 2002).

Within this broad literature, some studies have started to focus on the role that previous entrepreneurial experience has in shaping optimism about the profitability of existing opportunities among entrepreneurs. So far, the results from this literature have not offered a clear picture on the direction of the relationship between optimism and previous entrepreneurial experience. Some papers have suggested that with experience, some entrepreneurs develop unique knowledge structures that allow them to assess the future profitability of an opportunity differently than non-entrepreneurs (Mitchell et al., 2000; Smith et al., 2009). Indeed, it has been suggested that individuals with previous entrepreneurial experience may be able to detect potentially successful opportunities while also maintaining more realistic expectations for the success of a new venture (Dimov, 2010; Farmer et al., 2011; Hmieleski & Baron, 2009). This would be different from individuals who have no experience in this area and who may therefore easily over-estimate the future success of a new venture (Keh et al., 2002; Shane, 2009). Some authors, though, have pointed out that this is not always the case. Indeed, researchers have observed that experienced entrepreneurs do sometimes over-estimate the probability of success of generic new ventures as they may over-estimate their own capabilities in managing the nascent venture and overcoming future difficulties (Levinthal & March, 1993; McMullen & Shepherd, 2006).

To reconcile these results I suggest that two factors have to be considered. First, it is not previous entrepreneurial experience that matters per se but rather the length of this experience. Indeed, learning to recognize the potential prospects of an entrepreneurial opportunity requires time (Dimov, 2007), and this process may affect the expectations individuals have about a potentially profitable opportunity and, hence, their optimism. Second, I suggest that the relationship between optimism and entrepreneurial experience

may be conditioned by a set of additional motivations that may make individuals more inclined to over-value the potential of existing entrepreneurial opportunities. To clarify this point, it is important to start from one of the main tenets of social cognitive theory (Bandura, 1986; Wood & Bandura, 1989), which suggests that the cognitive process behind the recognition of opportunities (and the related optimism about future opportunities) is influenced by internal (e.g., self-efficacy and fear of failure) and external (e.g., social acceptance) motivations (Carsrud & Brännback, 2011). For instance, fear to fail may induce individuals to emphasize the potential costs (Fonseca et al., 2001) associated with a potential opportunity, which can equally negatively influence their perceptions about future opportunities and hence their optimism. The same argument can be applied to external motivations. For instance, the desire to emulate existing entrepreneurs may cause individuals to overlook costs associated with an entrepreneurial opportunity, and this may generate a positive view about the emergence of future entrepreneurial opportunities. A few studies have shown how motivations (both internal and external) may influence the process of opportunity recognition, but not too much is known about the relative importance of internal and external motivations in influencing the optimism individuals have about possible future opportunities. In addition, I argue that internal/external motivations may influence the relationship between optimism and length of entrepreneurial experience. Indeed, fear of failure can deter non-entrepreneurs from recognizing a potentially profitable opportunity and influence their perceptions of future business opportunities, but this internal motivation may be less relevant for experienced entrepreneurs. The same applies to external motivations: the desire to emulate existing entrepreneurs may be important for non-entrepreneurs or for inexperienced entrepreneurs but not so much for experienced entrepreneurs.

The goal of this study is to contribute to the literature on optimism among entrepreneurs, length of entrepreneurial experience, and motivations by focusing on a specific type of optimism—namely, optimism about the emergence of future entrepreneurial opportunities. More specifically, the aim of this study is to understand 1) whether more experienced entrepreneurs tend to be less (or more) optimistic about the emergence of future entrepreneurial opportunities and 2) how internal and external motivations condition the relationship between length of entrepreneurial experience and optimism about the emergence of future entrepreneurial opportunities.

An empirical analysis is conducted on a cross-national sample of 1,363,683 individuals drawn from the Adult Population Survey (APS), which is collected by the Global Entrepreneurship Monitor (GEM) consortium and covers the period from 2001 to 2010. Additionally, the sample includes 85 countries. This large geographical coverage ensures that I can easily control for cross-country (fixed) factors that can potentially influence optimism. The results suggest that entrepreneurs are more optimistic than non-entrepreneurs. However, experienced entrepreneurs are less optimistic than novice entrepreneurs, and I find an inverted U-shaped relationship between entrepreneurial experience and optimism. Additionally, I find that the relationship between optimism and length of entrepreneurial experience is conditioned by individuals' internal and external motivations. More specifically, novice and potential entrepreneurs who are confident in their capabilities and are not concerned about future failure tend to be more optimistic about the emergence of future possibilities than their peers who do not share the same internal motivations. Also, this is not the case for experienced entrepreneurs. My findings about external motivations suggest that entrepreneurs who live in communities where entrepreneurship is perceived as a respectable career option (i.e., entrepreneurship is

culturally supported) are not more optimistic than those who live in areas where there is not cultural support for entrepreneurship. Additionally, this holds for all types of entrepreneurs. The finding on the importance of social capital is quite interesting: potential and novice entrepreneurs who work in communities where there is an informal support network for entrepreneurs tend to be less optimistic about future entrepreneurial opportunities than those who have access to these informal networks.

This study contributes to the existing literature in several ways. For example, it shows that the optimism of entrepreneurs is not constant but varies according to the length of their entrepreneurial experience and the nature of the motivations that drive them. Potential and novice entrepreneurs who are driven by internal motivations tend to be more optimistic about the emergence of future entrepreneurial opportunities unlike experienced entrepreneurs. These results may also be important for policymakers as they may inform policy initiatives in support of entrepreneurship. Indeed, they suggest that the over-optimism that characterizes entrepreneurs in reality may be relevant only for novice and potential entrepreneurs with the result that programs aimed at providing entrepreneurs the instruments needed to better assess existing entrepreneurial opportunities may not be relevant for experienced entrepreneurs.

The rest of the chapter is structured as follows. In Section 3.2, I present the conceptual framework. On Section 3.3 several hypotheses are proposed. Section 3.4 describes the econometric methodology as well as the dataset and the variables. The results are presented in Section 3.5. Finally, some concluding remarks are offered in Section 3.6.

3.2. Conceptual Framework

Cognitive elements refer to the perceptions, analyses, and interpretations of the circumstances surrounding when and where action takes place (Baron, 1998; Busenitz & Barney, 1997; Grégoire et al., 2011; Mitchell et al., 2004; Mitchell et al., 2007). Research in this area focuses on the way people process information. In relation to entrepreneurship, Mitchell et al. (2002, p. 97) defined entrepreneurial cognitions as “the knowledge structures that people use to make assessments, judgments, or decisions involving opportunity evaluation, venture creation, and growth.” Further, Grégoire et al. (2011) pointed out that cognitive theory can be separated into two streams: cognition structures and cognition processes. The cognition structures stream refers to knowledge achieved, and the cognition processes stream deals with the manner in which that knowledge is received and used. In this research, I focus on cognitive processes, building on several studies that suggest that there are several aspects of cognition that may play a key role in certain stages of the entrepreneurial process and explaining some differences between entrepreneurs and non-entrepreneurs (Baron, 1998; Douglas, 2009; Douglas & Shepherd, 2002).

Cognitive entrepreneurship literature suggests that entrepreneurs often under-estimate risks and over-estimate the likelihood of success, so entrepreneurs tend to present optimistic biases as well as have greater regret about missed opportunities (Baron, 1998; Cooper et al., 1988). While some theories point out entrepreneurs’ over-confidence about their knowledge, predictions, and personal ability (e.g., Hayward et al., 2006) to pursue

opportunities, the identification of opportunities relies on personal expectations about how favorable the future is regarding potential business opportunities. In this regard, it is important to consider that in this study, I am concentrating on the first phase of the pursuit of opportunities, which is the subjective belief of the existence of an opportunity, leaving apart the evaluation of the opportunity, which is the second phase (Grégoire et al., 2010; McMullen & Shepherd, 2006). Moreover, since this study measures optimism, I will not make any distinction between first-person opportunity and third-person opportunity since the focus is on generic business opportunities (McMullen & Shepherd, 2006). Therefore, the process of recognizing opportunities is defined as effort to make sense of new information about new conditions to form beliefs (Stage 1) regarding whether or not to enact a course of action to address if this could lead to a certain benefit (Stage 2).

Just as affective and motivational factors, psychological studies have observed that cognitive factors are the main contributors to optimistic biases. A classical cognitive theory is attribution theory. Attribution theory is concerned with the explanations individuals give to explain their own actions and others' actions. Attributions can affect behaviors relating to the consequences of certain outcomes (Seligman & Schulman, 1986) but also thoughts and therefore aspirations of an unpredicted future starting from causal interpretations of external events. Attribution is the linking of causes and conditions to a certain event, which give that event meaning; it is the process by which people can interpret an event and make causal explanations of it (Heider, 1958; Kelley, 1973). Numerous causes may be used to explain an event, and the work in attribution theory has helped develop a clearer understanding of and the rules associated with the relationship between attributions and behavior. These rules may help in predicting and understanding

several things relating to entrepreneurship, such as the relationship between success and/or failure in an entrepreneurial activity and its outcomes for the entrepreneur (e.g., Rogoff et al., 2004; Sserwanga & Rooks, 2012). Attribution theory explains that there are two types of attributions: internal and external. Internal attribution is a causal inference individuals make to explain their behavior that is based on something about themselves, such as attitude or personality (Sserwanga & Rooks, 2012). External attribution, on the other hand, is a causal inference that attributes a person's behavior due to something about the situation he or she is in.

In a similar line, but referring mainly to intentions, the motivation model states that people act based on their intrinsic and extrinsic motivations (Carsrud & Brännback, 2011). Intrinsic motivation refers to a personal interest in a task as seen in studies on multi-dimensional achievement motivation in entrepreneurs (Carsrud et al., 1989; Carsrud et al., 2009; Carsrud & Olm, 1986). Extrinsic motivation refers to an external reward that follows certain behavior. Intrinsic and extrinsic motivations are not mutually exclusive. Hence, based on attribution and motivation theory, entrepreneurs should possess the cognitive structures needed to recognize opportunities when they emerge. Furthermore, the impact of internal and external motivations in certain minds should be processed differently in order to explain the entrepreneur behavior. In fact, entrepreneurs may be more likely than other individuals to engage in counterfactual thinking and, especially, to experience intense regret over past failures to act, often viewing themselves as responsible for any negative results (Baron, 1998). It is important to consider that in this study, we follow Carsrud et al. (2009), who stated that “entrepreneurs have the same motivations as anyone for fulfilling their needs and wants in the world; however, they use

those motivations in a different manner—they create ventures rather than just work in them” (p. 143).

3.3. Hypotheses

Cognitive research on entrepreneurship explicitly states that entrepreneurs tend to use knowledge structures that let them process external information differently than non-entrepreneurs. The result is that their decision making and perceptions of the world around them are affected by several cognitive biases, such as over-optimism, over-confidence (i.e., belief in their ability to bring about a given result), and representativeness (i.e., willingness to generalize from a small number of observations) (e.g., Brännback & Carsrud, 2009; Krueger, 2007; Mitchell et al., 2002, Mitchell et al., 2004; Mitchell & Shepherd, 2010). Some studies have shown that entrepreneurs tend to be over-confident about their capabilities and over-optimistic about potential business opportunities (De Meza & Southey, 1996; Helweg-Larsen & Shepperd, 2001; Koellinger et al., 2007; Ucbasaran et al., 2010), so they may have the tendency to perceive profitable business opportunities in their world even if these may not turn out to be so. Hence, I propose the following:

H1: Entrepreneurs are more optimistic about the emergence of future entrepreneurial opportunities than non-entrepreneurs

The literature on cognitive entrepreneurship and opportunity recognition suggests that entrepreneurs identify opportunities by using cognitive frameworks that vary immensely across individuals based on their experiences (Allison et al., 2000; Baron & Ensley, 2006; Huber et al., 2014). Mitchell et al. (2000) found that the cognitive frameworks of experienced entrepreneurs become clearer and richer with experience compared to those used by novice entrepreneurs, and they tend to have more realistic perceptions of potentially profitable business opportunities. In addition, their heuristics change over time as they gain experience with the result that their expectations are better aligned to the actual future profitability of projects (Mitchell et al., 2007; Douglas, 2009). Conversely, a few studies have suggested that new entrepreneurs might have an immature image of the obstacles and threats involved in the development of a new venture (Grégoire et al., 2010; Mitchell et al., 2002) and will be more likely to over-estimate the future profitability of potential entrepreneurial opportunities (Baron, 1998; De Meza & Southey, 1996; Helweg-Larsen & Shepperd, 2001; Ucbasaran et al., 2010). Therefore, I propose that as entrepreneurs become more experienced, they become less optimistic about the emergence of future business opportunities:

Hypothesis 2: There is an inverse relationship between optimism about future business opportunities and length of the entrepreneurial experience.

The literature on cognitive entrepreneurship suggests that individuals' attitudes toward entrepreneurship are shaped by internal and external motivations (Carsrud & Brännback, 2011; Fehr & Falk, 2002; Oosterbeek, 2010). As mentioned, internal motivations refer to undertaking an activity for its inherent satisfaction rather than for some external reasons

(e.g., financial reward or peer approval). Typically, self-efficacy and fear of failure are the most analyzed internal motivations in entrepreneurship research (Ardichvili et al., 2003; Bandura, 1977; Baron, 2004; Krueger & Dickson, 1994). Self-efficacy is defined as “one’s belief in one’s abilities to succeed Specifically situations” (Bandura, 1977; Baron, 2002; Carsrud et al., 2009), and several studies have identified self-efficacy as an important variable that can explain entrepreneurial motivation (Baron, 2004; Carsrud & Brännback, 2011; Dimov, 2010; Douglas, 2009). Also, it has been found that self-efficacy can also explain why entrepreneurs are more likely to be optimistic about potential entrepreneurial opportunities than non-entrepreneurs (e.g., Elfving et al., 2009; Koellinger et al., 2007) as self-efficacy may induce them to over-estimate the benefits of potential opportunities and overlook their future costs (Fonseca et al., 2001). Equally, fear of failure may color perceptions of the profitability of potential entrepreneurial opportunities as well as optimism about the emergence of future opportunities as individuals may tend to over-estimate the costs associated with future failure (Carsrud & Brännback, 2011; Koellinger et al., 2007). Therefore, I propose the following:

H3: There is a positive relationship between internal motivations and optimism about the emergence of future opportunities.

External motivations include financial reward and/or social acceptance. Individuals who live in countries or communities where entrepreneurship is considered an acceptable career option may tend to over-estimate the benefits associated with entrepreneurship and feel more optimistic about potential opportunities. According to Carsrud et al. (2009) and Baron (2002), role models (i.e., existing successful entrepreneurs) may affect the

perceptions individuals have about future opportunities (Ozgen & Baron, 2007). Equally, the presence of informal support networks in a community can lower the perceived costs of an entrepreneurial venture and can therefore contribute to the positive perceptions individuals have about the emergence of future entrepreneurial opportunities. Hence, I propose the following:

H4: There is a positive relationship between external motivations and optimism about the emergence of future opportunities.

Some empirical studies have suggested that the role of motivation in influencing entrepreneurs' behavior varies with their experience. Novice entrepreneurs tend to be driven by external motivations (e.g., financial rewards) in their activities, whereas internal motivations (e.g., self-efficacy) may be more important for experienced entrepreneurs who may wish to pursue an opportunity to prove their capabilities (e.g., McMullen & Shepherd, 2006). In addition, fear of failure is likely not a relevant deterrent for experienced entrepreneurs, whereas it may be for novice entrepreneurs.

All this may have a bearing on individuals' optimism about the emergence of future entrepreneurial opportunities. Fear of failure may dampen the optimism that novice entrepreneurs have about future opportunities, while self-efficacy may have the opposite effect among experienced entrepreneurs. Therefore, I propose the following:

Hypothesis 5: Internal and external motivations can condition the relationship between optimism about the emergence of future entrepreneurial opportunities and length of the entrepreneurial experience.

3.4. Data, Variables, and Methodology

For the empirical analysis, the main data source is the pooled APS, which covers 85 countries over the period 2001–2010. The APS is assembled by the GEM research consortium and is designed to capture information about respondents' involvement in venture creation as well as their motives and aspirations toward entrepreneurship. In this respect, it is a quite unique data resource as it captures start-up efforts at a very early stage as well as information about established businesses (Reynolds et al., 2005). The APS is the main source of information about entrepreneurship at the cross-national level as it provides internationally comparable data on entrepreneurial activities across the world. Unsurprisingly, it has been widely used to identify the drivers of entrepreneurship in cross-national settings (Alvarez et al., 2014; Amorós & Bosma, 2014; Koellinger, 2008). A detailed table on the size of sample for each country is provided in Appendix B.

As for the dependent variable, APS contains a set of questions around opportunity recognition. Among them, respondents are asked whether they agree with the following statement: "In the next six months there will be good opportunities for starting a business in the area where you live." From the answers to this question, a dummy variable was

constructed as a proxy for optimism taking the value of 1 if respondents agree with this statement and 0 otherwise.

As for the independent variables, I created a set of binary indicators to distinguish first between entrepreneurs and non-entrepreneurs and then between 1) potential entrepreneurs 2) nascent entrepreneurs (business duration from zero to three 3 months) and non-entrepreneurs, 3) baby entrepreneurs (business duration from three months to three-and-a-half years) and non-entrepreneurs, and 4) established entrepreneurs (business duration more than three-and-a-half years) and non-entrepreneurs.

In this model, I also include a set of proxies for internal and external motivations. The first proxy for internal motivations is the variable lack of fear of failure, which was constructed from the following question: “Would fear of failure prevent you from starting a business?” This variable is a dummy variable taking the value of 0 if the respondent’s answer is positive and 1 otherwise. The second proxy for internal motivation is self-efficacy, a dummy variable that takes the value of 1 if the respondent believes that he or she has the right knowledge and skills to start a new venture and 0 otherwise.

Two proxies for external motivations were included as independent variables in this study’s model. The first proxy is a dummy variable that takes the value of 1 if the respondent agrees with the following statement (and 0 otherwise): “You know someone personally who started a business in the past 2 years.” This variable tries to capture the possibility that role models may influence optimism among respondents (Amorós et al.,

2013; Arenius & Minniti, 2005; Scherer et al., 1989). The second proxy for external motivations (i.e., cultural support) captures respondents' perceptions about the extent to which entrepreneurial activities are socially and culturally accepted. The proxy was constructed by combining the answers to the following questions: "Do you agree most people consider entrepreneurship as a desirable career choice," "Do you agree that successful entrepreneurs have a high social status," and "Do you agree that cases of successful entrepreneurship have plenty [of] media attention." The index has four values: 0 if the respondent replies "no" to all three questions, 1 if he or she replies positively only to one question, 2 if the respondent replies "yes" to two questions, and 3 if the respondent replies positively to all questions. In addition, in this empirical specification, I controlled for gender, (the log of) age, as well as the year the survey was administered. Gender was coded as a dummy variable taking the value of 0 for females and 1 for males. Finally, I included a set of country dummies.

A description of the explanatory variables is provided in Table 8. The mean age in our sample was 43 years old, and 47% of the sample were males and 53% were women. In addition, 21% were entrepreneurs, and 38% knew someone personally who started a business in the past two years. Of the sampled individuals, 36% believed there would be good business opportunities in the next six months where they lived, while 64% believed that fear of failure would not prevent them from starting a business. Finally, 49% of the individuals in the sample believed they possessed the knowledge, skill, and experience to start a new venture.

Table 8: Descriptive Statistics

Variable Name	Variable Description	Mean	Std. Dev.	Min	Max
Age	Age (years)	43	15.146	18	99
Gender	Gender Male = 1 and female = 0	0.469	0.499	0	1
Opportunities	In the next six months there will be good opportunities for starting a business in the area where you live. Dummy variable with agree = 1 and disagree = 0	0.361	0.480	0	1
Social capital	You know someone personally who started a business in the past two years. Dummy variable with agree = 1 and disagree = 0	0.380	0.485	0	1
Self-efficacy	You have the knowledge, skill, and experience required to start a new business. Dummy variable with agree = 1 and disagree = 0	0.491	0.500	0	1
Lack of fear to fail	Fear of failure would prevent you from starting a business. Dummy variable with agree = 0 and disagree = 1	0.642	0.480	0	1
Cultural support	Cultural support for entrepreneurship	1.874	0.988	0	3
Non-entrepreneurs	Non-entrepreneurs (with no previous entrepreneurial experience)	0.791	0.407	0	1
Potential entrepreneurs	You are, alone or with others, expecting to start a new business, including any type of self-employment, within the next three years. Dummy variable with agree = 1 and disagree = 0	0.137	0.344	0	1
Nascent entrepreneurs	Actively involved in start-up effort, owner, no wages yet. Dummy variable with yes = 1 and no = 0	0.042	0.200	0	1
Baby business	Manages and owns a business that is up to 42 months old. Dummy variable with yes = 1 and no = 0	0.036	0.187	0	1
Established business	Manages and owns a business that is older than 42 months. Dummy variable with yes = 1 and no = 0	0.065	0.247	0	1

As mentioned in the introduction, the model relates individuals' propensity to expect a business opportunity in the near future with a set of dummy variables that captures the length of their entrepreneurial experience, their internal and external motivations, and a set of interactions between each of the previous variables (while controlling for respondents' basic demographic characteristics). Because the dependent variable is a binary variable, logit is the estimator of choice, and I controlled for potential cross-country correlations by clustering the standard errors around the countries. I also tried using multi-level models but the main results did not change substantially, so I focus here on the logit estimates.

Table 9 provides the (bivariate) correlation coefficients for all the independent variables. These variables are not highly correlated. Also, the variance inflation factor (VIF) results suggest that multi-collinearity is absent (Neter et al., 1990).

Table 9: Correlations among Independent Variables

Variables	1	2	3	4	5	6	7	8	9	10	11
1 Gender	1										
2 Age (log)	-0.031**	1									
3 Non-entrepreneurs	-0.101**	0.008**	1								
4 Potential entrepreneurs	0.086**	-0.192**	-0.279**	1							
5 Nascent entrepreneurs	0.055**	-0.062**	-0.406**	0.293**	1						
6 Baby business	0.046**	-0.055**	-0.378**	0.135**	0.032**	1					
7 Established business	0.091**	0.063**	-0.514**	0.063**	0.008**	-0.034**	1				
8 Lack of fear of failure	0.066**	0.018**	-0.088**	0.076**	0.060**	0.051**	0.061**	1			
9 Self-efficacy	0.160**	-0.039**	-0.265**	0.264**	0.176**	0.159**	0.205**	0.133**	1		
10 Cultural support	0.005**	-0.045**	-0.068**	0.118**	0.042**	0.043**	0.025**	-0.009**	0.090**	1	
11 Social capital	0.115**	-0.161**	-0.160**	0.234**	0.134**	0.109**	0.092**	0.029**	0.257**	0.078**	1

*p < 0.010; **p < 0.005; ***p < 0.001

3.5. Analysis and Results

The results are presented in Tables 10–12. The coefficients presented in these tables are the marginal effects rather than the actual coefficients. Table 10 presents the results of seven models. Model 1 is the baseline model that captures the relationship between optimism and the entrepreneurial status of the individual, whereas Models 2–7 model the relationship between optimism and the length of entrepreneurial experience of each respondent. Table 11 shows the same models where internal motivations (i.e., lack of fear to failure and self-efficacy) and external motivations (i.e., social capital, and cultural support to entrepreneurship) are included as additional control variables. Finally, I estimated a set of models that include the interaction term between each proxy for length of entrepreneurial experience and each indicator of internal and external motivation. I do not report the full estimates of these models; only the results of the test on the joint significance of the interaction terms and the variables in level (i.e., proxies for entrepreneurial experience and the set of internal and external motivations) are presented in Table 12.

Estimates from all the models suggest that men tend to be more optimistic than women. In addition, the older an individual is the less optimistic about future entrepreneurial opportunities he or she becomes. These results are consistent with the entrepreneurship literature, which states that women tend to be more risk averse than men (Gupta, 2009; Kwong et al., 2012) and that young individuals are more likely to start a new firm than older individuals (Lévesque & Minniti, 2006).

Model 2 in Table 10 suggests that entrepreneurs tend to be more optimistic than non-entrepreneurs. Hence, Hypothesis 1 is supported. This result is consistent with previous studies and with the general notion that entrepreneurs tend to have a positive mindset about potential entrepreneurial opportunities even if others do not (e.g., Douglas, 2009; Grégoire et al., 2010; Groves et al., 2011; Haynie et al., 2012). Models 3–7 suggest that as individuals become more experienced, they tend to be less optimistic. In Figure 2, I have plotted the marginal effects against each type of entrepreneurs (i.e., the proxy for length of entrepreneurial experience). While there are studies arguing that entrepreneurs' subjective knowledge and intuition are shaped by experience (e.g., Kor et al., 2007) and that individuals with no prior business ownership experience detect fewer entrepreneurial opportunities (e.g., Baron, 2006), these results suggest that optimism about the emergence of generic business opportunities is not enhanced by experience. Potential entrepreneurs and nascent entrepreneurs are more optimistic about the future than experienced entrepreneurs.

Table 11 examines the relationship between experience and optimism about future opportunities but includes proxies for internal and external motivations as additional controls. The results are similar to those reported in Table 10, and indeed, the shape of the relationship between length of entrepreneurial experience and the marginal effects in Figure 3 is the same as in Figure 2. In addition, each proxy for internal and external motivations is significant, and the marginal effects are positive.

Table 10: Length of Entrepreneurial Experience and Optimism about Future Entrepreneurial Opportunities, ML Estimates

Dependent Variable (Optimism about Future Business Opportunities)							
Control Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Gender	0.326***	0.273***	0.270***	0.304***	0.315***	0.310***	0.231***
(log) Age	-0.294***	-0.319***	-0.177***	-0.276***	-0.285***	-0.314***	-0.193***
Year dummies	yes	yes	yes	yes	yes	yes	yes
Country dummies	yes	yes	yes	yes	yes	yes	yes
Independent Variables							
Non-entrepreneurs		-0.121***					
Potential entrepreneurs			0.193***				0.167***
Nascent entrepreneurs				0.200***			0.137***
Baby business					0.131***		0.121***
Established business						0.062***	0.069***
Pseudo R2	0.0702	0.0787	0.0896	0.078	0.0732	0.0713	0.0967
Number of observations	886379	886379	806842	886379	886379	886379	806842

* $p < 0.010$; ** $p < 0.005$; *** $p < 0.001$

Note: The marginal effects are reported in the table.

Figure 2: Length of Entrepreneurial Experience and Optimism about Future Entrepreneurial Opportunities, Marginal Effects

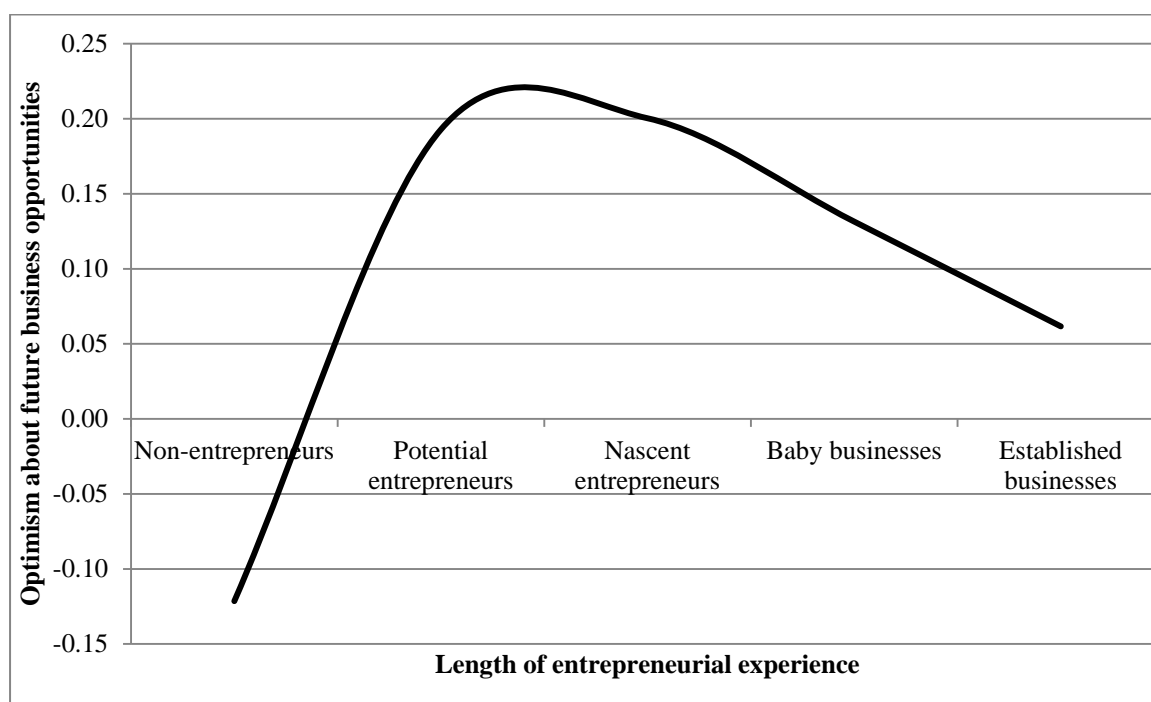


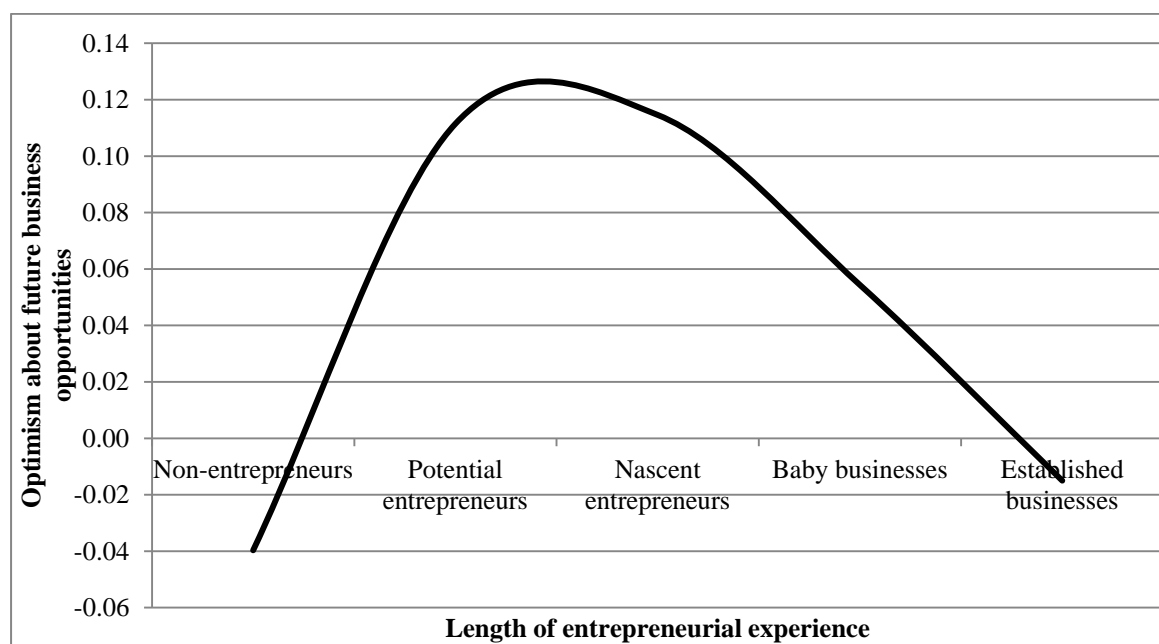
Table 11: Length of Entrepreneurial Experience, Optimism about Future Entrepreneurial Opportunities, and Motivations, ML Estimates

Dependent Variable (Optimism about Future Business Opportunities)							
Control Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Gender	0.139***	0.130***	0.130***	0.134***	0.138***	0.142***	0.123***
(log) Age	-1.143***	-0.159***	-0.082***	-0.136***	-0.140***	-0.136***	-0.082***
Year dummies	yes	yes	yes	yes	yes	yes	yes
Country dummies	yes	yes	yes	yes	yes	yes	yes
Independent Variables							
Non-entrepreneurs		-0.040***					
Potential entrepreneurs			0.111***				0.103***
Nascent entrepreneurs				0.115***			0.094***
Baby business					0.054***		0.064***
Established business						-0.015***	0.010***
Lack of fear of failure	0.041***	0.039***	0.037***	0.039***	0.040***	0.041***	0.034***
Self-efficacy	0.101***	0.094***	0.089***	0.095***	0.099***	0.103***	0.081***
Cultural support	0.060***	0.060***	0.058***	0.060***	0.060***	0.060***	0.058***
Social capital	0.114***	0.112***	0.104***	0.110***	0.113***	0.114***	0.100***
Pseudo R ²	0.1216	0.1225	0.1290	0.1244	0.1222	0.1217	0.1315
Number of observations	329530	329530	320445	329530	329530	329530	320445

*p < 0.010; **p < 0.005; ***p < 0.001

Note: The marginal effects are reported in the table.

Figure 3: Length of Entrepreneurial Experience, Optimism about Future Entrepreneurial Opportunities, and Motivations, Marginal Effects



Finally, Table 12 presents the results of the test on the joint significance of length of the entrepreneurial experience, (internal and external) motivations, and their interactions. The results show that these variables are jointly significant and confirm the hypothesis that internal and external motivations can condition the relationship between optimism and length of entrepreneurial experience. The marginal effects (calculated using the Ai and Norton's [2003] procedure) have been plotted against each type of entrepreneur but under different values for internal and external motivations. For instance, the first panel from Figure 4 plots the marginal effects for each type of entrepreneur in two cases—namely, when the variable lack of fear of failure is equal to 0 and then when it is equal to 1. The plot shows that both novice (or nascent) entrepreneurs and potential entrepreneurs with no fear of failure tend to be more optimistic about the emergence of future entrepreneurial activities. On the contrary, lack of fear of failure does not matter to experienced entrepreneurs (or established businesses). Indeed, there is no difference in the size of the two sets of marginal effects associated with experienced entrepreneurs. The second panel in Figure 4 refers to the role of self-efficacy and confirms the same results I just illustrated in the case of lack of fear of failure. Novice entrepreneurs and potential entrepreneurs who are self-confident about their capabilities (i.e., have self-efficacy) also tend to be more optimistic about the emergence of future entrepreneurial opportunities than their peers without self-efficacy.

The results about external motivations are also of interest. The third panel of Figure 4 shows that the differences in the marginal effects observed previously between potential and nascent entrepreneurs on the one hand and experienced entrepreneurs on the other

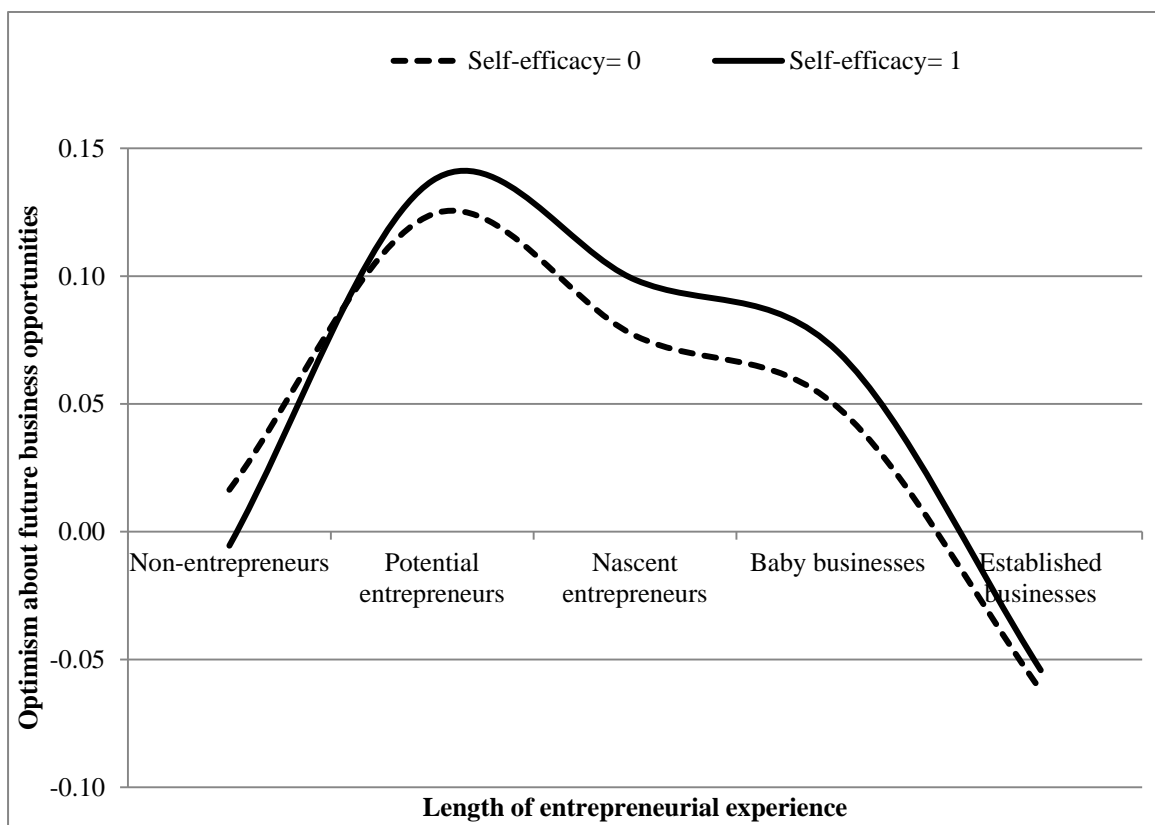
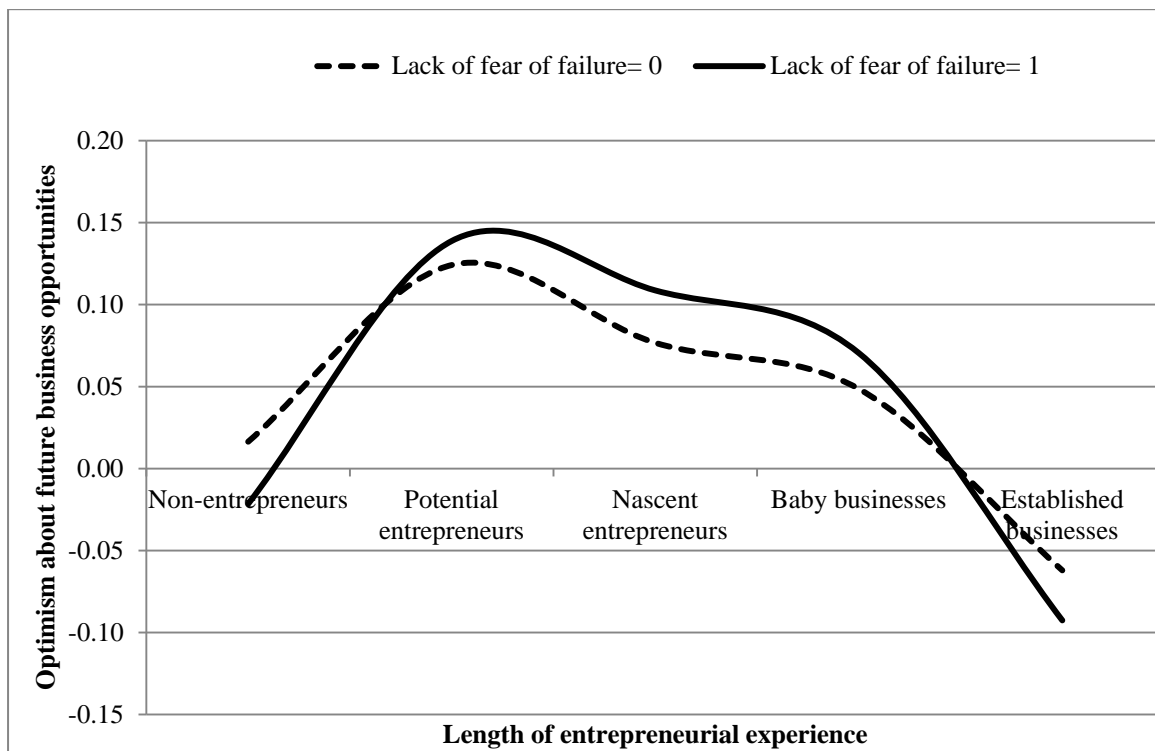
disappear if we focus on cultural support. In other words, entrepreneurs from communities that culturally approve of entrepreneurship are not more optimistic than those who live in communities in which entrepreneurship is not culturally approved, and this applies to all categories of entrepreneurs. However, the opposite is true for social capital: potential and novice entrepreneurs who work in communities where there is an informal support network for entrepreneurs tend to be less optimistic about future entrepreneurial opportunities than those who do not have access to these informal networks. As in the case of internal motivations, this effect disappears in the case of experienced entrepreneurs. It is important to note that the plots in Figure 4 do not show how an entrepreneur changes his or her vision about potential business opportunities (Ardichvili et al., 2003; Haynie et al., 2012, Keh et al., 2002) but how optimistic (about future business opportunities) entrepreneurs with different entrepreneurial experience are. Altogether, these results suggest that optimism is really reserved for new entrepreneurs who are mostly driven by internal motivations rather than by external motivations.

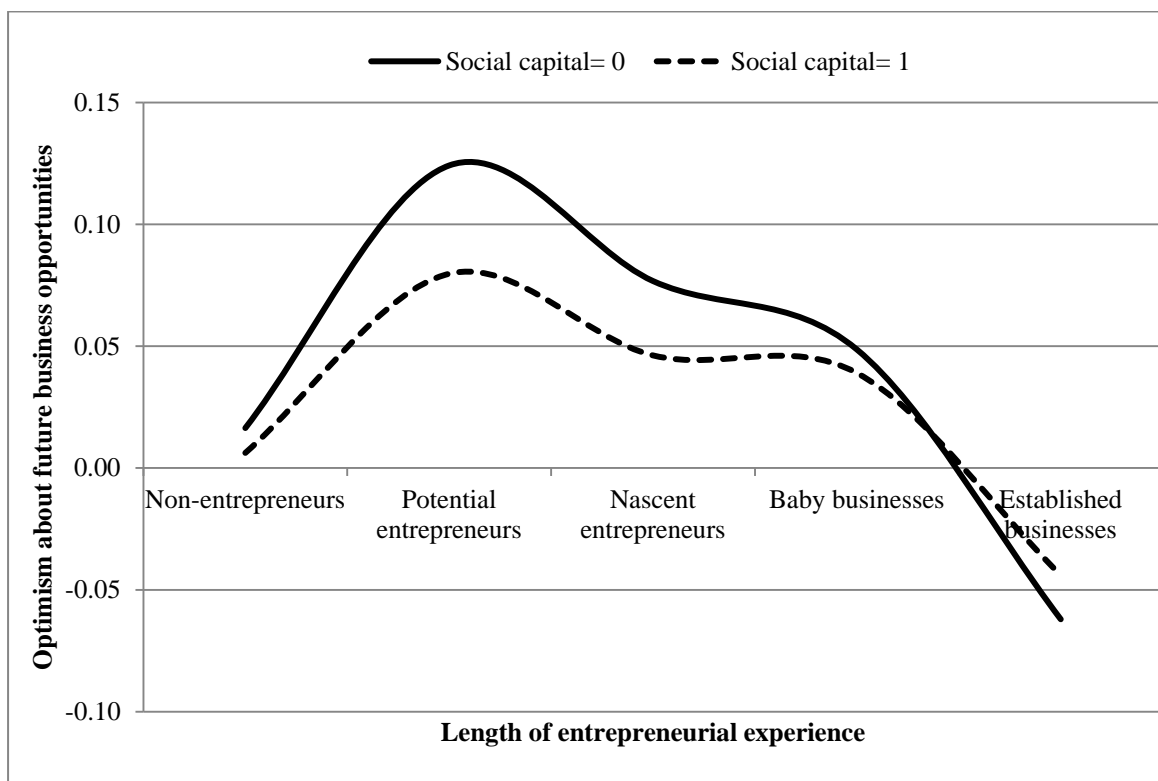
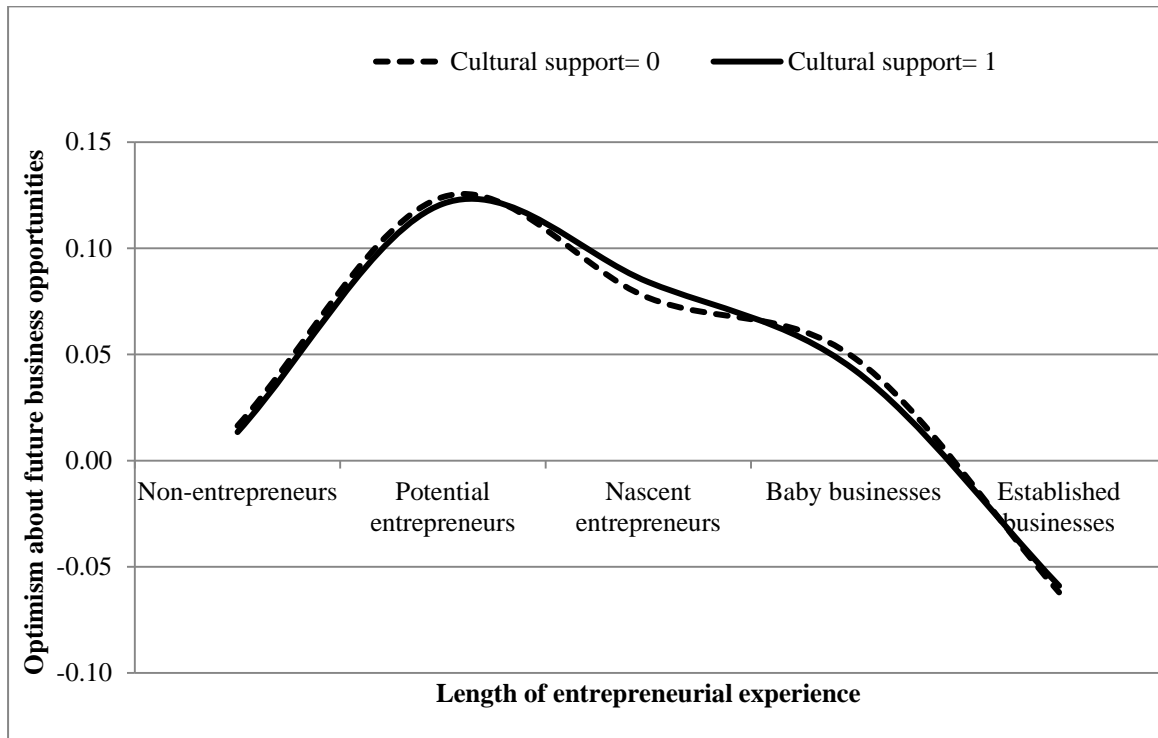
Table 12: Tests on the Joint Significance of the Interaction Terms and the Corresponding Variables

	Lack of fear of failure	Self-efficacy	Cultural support	Social capital
Non-entrepreneurs	p-value = 0	p-value = 0	p-value = 0	p-value = 0
Potential entrepreneurs	p-value = 0	p-value = 0	p-value = 0	p-value = 0
Nascent entrepreneurs	p-value = 0	p-value = 0	p-value = 0	p-value = 0
Baby businesses	p-value = 0	p-value = 0	p-value = 0	p-value = 0
Established businesses	p-value = 0	p-value = 0	p-value = 0	p-value = 0

Note: The null hypothesis is that the variables (each proxy for length of entrepreneurial experience, each motivation—internal and external—and their interactions) are all equal to zero.

Figure 4: Relationship between Optimism and Length of Entrepreneurial Experience under Different Values of the (Internal and External) motivation variables, marginal effects





3.6. Discussion and Conclusions

This study analyzed the differences in optimism about the emergence of future business opportunities between entrepreneurs and non-entrepreneurs and among entrepreneurs with entrepreneurial experience of different lengths. This analysis was conducted using the APS assembled by the GEM consortium and covers the period 2001–2010.

Firstly, the findings are consistent with previous studies indicating that young individuals and men tend to be more optimistic about future opportunities than women or older individuals. Secondly, I contribute to the literature by providing more evidence about the key role played by experience in shaping individuals' optimism around future business opportunities. The results show that entrepreneurs generally tend to be more optimistic than non-entrepreneurs although more experienced entrepreneurs tend to be less optimistic than new entrepreneurs. These findings are consistent with previous studies about the relationship between opportunities and experience or non-theoretical knowledge (e.g., Kor et al., 2007).

Thirdly, the results show that both internal and external motivations are positively correlated to optimism and condition the relationship between optimism and length of entrepreneurial experience. Novice and potential entrepreneurs who are confident about their capabilities and are not concerned about future failure tend to be more optimistic about the emergence of future possibilities than their peers who do not share the same internal motivations. Also, this is not the case for experienced entrepreneurs. The findings

about external motivations suggest that all types of entrepreneurs who live in communities or countries where entrepreneurship is perceived as a respectable career option (i.e., entrepreneurship is culturally supported) are not more optimistic than those who live in communities where there is not cultural support for entrepreneurship. Also, potential and novice entrepreneurs who work in communities rich in social capital for entrepreneurs tend to be less optimistic about future entrepreneurial opportunities than those who live in environments where there is not social capital to support the activities of the entrepreneurs. Ultimately, potential and novice entrepreneurs who are driven by internal motivations tend to be more optimistic about the emergence of future entrepreneurial opportunities. Thus, I provide more evidence about the key role played by internal motivations in shaping individuals' optimism about future business opportunities. This result is consistent with the general view in the cognitive literature that novice entrepreneurs tend to use less structured mental maps when assessing potential opportunities because of their lack of experience with the result that they tend to be subject to over-optimism (Allison et al., 2000; Baron & Ensley, 2006).

These results cast some light on the type of policies that are needed to support entrepreneurship. Novice and potential entrepreneurs need to be helped to counterbalance the effects of their over-optimism and need to be taught how to assess the expected costs and benefits of entrepreneurial activity in a realistic way. Doing so may potentially reduce the risk of new ventures failing in the first years of life with the result that useful resources are not wasted in unsuccessful projects.

References

- Ai, C. & Norton, E. C. (2003), Interaction terms in Logit and Probit Models, *Economics Letters*, 80(1), 123-129.
- Allinson, C. W., Chell, E., & Hayes, J. (2000). Intuition and entrepreneurial behaviour. *European Journal of Work and Organizational Psychology*, 9(1), 31-43.
- Álvarez, C., Urbano, D., & Amorós, J. E. (2014). GEM research: achievements and challenges. *Small Business Economics*, 42(3), 445-465.
- Amorós, J. E., & Bosma, N. (2014). *Global Entrepreneurship Monitor, 2013 Global Report*. Babson Park, MA, U.S.: Babson College; Santiago, Chile: Universidad del Desarrollo; Kuala Lumpur, Universiti Tun Abdul Razak and London, U.K.: Global Entrepreneurship Research Association
- Amorós, J. E., Bosma, N., & Levie, J. (2013). Ten years of Global Entrepreneurship Monitor: accomplishments and prospects. *International Journal of Entrepreneurial Venturing*, 5(2), 120-152.
- Ardichvili, A, Cardozob, R., & Rayc, S. (2003). A theory of entrepreneurial opportunity identification and development. *Journal of Business Venturing*, 18(1), 105–123.
- Arenius, P., & Minniti, M. (2005). Perceptual variables and nascent entrepreneurship. *Small Business Economics*, 24(3), 233-247.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioural change. *Psychological Review*, 84(2), 191-215.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.

Baron, R. A. (1998). Cognitive mechanisms in entrepreneurship: Why and when entrepreneurs think differently than other people. *Journal of Business Venturing*, 13(4), 275-294.

Baron, R. A. (2000). Psychological perspectives on entrepreneurship: cognitive and social factors in entrepreneurs' success. *Current Directions in Psychological Science*, 9, 15-18.

Baron, R. A. (2002). OB and entrepreneurship: the reciprocal benefits of closer conceptual links. *Research in Organizational Behavior*, 24, 225-269.

Baron, R. A. (2004). The cognitive perspective: a valuable tool for answering entrepreneurship's basic "why" questions. *Journal of Business Venturing*, 19(2), 221-239.

Baron, R. A. (2006). Opportunity recognition as pattern recognition: How entrepreneurs "connect the dots" to identify new business opportunities. *The Academy of Management Perspectives*, 20(1), 104-119.

Baron, R. A., & Ensley, M. D. (2006). Opportunity recognition as the detection of meaningful patterns: Evidence from comparisons of novice and experienced entrepreneurs. *Management Science*, 52(9), 1331-1344.

Brännback, M., & Carsrud, A. (2009). *Cognitive maps in entrepreneurship: researching sense making and action*, in *Understanding the Entrepreneurial Mind: Opening the Black Box*. Eds. A. Carsrud and M. Brännback, pp. 75-96.

Busenitz, L. W., & Barney, J. B. (1997). Differences between entrepreneurs and managers in large organizations: Biases and heuristics in strategic decision-making. *Journal of Business Venturing*, 12(1), 9-30.

Busenitz, L., & Lau, C. (1996). A cross-cultural cognitive model of new venture creation. *Entrepreneurship Theory and Practice*, 20, 4, 25-39.

Carsrud, A., & Brännback, M. (2011). Entrepreneurial motivations: what do we still need to know? *Journal of Small Business Management*, 49, 9–26.

Carsrud, A., Brännback, M., Elfving, J., & Brandt, K. (2009). *Motivations: The Entrepreneurial Mind and Behavior*, in *Understanding the Entrepreneurial Mind: Opening the Black Box*. Eds. A. Carsrud and M. Brännback, pp. 141-166.

Cooper, A. C., Woo, C. Y., & Dunkelberg, W. C. (1988). Entrepreneurs' perceived chances for success. *Journal of Business Venturing*, 3(2), 97-108.

Cooper, D. & Saral, K. (2013). Entrepreneurship and team participation: An experimental study. *European Economic Review*, 59, 126-140.

De Meza, D., & Southey, C. (1996). The borrower's curse: optimism, finance and entrepreneurship. *Economic Journal*, 106, 375–386.

Deci, E., & Ryan, R. (2008). Self-determination theory: A macro theory of human motivation, development, and health. *Canadian Psychology/Psychologie canadienne*, 49, 182-185.

Dimov, D. (2007). Beyond the single-person, single-insight attribution in understanding entrepreneurial opportunities. *Entrepreneurship Theory and Practice*, 31(5), 713-731.

- Dimov, D. (2010). Nascent entrepreneurs and venture emergence: Opportunity confidence, human capital, and early planning. *Journal of Management Studies*, 47(6), 1123-1153.
- Douglas, E. (2009). *Perceptions - Looking at the world through entrepreneurial lenses*. In, A. Carsrud & M. Brännback (Eds.), *Understanding the entrepreneurial mind*. New York, NY: Springer. pp. 3-22.
- Elfving, E., Brännback, M., & Carsrud, A. (2009). Toward A Contextual Model of Entrepreneurial Intentions. In, A. Carsrud & M. Brännback (Eds.), *Understanding the entrepreneurial mind*. New York, NY: Springer, pp. 23-34.
- Farmer, S., Yao, X., & Kung-Mcintyre, K. (2011). The behavioral impact of entrepreneur identity aspiration and prior entrepreneurial experience. *Entrepreneurship Theory and practice*, 35(2), 245-273.
- Fehr, E. & Falk, A. (2002). Psychological foundations of incentives. *European Economic Review*, 46, 687-724.
- Fonseca, R., Lopez-Garcia., P., & Pissarides, C. (2001). Entrepreneurship, start-up costs and employment. *European Economic Review*, 45, 692-705.
- Gaglio, C. M. (2004). The role of mental simulations and counterfactual thinking in the opportunity identification process. *Entrepreneurship Theory and Practice*, 28(6), 533–552.
- Grégoire, D., Shepherd, D., & Lambert, L. (2010). Measuring Opportunity-Recognition Beliefs: Illustrating and Validating an Experimental Approach. *Organizational Research Methods*, 13(1), 114-145.

Groves, K., Vance, C., & Choi, D. (2011). Examining entrepreneurial cognition: an occupational analysis of balanced linear and nonlinear thinking and entrepreneurship success. *Journal of Small Business Management*, 49(3), 438-466.

Gupta, V. K., Turban, D. B., Wasti, S. A., & Sikdar, A. (2009). The role of gender stereotypes in perceptions of entrepreneurs and intentions to become an entrepreneur. *Entrepreneurship Theory and Practice*, 33(2), 397-417.

Haynie, J. M., Shepherd, D. A., & Patzelt, H. (2012). Cognitive adaptability and an entrepreneurial task: The role of metacognitive ability and feedback. *Entrepreneurship Theory and Practice*, 36(2), 237-265.

Haynie, J. M., Shepherd, D., Mosakowski, E., & Earley, P. C. (2010). A situated metacognitive model of the entrepreneurial mindset. *Journal of Business Venturing*, 25(2), 217-229.

Helweg-Larsen, M., & Shepperd, J. (2001). Do moderators of the optimistic bias affect personal or target risk estimates?. *Personality and Social Psychology Review* 5, 74-95.

Hmieleski, K. M., & Baron, R. A. (2009). Entrepreneurs' optimism and new venture performance: A social cognitive perspective. *Academy of Management Journal*, 52(3), 473-488.

Huber, L., Sloof, R. & Van Praag M. (2014). The effect of early entrepreneurship education: Evidence from a field experiment. *European Economic Review* 72, 76-97.

Keh, H., Foo, M., & Lim, B. (2002). Opportunity evaluation under risky conditions: The cognitive processes of entrepreneurs. *Entrepreneurship Theory and Practice*, 27(2), 125-148.

Koellinger, P. (2008). Why are some entrepreneurs more innovative than others?. *Small Business Economics*, 31(1), 21-37.

Koellinger, P., Minniti, M., & Schade, C. (2007). "I think I can, I think I can": Overconfidence and entrepreneurial behavior. *Journal of Economic Psychology*, 28(4), 502-527.

Kor, Y. Y., Mahoney, J. T., & Michael, S. C. (2007). Resources, capabilities and entrepreneurial perceptions. *Journal of Management Studies*, 44(7), 1187-1212.

Krueger, N. F. (2003). *The cognitive psychology of entrepreneurship*. In Handbook of entrepreneurship research (pp. 105-140). Springer US.

Krueger, N. F. (2007). What lies beneath? The experiential essence of entrepreneurial thinking. *Entrepreneurship Theory and Practice*, 31(1), 123-138.

Krueger, N., & Dickson, P. (1994). How believing in ourselves increases risk taking: perceived self-efficacy and opportunity recognition. *Decision Sciences*, 25, 385-400.

Kwong, C., Jones-Evans, D., & Thompson, P. (2012). Differences in perceptions of access to finance between potential male and female entrepreneurs: Evidence from the UK. *International Journal of Entrepreneurial Behavior & Research*, 18(1), 75-97.

Laussel, D., & Le Bron, M. (1995). A general equilibrium theory of firm formation based on individual unobservable skills. *European Economic Review*, 39, 1303-1319.

Lazear, E. (2004). Balanced Skills and Entrepreneurship. *American Economic Review*, 94, 208–211.

Lazear, E. (2005). Entrepreneurship. *Journal of Labor Economics*, 23, 649–680.

Levesque, M., & Minniti, M. (2006). The effect of aging on entrepreneurial behavior. *Journal of Business Venturing*, 21, 177-194.

Levinthal, D., & March, J. (1993). The myopia of learning. *Strategic Management Journal*, 14(S2), 95-112.

Markman, G. D., Balkin, D. B., & Baron, R. A. (2002). Inventors and new venture formation: the effects of general self-efficacy and regretful thinking. *Entrepreneurship Theory and Practice*, 27(2), 149-165.

McMullen, J. S., & Shepherd, D. A. (2006). Entrepreneurial action and the role of uncertainty in the theory of the entrepreneur. *Academy of Management Review*, 31(1), 132-152.

Mitchell, J. R., & Shepherd, D. A. (2010). To thine own self be true: Images of self, images of opportunity, and entrepreneurial action. *Journal of Business Venturing*, 25(1), 138-154.

Mitchell, R. K., Busenitz, L. W., Bird, B., Gaglio, C. M., McMullen, J. S., Morse, E. A., & Smith, J. B. (2007). The central question in entrepreneurial cognition research 2007. *Entrepreneurship Theory and Practice*, 31(1), 1-27.

Mitchell, R. K., Busenitz, L. W., Lant, T., McDougall, P. P., Morse, E. A., & Smith, J. B. (2004). The distinctive and inclusive domain of entrepreneurial cognition research. *Entrepreneurship Theory and Practice*, 28(6), 505-518.

Mitchell, R. K., Busenitz, L., Lant, T., McDougall, P. P., Morse, E. A., & Smith, J. B. (2002). Toward a theory of entrepreneurial cognition: Rethinking the people side of entrepreneurship research. *Entrepreneurship Theory and Practice*, 27(2), 93-104.

Mitchell, R. K., Smith, B., Seawright, K. W., & Morse, E. A. (2000a). Cross-cultural cognitions and the venture creation decision. *Academy of Management Journal*, 43(5), 974-993.

Neck, H., & Greene, P., (2011). Entrepreneurship Education: Known Worlds and New Frontiers. *Journal of Small Business Management*, 49, 55-70.

Oosterbeek, H., van Praag, M. & Ijsselstein, A. (2010). The impact of entrepreneurship education on entrepreneurship skills and motivation. *European Economic Review* 54, 442-454.

Ozgen, E., & Baron, R. (2007). Social sources of information in opportunity recognition: Effects of mentors, industry networks, and professional forums. *Journal of Business Venturing*, 22(2), 174-192.

Reynolds, P., Bosma, N., Autio, E., Hunt, S., De Bono, N., Servais, I., Lopez-Garcia, P. & Chin, N. (2005). Global entrepreneurship monitor: Data collection design and implementation 1998–2003. *Small Business Economics*, 24(3), 205-231.

Ryan, R., & Deci, E. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78.

Scherer, R., Adams, J., Carley, S., & Wiebe, F. (1989). Role model performance effects on development of entrepreneurial career preference. *Entrepreneurship, Theory and Practice*, 13(3), 53-71.

Shane, S. (2009). Why encouraging more people to become entrepreneurs is bad public policy. *Small Business Economics*, 33(2), 141-149.

Shook, C. L., Priem, R. L., & McGee, J. E. (2003). Venture creation and the enterprising individual: A review and synthesis. *Journal of Management*, 29(3), 379-399.

Smith, J. B., Mitchell, J. R., & Mitchell, R. K. (2009). Entrepreneurial scripts and the new transaction commitment mindset: Extending the expert information processing theory approach to entrepreneurial cognition research. *Entrepreneurship Theory and Practice*, 33(4), 815-844.

Ucbasaran, D., Westhead, P., Wright, M., & Flores, M. (2010). The nature of entrepreneurial experience, business failure and comparative optimism. *Journal of Business Venturing*, 25(6), 541-555.

Wood, R., & Bandura, A. (1989). Social cognitive theory of organizational management. *Academy of Management Review*, 14, 361-384.

Zahra, S., Korri, J., & Yu, J. (2005). Cognition and international entrepreneurship: implications for research on international opportunity recognition and exploitation. *International Business Review*, 14, 129-146.

Appendix B: List of countries surveyed by GEM over the period 2001-2010 and number of individuals surveyed by country and year.

Country	Year survey was administered										Total
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	
United States	1983	7059	9197	2007	2021	3093	2166	5249	5002	4000	41777
Russia	2012	2190	0	0	0	1894	1939	1660	1695	1736	13126
Egypt	0	0	0	0	0	0	0	2636	0	2769	5405
South Africa	1827	6993	3262	3252	3268	3248	0	3270	3135	3279	31534
Greece	0	0	2000	2008	2000	2000	2000	2000	2000	2000	16008
Netherlands	2013	3510	3505	3507	3582	3535	3539	3508	3003	3502	33204
Belgium	2038	4057	2184	3879	4047	2001	2028	1997	3989	2000	28220
France	1991	2029	2018	1953	2005	1909	2005	2018	2019	2012	19959
Spain	2016	2000	2000	16980	19384	28306	27880	30879	28888	26388	184721
Hungary	2000	2000	0	2878	2878	2500	1500	2001	2000	2000	19757
Italy	1973	2002	2003	2945	2001	1999	2000	3000	3000	3000	23923
Romania	0	0	0	0	0	0	2046	2206	2093	2235	8580
Switzerland	0	2001	2003	0	5456	0	2148	0	2024	2002	15634
Austria	0	0	0	0	2197	0	2002	0	0	0	4199
UK	4899	16002	22010	24006	11203	43033	41829	8000	30003	3000	203985
Denmark	2022	2009	2008	2009	2010	10000	2001	2012	2012	1957	28040
Sweden	2056	2000	2025	26700	2002	2003	2001	0	0	2492	41279
Norway	2874	2036	2040	2883	2015	1999	1996	2049	2029	2002	21923
Poland	2000	2000	0	2001	0	0	0	0	0	0	6001
Germany	7058	15041	7534	7523	6577	4049	0	4751	6032	5552	64117
Peru	0	0	0	2007	0	1997	2000	2052	2021	2108	12185
Mexico	2014	1002	0	0	2011	2015	0	2605	0	2605	12252
Argentina	1992	1999	2004	2003	2008	2007	2018	2031	2008	2001	20071
Brazil	2000	2000	2000	4000	2000	2000	2000	2000	2000	2000	22000
Chile	0	2016	1992	0	1997	2007	4008	2000	5000	7195	26215
Colombia	0	0	0	0	0	2001	2102	2001	2055	11029	19188

Malaysia	0	0	0	0	0	2005	0	0	2002	2010	6017
Australia	2072	3378	2212	1991	2465	2518	0	0	0	2000	16636
Indonesia	0	0	0	0	0	2000	0	0	0	0	2000
Philippines	0	0	0	0	0	2000	0	0	0	0	2000
New Zealand	1960	2000	2009	1933	1003	0	0	0	0	0	8905
Singapore	2004	2005	2008	3852	4004	4011	0	0	0	0	17884
Thailand	0	1043	0	0	2000	2000	2000	0	0	0	7043
Japan	1999	1999	2000	1917	2000	2000	1860	2001	1600	2006	19382
Korea	2008	2015	0	0	0	0	0	2000	2000	2001	10024
China	0	2054	1607	0	2109	2399	2666	0	3608	3677	18120
Turkey	0	0	0	0	0	2417	2400	2400	0	2401	9618
India	2011	3047	0	0	0	1999	1662	2032	0	0	10751
Pakistan	0	0	0	0	0	0	0	0	0	2007	2007
Iran	0	0	0	0	0	0	0	3124	3350	3359	9833
Canada	1939	2007	2028	2004	6418	2038	0	0	0	0	16434
Morocco	0	0	0	0	0	0	0	0	1500	0	1500
Algeria	0	0	0	0	0	0	0	0	2000	0	2000
Tunisia	0	0	0	0	0	0	0	0	2000	2001	4001
Ghana	0	0	0	0	0	0	0	0	0	2447	2447
Angola	0	0	0	0	0	0	0	1518	0	2167	3685
Uganda	0	0	1035	2005	0	0	0	0	2095	2267	7402
Zambia	0	0	0	0	0	0	0	0	0	2039	2039
Portugal	2000	0	0	1000	0	0	2023	0	0	2002	7025
Ireland	1971	2000	2000	1978	2000	2008	2007	2001	0	2000	17965
Iceland	0	2000	2011	2002	2002	2001	2002	2002	2005	2001	18026
Finland	2001	2005	2005	2000	2010	2005	2005	2011	2004	2006	20052
Latvia	0	0	0	0	1964	1958	2000	2011	2003	2001	11937
Serbia	0	0	0	0	0	0	2200	2297	2300	0	6797
Montenegro	0	0	0	0	0	0	0	0	0	2000	2000
Croatia	0	2001	2000	2016	2000	2000	2000	1996	2000	2000	18013

Slovenia	0	2030	2012	2003	3016	3008	3020	3019	3030	3012	24150
Bosnia and Herzegovina	0	0	0	0	0	0	0	2028	2000	2000	6028
Macedonia	0	0	0	0	0	0	0	2000	0	2002	4002
Czech Republic	0	0	0	0	0	2001	0	0	0	0	2001
Guatemala	0	0	0	0	0	0	0	0	2190	2285	4475
Costa Rica	0	0	0	0	0	0	0	0	0	2003	2003
Panama	0	0	0	0	0	0	0	0	2000	0	2000
Venezuela	0	0	2000	0	2000	0	1794	0	1693	0	7487
Bolivia	0	0	0	0	0	0	0	2000	0	3524	5524
Ecuador	0	0	0	2010	0	0	0	2142	2200	2077	8429
Uruguay	0	0	0	0	0	1997	2000	2027	2001	2034	10059
Azores	0	0	0	0	0	0	0	0	0	1010	1010
Tonga	0	0	0	0	0	0	0	0	1184	0	1184
Vanuatu	0	0	0	0	0	0	0	0	0	1182	1182
Kazakhstan	0	0	0	0	0	0	2000	0	0	0	2000
Shenzhen	0	0	0	0	0	0	0	0	2000	0	2000
Puerto Rico	0	0	0	0	0	0	1998	0	0	0	1998
Dominican Republic	0	0	0	0	0	0	2081	2019	2007	0	6107
Hong Kong	0	2000	2000	2004	0	0	2058	0	2000	0	10062
Trinidad & Tobago	0	0	0	0	0	0	0	0	0	2016	2016
Jamaica	0	0	0	0	2180	3669	0	2407	2012	2298	12566
Taiwan	0	2236	0	0	0	0	0	0	0	2001	4237
Lebanon	0	0	0	0	0	0	0	0	2000	0	2000
Jordan	0	0	0	2000	0	0	0	0	2006	0	4006
Syria	0	0	0	0	0	0	0	0	2002	0	2002
Saudi Arabia	0	0	0	0	0	0	0	0	2000	2000	4000
Yemen	0	0	0	0	0	0	0	0	2065	0	2065
West Bank & Gaza Strip	0	0	0	0	0	0	0	0	2080	1992	4072
United Arab Emirates	0	0	0	0	0	2001	2180	0	2056	0	6237
Israel	1869	2004	0	1933	0	0	2019	2030	2073	2007	13935

**Chapter 4. Growth Expectations through Innovative Entrepreneurship:
The Role of Subjective Valuations and Length of Entrepreneurial
Experience.**

Growth Expectations Through Innovative Entrepreneurship: The Role of Subjective Valuations and Length Of Entrepreneurial Experience

4.1. Introduction

A rich body of research has examined the determinants of firm growth (e.g., Davidsson, 1991; Steffens et al., 2009; Wiklund et al., 2003), identifying three prerequisites that must be fulfilled for a firm to grow: (1) opportunities available for the firm, (2) the ability to recognize and capture these opportunities successfully, and (3) firm decision makers' motivation to pursue these opportunities (Davidsson, 1991). According to Autio and Acs (2010), among these factors, the latter one, which refers to the willingness to grow, has received less attention. Several theoretical and empirical studies have pointed out that there are many factors influencing both firms and entrepreneurs in their intention and willingness to grow (e.g., Cliff, 1998; Davidsson, 1991; Gundry and Welsch, 2001). For example, it has been suggested that some entrepreneurs have an innate desire to grow, whereas other entrepreneurs rationally evaluate the best choice among strategic orientations. In this regards, Rosenbusch et al. (2011) pointed out that entrepreneurs are likely to conclude that innovation benefits firm development irrespective of the circumstances. Considering that prior research has suggested that entrepreneurs do not necessarily follow normative models in their thinking, their knowledge structures, assessments, judgements, and decisions may be different from managers (e.g., Busenitz and Barney, 1997). In this regards, even when personality variables and motivations have been included into the analysis (e.g., Verheul and Van Mil, 2008), there is still little evidence about how heuristics, such as mental simulations that lead to subjective valuations, may foster over-optimistic growth aspirations. Considering the contributions the cognitive perspective has provided to the field (see Baron, 2004; Shepherd, 2015), it

has been suggested that studying the impact mental simulations may have on several dimensions of the firm is fertile territory for further research.

The purpose of this study is to fill a gap in the literature, motivated by prior calls (e.g., Mitchell et al., 2007; Shepherd, 2015) to attend to the effect of strategic orientation and experience on self-reflection in order to construct aspirations. Specifically, this study focuses on the role subjective valuations play in regard to entrepreneurs' growth aspirations. Therefore, this study attempts to contribute to the current discussion on entrepreneurial cognitions by proposing a model constructed using a heuristic-based approach that investigates how entrepreneurs increase their growth aspirations based on their subjective valuations and beliefs about the best alternative or mechanism to reach their goals. This study extends previous works (e.g., Cliff et al., 2006; Dutta and Thornhill, 2008) by focusing on the cognitive coherence among strategic orientation, subjective valuations, and growth aspirations. In terms of the entrepreneurship process, this study centers on the stage before any real outcomes unfold as it is individuals' entrepreneurial intentions that lead to behaviors. However, this study aggregates new evidence in the attempt to more fully understand the connection between innovative entrepreneurship and performance outcomes. Furthermore, this study explains entrepreneurs' over-optimism in the innovation-performance relationship (Rosenbusch et al., 2011).

This research is based on the paradigm that human functioning is a result of the interplay between personal, behavioral, and environmental influences (Bandura, 1986); consequently, pre-conceived ideas and beliefs—denoted by experiences and mental

simulations—are determinants of behaviors (Krueger, 2003). It is important to mention that while entrepreneurs' intentions—and thus their decision making—may be profoundly influenced by their surrounding context (Dutta and Thornhill, 2008), the following analysis will focus on self-created images: mental simulations and expectations. Drawing upon this cognitive perspective and grounded by a heuristic-based approach, I propose that the length of entrepreneurial experience moderates the relationship between developing an innovative strategy and subjective valuations of innovation, whereas, through the development of innovative entrepreneurship, entrepreneurs' confidence in innovation directly and indirectly determines how ambitious they are regarding their aspirations for growth.

It is important to note that similar to studies like Koellinger (2008), this research distinguishes between innovative and imitative entrepreneurship (at the market level rather than on a global scale), considering innovation as a subjective concept that depends on the perspective of the observer. Concretely, for the purpose of this study, individuals act as imitative entrepreneurs when they start new ventures that essentially replicate prevailing practices, and innovative entrepreneurs when they found firms that exhibit novelty and difference, either at product-market level, technological processes and novel organizational designs (Cliff et al., 2006). The length of entrepreneurial experience is considered an indicator that includes all the pre-conceived beliefs and knowledge that an individual acquires while involved in entrepreneurial activity (Davidsson and Honig, 2003; Felin and Zenger, 2009; McMullen and Shepherd, 2003). Furthermore, this study assumes that subjective valuations emerge from mental simulations, which are a form of heuristic to estimate probability and causality (Gaglio, 2004; Mitchell et al., 2007). Finally, in accordance with Autio and Acs (2010), growth expectations are considered an

entrepreneur's intentions and expected goals of the growth trajectory she or he would like the venture to follow.

4.2. Theoretical background and hypothesis

A heuristic-based approach argues that individuals are subjects to cognitive biases due to the utilization of simplified decisions rules (Busenitz and Barney, 1997; Mitchell et al., 2007). Having a heuristic-based logic enables individuals to make sense of uncertain and complex situations. Entrepreneurs, in particular, are regularly involved in these kinds of situations. For example, it has been argued that entrepreneurs have innovative ideas that are not always very linear or factually based. In this sense, heuristics not only affect the process of opportunity recognition but also impact strategic decision making under uncertainty (Hodgkinson et al., 1999). By using heuristics, entrepreneurs take greater risks than they think they are taking because, given the nature of heuristics, there are unperceived risks involved in the decision-making process since relevant information is ignored (e.g., proper data or sufficient analysis). Consequently, even when it is recognized that there are several forms of innovative entrepreneurship, the focus will be on any variance from purely imitative entrepreneurship. In other words, the comparison is going to be between imitative entrepreneurs and innovative entrepreneurs regardless the degree of innovativeness.

Expectations are one of the most important components in decision models, so they have been included in several theories of human behavior, including economic theory, decision

theory (March, 1994; Townsend et al., 2010), and expectancy theory (Vroom, 1964), among others. When decision-making processes rely on heuristics, optimistic expectations are very likely to result, and although heuristics are more effective when an individual lacks experience (Hodgkinson et al., 1999)—turning experience into a “compass” that constantly corrects their comprehension of reality for sense-making purposes (Brännback and Carsrud, 2009)—heuristics lead to decisions that are characterized by three features (Mitchell et al., 2007): they are at least partially subjective, they are influenced by personal beliefs that are guided by specific methods for solving problems for which no formula exists, and they are based on informal processes and experiences (Busenitz and Barney, 1997; Busenitz and Lau, 1996; Simon and Houghton, 2002). Consequently, subjective valuations are a form of heuristics built from mental simulations, which are cognitive mechanisms people use when making decisions based on personal criteria. As such, subjective valuations of innovation are constructed by personal appraisals as a consumer of innovation, and they occur at both the individual and firm levels.

4.2.1. Innovative entrepreneurship and growth aspirations

Several theories consider that current behavior is a function of individual expectations. If so, individuals necessarily must believe that exerting certain effort can reach some level of performance, which itself must result in the achievement of a particular goal. In this sense, there is a relationship between effort, performance, and expected achievements. This relationship of pre-conceived beliefs has been observed in a meta-analysis by Rosenbusch et al. (2011), who remarked that entrepreneurs tend to have several

arguments about the importance of innovation, such as the belief that innovation benefits new businesses irrespective of the circumstances, so entrepreneurs tend to believe that innovation is always the better approach (Rosenbusch et al., 2011). In this sense, they are more likely than non-entrepreneurs to perceive that success comes after innovation.

The argument that innovation affects business success has been explicitly recognized in several works (e.g., Bausch and Rosenbusch, 2005; Heunks, 1998; Rauch and Frese, 2007); however, it is important to note that success can be manifested in several ways, with firm growth being one of these ways (Dutta and Thornhill, 2008). Previous research on the relationship between innovation and growth at the firm level has identified several mechanisms through which entrepreneurial innovativeness exerts such effects, such as by enabling firms to gain more loyal customers (e.g., Lieberman and Montgomery, 1988) or evade price competition (e.g., Porter, 1980) or by imposing entry barriers to avoid potential threats (e.g., Greene and Brown, 1997).

One way to analyze the relationship between innovation and growth expectations is to simply assume that entrepreneurs believe that unless they do not do something innovative, they are unlikely to achieve high rates of expansion in their business since there will be intense levels of competition. Alternatively, it is possible to argue that there is a relationship between risks and rewards (Krueger and Brazeal, 1994; Miller and Friesen, 1982) such that individuals rationally accept a risky option only if the expected rewards of that option justify the risk assumed. For instance, Baron (2004) analyzed why some individuals decide to become entrepreneurs and suggested that people who choose to become entrepreneurs tend to frame many situations in terms of losses. Grounded in

prospect theory, which is centered on the concept of *subjective value* (i.e., gains or losses) in terms of a reference point, the author suggested that entrepreneurs focus on the possibilities for economic gains they will forfeit if they ignore or overlook an opportunity and continue to work for an existing organization (pp. 224-225). The same logic can be used to explain the relationship between innovation and firm growth. Even though innovative entrepreneurship could be considered riskier than imitative entrepreneurship, entrepreneurs who expect greater outcomes from having an innovative orientation rather than an imitative orientation are more likely to pursue innovative entrepreneurship.

Within the entrepreneurship literature, studies have found that entrepreneurs tend to believe that things will work out. Specifically, evidence suggests that entrepreneurs tend to have an inflated illusion of control in situations and can control results that are beyond their range of action (i.e., are exogenous by nature), and they sometimes tend to believe that exceptions confirm the norm. As such, using only a small sample of information, entrepreneurs often consider themselves ready and able to draw conclusions (e.g., Simon et al., 2000). In this sense, strong evidence has been presented to conclude that entrepreneurs tend to be over-optimistic (e.g., Baron, 1998; Cassar, 2010; Cooper et al., 1988). Lacking input from the environment (i.e., diagnostic cues), entrepreneurs tend to rely on associations about others' cues, which are normally positive outcomes (Simon and Houghton, 2003), and they often underestimate risks and difficulties in their businesses and overestimate the likelihood of success (Baron, 1998, 2004; Cassar, 2010; Cooper *et al.*, 1988; Ucbasaran et al., 2010). As a result, pursuing an innovative strategy should reflect a high desire to succeed. This leads us to propose the following:

H1: Entrepreneurs engaged in innovative entrepreneurship are more likely to have higher growth expectations.

4.2.2. Subjective valuations and growth expectations

Individuals use knowledge structures to make assessments and judgments affecting the decision-making process. In this regard, the cognitive entrepreneurship literature has shown that entrepreneurs tend to make decisions based more on heuristic-based logic than on causal information processing (Baron, 1998; Busenitz and Barney, 1997; Simon et al., 2000). Heuristics are defined as simplifying strategies that individuals use to manage information and make sense of complex and ambiguous situations, such as counterfactual thinking and mental simulations (Gaglio, 2004; Mitchell et al., 2007). Indeed, one of the most common ways individuals make sense of events is through the use of mental simulations.

The imaginary construction of a series of events based on a successive sequence of actions enables individuals to anticipate future scenarios and imagine strategies and tactics that would lead to the achievements of certain goals, such as firm growth (Gaglio, 2004). In this sense, mental simulations lead to subjective valuations, which themselves stem from experiences, judgements, and beliefs that individuals hold about people, objects, or events (Cliff et al., 2006). Evidence suggests that entrepreneurs are prone to using their own judgements to evaluate situations (McVea, 2009), so their criteria depend on parameters like their own personal experiences, emotions, and subjective valuations.

While there are studies about subjective valuations that have observed how perceptions of what is considered appropriate can differ greatly among managers and companies (e.g., Miller, 1996), entrepreneurs are characterized by their (over-)confidence, which is necessary to motivate individuals to go further with their decisions, such as start a business or define a certain innovative strategy (e.g., Koellinger et al., 2007; Markman et al., 2002). Along these lines, Hmieleski and Baron (2008) suggested that entrepreneurs, who are generally confident in their abilities, knowledge, and experience, tend to lead their firms toward challenging growth rates. This implies that entrepreneurs may tend to perceive themselves as being competent to implement more risky strategies (i.e., innovative orientation), enabling them to perform—and so their firms—at certain levels of performance, so they feed on their beliefs. Empirical research has confirmed this relationship between confidence and performance (e.g., Baum and Locke, 2004; Forbes, 2005).

Further, since in the absence of cues, individuals tend to observe instances with positive outcomes (Busenitz and Barney, 1997; Simon and Houghton, 2003), entrepreneurs are likely to make associations that make them over-confident. Considering that growth aspirations combine what the entrepreneur wants with what is possible given the capabilities of the entrepreneur and available resources, with a similar number of available resources, over-confident entrepreneurs will have more perceived capabilities and consequently more growth aspirations. It is important to consider, though, that Hayward et al. (2006) remarked that people's confidence can be manifested under different and independent processes, such as confidence in knowledge, predictions, and personal abilities. Therefore, being confident in innovation can denote optimism about future outputs. Since confident entrepreneurs tend to have higher hopes for success

(Rauch and Frese, 2007), confidence and aspirations should be related (Hayward et al., 2010). Based on these arguments, I posit the following hypothesis:

H2: Entrepreneurs who has higher subjective valuations in innovation will be more likely to have higher growth expectations.

4.2.3. Innovative entrepreneurship and subjective valuations

Economic theory calls the functions that relate to objective values and subjective desirabilities “preference functions,” and the form of these preference functions is inferred from a person’s observed behavior. In this sense, choices reflecting subjective desirability are central to nearly all economic theories of decision making. When entrepreneurs pursue an innovative orientation—since logical reasoning replaces lack of evidence in uncertain environments (e.g., the introduction of pioneer products)—intuitively, but still rationally, they must consider that innovation is a better choice than imitation. Thus, the likelihood of trusting in innovation should be higher in individuals who pursue innovative entrepreneurship. In this regard, neuroscience studies provide evidence that the subjective value of potential rewards is explicitly represented in the human brain (e.g., Kable and Glimber, 2007), so decision-making processes may be actively influenced by subjective valuations.

Moreover, it has been argued that over-optimism can be affected by susceptibility to cognitive biases based on what entrepreneurs believe about themselves (Forbes, 2005). In

this sense, over-optimism and over-confidence are related. According to Busenitz and Barney (1997), entrepreneurs are often susceptible to the use of certain decisions-making biases and heuristics that tend to slant their judgements in a positive direction. Similarly, Simon and Houghton (2003) suggested that over-confidence is more likely to occur when individuals make predictions regarding less repetitive decisions, such as product introductions that are pioneering. In this regard, Hayward et al. (2006) remarked that people's confidence can be manifested under different and independent processes, such as their confidence in knowledge, predictions, and personal abilities. High levels of optimism thus appear to enhance entrepreneurs' reliance on heuristic thinking (Hmieleski and Baron, 2008). Hence, current subjective valuations of innovation are nurtured by prior decisions, such as the prior image of innovation that led entrepreneurs to act as innovators in the first place.

Considering that over-confidence has strategic implications, such as increasing an individuals' probability of making risky products (Simon and Houghton, 2003), and that when entrepreneurs process new information and form expectations, they put a great deal of weight on prior beliefs (Parker, 2006), entrepreneurs' reasoning behind pursuing innovative entrepreneurship may trigger their current image of innovation. Since entrepreneurs are not cognitively homogeneous (Forbes, 2005), engaging in innovative entrepreneurship should lead to certain mental simulations that increase their confidence in innovation. On the basis of this reasoning, the following is proposed:

H3: Entrepreneurs engaged in innovative entrepreneurship have a greater propensity to trust in innovation.

It is important to note that the above hypothesis does not discuss how initial subjective valuations of innovation determine a certain strategy. Considering that subjective valuations are a continuous feature that is modified constantly, the focus is only of the (over-)confidence that entrepreneurs have in their prior decisions. Although I recognize that entrepreneurs' prior image of innovation may determine whether they pursue imitative or innovative strategies, this hypothesis does not discuss this potential bidirectional relationship. Instead, I argue that entrepreneurs involved in innovative entrepreneurship are more likely to nurture their subjective valuations based on their previous decisions (i.e., having developed innovative entrepreneurship).

4.2.4. Mediating effects of subjective valuations

As noted above, there are both empirical and theoretical arguments to suggest that innovative entrepreneurship contributes to growth expectations. Despite these arguments, there is another viewpoint suggesting that an individual's attitudes toward growth may be only partly attributable to an innovative orientation. Psychological studies have observed that while individuals may have similar experiences or observations, those experiences and observations themselves do not necessarily induce the same beliefs or action patterns in different people. In this sense, observations and experiences offer only some understanding about entrepreneurs' behavior (March et al., 1991). According to Felin and Zenger (2009), one way to conceptualize experiences and observations is to think about these as fragmented lessons or data that inform—but do not determine—eventual entrepreneurial beliefs. In this sense, it is possible to argue that subjective valuations of

innovation may or may not enhance expected positive outcomes related to innovative entrepreneurship; innovation only matters when an entrepreneur believes that a strategy itself has attractive potential to affect firm performance.

Individuals' actions are mostly determined by their intentions, which are driven by beliefs. As such beliefs have proven to be one of the most important predictors of behavior (e.g., Krueger, 2003). However, perceptions about a positive relationship between innovation and performance underlie an individual's mental image of future venture outcomes, where the level of reliance with the ongoing strategy ultimately determines entrepreneurs' expectations. Evidence has suggested that expectations are more related to cognitions than to actions, so growth motivations are the outcome of expected growth and individual valuations of achieving growth (Verheul and Van Mil, 2011). As noted above, entrepreneurs suffer from optimistic biases about their chances of success (e.g., Baron, 1998; Cassar, 2010; Simon et al., 2000) and perceive existing risks as being smaller than they are (e.g., Baron, 2004), so entrepreneurs should have a higher tendency to over-trust innovation. Nevertheless, an increase in growth aspirations will only occur if innovative entrepreneurs trust in the potential benefits that innovation has.

Cassar (2010) suggested that "over-optimism tends to be exacerbated when tasks are perceived to be controllable and therefore is likely to be heightened if aspirations are based upon planned activity" (p. 824). Several studies have shown that innovation demands substantial resource consumption and may also lead to increased uncertainty and risks. In addition, evidence shows that the highest rates of business failure are observed among innovative firms, which makes innovation an alternative strategic orientation with

several positive and negative tradeoffs. In this sense, entrepreneurs' level of skepticism must enable them to make better judgements about the feasibility of the chosen strategy and the likelihood of developing it successfully. Innovative entrepreneurs need customers (i.e., individuals or businesses) who are willing to buy new products and services and to try products and services that utilize new technology. Namely, they need customers who are receptive to such innovations and tend to believe they will improve their lives (Levie, 2010). Accordingly, if entrepreneurs tend to exclusively believe that these conditions are covered, the more confident they will be in innovation, leading to higher subjective valuations of innovation. In other words, to the extent that innovative entrepreneurship can make entrepreneurs better attuned to the strategic orientation at hand, their subjective valuations of innovation can both increase and decrease, with each option having different consequences for their growth expectations. Therefore, the following hypothesis is put forth:

H4: Subjective valuations of innovation mediate the relationship between innovative entrepreneurship and growth expectations.

4.2.5. Moderating role of entrepreneurial experience

As mentioned previously, experience provides information for judgements as a form of fragmented lessons, or data (Felin and Zenger, 2009), so entrepreneurs' criterion for the interpretation of reality—to a greater or lesser extent—is modified while they acquire experience. Implicitly, it is assumed that valuations of innovation are constructed based

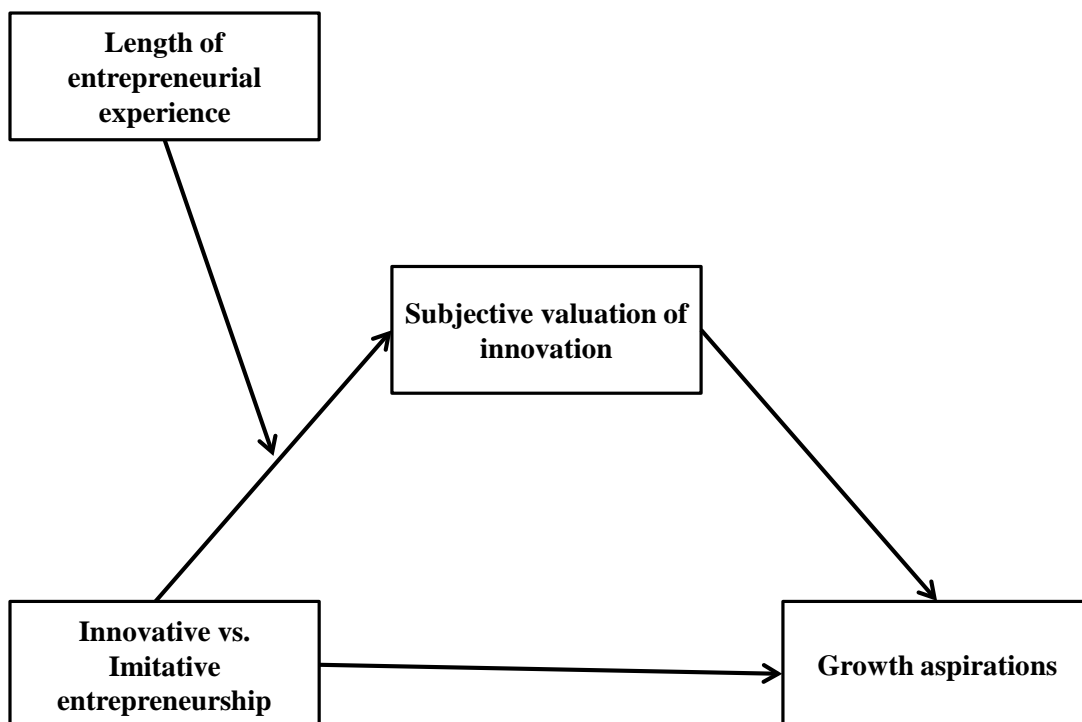
on complex parameters, where both theoretical and tacit knowledge play a key role in the elaboration of mental simulations (e.g., Cliff et al., 2006; Dimov, 2010; Shane, 2000). Considering that perceptions of reality are dynamic and interpretations are subject to revision and replacement (Brannback & Carsrud, 2009), it is possible to explain issues like why the likelihood of innovation decreases with firm age despite available resources (Huerigo and Jaumandreu, 2004). Bager and Schøtt (2004) suggested that differences in aspirations among entrepreneurs may be due to a survival bias, with novice entrepreneurs usually having a less realistic image of the future than established entrepreneurs; hence, the length of entrepreneurial experience should influence the relationship between strategic orientation (i.e., imitative or innovative entrepreneurship) and subjective valuations of innovation.

Considering this line of thinking, established organizations are more likely to already have developed routines, so their activities are institutionalized. However, novice entrepreneurs without pre-developed practices must rely on their own interpretations of reality and their perceptions to make decisions (Gartner et al., 1992). In this sense, entrepreneurs are likely to be more susceptible to cognitive biases in the earliest years of a venture's existence, but this susceptibility is likely to diminish when the entrepreneurs acquire experience (Forbes, 2005). Consequently, the relationship between innovative entrepreneurship and subjective valuations of innovation depends on entrepreneurial experience. Formally, I offer the following:

H5: Entrepreneurial experience moderates the relationship between innovative entrepreneurship and subjective valuations of innovation such that this relationship is weaker for entrepreneurs with more entrepreneurial experience.

In sum, this study proposes a moderated mediation model of the role of subjective valuations of innovation on strategic orientation and growth aspirations. The model suggests that subjective valuations of innovation mediate the relationship between innovative entrepreneurship and growth expectations. I expect that there will be a positive effect on subjective valuations of innovation for innovative entrepreneurs and that this relationship is in turn moderated by the length of entrepreneurial experience. I also expect a positive relationship between innovative entrepreneurship and growth expectation. Further, it is argued that subjective valuations of innovation may promote growth expectations. The overall theoretical model is outlined in Figure 5.

Figure 5: Conceptual model of moderated mediation.



4.3. Method

The model is tested by using the individual-level data for 24 countries that participated in an Adult Population Survey (APS) that was carried out as part of the GEM during 2011. These countries are South Africa, Hungary, Romania, United Kingdom, Sweden, Poland, Peru, Mexico, Argentina, Chile, Malaysia, Thailand, Korea, China, Pakistan, Iran, Algeria, Croatia, Slovenia, Bosnia and Herzegovina, Slovakia, Venezuela, Uruguay, Trinidad and Tobago, Jamaica, Bangladesh, and Taiwan.

Specifically, an initial APS database of more than 162,724 interviews with adult individuals from 18 to 64 years old was used (Reynolds et al., 2005). After the sample was restricted to only entrepreneur participants of the IIP survey of innovation confidence developed by the Institute for Innovation & Information Productivity (see Levie, 2010), the total number of observations in my sample is 11,579². The GEM database is considered suitable since it is focused on measure of differences in entrepreneurial attitudes, activity, and aspirations of individuals from different economies across the globe, thereby enabling representativeness.

² For entrepreneurs involved in more than one business, the selection criterion is based on time. Consequently, information for an entrepreneur's oldest venture is analyzed.

4.3.1. Measures

Growth aspirations. Firm growth ambitions were empirically examined in terms of employment. Similar to previous studies (e.g., Autio, 2007; Autio and Acs, 2010; Hessels et al., 2008; Verheul and Van Mil, 2011), this measure is based on the number of jobs an individual expects to have in the next five years. In concordance with Autio and Acs' (2010) procedure, a natural logarithm of expected jobs was used after removing and resetting extreme cases.

Innovative entrepreneurship. Following Koellinger (2008), the profile of innovativeness was measured using three questions relating to innovation. These questions ask about (1) the novelty of the technology ventures attempt to use, (2) the novelty of the product or service for potential customers, and the expected degree of competition in the market. The responses to these questions were categorized into three answers options. Since the concern of this study was primarily with the distinction between entrepreneurs with pure imitative strategies and those who carry out any type of innovation, consistent with Koellinger (2008), I used the strictest possible definition that the data allow. Hence, imitative entrepreneurship (0) was categorized as entrepreneurs who answer that they do not use new technologies nor procedures for their products or services, that none of their customers consider their product or service new or unfamiliar, and that they have many business competitors. Any other combination of these variables was categorized as innovative entrepreneurship (1).

Subjective valuations of innovation. This construct was measured using two instruments developed by Levie (2010). The first construct is the innovation confidence index, which is measured using three dimensions: willingness to buy new products or services, willingness to try products or services that involve new technology, and the belief that new products or services will improve one's life. Each question was measured using a five-point Likert scale, where 1 indicates strong disagreement with the statement and 5 indicates strong agreement. The second construct is the organizational innovation index, which includes three items: (1) "In the next six months, the organization that you work for is likely to buy products or services that are new to the organization," (2) "In the next six months, you are likely to try products or services that use new technologies in your daily work for the first time," and (3) "In the next six months, new products and services will improve your working life." Similar to the first instrument, respondents rated their level of agreement with each item using a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The internal consistencies of these groups of questions were measured using Cronbach's alpha. The analysis revealed the reliability of the scale (Alpha = .9), so a variable-reduction procedure using principal component analysis was conducted.

Length of entrepreneurial experience. This is a categorical variable that reflects the following categories: (1) nascent entrepreneurs, who are individuals actively involved in setting up their own business; (2) young business owners, who are owners and managers of a business that has existed for 42 months or less; and (3) established business owners, who are owners and managers of a business that has existed for more than 42 months.

Similar to Hessels et al. (2011), in cases in which an individual belongs to more than one category, the highest applicable level was assigned.

Control variables. In addition to country dummies, a total of seven control variables were included. At the individual level, entrepreneurs' age, gender, and educational level were controlled because entrepreneurs' characteristics may be associated with the entrepreneurial decisions they make. Educational level was measured with seven categories: (0) pre-primary, (1) primary, (2) lower secondary, (3) upper secondary, (4) post-secondary, (5) first stage of tertiary education, and (6) second stage of tertiary education. At the firm level, previous research has shown that firm size, export intensity, growth expectations, and industry play an important role in influencing innovation and other aspects of strategic decisions. Firm size was measured by the natural logarithm of the current number of employees within the venture. Export intensity was measured by the percentage of customers overseas with five categories: (1) 76–100%, (2) 26–75%, (3) 11–25%, (4) 1–10%, and (5) none. Industry was measured by grouping the specific International Standard Industrial Classification (ISIC) codes of each firm in the main sectors into one of four categories: (1) extractive, (2) transforming, (3) business service, or (4) consumer oriented.

4.3.2. Statistical procedure

This analysis boils down to two exercises. For the first set of models (Table 14), I started by estimating the factors that determine subjective valuations of innovation using moderated hierarchical regression. Specifically, after controlling others variables that may provide alternative explanations for how subjective valuations of innovation emerge, I focused on a specific strategy differencing between innovative and imitative entrepreneurship and the ways the length of entrepreneurial experience impacts this relationship as a moderator.

In a second exercise, I examined the effects on growth expectations through hierarchical regressions. Basically, this set of models sought to identify the mechanism that underlies growth expectations by observing the direct effect of strategy (imitative versus innovative) and the indirect effect of subjective valuations of innovation in order to clarify the nature of the relationship between innovative entrepreneurship and growth expectations. These results are presented in Table 15.

In both tables, the first model represents the baseline control model for alternative explanations. As a whole, these models accounted for 26% of the variation in subjective valuations of innovation (Table 14) and 54% of the variation in growth expectations (Table 15).

4.4. Empirical Results

4.4.1. Descriptive statistics

Table 13 shows the sample means and standard deviations of the variables (country dummy variables excluded) for each group of entrepreneurs. Of the whole sample, 39.4% involves imitative entrepreneurship, whereas the other 60.6% represents entrepreneurial activity that involves at least one innovative element, such as introducing a new product or process or entering a market with limited expected competition. Approximately 63% of the participants are male and 37% are females, and the average age is 42 years.

In addition, Table 13 summarizes the correlations for all variables, where the highest correlation between any pair of independent variables was 0.265, suggesting a first line of evidence for the discriminant validity of specific construct within the overall model. From here, it is possible to observe that subjective valuations of innovation are positively related to innovative entrepreneurship and growth expectations and that innovative entrepreneurship is positively associated with growth expectations. The variance inflation factor was estimated for all variables in the full models, and the findings indicate that multicollinearity is not a concern since no score was greater than 1.386.

4.4.2. Hypothesis tests

Hypothesis 3 predicted a positive relationship between innovative entrepreneurship and subjective valuations of innovation. The coefficient for innovative entrepreneurship in

Model 2 of Table 14 is positive and significant. This suggests that innovative entrepreneurs are more likely to have higher valuations of innovation. Therefore, this result provides support for Hypothesis 3.

Hypothesis 5 proposes a moderating effect of the length of entrepreneurial experience on the relationship between innovative entrepreneurship and subjective valuations of innovation. Model 4 of Table 14 indicates that, as predicted, the interaction between innovative entrepreneurship and the length of entrepreneurial experience is negative and significant, suggesting that the link between innovative entrepreneurship and subjective valuations of innovation is indeed weaker in the presence of more entrepreneurial experience. The evidence presented is consistent with the reasoning behind Hypothesis 5, thus providing support for the hypothesis.

Table 13: Descriptive statistics and correlations (country dummies are excluded)

Variables	Mean	S.D.	1	2	3	4	5	6	7	8	9
1 Growth	1.118	1.240									
2 Gender	1.370	0.483	-0.079 ***								
3 Age	40.547	12.361	-0.073 ***	0.017							
4 Educational level	3.071	1.382	0.192 ***	0.017	-0.094 ***						
5 Firm Size	1.132	1.106	0.809 ***	-0.077 ***	0.003	0.184 ***					
6 Export intensity	4.369	1.088	-0.197 ***	0.033 ***	-0.014	-0.164 ***	-0.182 ***				
7 Industry	3.111	1.056	-0.053 ***	0.148 ***	-0.082 ***	0.106 ***	-0.085 ***	0.024 **			
8 Length of experience	2.023	0.863	-0.019 **	-0.044 ***	0.265 ***	-0.067 ***	0.071 ***	0.034 ***	-0.118 ***		
9 Innovative entrep.	0.606	0.489	0.147 ***	0.066 ***	-0.042 ***	0.093 ***	0.072 ***	-0.104 ***	0.039 ***	-0.098 ***	
10 Valuations of innov.	0.000	1.000	0.168 ***	-0.008	-0.131 ***	0.026 **	0.085 ***	-0.002	0.079 ***	-0.136 ***	0.127 ***

*p<0.05 **p<0.01 ***p<0.001

Table 14: Hierarchical regression analysis. Dependent variable: subjective valuations of innovation.

Variables	Model 1	Model 2	Model 3	Model 4
Country dummies	yes	yes	yes	yes
Gender	-0.033	-0.038	-0.037	-0.039
Age	-0.005 ***	-0.004 ***	-0.005 ***	-0.005 ***
Educational level	0.035 ***	0.033 ***	0.033 ***	0.032 ***
Firm size	0.067 ***	0.062 ***	0.060 ***	0.061 ***
Export intensity	-0.021	-0.015	-0.015	-0.014
Industry	0.031 **	0.029 **	0.030 **	0.027 **
Innovative entrepreneurship		0.172 ***	0.175 ***	0.533 ***
Length of entrepreneurial experience			0.049 **	0.132 ***
Innov. * Length				-0.141 ***
R ²	0.266	0.278	0.278	0.280
Adjusted R ²	0.262	0.272	0.272	0.274
Change in R ²	0.004	0.006	0.006	0.006

*p<0.05 **p<0.01 ***p<0.001

Table 15: Hierarchical regression analysis. Dependent variable: growth expectation.

Variables	Model 1	Model 2	Model 3	Model 4
Country dummies	yes	yes	yes	yes
Gender	-0.058 ***	-0.059 ***	-0.064 ***	-0.045 ***
Age	-0.007 ***	-0.006 ***	-0.005 ***	-0.006 ***
Educational level	0.054 ***	0.052 ***	0.052 ***	0.052 ***
Firm size	0.884 ***	0.882 ***	0.885 ***	0.888 ***
Export intensity	-0.067 ***	-0.063 ***	-0.063 ***	-0.061 ***
Industry	-0.010 ***	-0.011 ***	-0.011 ***	-0.025 ***
Innovative entrepreneurship		0.124 ***	0.117 ***	0.104 ***
Length of entrepreneurial experience			-0.090 ***	-0.103 **
Valuations of innovation				0.086 ***
R ²	0.540	0.542	0.679	0.675
Adjusted R ²	0.538	0.539	0.677	0.673
Change in R ²	0.002	0.003	0.002	0.002

*p<0.05 **p<0.01 ***p<0.001

In the second analysis, variations in growth expectations were examined. Model 2 in Table 15 reveals that the coefficients show a significant positive effect of innovative entrepreneurship on growth expectations, which is in line with Hypothesis 1. Therefore, this suggests that innovative entrepreneurs tend to have higher growth expectations than imitative entrepreneurs (Hypothesis 1).

In regard to Hypothesis 2, which predicted that subjective valuations of innovation are positively related to growth expectation, the coefficient in Models 4 of Table 15 is significant. Hence, this result supports Hypothesis 2: entrepreneurs who trust in innovation have higher growth expectations.

In respect to the mediating role of subjective valuations of innovation (Hypothesis 4), similar to Dimov (2010) and Baron and Tang (2011), I adopted the procedure suggested by Baron and Kenny (1986), which states that mediation occurs under certain conditions: (1) the independent variable must significantly affect the dependent variable when the mediator is not included in the equation, (2) the mediated variable is a significant predictor of the mediator, (3) the mediator is a significant predictor of the dependent variable, and (4) the effect of the mediated variable on the dependent variable diminishes in the presence of the mediator. When the independent variable is no longer significant, that indicates full mediation; however, when the independent variable is reduced but is still significant, that suggests partial mediation. Table 15 shows that the coefficient decreased from 0.124 ($p < 0.001$ in Model 2) to 0.104 ($p < 0.001$ in Model 4). Thus, subjective valuations of innovation partially mediate the positive relationship between innovative entrepreneurship and growth expectations. In order to test the significance of

the mediation effects, I conducted a more rigorous Sobel large-sample test to estimate the statistical significance of the indirect effects. Using an interactive calculation tool for a mediation test (Preacher and Leonardelli, 2001), I found that the mediating effect is significant (Sobel test = 3.44, $p < 0.001$). This result supports Hypothesis 4.

4.5. Discussion

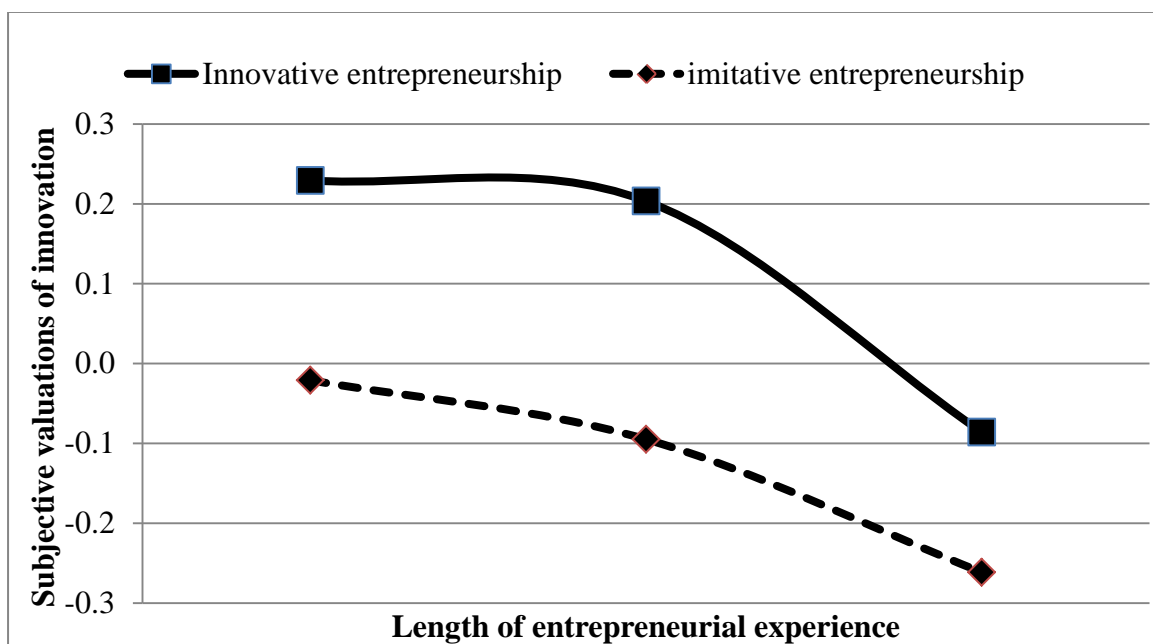
4.5.1. Key findings and implications

The results suggest that innovative entrepreneurs present more confidence in innovation than imitative entrepreneurs, although acquiring entrepreneurial experience makes this relationship weaker. As Figure 6 shows, on average, mature entrepreneurs—both innovative and imitative—tend to have less confidence in innovation than novices. Similarly, on average, a novice innovative entrepreneur will have more confidence in innovation than a novice imitative entrepreneur, and the same occurs if mature entrepreneurs are compared. However, on average, a novice imitative entrepreneur will have more confidence in innovation than a mature innovative entrepreneur. It is important to remark that Figure 6 does not show how entrepreneurs change their subjective valuations of innovation across the whole entrepreneurial process; rather, the figure shows the relationship of subjective valuations of innovation for different groups of entrepreneurs at different stages in the entrepreneurial process.

Further, the results indicate that while innovative entrepreneurs tend to present higher growth expectations per se, subjective valuations of innovation play an important role in

governing the relationship between developing innovative entrepreneurship and growth expectations. Having confidence in innovation has a direct effect on growth expectations and also an indirect effect through the development of innovative entrepreneurship. Certainly, it is important to mention that pre-conceived ideas about innovation are also part of valuations of innovation before any strategic decision is made. However, former opinion about innovation was not measured, and in this sense, details about these pre-conceived ideas are beyond the scope of this research. Although I attempted to overcome with this limitation with the length of entrepreneurial experience, no specific information regarding these ideas is covered in this study.

Figure 6: Mean values of subjective valuations on innovation for each type of entrepreneurial strategy through different entrepreneurial stages



Consistent with prior research, this study suggests that entrepreneurs—particularly novices—tend to be over-optimistic about their own beliefs (e.g., Cassar, 2010). This

over-optimism in young entrepreneurs is also observed in their under-estimation of the risks they face. Early-stage entrepreneurs showed more confidence in innovation, being comparatively more willing to buy, try, and believe that entrepreneurial innovativeness is the best way to reach their goals (i.e., growth expectations). Even though this study does not analyze firm outcomes, Hayward et al. (2010) suggest that over-confidence is one of the most damaging errors of judgments affecting over-entry into new markets and commitment to risky new projects and assets (Camerer and Lovallo, 1999; Simon and Houghton, 2003). Hence, projections based on the results of this study may reinforce prior studies that suggest that fostering a high emphasis on innovative behaviors may indeed be harmful for firm growth (e.g., Stenholm, 2011).

Implicitly, the model presented in this study suggests that individuals have causal rationality, which is nurtured by heuristic-based logic. Previous studies have observed that entrepreneurs collect, process, and evaluate information in a more intuitive manner than managers (e.g., Lindlom et al., 2008). That is, entrepreneurs tend to use cognitive shortcuts instead of logical-rational information processing, which is sometimes beneficial in producing superior results but also can lead to errors (e.g., erroneous evaluations and decisions). From a heuristic-based perspective, the entrepreneurship literature has noted that “entrepreneurs may often make significant leaps in their thinking leading to innovative ideas that are not always very linear and factually based” (Mitchell et al., 2007, p. 7). Considering that innovation may not be necessarily beneficial to subject matter experts (Rosenbush et al., 2011; Stenholm, 2011) and that entrepreneurial decision-making processes are often pursued using perceived tradeoffs between upsides and downsides—where apparently positive information is processed differently from negative information—a context that aggressively encourages innovative

entrepreneurship could cause entrepreneurs to become overly optimistic about innovation and employment. Overall, the present results serve to emphasize an important point: growth expectations are nurtured by an innovation orientation, which itself is fed by personal beliefs about innovation. These beliefs may lead entrepreneurs to conclude (erroneously or not) that they must pursue innovative strategies and that by doing so, they are very likely to have positive outcomes.

On the other hand, it is important to note that the nature of innovation is local (e.g., Koellinger, 2008) and that strategic orientation shapes how the environment is perceived (e.g., Lumpkin and Dess, 1996). Hence, individuals' mental image of innovation and the fact that an innovation does not necessarily mean creating something drastically new (i.e., it can also include small novelties in a small communities [Oslo manual, 2005]) suggest that radical positive changes may also emerge from subjective notions of innovative opportunities. However, it may be possible that most innovation is developed through entrepreneurial bricolage (Baker and Nelson, 2005), thus depending on a series of external factors and processes, which may (or may not) generate in real growth (Davidsson, 1991; Steffens et al., 2009; Wiklund et al., 2003). Undoubtedly, the story is not complete, and there is still fertile space for further research.

4.5.2. Limitations and suggestions for future research

It is important to consider the nature of the variables used in this study. For instance, innovative orientation and confidence in innovation are used to try to analyze whether

there is consistency among entrepreneurs and whether these variables influence entrepreneurial expectations. Overall, the model presented in this study is constructed mostly considering the subjective perceptions of individuals and the virtuous/vicious circle that emerges from decisions based on their assessments and judgements. Therefore, this study is focused on how growth expectations are affected by an innovative orientation and how personal subjective valuations nurture this relationship. It is important to note that no distinction was made between different types of innovation; instead, distinction among entrepreneurial innovativeness was measured using subjective judgements. In this sense, this study considers innovation based on what the individual perceives as innovation, which may lead to an over-representation of this group, and so other definition of innovation more strict may derived in different results. Future studies that address this issue, differentiating between types of innovations (e.g., at the process, product, marketing, organizational level), will provide more detailed information on how subjective valuations enhance certain innovations more than others.

Further, the empirical analysis did not include interventions of teams or social groups within firms (i.e., employees), nor did it consider how other actors (e.g., consultants) or other social interactions (e.g., with stakeholders) affect the relationship between the entrepreneur's strategic orientation, growth expectations, and subjective valuations of innovation. In this regard, Shepherd and Krueger (2002) proposed that a team's entrepreneurial intentions depend on the team's collective efficacy toward entrepreneurial behaviors, collective experiences, and perceived desirability. Additionally, West (2007) observed that moderated levels of differentiation and integration play a key role in positively affecting performance and also have a positive association with the interaction between differentiation and integration of strategic constructs within the top management

team. Consequently, it is possible that entrepreneurs' over-confidence in innovation is reduced in this context and that growth expectations may become more realistic. If so, it will be important to document the importance of supporting groups surrounding entrepreneurs that help guide them strategically. Hence, it would be interesting to examine the conditions under which entrepreneurs change their expectations and subjective valuations.

Furthermore, panel data analysis is likely to provide a more detailed perspective, especially to emphasize the role of entrepreneurial experience across the whole process. Even though analyzing the performance of a strategy is beyond the scope of this research, there is a lack of evidence across time that enables the exploration of how some orientations, valuations, and expectations materialize in certain contexts. In other words, the end of the story is not discussed in this study (e.g., actual firm performance). This study centers on a cognitive spectrum, so it would be interesting for future research to analyze if (and to what extent) entrepreneurs twist their beliefs. Specifically contextual circumstances (e.g., industry concentration, external financial crises, etc.) and what type of (and under what circumstances) entrepreneurs tend to be more susceptible to manipulations/interventions in their thoughts? To what extent does entrepreneurial education shape pre-conceived thoughts that lead entrepreneurs to over-value innovation?

4.5.3. Contributions and conclusions

The entrepreneurship literature has remarked on the importance of studying entrepreneurial thinking, particularly those cognitions that relate to entrepreneurial decision making. As such, this research focused on perceptual processes. The findings are of interest because they provide a wider vision of how entrepreneurs' cognitive structures influence firm-level decisions and managerial expectations. This research responds to previous calls regarding the importance of focusing on how entrepreneurs configure their cognitive processes in response to strategic managerial decisions, instead of analyzing mental maps that may generate certain behaviors, in order to obtain a more interactive comprehension of the entrepreneurial ecosystem (e.g., Mitchell et al., 2007; Shepherd, 2015). Thus, this research reveals some antecedents of how entrepreneurial aspirations are built by developing a model of moderated mediation that involves cognitions and strategic decisions.

This study also provides a theoretical contribution that, based on a heuristic approach, sheds more light on how an innovative orientation and entrepreneurial expectations are aligned. Specifically, this study assumes a sequence in which individuals define the best means to accomplish a certain outcome (i.e., innovative orientation for firm growth), and depending on the probability that this outcome is likely to occur (i.e., confidence in innovation), this desired outcome is intensified (i.e., growth expectations). In addition to developing a model explaining the interaction of entrepreneurial experience with strategic

orientation and subjective valuations of innovation in respect to the growth expectations, this study empirically tested and validated the model.

By assuming that entrepreneurs' expectations go through a dynamic and highly iterative process, which includes interpretations of current business activities and experiences, this study is aligned with Mitchell et al. (2007), who noted that "people engaged in entrepreneurial activities appear not to perform an elaborate, deliberative, thorough evaluation of the best way in which to describe a problem, or decision, nor do they conduct meticulous cost-benefit analyses on all possible alternatives before choosing the option that produces the highest return on investment" (p. 6). This study aims to clarify how micro individual-level variables, like subjective valuations and entrepreneurs' experience, ultimately influence growth expectations. Considering that growth expectations are related to macro firm-level measures of performance, such as growth in employment (Davidsson, 1991), understanding these mechanisms is a crucial task for the field in order to more deeply comprehend the entrepreneurial process.

References

- Autio, E. (2007). *GEM 2007 report on high-growth entrepreneurship*. London: GERA.
- Autio, E., & Acs, Z. (2010). Intellectual property protection and the formation of entrepreneurial growth aspirations. *Strategic Entrepreneurship Journal*, 4(3), 234-251.
- Bager, T., & Schøtt, T. (2004). Growth expectation by entrepreneurs in nascent firms, baby business and mature firms: analysis of GEM population data 2000-2003. *Global Entrepreneurship Monitor*, 281-291.
- Baker, T., & Nelson, R. E. (2005). Creating something from nothing: Resource construction through entrepreneurial bricolage. *Administrative Science Quarterly*, 50(3), 329-366.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Baron, R. A. (1998). Cognitive mechanisms in entrepreneurship: Why and when entrepreneurs think differently than other people. *Journal of Business Venturing*, 13(4), 275-294.
- Baron, R. A. (2004). The cognitive perspective: a valuable tool for answering entrepreneurship's basic "why" questions. *Journal of Business Venturing*, 19(2), 221-239.
- Baron, R. A., & Tang, J. (2011). The role of entrepreneurs in firm-level innovation: Joint effects of positive affect, creativity, and environmental dynamism. *Journal of Business Venturing*, 26(1), 49-60.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173.

Baum, J. R., & Locke, E. A. (2004). The relationship of entrepreneurial traits, skill, and motivation to subsequent venture growth. *Journal of Applied Psychology*, 89(4), 587.

Bausch, A., & Rosenbusch, N. (2005). Does innovation really matter? A meta-analysis on the relationship between innovation and business performance. In *Babson College Kaufman Foundation Entrepreneurship Research Conference, Babson, MA*.

Brännback, M., & Carsrud, A. (2009). *Cognitive maps in entrepreneurship: researching sense making and action*, in *Understanding the Entrepreneurial Mind: Opening the Black Box*. Eds. A. Carsrud and M. Brännback, pp. 75-96.

Busenitz, L. W., & Barney, J. B. (1997). Differences between entrepreneurs and managers in large organizations: Biases and heuristics in strategic decision-making. *Journal of Business Venturing*, 12(1), 9-30.

Busenitz, L. W., & Lau, C. (1996). A cross-cultural cognitive model of new venture creation. *Entrepreneurship Theory and Practice*, 20, 4, 25-39.

Camerer, C., & Lovallo, D. (1999). Overconfidence and excess entry: An experimental approach. *American Economic Review*, 306-318.

Cassar, G. (2010). Are individuals entering self-employment overly optimistic? an empirical test of plans and projections on nascent entrepreneur expectations. *Strategic Management Journal*, 31(8), 822-840.

Cliff, J. E. (1998). Does one size fit all? Exploring the relationship between attitudes towards growth, gender, and business size. *Journal of Business Venturing*, 13(6), 523-542.

Cliff, J. E., Jennings, P. D., & Greenwood, R. (2006). New to the game and questioning the rules: The experiences and beliefs of founders who start imitative versus innovative firms. *Journal of Business Venturing*, 21(5), 633-663.

Cooper, A. C., Woo, C. Y., & Dunkelberg, W. C. (1988). Entrepreneurs' perceived chances for success. *Journal of Business Venturing*, 3(2), 97-108.

Davidsson, P. (1991). Continued entrepreneurship: Ability, need, and opportunity as determinants of small firm growth. *Journal of Business Venturing*, 6(6), 405-429.

Davidsson, P., & Honig, B. (2003). The role of social and human capital among nascent entrepreneurs. *Journal of business venturing*, 18(3), 301-331.

Dimov, D. (2010). Nascent entrepreneurs and venture emergence: Opportunity confidence, human capital, and early planning. *Journal of Management Studies*, 47(6), 1123-1153.

Dutta, D. K., & Thornhill, S. (2008). The evolution of growth intentions: Toward a cognition-based model. *Journal of Business Venturing*, 23(3), 307-332.

Felin, T., & Zenger, T. R. (2009). Entrepreneurs as theorists: on the origins of collective beliefs and novel strategies. *Strategic Entrepreneurship Journal*, 3(2), 127-146.

Forbes, D. P. (2005). Are some entrepreneurs more overconfident than others?. *Journal of Business Venturing*, 20(5), 623-640.

Gaglio, C. M. (2004). The role of mental simulations and counterfactual thinking in the opportunity identification process. *Entrepreneurship Theory and Practice*, 28(6), 533–552.

Gartner, W. B., Bird, B. J., & Starr, J. A. (1992). Acting as if: Differentiating entrepreneurial from organizational behavior. *Entrepreneurship Theory and Practice*, 16(3), 13-31.

Greene, P. G., & Brown, T. E. (1997). Resource needs and the dynamic capitalism typology. *Journal of Business Venturing*, 12(3), 161-173.

Gundry, L. K., & Welsch, H. P. (2001). The ambitious entrepreneur: high growth strategies of women-owned enterprises. *Journal of Business Venturing*, 16(5), 453-470.

Hayward, M. L., Forster, W. R., Sarasvathy, S. D., & Fredrickson, B. L. (2010). Beyond hubris: How highly confident entrepreneurs rebound to venture again. *Journal of Business Venturing*, 25(6), 569-578.

Hayward, M. L., Shepherd, D. A., & Griffin, D. (2006). A hubris theory of entrepreneurship. *Management Science*, 52(2), 160-172.

Hessels, J., Grilo, I., Thurik, R., & van der Zwan, P. (2011). Entrepreneurial exit and entrepreneurial engagement. *Journal of Evolutionary Economics*, 21(3), 447-471.

Hessels, J., Van Gelderen, M., & Thurik, R. (2008). Entrepreneurial aspirations, motivations, and their drivers. *Small Business Economics*, 31(3), 323-339.

Heunks, F. J. (1998). Innovation, creativity and success. *Small Business Economics*, 10(3), 263-272.

Hmieleski, K. M., & Baron, R. A. (2008). When does entrepreneurial self-efficacy enhance versus reduce firm performance?. *Strategic Entrepreneurship Journal*, 2(1), 57-72.

Hodgkinson, G. P., Bown, N. J., Maule, A. J., Glaister, K. W., & Pearman, A. D. (1999). Breaking the frame: An analysis of strategic cognition and decision making under uncertainty. *Strategic Management Journal*, 20(10), 977-985.

Huergo, E., & Jaumandreu, J. (2004). How does probability of innovation change with firm age?. *Small Business Economics*, 22(3-4), 193-207.

Kable, J. W., & Glimcher, P. W. (2007). The neural correlates of subjective value during intertemporal choice. *Nature Neuroscience*, 10(12), 1625-1633.

Koellinger, P. (2008). Why are some entrepreneurs more innovative than others?. *Small Business Economics*, 31(1), 21-37.

Koellinger, P., Minniti, M., & Schade, C. (2007). "I think I can, I think I can": Overconfidence and entrepreneurial behavior. *Journal of Economic Psychology*, 28(4), 502-527.

Krueger, N. F. (2003). *The cognitive psychology of entrepreneurship*. In Handbook of entrepreneurship research (pp. 105-140). Springer US.

Krueger, N. F., & Brazeal, D. V. (1994). Entrepreneurial potential and potential entrepreneurs. *Entrepreneurship Theory and Practice*, 18(3), 91-91.

Levie, J. (2010). *The IIP Innovation Confidence Indexes 2009 Report*. Hunter Center for Entrepreneurship, University of Strathclyde.

Lieberman, M. B., & Montgomery, D. B. (1988). First-mover advantages. *Strategic Management Journal*, 9(1), 41-58.

Lindblom, A., Olkkonen, R., & Mitronen, L. (2008). Cognitive styles of contractually integrated retail entrepreneurs: a survey study. *International Journal of Retail & Distribution Management*, 36(6), 518-532.

Lumpkin, G. T., & Dess, G. G. (1996). Clarifying the entrepreneurial orientation construct and linking it to performance. *Academy of Management Review*, 21(1), 135-172.

March, J. G. (1994). *Primer on decision making: How decisions happen*. Simon and Schuster.

March, J. G., Sproull, L. S., & Tamuz, M. (1991). Learning from samples of one or fewer. *Organization Science*, 2(1), 1-13.

Markman, G. D., Balkin, D. B., & Baron, R. A. (2002). Inventors and new venture formation: the effects of general self-efficacy and regretful thinking. *Entrepreneurship Theory and Practice*, 27(2), 149-165.

McMullen, J. S., & Shepherd, D. A. (2006). Entrepreneurial action and the role of uncertainty in the theory of the entrepreneur. *Academy of Management Review*, 31(1), 132-152.

McVea, J. F. (2009). A field study of entrepreneurial decision-making and moral imagination. *Journal of Business Venturing*, 24(5), 491-504.

Miller, D., & Friesen, P. H. (1982). Innovation in conservative and entrepreneurial firms: Two models of strategic momentum. *Strategic Management Journal*, 3(1), 1-25.

Miller, S. M. (1996). Monitoring and blunting of threatening information: Cognitive interference and facilitation in the coping process. *Cognitive interference: Theories, methods, and findings*, 175-190.

Mitchell, R. K., Busenitz, L. W., Bird, B., Gaglio, C. M., McMullen, J. S., Morse, E. A., & Smith, J. B. (2007). The central question in entrepreneurial cognition research 2007. *Entrepreneurship Theory and Practice*, 31(1), 1-27.

Oslo Manual (2005). *Guidelines for collecting and interpreting innovation data*. Paris: OECD.

Parker, S. C. (2006). Learning about the unknown: How fast do entrepreneurs adjust their beliefs?. *Journal of Business Venturing*, 21(1), 1-26.

Porter, M. E. (1980). *Competitive strategy: Techniques for analyzing industries and competition*. New York, 300.

Preacher, K. J., & Leonardelli, G. J. (2001). Calculation for the Sobel test. Retrieved November, 1, 2008.

Rauch, A., & Frese, M. (2007). Let's put the person back into entrepreneurship research: A meta-analysis on the relationship between business owners' personality traits, business creation, and success. *European Journal of Work and Organizational Psychology*, 16(4), 353-385.

Rosenbusch, N., Brinckmann, J., & Bausch, A. (2011). Is innovation always beneficial? A meta-analysis of the relationship between innovation and performance in SMEs. *Journal of Business Venturing*, 26(4), 441-457.

Shane, S. (2000). Prior knowledge and the discovery of entrepreneurial opportunities. *Organization Science*, 11(4), 448-469.

Shepherd, D. A. (2015). Party On! A call for entrepreneurship research that is more interactive, activity based, cognitively hot, compassionate, and prosocial. *Journal of Business Venturing*, 30(4), 489-507.

Shepherd, D. A., & Krueger, N. F. (2002). An Intentions-Based Model of Entrepreneurial Teams' Social Cognition. *Entrepreneurship Theory and Practice*, 27(2), 167-185.

Simon, M., & Houghton, S. M. (2002). The relationship among biases, misperceptions, and the introduction of pioneering products: Examining differences in venture decision contexts. *Entrepreneurship Theory and Practice*, 27(2), 105-124.

Simon, M., & Houghton, S. M. (2003). The relationship between overconfidence and the introduction of risky products: Evidence from a field study. *Academy of Management Journal*, 46(2), 139-149.

Simon, M., Houghton, S. M., & Aquino, K. (2000). Cognitive biases, risk perception, and venture formation: How individuals decide to start companies. *Journal of Business Venturing*, 15(2), 113-134.

Steffens, P., Davidsson, P., & Fitzsimmons, J. (2009). Performance configurations over time: implications for growth-and profit-oriented strategies. *Entrepreneurship Theory and Practice*, 33(1), 125-148.

Stenholm, P. (2011). Innovative behavior as a moderator of growth intentions. *Journal of Small Business Management*, 49(2), 233-251.

- Townsend, D. M., Busenitz, L. W., & Arthurs, J. D. (2010). To start or not to start: Outcome and ability expectations in the decision to start a new venture. *Journal of Business Venturing*, 25(2), 192-202.
- Ucbasaran, D., Westhead, P., Wright, M., & Flores, M. (2010). The nature of entrepreneurial experience, business failure and comparative optimism. *Journal of Business Venturing*, 25(6), 541-555.
- Verheul, I., & Van Mil, L. (2011). What determines the growth ambition of Dutch early-stage entrepreneurs?. *International Journal of Entrepreneurial Venturing*, 3(2), 183-207.
- Vroom, V. H. (1964). *Work and motivation*. New York: Wiley.
- Weinstein, N. D. (1980). Unrealistic optimism about future life events. *Journal of Personality and Social Psychology*, 39(5), 806.
- West, G. P. (2007). Collective cognition: When entrepreneurial teams, not individuals, make decisions. *Entrepreneurship Theory and Practice*, 31(1), 77-102.
- Wiklund, J., Davidsson, P., & Delmar, F. (2003). What Do They Think and Feel about Growth? An Expectancy-Value Approach to Small Business Managers' Attitudes Toward Growth. *Entrepreneurship Theory and Practice*, 27(3), 247-270.

Chapter 5. Conclusions

Conclusions

5.1. Introduction

The purpose of this section is to integrate the findings and issues raised in the discussion sections of each prior chapter, such as main arguments, research questions, and so forth. Therefore, this chapter summarizes the main findings obtained in the three individual studies. Specifically, this chapter focuses on the key results, implications, potential extensions for further studies, and final remarks.

5.2. Key Findings

Each of the presented studies provides new empirical evidence that may be fruitful for the field of entrepreneurship since they help provide a better understanding of how entrepreneurs' minds process information. As the Table 16 depicts, the first paper compares different experts in entrepreneurship (entrepreneurs versus non-entrepreneurs) regarding how they perceive their surrounding environment and opportunities. The results show statistical differences in the way these groups analyze their surrounding environment and opportunities, suggesting that the role an individual plays determines how he or she reads external signals given in the environment. Although prior studies have observed a difference in opportunity recognition (Baron, 2006; Gaglio, 2004; Simon et al., 2000), this study is novel since it also provides a broad perspective on some of the most important dimensions surrounding entrepreneurs' business environment. More specifically, based on the results, it is very likely that compared with other experts,

entrepreneurs will differ in their perceptions of almost all aspects of their business unless there is no space for dispute (Mitchell & Shepherd, 2010), such as negative cash flow.

Comparing entrepreneurs and non-entrepreneurs as well as entrepreneurs who are in different stages of the entrepreneurial process, the second paper analyzed individuals' likelihood of conceiving the future positively in regard to entrepreneurial opportunities (McMullen & Shepherd, 2006). Although entrepreneurs are more optimistic about the emergence of future business opportunities than non-entrepreneurs, experienced entrepreneurs tend to be less optimistic than the new entrepreneurs (Cooper et al., 1988). Specifically, this study observed an inverted U-shaped relationship between length of entrepreneurial experience and optimism about future business opportunities. This relationship suggests that as more entrepreneurial experience is acquired, on average, over-optimism in perceptions about future business opportunities should decrease to a more realistic level. Further, after internal and external stimuli are controlled for, the results remain (Douglas, 2009). This suggests that intentional entrepreneurs and nascent entrepreneurs are more susceptible to entrepreneurial euphoria (Cooper et al., 1988), which may hinder their ability to correctly evaluate their chances of success, growth rates, and so forth.

Table 16: Summary of Studies

Study	Research Questions	Subject of Study	Sample	Contribution to the Field
1	Will differences between entrepreneurs and non-entrepreneurs exist even when experts in the field are evaluated? Do entrepreneurs and non-entrepreneurs differ in the way they conceive their environment? If so, what is the relationship between an environment that fosters entrepreneurship and one that constrains it regarding opportunity perceptions?	Experts in entrepreneurship (non-entrepreneurs and entrepreneurs)	1,605 individuals from Chile from 2010 to 2012	Expert information processing theory suggests that experts store information differently than novices by using knowledge systems that are organized around context-relevant scripts. When experts in the field of entrepreneurship are compared, entrepreneurs and non-entrepreneurs statistically differ not only regarding business opportunities but also regarding most of the external environment related to local entrepreneurial activity.
2	How optimistic are entrepreneurs in comparison to non-entrepreneurs in their perceptions of future business opportunities? What is the role played by experience? Are novice entrepreneurs or experienced entrepreneurs more optimistic about future business opportunities? How do internal and external stimuli affect this perception?	Individuals (non-entrepreneurs and entrepreneurs)	900,000 individuals from 85 countries from 2001 to 2010	Entrepreneurial euphoria regarding a good future for starting up starts with potential entrepreneurs and the novice ones. However, while they acquire experience, they are less likely to be optimistic. Internal and external stimuli directly impact optimism and also moderate the relationship between length of entrepreneurial experience and optimism.
3	Are innovative entrepreneurs more optimistic than imitative entrepreneurs regarding their expectation of growth? How do subjective valuations of innovation directly and indirectly determine entrepreneurs' expectations? Are innovative entrepreneurs more confident than imitative entrepreneurs regarding the benefits of innovation? Does the prior relationship between growth expectation and the strategy pursued depend on entrepreneurial experience?	Entrepreneurs	11,579 individuals from 24 countries in 2011	Innovative entrepreneurs have comparatively higher expectations of growing, but this relationship depends on the length of their entrepreneurial experience. Indirectly, subjective valuations of innovation foster the former relationship, and directly, entrepreneurs willing to trust in innovation are more likely to have higher growth expectations.

Finally, the third paper proposes a moderated mediation model of the effect of subjective valuations of innovation on strategic orientation and growth expectations. This study's empirical results confirm the model since entrepreneurs involved in innovative entrepreneurship are more likely to have higher growth expectations (Eisenhardt & Schoonhoven, 1990), with subjective valuations playing a direct and indirect role in entrepreneurs' expectations of firm growth. Additionally, these results indicate that length of entrepreneurial experience moderates the relationship between strategic orientation and confidence in innovation. This finding suggests there is feedback between beliefs about the benefits of innovation and being an innovative entrepreneur, resulting in an over-estimation, at least in comparative terms, regarding firm growth rates. This relationship is stronger for novice entrepreneurs since experienced entrepreneurs tend to be more cautious about their expectations of growing.

5.3. Implications

5.3.1. Theoretical

The present findings have important theoretical implications. These studies present evidence suggesting that not only do entrepreneurs and non-entrepreneurs differ but that there are also substantial differences among entrepreneurs as well. Consistent with prior work, this research accepts the general premise that cognitive biases and heuristics exist, and even when there could be an objective environment, the way people conceive their reality is based on subjective parameters. Environmental change has been considered the

source of opportunities, especially in the discovery view of entrepreneurship (Alvarez & Barney, 2007). However, the specific role of the environment in the first study remains somewhat ambiguous. While several studies have suggested that entrepreneurial perceptions are the key mechanisms through which environmental characteristics influence outcomes, such as firm creation (e.g., Edelman & Yli-Renko, 2010), our results show that entrepreneurs' perceptions of opportunity are significantly better than those from non-entrepreneurs even though the latter group is better at interpreting the entrepreneurial framework conditions (EFCs). Characteristics of the environment have been linked with entrepreneurial activity (Sine & David, 2003) as well as new firms' entry success (Sandberg & Hofer, 1987) and higher performance (Eisenhardt & Schoonhoven, 1990); however, this may not be the case for third-person opportunities (McMullen & Shepherd, 2006). Considering that all the individuals in the sample were characterized as "experts in entrepreneurship," our results in the first study suggest that knowledge of the market in terms of identifying, evaluating, and pursuing opportunities is more important than technical or supply-side knowledge when perceptions of opportunity existence are evaluated. Further, the counterintuitive results about how entrepreneurs and non-entrepreneurs conceive their surrounding environment and opportunities suggest that although formal and informal institutions influence entrepreneurial perceptions, the effect that these perceptions have on entrepreneurial cognition is far from being lineal and direct.

Entrepreneurs' actions are driven primarily by their perceptions, and even when these perceptions are influenced by external factors, the definition of a good opportunity is personal and nurtured by internal and external motivations that shape these interpretations. This is likely to be especially true for potential and nascent entrepreneurs

who are looking to start businesses under the biases of entrepreneurial lenses (Douglas, 2009) and entrepreneurial euphoria (Cooper et al., 1988). This study's results are in line with Edelman and Yli-Renko (2010), who demonstrated that nascent entrepreneurs might not need to perceive resource availability in order to pursue an opportunity; indeed, they suggested that entrepreneurs reduce subjective uncertainty regarding opportunities by mobilizing resources to start a venture. This research complements this by suggesting that opportunity recognition in novice entrepreneurs does not necessarily depend on specific features of the environment. Instead, just as entrepreneurs tend to nurture over-confidence in their self-constructed beliefs about untested abilities to succeed as entrepreneurs (Hayward et al., 2006), the idea of a future with good conditions for starting up a new business may be part of their own mental self-fulfilling prophecy. In this sense, desiring to create a business may increase the likelihood of perceived optimism about a future with business opportunities. It could be possible that, similar to subjective valuations of innovation encouraging the growth expectations of innovative entrepreneurs, mental simulations may be the main driving force for entrepreneurial behaviors, especially when the individual lacks entrepreneurial experience. As was shown in the second chapter of this dissertation, despite the high level of business failure, entrepreneurs tend to be significantly more optimistic than non-entrepreneurs, so it seems they use their subjective interpretations to give meaning to objects, situations, and concepts to connect the dots (Baron, 2006). For example, being optimistic about a future with business opportunities may increase entrepreneurs' likelihood of discovering business opportunities since they are in an active state of entrepreneurial alertness.

Much of the venture-creation process involves seeking and processing information, which makes this activity critical in entrepreneurship (Kirzner, 1973). While some studies have

argued that experienced entrepreneurs—given their exposure to customers, competitors, and suppliers, among others—tend to have a more external orientation as they are more aware of external pressures and challenges (e.g., Cooper et al., 1995), others studies have suggested that entrepreneurs fail to incorporate external information into their decision-making process since they believe they can successfully pursue an opportunity independent of the environment (e.g., Mitchell & Shepherd, 2010). This phenomenon is intensified for entrepreneurs with prior ventures that succeeded, such as serial entrepreneurs. Consequently, the balance between personal attitude and external environment as the drivers of entrepreneurs' behaviors seems to be incomplete, at least in regard to the role experience plays in influencing each one. Further, Grégoire et al. (2011) observed that is not totally clear whether entrepreneurs' cognitive differences originate from idiosyncratic factors and events that precede their efforts and actions or from the very experience of undertaking entrepreneurship (Foo et al., 2009). In this regard, the second study revealed that individuals with entrepreneurial intentions and early-stage entrepreneurs (i.e., entrepreneurs in the subsequent stages of the entrepreneurial process) are over-optimistic about a future with business opportunities. While this study sheds some light onto why some individuals choose to become entrepreneurs (Baron, 2004; Mitchell et al., 2007; Simon et al., 2000), the fact that mature entrepreneurs are less likely to be over-optimistic than novice entrepreneurs suggests that entrepreneurial experience tends to reduce some cognitive biases that differentiate entrepreneurs from non-entrepreneurs, at least regarding optimism about future business opportunities. Additionally, considering that the Global Entrepreneurship Monitor (GEM) database allows studies to be empirically tested using individuals from different countries; consistent with other studies (e.g., Mitchell et al., 2002), this study supports the notion that entrepreneurial cognition is universal irrespective of country of origin.

It is important to note that although entrepreneurial cognition may be different for entrepreneurs, it does not mean that entrepreneurs are members of a homogeneous group (Mitchell et al., 2002). Indeed, differences can still be observed among entrepreneurs. For instance, just like the motivation that drives entrepreneurial activity—namely, whether it is opportunity driven or necessity driven—similar differences arise with innovative and imitative entrepreneurs: managerial strategy causes entrepreneurs to make certain decisions to fulfill their expectations. In this sense, the third study attempts to use a heuristic approach to determine why innovative entrepreneurs have higher growth expectations than imitative entrepreneurs. Under the argument suggesting that individuals make judgment-based decisions using simplifying strategies, it has been suggested that entrepreneurs rely more on heuristics when evaluating opportunities but not when exploiting opportunities (Bryant, 2007). However, heuristics guide entrepreneurs' actions (Gaglio, 2004), so they frequently employ heuristics (Alvarez & Busenitz, 2001). As a result, it is proposed that mental simulations, as a type of heuristic, nurture subjective valuations of innovation, encouraging entrepreneurs to increase their expectations of growth. Hence, this research identifies how entrepreneurs connect some of their mental images along with their expectations.

5.3.2. Policy

Turning to the policy implications of this research, perhaps the most direct extension of the arguments offered is that since entrepreneurs conceive things differently than non-entrepreneurs, there is a predisposition of both parties to feel misunderstood. For instance,

as the first study revealed, there are discrepancies among these two groups in several dimensions of the EFCs as well as in their perceptions of opportunities. These differences may lead to the development of legislation and public programs to foster entrepreneurship that do not necessarily align with entrepreneurs' needs. It is important to note, though, that even when original aims may not be covered (i.e. policy-makers expected outcomes), such legislation and programs could still be perceived as valuable for entrepreneurs.

Programs to support new ventures financially (such as small business loans or grants) would enable potential entrepreneurs to launch and grow their new ventures. However, if policymakers provide a system of credits for professional or technical consultancies, they might add a complementary indirect source in their quest to nurture successful entrepreneurial businesses. As the second study showed, inexperienced entrepreneurs may be over-optimistic. Although there are benefits from any entrepreneurial activity at the macro level, there may be thousands of failed entrepreneurs who lost everything because they were unrealistically optimistic. In this sense, it may be more fruitful if incentives are directed only to a subgroup of all "opportunity-driven" entrepreneurial activity. Complementarily with the above, entrepreneurial education about optimism is recommended. Entrepreneurs could benefit by recognize and distinguish not only among dispositional optimism and unrealistic optimism, but also among unrealistic optimism in absolute terms and comparative terms. Each type of optimism has different origins and also may cause unpredictable results. Training about the likelihood of failure and how to manage it correctly, either for a learning experience or as a background for a future upcoming new venture may provide a constructive asset, especially for non-expert entrepreneurs.

Moreover, introducing legislation and incentive-based schemes to foster self-control when using public resources could increase entrepreneurs' intentions to use funds in more responsible ways. For those interested in fostering entrepreneurship, it seems that assuming an oversight role instead of a supplier role will serve to increase several cognitive resources underlying entrepreneurial behavior. In line with Hyttinen et al. (2015), who observed that innovativeness is negatively correlated with firms' survival probability, the results of the third study also suggest that fostering innovation should not be considered as a form of insurance against failure. Instead, within the nature of innovation an increasing amount of uncertainty is added, in comparison with following an imitative strategy. Under this scenario, therefore, more cautious must be applied and so overly-optimistic entrepreneurs should be trained. When the stage of transmitting the benefits of entrepreneurship to society is reached, and also there is a strong support from the whole ecosystem to entrepreneurship, it is necessary to add more focus on how to encourage financially sustained new ventures.

Even when, in broad terms, fostering innovation and entrepreneurship may be considered bad policy (Shane, 2009), local aspects will determine the nature of most entrepreneurial activities developed by entrepreneurs. Even though certain societies have several public services (e.g., unemployment insurances) that increase the opportunity cost of starting up a new business, the combination of over-confidence, over-optimism, and necessity-based entrepreneurship is particularly harmful since it is very likely that a significant percentage of the entrepreneurial activity may be undertaken by biased individuals who made unfortunate choices leading to erroneous conclusions.

5.3.3. Practical

The results of this study can guide practitioners in a number of ways. For example, since it seems that entrepreneurs are likely to conceive things differently, which is not necessarily bad, it may be beneficial for them to receive guidance from others in order to diminish cognitive biases that may lead to harmful situations for their businesses. An overuse of heuristics does not seem to be the best method in the long term. Different from bricolage strategies, which refer to the use of resources at hand (Baker & Nelson, 2005), heuristics refers to the mental phenomena present when an individual makes judgment-based decisions using simplifying strategies. As the third study showed, entrepreneurs may be driven by their own thoughts, illusions and ideas; consequently, having discussions with others may reduce their likelihood of having certain problems caused by their heuristics, such as representativeness (i.e., the insensitivity bias to sample size prior probabilities or predictability), availability (i.e., biases due to retrievability, imaginability, or illusory correlation), or adjustment/anchoring (i.e., biases due to insufficient adjustment, evaluation, or subjective probability distribution) (Bryant, 2007).

Shane (2009) noted that entrepreneurs are not normally good at finding the best industry to start up new businesses; instead, they tend to focus on the easiest industry. In addition, novice entrepreneurs' perceptions of opportunities are characterized by newness and uniqueness (Mitchell & Shepherd, 2010). Thus, considering the second study, it may be possible that conducting ideas constructed on wrong elements may nurture the over-optimism, especially in the initial stages of the entrepreneurial process. Thus, instead of

focusing solely on whether or not to start a new business based on the novelty it may represent, entrepreneurs should also consider the potential lack of profitability the business may also represent. After all, since entrepreneurship is a process centered on intentionality (Bird, 1988), over-optimism may lead individuals to enter into entrepreneurship based on false beliefs of feasibility and desirability (Krueger, 1993).

5.3.3.1. Entrepreneurial Education

Entrepreneurship education often puts too much emphasis on entrepreneurs and ways to create or discover business opportunities; however, not enough attention has been placed on entrepreneurial activity itself. In other words, educators often tend to teach about how to be an entrepreneur, neglecting other considerations about entrepreneurship. Certainly, creating or discovering opportunities plays an evident role in potential new ventures as does business planning and seeking funding sources, among other managerial topics usually incorporated into curricula. Nevertheless, these topics push out the people side of entrepreneurship. Considering that entrepreneurs are more susceptible to developing cognitive biases, as several studies have evidenced, entrepreneurial education should focus more on soft skills beyond leadership and self-confidence, such as developing functional multidisciplinary teams. Entrepreneurs should not only cautiously monitor their progress but should also receive frequent mentoring in order to avoid extremely unrealistic situations that may affect not only themselves but all other stakeholders of their business.

Since attitudes can be changed over time given exposure to education and experience, educators might focus on changing the attitudes of their students regarding managing adverse scenarios, such as facing failure and being exposed to highly uncertain scenarios. Considering that these scenarios are frequent among entrepreneurs, students should critically consider whether they want to become entrepreneurs or intrapreneurs and how over-optimistic they may be regarding their expectations. Even though being optimistic is not necessarily bad, having optimistic biases may cause individuals to make harmful decisions only because they calculated the odds badly.

Considering that extreme optimism may make it difficult for entrepreneurs to diagnose problem areas, entrepreneurial education should help entrepreneurs assess their own strengths and weakness as well the early stages of their firms as objectively as possible.

5.4. Extensions of the Study

Naturally, the general insights from these studies provide several avenues for future work. For example, based on the results of the first study, it could be interesting to compare differences among types of countries depending on their level of economic development. Do entrepreneurs in developed economies differ more or less from non-entrepreneurs than in developing economies? Furthermore, under the expertise-based approach, future studies may provide more detailed information about the cognitive structures (i.e., arrangements, willingness, and ability scripts) that shape differences among types of experts in entrepreneurship.

In addition, the first study could be the starting point of a whole new conversation centered on the consequences of these differences between entrepreneurs and non-entrepreneurs for the origin of opportunities. On the one hand, if the pursuit of an opportunity begins with a process of observing and recognizing a set of conditions that constitutes a viable opportunity, then how do individuals develop entrepreneurial alertness without necessarily leading their own entrepreneurial activities? As the first study showed, having expertise in entrepreneurship is necessary but not sufficient to think as entrepreneurs do. On the other hand, if the pursuit of opportunity begins with a process wherein a set of observed conditions can turn into a viable opportunity, it is necessary to explore the cognitive processes whereby signals from the environment are used to construct an opportunity (Krueger, 2003).

From the findings of the second study, it may be interesting for future studies to compare unrealistic optimism among entrepreneurs with peers in others stages of the entrepreneurial process, for instance, by testing whether entrepreneurs' expectations of growth are possible to obtain. Additionally, considering that several of the measures employed in the second study were self-reported and evaluated with single-item factors, replication studies with additional measures for these variables are necessary before the present results can be accepted with confidence even though these measures were based on measures used in previous research and have been shown to possess acceptable reliability and validity.

The third study is focused on growth expectations as a dependent variable, so there are secondary questions about the sources of growth capabilities. For example, there is a lack of understanding about how growth capabilities depend on entrepreneurial cognition as well as about how entrepreneurial cognitions impact the development of growth capabilities. Moreover, and by focusing on the imitative/innovative strategy developed in the study, as Table 17 depicts, there are at least four combinations if only markets and products are evaluated. Even when the third study added technology as a third dimension, it is possible to visualize the simplistic difference used to define both imitation and innovation entrepreneurship. Differentiating between these types of innovation using more detailed aspects was beyond the scope of the third study; thus, future studies could uncover these hidden distinctions.

The main focus of the third study was the role heuristics play. It was argued that mental simulations tend to potentiate entrepreneurs' growth expectations. By centering the argument on subjective valuations of innovation, the study confirmed the propositions; however, the study did not specify the simplifying strategy in terms of where the shortcut was based (i.e., whether it was by representativeness, availability, or adjustment/anchoring). Consequently, controlled experiments focused on clarify how and where entrepreneurs use mental shortcuts could provide useful evidence for understand their way of thinking.

Table 17: Product Market Combinations

		Product	
		New	Existing
Market	New	Innovation	Innovation
	Existing	Innovation	Imitation

It is also important to note that methodologically, the third study could be analyzed using different statistical techniques, specifically, structural equation modeling. The main reason this method was not used in the third study was the lack of control for external variables that could also influence the model. In other words, since control variables are treated as any other covariate in structural equation modeling, the development of regressions appeared to be more appropriate.

In broad terms, and in regards to entrepreneurial cognition research, it has been noted that ambiguity exists among the source and nature of entrepreneurs' cognitive differences (e.g., Grégoire et al., 2011). Future studies should directly investigate the influence of cognitive resources and cognitive representations. The three empirical studies presented here provide a solid foundation for future work regarding entrepreneurs' optimism. The results presented in these studies already indicate that mental images of reality are a key factor in entrepreneurship, but various other cognitive elements are left unexplored.

5.5. Contributions

The studies offer several contributions. First, and most generally, they seek to contribute to current efforts to understand entrepreneurs' behavior. Clarifying the mechanisms through which entrepreneurs' mental images influence firm-level outcomes, such as innovation and growth, is an essential task of the field of entrepreneurship. Second, these studies provide empirical evidence on the role of optimism in entrepreneurship. Although optimism's role has been discussed on the basis of existing theory and research (e.g., Cooper et al., 1988; Krueger, 2003), it has only recently become a subject of ongoing research in the field of entrepreneurship

Together, these essays contribute to the field of entrepreneurship by clarifying a broad perspective about the mental images that entrepreneurs have about reality and their expectations. While there is a current debate of whether experienced entrepreneurs handle the environmental signals better than novices, which somehow points to which one incorporates more internal and external aspects into their judgments before making decisions, both the second and third studies suggest that more experienced entrepreneurs are likely to have less optimistic expectations than novice entrepreneurs. The first study provides evidence suggesting that entrepreneurs do not have a positive perspective of everything. Indeed, in most of the dimensions, non-entrepreneurs evaluate the same conditions better than entrepreneurs. However, entrepreneurs evaluate better the dimension of opportunity recognition. In consequence, entrepreneurs may be more optimistic than non-entrepreneurs about specific aspects that are directly under their

control (e.g., perceptions of opportunities). This finding is not necessarily extendable to other aspects surrounding entrepreneurship.

The second study suggests that intentional and novice entrepreneurs are likely to be over-optimistic; however, this likelihood tends to be reduced as entrepreneurs acquire more experience. Even when both internal and external stimuli are added into the analysis, there is an inverted U-shaped relationship between length of entrepreneurial experience and optimism about a future with business opportunities.

Finally, the third study deepens to our understanding of the complex processes through which organizational-level decisions, such as acting as an innovator or imitator, ultimately influence individual-level factors, such as subjective valuations of innovation and growth expectations. Attaining greater understanding of these processes has been identified as an important task by many researchers in the field of entrepreneurship (e.g., Grégoire et al., 2011; Kruger, 2003; Mitchell et al., 2007). The present findings contribute to progress in this task by suggesting that strategies whose objective is the cultivation of innovation feed entrepreneurs' subjective valuations of innovation as well as expectations of growth. Although the length of entrepreneurial experience moderates the relationship between acting as an innovative entrepreneur and subjective valuations of innovation, the results suggest that entrepreneurs' expectations are primarily driven by their internal perceptions of reality.

5.6. Final Remarks

Taken together, these papers constitute a value greater than the sum of the three parts by building a strong conceptualization of how entrepreneurs' perceptions of the environment, optimism about a future full of business opportunities, and growth affect their individual decisions. Collectively, the findings of this dissertation shed more light about how the cognitive entrepreneurship literature can ultimately explain macro-levels of entrepreneurial activities.

The results of the first study suggest that entrepreneurs and non-entrepreneurs differ even when experts in the field are evaluated. Consistent with the cognitive entrepreneurship literature, the difference is observed in opportunity recognition, but this research also adds that the way they conceive their environment differs. The second study contributes by analyzing optimism among entrepreneurs compared to non-entrepreneurs about their perceptions of future business opportunities. This study suggests that experience plays a key role since the likelihood of being over-optimistic is higher for novice entrepreneurs than for experienced entrepreneurs. The third study provides a model suggesting that subjective valuations of innovation directly and indirectly determine entrepreneurs' growth expectations. On the one hand, this study shows that innovative entrepreneurs are more confident than imitative entrepreneurs regarding the benefits of innovation. On the other hand, while innovative entrepreneurs are more optimistic than imitative entrepreneurs regarding their expectations of growth per se, entrepreneurial experience moderates this relationship. In this sense, it is proposed that mental simulations nurture

both entrepreneurs' lack of experience and lack of information, whereas they construct and adjust their expectations.

In this dissertation, I have sought to understand how entrepreneurs construct their reality. By doing so, three inter-related studies were conducted. These findings suggest that entrepreneurs' expectations and optimism are constructed based mainly on their own judgments, without necessarily being influenced by the environment, which is more common among non-entrepreneurs. In this sense, the findings provide an explanation that clarifies the role that mental simulations and entrepreneurial experience play in constructing entrepreneurs' optimism.

References

- Alvarez, S. A., & Barney, J. B. (2007). Discovery and creation: Alternative theories of entrepreneurial action. *Strategic Entrepreneurship Journal*, 1(1-2), 11-26.
- Alvarez, S. A., & Busenitz, L. W. (2001). The entrepreneurship of resource-based theory. *Journal of Management*, 27(6), 755-775.
- Baker, T., & Nelson, R. E. (2005). Creating something from nothing: Resource construction through entrepreneurial bricolage. *Administrative Science Quarterly*, 50(3), 329-366.
- Baron, R. A. (2004). The cognitive perspective: a valuable tool for answering entrepreneurship's basic "why" questions. *Journal of Business Venturing*, 19(2), 221-239.
- Baron, R. A. (2006). Opportunity recognition as pattern recognition: How entrepreneurs "connect the dots" to identify new business opportunities. *The Academy of Management Perspectives*, 20(1), 104-119.
- Bird, B. (1988). Implementing entrepreneurial ideas: The case for intention. *Academy of Management Review*, 13(3), 442-453.
- Bryant, P. (2007). Self-regulation and decision heuristics in entrepreneurial opportunity evaluation and exploitation. *Management Decision*, 45(4), 732-748.
- Cooper, A. C., Woo, C. Y., & Dunkelberg, W. C. (1988). Entrepreneurs' perceived chances for success. *Journal of Business Venturing*, 3(2), 97-108.

Douglas, E. (2009). Perceptions - *Looking at the world through entrepreneurial lenses*. In, A. Carsrud & M. Brännback (Eds.), *Understanding the entrepreneurial mind*. New York, NY: Springer. pp. 3-22.

Edelman, L., & Yli-Renko, H. (2010). The impact of environment and entrepreneurial perceptions on venture-creation efforts: bridging the discovery and creation views of entrepreneurship. *Entrepreneurship Theory and Practice*, 34(5), 833-856.

Eisenhardt, K.M. & Schoonhoven, C.B. (1990). Organizational growth: Linking founding team, strategy, environment, and growth among U.S. semiconductor ventures, 1978–1988. *Administrative Science Quarterly*, 35(3), 504–529.

Foo, M. D., Uy, M. A., & Baron, R. A. (2009). How do feelings influence effort? An empirical study of entrepreneurs' affect and venture effort. *Journal of Applied Psychology*, 94(4), 1086.

Gaglio, C. M. (2004). The role of mental simulations and counterfactual thinking in the opportunity identification process. *Entrepreneurship Theory and Practice*, 28(6), 533–552.

Grégoire, D. A., Corbett, A. C., & McMullen, J. S. (2011). The cognitive perspective in entrepreneurship: an agenda for future research. *Journal of Management Studies*, 48(6), 1443-1477.

Hayward, M. L., Shepherd, D. A., & Griffin, D. (2006). A hubris theory of entrepreneurship. *Management Science*, 52(2), 160-172.

Hyytinen, A., Pajarinen, M., & Rouvinen, P. (2015). Does innovativeness reduce startup survival rates?. *Journal of Business Venturing*, 30(4), 564-581.

Krueger, N. F. (1993). The impact of prior entrepreneurial exposure on perceptions of new venture feasibility and desirability. *Entrepreneurship Theory and Practice*, 18(1), 5-21.

Krueger, N. F. (2003). *The cognitive psychology of entrepreneurship*. In Handbook of entrepreneurship research (pp. 105-140). Springer US.

McMullen, J. S., & Shepherd, D. A. (2006). Entrepreneurial action and the role of uncertainty in the theory of the entrepreneur. *Academy of Management Review*, 31(1), 132-152.

Mitchell, J. R., & Shepherd, D. A. (2010). To thine own self be true: Images of self, images of opportunity, and entrepreneurial action. *Journal of Business Venturing*, 25(1), 138-154.

Mitchell, R. K., Busenitz, L. W., Bird, B., Gaglio, C. M., McMullen, J. S., Morse, E. A., & Smith, J. B. (2007). The central question in entrepreneurial cognition research 2007. *Entrepreneurship Theory and Practice*, 31(1), 1-27.

Mitchell, R. K., Smith, J. B., Morse, E. A., Seawright, K. W., Peredo, A. M., & McKenzie, B. (2002). Are entrepreneurial cognitions universal? Assessing entrepreneurial cognitions across cultures. *Entrepreneurship Theory and Practice*, 26(4), 9-32.

Sandberg, W. R. & Hofer, C. W. (1987). Improving new venture performance: The role of strategy, industry structure, and the entrepreneur. *Journal of Business Venturing*, 2(1), 5-28.

Shane, S. (2009). Why encouraging more people to become entrepreneurs is bad public policy. *Small Business Economics*, 33(2), 141-149.

Simon, M., Houghton, S. M., & Aquino, K. (2000). Cognitive biases, risk perception, and venture formation: How individuals decide to start companies. *Journal of Business Venturing*, 15(2), 113-134.

Sine, W. D. & David, R. J. (2003). Environmental jolts, institutional change, and the creation of entrepreneurial opportunity in the US electric power industry. *Research Policy*, 32(2), 185–207.

Bibliography

Acedo, F. J., & Florin, J. (2007). Understanding the risk perception of strategic opportunities: a tripartite model. *Strategic Change*, 16(3), 97-116.

Acs, Z. J., Braunerhjelm, P., Audretsch, D. B., & Carlsson, B. (2009). The knowledge spillover theory of entrepreneurship. *Small Business Economics*, 32(1), 15-30.

Ai, C. & Norton, E. C. (2003), Interaction terms in Logit and Probit Models, *Economics Letters*, 80(1), 123-129.

Allinson, C. W., Chell, E., & Hayes, J. (2000). Intuition and entrepreneurial behaviour. *European Journal of Work and Organizational Psychology*, 9(1), 31-43.

Alvarez, C., & Urbano, D. (2011). Una Década de Investigación basada en el GEM: Logros y Retos (A Decade of GEM Research: Achievements and Challenges). *Academia Revista Latinoamericana de Administración*, (46), 16-37.

Álvarez, C., Urbano, D., & Amorós, J. E. (2014). GEM research: achievements and challenges. *Small Business Economics*, 42(3), 445-465.

Alvarez, S. A., & Barney, J. B. (2007). Discovery and creation: Alternative theories of entrepreneurial action. *Strategic Entrepreneurship Journal*, 1(1-2), 11-26.

Alvarez, S. A., & Busenitz, L. W. (2001). The entrepreneurship of resource-based theory. *Journal of Management*, 27(6), 755-775.

Amorós, J. E., & Bosma, N. (2014). *Global Entrepreneurship Monitor, 2013 Global Report*. Babson Park, MA, U.S.: Babson College; Santiago, Chile: Universidad del

Desarrollo; Kuala Lumpur, Universiti Tun Abdul Razak and London, U.K.: Global Entrepreneurship Research Association

Amorós, J. E., Bosma, N., & Levie, J. (2013). Ten years of Global Entrepreneurship Monitor: accomplishments and prospects. *International Journal of Entrepreneurial Venturing*, 5(2), 120-152.

Ardichvili, A, Cardozob, R., & Rayc, S. (2003). A theory of entrepreneurial opportunity identification and development. *Journal of Business Venturing*, 18(1), 105–123.

Arenius, P., & Minniti, M. (2005). Perceptual variables and nascent entrepreneurship. *Small Business Economics*, 24(3), 233-247.

Audretsch, D. B., & Keilbach, M. (2007). The Theory of Knowledge Spillover Entrepreneurship. *Journal of Management Studies*, 44(7), 1242-1254.

Autio, E. (2007). *GEM 2007 report on high-growth entrepreneurship*. London: GERA.

Autio, E., & Acs, Z. (2010). Intellectual property protection and the formation of entrepreneurial growth aspirations. *Strategic Entrepreneurship Journal*, 4(3), 234-251.

Bager, T., & Schøtt, T. (2004). Growth expectation by entrepreneurs in nascent firms, baby business and mature firms: analysis of GEM population data 2000-2003. *Global Entrepreneurship Monitor*, 281-291.

Baker, T., & Nelson, R. E. (2005). Creating something from nothing: Resource construction through entrepreneurial bricolage. *Administrative Science Quarterly*, 50(3), 329-366.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioural change. *Psychological Review*, 84(2), 191-215.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, 52(1), 1-26.

Baron, R. A. (1998). Cognitive mechanisms in entrepreneurship: Why and when entrepreneurs think differently than other people. *Journal of Business Venturing*, 13(4), 275-294.

Baron, R. A. (2000). Psychological perspectives on entrepreneurship: cognitive and social factors in entrepreneurs' success. *Current Directions in Psychological Science*, 9, 15-18.

Baron, R. A. (2002). OB and entrepreneurship: the reciprocal benefits of closer conceptual links. *Research in Organizational Behavior*, 24, 225-269.

Baron, R. A. (2004). The cognitive perspective: a valuable tool for answering entrepreneurship's basic "why" questions. *Journal of Business Venturing*, 19(2), 221-239.

Baron, R. A. (2006). Opportunity recognition as pattern recognition: How entrepreneurs "connect the dots" to identify new business opportunities. *The Academy of Management Perspectives*, 20(1), 104-119.

Baron, R. A., & Ensley, M. D. (2006). Opportunity recognition as the detection of meaningful patterns: Evidence from comparisons of novice and experienced entrepreneurs. *Management Science*, 52(9), 1331-1344.

Baron, R. A., & Tang, J. (2011). The role of entrepreneurs in firm-level innovation: Joint effects of positive affect, creativity, and environmental dynamism. *Journal of Business Venturing*, 26(1), 49-60.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173.

Baum, J. R., & Locke, E. A. (2004). The relationship of entrepreneurial traits, skill, and motivation to subsequent venture growth. *Journal of Applied Psychology*, 89(4), 587.

Baumol, W. J. (1996). Entrepreneurship: Productive, unproductive, and destructive. *Journal of Business Venturing*, 11(1), 3-22.

Bausch, A., & Rosenbusch, N. (2005). Does innovation really matter? A meta-analysis on the relationship between innovation and business performance. In *Babson College Kaufman Foundation Entrepreneurship Research Conference, Babson, MA*.

Bennett, R., & Dann, S. (2000). The changing experience of Australian female entrepreneurs. *Gender, Work & Organization*, 7(2), 75-83.

Bird, B. (1988). Implementing entrepreneurial ideas: The case for intention. *Academy of Management Review*, 13(3), 442-453.

Bosma, N. (2013). *The Global Entrepreneurship Monitor (GEM) and its impact on entrepreneurship research*. Foundations and Trends in Entrepreneurship, 9(2).

Bosma, N., Coduras, A., Litovsky, Y., & Seaman, J. (2012). *GEM Manual. A report on the design, data and quality control of the Global Entrepreneurship Monitor*. Global Entrepreneurship Monitor, 1-95.

Bouckenoghe, D., Cools, E., Van den Broeck, H., & Vanderheyden, K. (2005). In search for the heffalump: An exploration of the cognitive style profiles among entrepreneurs. *Journal of Applied Management and Entrepreneurship*, 10, 58-75.

- Brännback, M., & Carsrud, A. (2008). Do they see what we see?: A critical nordic tale about perceptions of entrepreneurial opportunities, goals and growth. *Journal of Enterprising Culture*, 16(01), 55-87.
- Brännback, M., & Carsrud, A. (2009). *Cognitive maps in entrepreneurship: researching sense making and action*, in Understanding the Entrepreneurial Mind: Opening the Black Box. Eds. A. Carsrud and M. Brännback, pp. 75-96.
- Bruni, A., Gherardi, S., & Poggio, B. (2004). Doing gender, doing entrepreneurship: An ethnographic account of intertwined practices. *Gender, Work & Organization*, 11(4), 406-429.
- Bryant, P. (2007). Self-regulation and decision heuristics in entrepreneurial opportunity evaluation and exploitation. *Management Decision*, 45(4), 732-748.
- Busenitz, L. W., & Barney, J. B. (1997). Differences between entrepreneurs and managers in large organizations: Biases and heuristics in strategic decision-making. *Journal of Business Venturing*, 12(1), 9-30.
- Busenitz, L. W., Gomez, C., & Spencer, J. W. (2000). Country institutional profiles: Unlocking entrepreneurial phenomena. *Academy of Management Journal*, 43(5), 994-1003.
- Busenitz, L. W., & Lau, C. (1996). A cross-cultural cognitive model of new venture creation. *Entrepreneurship Theory and Practice*, 20, 4, 25-39.
- Bygrave, W., Hay, M., Ng, E., & Reynolds, P. (2003). Executive forum: a study of informal investing in 29 nations composing the Global Entrepreneurship Monitor. *Venture Capital: An International Journal of Entrepreneurial Finance*, 5(2), 101-116.

Camerer, C., & Lovo, D. (1999). Overconfidence and excess entry: An experimental approach. *American Economic Review*, 306-318.

Carsrud, A., & Brännback, M. (2011). Entrepreneurial motivations: what do we still need to know? *Journal of Small Business Management*, 49, 9–26.

Carsrud, A., Brännback, M., Elfving, J., & Brandt, K. (2009). *Motivations: The Entrepreneurial Mind and Behavior*, in *Understanding the Entrepreneurial Mind: Opening the Black Box*. Eds. A. Carsrud and M. Brännback, pp. 141-166.

Carter, S., & Shaw, E. (2006). *Womens's Business Ownership: Recent Research and Policy Developments* (pp. 1-96). DTI.

Cassar, G. (2010). Are individuals entering self-employment overly optimistic? an empirical test of plans and projections on nascent entrepreneur expectations. *Strategic Management Journal*, 31(8), 822-840.

Casson, M. (1982). *The Entrepreneur: An Economic Theory* (2nd ed.). Oxford: Edward Elgar.

Clark, B. W., Davis, C. H., & Harnish, V. C. (1984). Do courses in entrepreneurship aid in new venture creation?. *Journal of Small Business Management*, 2(26), 26-31.

Cliff, J. E. (1998). Does one size fit all? Exploring the relationship between attitudes towards growth, gender, and business size. *Journal of Business Venturing*, 13(6), 523-542.

Cliff, J. E., Jennings, P. D., & Greenwood, R. (2006). New to the game and questioning the rules: The experiences and beliefs of founders who start imitative versus innovative firms. *Journal of Business Venturing*, 21(5), 633-663.

- Cooper, A. C., Folta, T. B., & Woo, C. (1995). Entrepreneurial information search. *Journal of Business Venturing*, 10(2), 107-120.
- Cooper, A. C., Woo, C. Y., & Dunkelberg, W. C. (1988). Entrepreneurs' perceived chances for success. *Journal of Business Venturing*, 3(2), 97-108.
- Cooper, D. & Saral, K. (2013). Entrepreneurship and team participation: An experimental study. *European Economic Review*, 59, 126-140.
- Cope, J., & Down, S. (2010). I think therefore I learn? Entrepreneurial cognition, learning and knowing in practice. *Entrepreneurial Cognition, Learning and Knowing in Practice (April 1, 2010)*.
- Corbett, A. C., & Hmieleski, K. M. (2007). The conflicting cognitions of corporate entrepreneurs. *Entrepreneurship Theory and Practice*, 31(1), 103-121.
- Davidsson, P. (1991). Continued entrepreneurship: Ability, need, and opportunity as determinants of small firm growth. *Journal of Business Venturing*, 6(6), 405-429.
- Davidsson, P., & Honig, B. (2003). The role of social and human capital among nascent entrepreneurs. *Journal of business venturing*, 18(3), 301-331.
- Davies, H., & Walters, P. (2004). Emergent patterns of strategy, environment and performance in a transition economy. *Strategic Management Journal*, 25(4), 347-364.
- Davis, M. A., Curtis, M. B., & Tschetter, J. D. (2003). Evaluating cognitive training outcomes: Validity and utility of structural knowledge assessment. *Journal of Business and Psychology*, 18(2), 191-206.
- De Meza, D., & Southey, C. (1996). The borrower's curse: optimism, finance and entrepreneurship. *Economic Journal*, 106, 375-386.

Deci, E., & Ryan, R. (2008). Self-determination theory: A macro theory of human motivation, development, and health. *Canadian Psychology/Psychologie canadienne*, 49, 182-185.

Dew, N., Read, S., Sarasvathy, S. D., & Wiltbank, R. (2009). Effectual versus predictive logics in entrepreneurial decision-making: Differences between experts and novices. *Journal of Business Venturing*, 24(4), 287-309.

Dimov, D. (2007). Beyond the single-person, single-insight attribution in understanding entrepreneurial opportunities. *Entrepreneurship Theory and Practice*, 31(5), 713-731.

Dimov, D. (2010). Nascent entrepreneurs and venture emergence: Opportunity confidence, human capital, and early planning. *Journal of Management Studies*, 47(6), 1123-1153.

Douglas, E. (2009). Perceptions - *Looking at the world through entrepreneurial lenses*. In, A. Carsrud & M. Brännback (Eds.), *Understanding the entrepreneurial mind*. New York, NY: Springer. pp. 3-22.

Douglas, E. J., & Shepherd, D. A. (2002). Self-employment as a career choice: Attitudes, entrepreneurial intentions, and utility maximization. *Entrepreneurship Theory and Practice*, 26(3), 81-90.

Dunne, T., Roberts, M. J., & Samuelson, L. (1989). The growth and failure of US manufacturing plants. *The Quarterly Journal of Economics*, 671-698.

Dutta, D. K., & Thornhill, S. (2008). The evolution of growth intentions: Toward a cognition-based model. *Journal of Business Venturing*, 23(3), 307-332.

- Edelman, L., & Yli-Renko, H. (2010). The impact of environment and entrepreneurial perceptions on venture-creation efforts: bridging the discovery and creation views of entrepreneurship. *Entrepreneurship Theory and Practice*, 34(5), 833-856.
- Eisenhardt, K.M. & Schoonhoven, C.B. (1990). Organizational growth: Linking founding team, strategy, environment, and growth among U.S. semiconductor ventures, 1978–1988. *Administrative Science Quarterly*, 35(3), 504–529.
- Elfving, E., Brännback, M., & Carsrud, A. (2009). Toward A Contextual Model of Entrepreneurial Intentions. In, A. Carsrud & M. Brännback (Eds.), *Understanding the entrepreneurial mind*. New York, NY: Springer, pp. 23-34.
- Endsley, M. R. (2000). Theoretical underpinnings of situation awareness: A critical review. *Situation Awareness Analysis and Measurement*, 3-32.
- Ericsson, K. A. (2006). The influence of experience and deliberate practice on the development of superior expert performance. *The Cambridge handbook of expertise and expert performance*, 683-703.
- Estes, Z., & Hasson, U. (2004). The importance of being nonalignable: a critical test of the structural alignment theory of similarity. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 30(5), 1082-1092.
- Estrin, S., Korosteleva, J., & Mickiewicz, T. (2013). Which institutions encourage entrepreneurial growth aspirations?. *Journal of Business Venturing*, 28(4), 564-580.
- Farmer, S., Yao, X., & Kung-Mcintyre, K. (2011). The behavioral impact of entrepreneur identity aspiration and prior entrepreneurial experience. *Entrepreneurship Theory and practice*, 35(2), 245-273.

Fehr, E. & Falk, A. (2002). Psychological foundations of incentives. *European Economic Review*, 46, 687-724.

Felin, T., & Zenger, T. R. (2009). Entrepreneurs as theorists: on the origins of collective beliefs and novel strategies. *Strategic Entrepreneurship Journal*, 3(2), 127-146.

Fonseca, R., Lopez-Garcia., P., & Pissarides, C. (2001). Entrepreneurship, start-up costs and employment. *European Economic Review*, 45, 692-705.

Foo, M. D., Uy, M. A., & Baron, R. A. (2009). How do feelings influence effort? An empirical study of entrepreneurs' affect and venture effort. *Journal of Applied Psychology*, 94(4), 1086.

Forbes, D. P. (2005). Are some entrepreneurs more overconfident than others?. *Journal of Business Venturing*, 20(5), 623-640.

Gaglio, C. M. (2004). The role of mental simulations and counterfactual thinking in the opportunity identification process. *Entrepreneurship Theory and Practice*, 28(6), 533-552.

Gaglio, C. M., & Katz, J. A. (2001). The psychological basis of opportunity identification: Entrepreneurial alertness. *Small Business Economics*, 16(2), 95-111.

Gartner, W. B. (1985). A conceptual framework for describing the phenomenon of new venture creation. *Academy of Management Review*, 10(4), 696-706.

Gartner, W. B., Bird, B. J., & Starr, J. A. (1992). Acting as if: Differentiating entrepreneurial from organizational behavior. *Entrepreneurship Theory and Practice*, 16(3), 13-31.

Gentner, D. (1983). Structure-mapping: A theoretical framework for analogy. *Cognitive Science*, 7(2), 155-170.

Gentner, D., & Markman, A. B. (1994). Structural alignment in comparison: No difference without similarity. *Psychological Science*, 5(3), 152-158.

Greene, P. G., & Brown, T. E. (1997). Resource needs and the dynamic capitalism typology. *Journal of Business Venturing*, 12(3), 161-173.

Grégoire, D. A., Barr, P. S., & Shepherd, D. A. (2010). Cognitive processes of opportunity recognition: The role of structural alignment. *Organization Science*, 21(2), 413-431.

Grégoire, D. A., Corbett, A. C., & McMullen, J. S. (2011). The cognitive perspective in entrepreneurship: an agenda for future research. *Journal of Management Studies*, 48(6), 1443-1477.

Grégoire, D., Shepherd, D., & Lambert, L. (2010). Measuring Opportunity-Recognition Beliefs: Illustrating and Validating an Experimental Approach. *Organizational Research Methods*, 13(1), 114-145.

Groves, K., Vance, C., & Choi, D. (2011). Examining entrepreneurial cognition: an occupational analysis of balanced linear and nonlinear thinking and entrepreneurship success. *Journal of Small Business Management*, 49(3), 438-466.

Gundry, L. K., & Welsch, H. P. (2001). The ambitious entrepreneur: high growth strategies of women-owned enterprises. *Journal of Business Venturing*, 16(5), 453-470.

Gupta, V. K., Turban, D. B., Wasti, S. A., & Sikdar, A. (2009). The role of gender stereotypes in perceptions of entrepreneurs and intentions to become an entrepreneur.

Entrepreneurship Theory and Practice, 33(2), 397-417.

Hatten, T.S. (1997). *Small Business: Entrepreneurship and Beyond*. Upper Saddle River, NJ: Prentice-Hall.

Haynie, J. M., Shepherd, D. A., & Patzelt, H. (2012). Cognitive adaptability and an entrepreneurial task: The role of metacognitive ability and feedback. *Entrepreneurship*

Theory and Practice, 36(2), 237-265.

Haynie, J. M., Shepherd, D. A., Mosakowski, E., & Earley, P. C. (2010). A situated metacognitive model of the entrepreneurial mindset. *Journal of Business Venturing*,

25(2), 217-229.

Hayward, M. L., Forster, W. R., Sarasvathy, S. D., & Fredrickson, B. L. (2010). Beyond hubris: How highly confident entrepreneurs rebound to venture again. *Journal of Business*

Venturing, 25(6), 569-578.

Hayward, M. L., Shepherd, D. A., & Griffin, D. (2006). A hubris theory of entrepreneurship. *Management Science*, 52(2), 160-172.

Headd, B. (2003). Redefining business success: Distinguishing between closure and failure. *Small Business Economics*, 21(1), 51-61.

Hechavarria, D. M., & Reynolds, P. D. (2009). Cultural norms & business start-ups: the impact of national values on opportunity and necessity entrepreneurs. *International*

Entrepreneurship and Management Journal, 5(4), 417-437.

Helweg-Larsen, M., & Shepperd, J. (2001). Do moderators of the optimistic bias affect personal or target risk estimates?. *Personality and Social Psychology Review* 5, 74–95.

Hessels, J., Grilo, I., Thurik, R., & van der Zwan, P. (2011). Entrepreneurial exit and entrepreneurial engagement. *Journal of Evolutionary Economics*, 21(3), 447-471.

Hessels, J., Van Gelderen, M., & Thurik, R. (2008). Entrepreneurial aspirations, motivations, and their drivers. *Small Business Economics*, 31(3), 323-339.

Heunks, F. J. (1998). Innovation, creativity and success. *Small Business Economics*, 10(3), 263-272.

Hindle, K. (2004). Choosing qualitative methods for entrepreneurial cognition research: a canonical development approach. *Entrepreneurship Theory and Practice*, 28(6), 575-607.

Hmieleski, K. M., & Baron, R. A. (2008). When does entrepreneurial self-efficacy enhance versus reduce firm performance?. *Strategic Entrepreneurship Journal*, 2(1), 57-72.

Hmieleski, K. M., & Baron, R. A. (2009). Entrepreneurs' optimism and new venture performance: A social cognitive perspective. *Academy of Management Journal*, 52(3), 473-488.

Hodgkinson, G. P., Bown, N. J., Maule, A. J., Glaister, K. W., & Pearman, A. D. (1999). Breaking the frame: An analysis of strategic cognition and decision making under uncertainty. *Strategic Management Journal*, 20(10), 977-985.

Hornsby, J. S., Kuratko, D. F., Shepherd, D. A., & Bott, J. P. (2009). Managers' corporate entrepreneurial actions: Examining perception and position. *Journal of Business Venturing*, 24(3), 236-247.

Hornsby, J. S., Naffziger, D. W., Kuratko, D. F., & Montagno, R. V. (1993). An interactive model of the corporate entrepreneurship process. *Entrepreneurship Theory and Practice*, 17(2), 29-37.

Huber, L., Sloof, R. & Van Praag M. (2014). The effect of early entrepreneurship education: Evidence from a field experiment. *European Economic Review* 72, 76–97.

Huergo, E., & Jaumandreu, J. (2004). How does probability of innovation change with firm age?. *Small Business Economics*, 22(3-4), 193-207.

Hyytinen, A., Pajarinen, M., & Rouvinen, P. (2015). Does innovativeness reduce startup survival rates?. *Journal of Business Venturing*, 30(4), 564-581.

Jack, S. L., & Anderson, A. R. (2002). The effects of embeddedness on the entrepreneurial process. *Journal of Business Venturing*, 17(5), 467-487.

Jackson, J. E. (2005). *A user's guide to principal components*. John Wiley & Sons.

Johnson, P. (2004). Differences in regional firm formation rates: a decomposition analysis. *Entrepreneurship Theory and Practice*, 28(5), 431-445.

Jones, D. K., & Read, S. J. (2005). Expert-novice differences in the understanding and explanation of complex political conflicts. *Discourse Processes*, 39(1), 45-80.

Kable, J. W., & Glimcher, P. W. (2007). The neural correlates of subjective value during intertemporal choice. *Nature Neuroscience*, 10(12), 1625-1633.

Keh, H., Foo, M., & Lim, B. (2002). Opportunity evaluation under risky conditions: The cognitive processes of entrepreneurs. *Entrepreneurship Theory and Practice*, 27(2), 125-148.

Kirzner, I. M. (1978). *Competition and entrepreneurship*. Chicago and London: University of Chicago press.

Kirzner, I. M. (1979). *Perception, opportunity, and profit: Studies in the theory of entrepreneurship*. University of Chicago press.

Koellinger, P. (2008). Why are some entrepreneurs more innovative than others?. *Small Business Economics*, 31(1), 21-37.

Koellinger, P., Minniti, M., & Schade, C. (2007). "I think I can, I think I can": Overconfidence and entrepreneurial behavior. *Journal of Economic Psychology*, 28(4), 502-527.

Kor, Y. Y., Mahoney, J. T., & Michael, S. C. (2007). Resources, capabilities and entrepreneurial perceptions. *Journal of Management Studies*, 44(7), 1187-1212.

Krentzman, H. C., & Samaras, J. N. (1960). *Can small businesses use consultants*. Harvard Business Review, 38(3), 126-136.

Krueger, N. F. (1993). The impact of prior entrepreneurial exposure on perceptions of new venture feasibility and desirability. *Entrepreneurship Theory and Practice*, 18(1), 5-21.

Krueger, N. F. (2003). *The cognitive psychology of entrepreneurship*. In Handbook of entrepreneurship research (pp. 105-140). Springer US.

Krueger, N. F. (2007). What lies beneath? The experiential essence of entrepreneurial thinking. *Entrepreneurship Theory and Practice*, 31(1), 123-138.

Krueger, N. F., & Brazeal, D. V. (1994). Entrepreneurial potential and potential entrepreneurs. *Entrepreneurship Theory and Practice*, 18(3), 91-91.

Krueger, N. F., & Carsrud, A. L. (1993). Entrepreneurial intentions: applying the theory of planned behaviour. *Entrepreneurship & Regional Development*, 5(4), 315-330.

Krueger, N., & Dickson, P. (1994). How believing in ourselves increases risk taking: perceived self-efficacy and opportunity recognition. *Decision Sciences*, 25, 385-400.

Kuratko, D. F., Hornsby, J. S., Naffziger, D. W., & Montagno, R. V. (1993). Implementing entrepreneurial thinking in established organizations. *SAM Advanced Management Journal*, 58(1), 28-39.

Kuratko, D. F., Montagno, R. V., & Hornsby, J. S. (1990). Developing an intrapreneurial assessment instrument for an effective corporate entrepreneurial environment. *Strategic Management Journal*, 11(4), 49-58.

Kwong, C., Jones-Evans, D., & Thompson, P. (2012). Differences in perceptions of access to finance between potential male and female entrepreneurs: Evidence from the UK. *International Journal of Entrepreneurial Behavior & Research*, 18(1), 75-97.

Laussel, D., & Le Bron, M. (1995). A general equilibrium theory of firm formation based on individual unobservable skills. *European Economic Review*, 39, 1303-1319.

Lazear, E. (2004). Balanced Skills and Entrepreneurship. *American Economic Review*, 94, 208-211.

Lazear, E. (2005). Entrepreneurship. *Journal of Labor Economics*, 23, 649-680.

Levesque, M., & Minniti, M. (2006). The effect of aging on entrepreneurial behavior. *Journal of Business Venturing*, 21, 177-194.

Levie, J. (2010). *The IIP Innovation Confidence Indexes 2009 Report*. Hunter Center for Entrepreneurship, University of Strathclyde.

- Levie, J., & Autio, E. (2008). A theoretical grounding and test of the GEM model. *Small Business Economics*, 31(3), 235-263.
- Levie, J., Autio, E., Acs, Z., & Hart, M. (2014). Global entrepreneurship and institutions: an introduction. *Small Business Economics*, 42(3), 437-444.
- Levinthal, D., & March, J. (1993). The myopia of learning. *Strategic Management Journal*, 14(S2), 95–112.
- Lieberman, M. B., & Montgomery, D. B. (1988). First-mover advantages. *Strategic Management Journal*, 9(1), 41-58.
- Lim, B. C., & Klein, K. J. (2006). Team mental models and team performance: a field study of the effects of team mental model similarity and accuracy. *Journal of Organizational Behavior*, 27(4), 403-418.
- Liñán, F. (2008). Skill and value perceptions: how do they affect entrepreneurial intentions?. *International Entrepreneurship and Management Journal*, 4(3), 257-272.
- Liñán, F., & Santos, F. J. (2007). Does social capital affect entrepreneurial intentions?. *International Advances in Economic Research*, 13(4), 443-453.
- Lindblom, A., Olkkonen, R., & Mitronen, L. (2008). Cognitive styles of contractually integrated retail entrepreneurs: a survey study. *International Journal of Retail & Distribution Management*, 36(6), 518-532.
- Lord, R. G., & Maher, K. J. (1990). Alternative information-processing models and their implications for theory, research, and practice. *Academy of Management Review*, 15(1), 9-28.

Lumpkin, G. T., & Dess, G. G. (1996). Clarifying the entrepreneurial orientation construct and linking it to performance. *Academy of Management Review*, 21(1), 135-172.

March, J. G. (1994). *Primer on decision making: How decisions happen*. Simon and Schuster.

March, J. G., Sproull, L. S., & Tamuz, M. (1991). Learning from samples of one or fewer. *Organization Science*, 2(1), 1-13.

Markman, A. B., & Gentner, D. (1993a). Splitting the differences: A structural alignment view of similarity. *Journal of Memory and Language*, 32(4), 517-535.

Markman, A. B., & Gentner, D. (1993b). Structural alignment during similarity comparisons. *Cognitive Psychology*, 25(4), 431-467.

Markman, G. D., Balkin, D. B., & Baron, R. A. (2002). Inventors and new venture formation: the effects of general self-efficacy and regretful thinking. *Entrepreneurship Theory and Practice*, 27(2), 149-165.

McKeithen, K. B., Reitman, J. S., Rueter, H. H., & Hirtle, S. C. (1981). Knowledge organization and skill differences in computer programmers. *Cognitive Psychology*, 13(3), 307-325.

McMullen, J. S., & Shepherd, D. A. (2006). Entrepreneurial action and the role of uncertainty in the theory of the entrepreneur. *Academy of Management Review*, 31(1), 132-152.

McVea, J. F. (2009). A field study of entrepreneurial decision-making and moral imagination. *Journal of Business Venturing*, 24(5), 491-504.

Medin, D. L., Goldstone, R. L., & Markman, A. B. (1995). Comparison and choice: Relations between similarity processes and decision processes. *Psychonomic Bulletin & Review*, 2(1), 1-19.

Miller, D., & Friesen, P. H. (1982). Innovation in conservative and entrepreneurial firms: Two models of strategic momentum. *Strategic Management Journal*, 3(1), 1-25.

Miller, S. M. (1996). Monitoring and blunting of threatening information: Cognitive interference and facilitation in the coping process. *Cognitive interference: Theories, methods, and findings*, 175-190.

Minniti, M. (2008). The role of government policy on entrepreneurial activity: productive, unproductive, or destructive?. *Entrepreneurship Theory and Practice*, 32(5), 779-790.

Mitchell, J. R., & Shepherd, D. A. (2010). To thine own self be true: Images of self, images of opportunity, and entrepreneurial action. *Journal of Business Venturing*, 25(1), 138-154.

Mitchell, R. K., Busenitz, L. W., Bird, B., Gaglio, C. M., McMullen, J. S., Morse, E. A., & Smith, J. B. (2007). The central question in entrepreneurial cognition research 2007. *Entrepreneurship Theory and Practice*, 31(1), 1-27.

Mitchell, R. K., Busenitz, L. W., Lant, T., McDougall, P. P., Morse, E. A., & Smith, J. B. (2002). Toward a theory of entrepreneurial cognition: Rethinking the people side of entrepreneurship research. *Entrepreneurship Theory and Practice*, 27(2), 93-104.

Mitchell, R. K., Busenitz, L. W., Lant, T., McDougall, P. P., Morse, E. A., & Smith, J. B. (2004). The distinctive and inclusive domain of entrepreneurial cognition research. *Entrepreneurship Theory and Practice*, 28(6), 505-518.

- Neisser, U. (1967). *Cognitive psychology*. New York: Appleton-Century-Crafts.
- Phillips, B. D., & Kirchoff, B. A. (1989). Formation, growth and survival; small firm dynamics in the US economy. *Small Business Economics*, 1(1), 65-74.
- Reynolds, P., Bosma, N., Autio, E., Hunt, S., De Bono, N., Servais, I., Lopez-Garcia, P. & Chin, N. (2005). Global entrepreneurship monitor: Data collection design and implementation 1998–2003. *Small Business Economics*, 24(3), 205-231.
- Shane, S. (2000). Prior knowledge and the discovery of entrepreneurial opportunities. *Organization Science*, 11(4), 448-469.
- Shane, S. (2009). Why encouraging more people to become entrepreneurs is bad public policy. *Small Business Economics*, 33(2), 141-149.
- Shane, S., & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *Academy of Management Review*, 25(1), 217-226.
- Shane, S., Locke, E. A., & Collins, C. J. (2003). Entrepreneurial motivation. *Human Resource Management Review*, 13(2), 257-279.
- Shepherd, D. A. (2015). Party On! A call for entrepreneurship research that is more interactive, activity based, cognitively hot, compassionate, and prosocial. *Journal of Business Venturing*, 30(4), 489-507.
- Shepherd, D. A., & Krueger, N. F. (2002). An Intentions-Based Model of Entrepreneurial Teams' Social Cognition. *Entrepreneurship Theory and Practice*, 27(2), 167-185.
- Shook, C. L., Priem, R. L., & McGee, J. E. (2003). Venture creation and the enterprising individual: A review and synthesis. *Journal of Management*, 29(3), 379-399.

Simon, M., & Houghton, S. M. (2002). The relationship among biases, misperceptions, and the introduction of pioneering products: Examining differences in venture decision contexts. *Entrepreneurship Theory and Practice*, 27(2), 105-124.

Simon, M., & Houghton, S. M. (2003). The relationship between overconfidence and the introduction of risky products: Evidence from a field study. *Academy of Management Journal*, 46(2), 139-149.

Simon, M., Houghton, S. M., & Aquino, K. (2000). Cognitive biases, risk perception, and venture formation: How individuals decide to start companies. *Journal of Business Venturing*, 15(2), 113-134.

Sine, W. D. & David, R. J. (2003). Environmental jolts, institutional change, and the creation of entrepreneurial opportunity in the US electric power industry. *Research Policy*, 32(2), 185–207.

Smith, J. B., Mitchell, J. R., & Mitchell, R. K. (2009). Entrepreneurial scripts and the new transaction commitment mindset: Extending the expert information processing theory approach to entrepreneurial cognition research. *Entrepreneurship Theory and Practice*, 33(4), 815-844.

Solomon, G. T., & Weaver, K. M. (1983). Small business institute economic impact evaluation. *American Journal of Small Business*, 8(1), 41-51.

Steffens, P., Davidsson, P., & Fitzsimmons, J. (2009). Performance configurations over time: implications for growth-and profit-oriented strategies. *Entrepreneurship Theory and Practice*, 33(1), 125-148.

Stenholm, P. (2011). Innovative behavior as a moderator of growth intentions. *Journal of Small Business Management*, 49(2), 233-251.

Stenholm, P., Acs, Z. J., & Wuebker, R. (2013). Exploring country-level institutional arrangements on the rate and type of entrepreneurial activity. *Journal of Business Venturing*, 28(1), 176-193.

Sternberg, R. J. (1999). *The Nature of Cognition*. MIT Press, Cambridge, MA.

Stewart Jr, W. H., & Roth, P. L. (2001). Risk propensity differences between entrepreneurs and managers: a meta-analytic review. *Journal of Applied Psychology*, 86(1), 145-153.

Thai, M. T. T., & Turkina, E. (2014). Macro-level determinants of formal entrepreneurship versus informal entrepreneurship. *Journal of Business Venturing*, 29(4), 490-510.

Townsend, D. M., Busenitz, L. W., & Arthurs, J. D. (2010). To start or not to start: Outcome and ability expectations in the decision to start a new venture. *Journal of Business Venturing*, 25(2), 192-202.

Ucbasaran, D., Westhead, P., & Wright, M. (2009). The extent and nature of opportunity identification by experienced entrepreneurs. *Journal of Business Venturing*, 24(2), 99-115.

Ucbasaran, D., Westhead, P., Wright, M., & Flores, M. (2010). The nature of entrepreneurial experience, business failure and comparative optimism. *Journal of Business Venturing*, 25(6), 541-555.

Vaghely, I. P., & Julien, P. A. (2010). Are opportunities recognized or constructed?: An information perspective on entrepreneurial opportunity identification. *Journal of Business Venturing*, 25(1), 73-86.

- Valliere, D. (2013). Towards a schematic theory of entrepreneurial alertness. *Journal of Business Venturing*, 28(3), 430-442.
- Veciana, J. M., & Urbano, D. (2008). The institutional approach to entrepreneurship research. Introduction. *International Entrepreneurship and Management Journal*, 4(4), 365-379.
- Venkataraman, S. (1997). The distinctive domain of entrepreneurship research. *Advances in Entrepreneurship, Firm Emergence and Growth*, 3(1), 119-138.
- Verheul, I., & Van Mil, L. (2011). What determines the growth ambition of Dutch early-stage entrepreneurs?. *International Journal of Entrepreneurial Venturing*, 3(2), 183-207.
- Vroom, V. H. (1964). *Work and motivation*. New York: Wiley.
- Webb, J. W., Bruton, G. D., Tihanyi, L., & Ireland, R. D. (2013). Research on entrepreneurship in the informal economy: Framing a research agenda. *Journal of Business Venturing*, 28(5), 598-614.
- Weinstein, N. D. (1980). Unrealistic optimism about future life events. *Journal of Personality and Social Psychology*, 39(5), 806.
- Welter, F., & Smallbone, D. (2011). Institutional perspectives on entrepreneurial behavior in challenging environments. *Journal of Small Business Management*, 49(1), 107-125.
- West, G. P. (2007). Collective cognition: When entrepreneurial teams, not individuals, make decisions. *Entrepreneurship Theory and Practice*, 31(1), 77-102.
- Wiklund, J., Davidsson, P., & Delmar, F. (2003). What Do They Think and Feel about Growth? An Expectancy-Value Approach to Small Business Managers' Attitudes Toward Growth. *Entrepreneurship Theory and Practice*, 27(3), 247-270.

Williams, D. W. (2010). *Why do different new ventures internationalize differently? A cognitive model of entrepreneurs' internationalization decisions*. Dissertation, Georgia State University

Wong, P. K., Ho, Y. P., & Autio, E. (2005). Entrepreneurship, innovation and economic growth: Evidence from GEM data. *Small Business Economics*, 24(3), 335-350.

Wood, M. S., McKelvie, A., & Haynie, J. M. (2014). Making it personal: Opportunity individuation and the shaping of opportunity beliefs. *Journal of Business Venturing*, 29(2), 252-272.

Wood, R., & Bandura, A. (1989). Social cognitive theory of organizational management. *Academy of Management Review*, 14, 361–384.

Yusuf, J. E. (2010). Meeting entrepreneurs' support needs: are assistance programs effective?. *Journal of Small Business and Enterprise Development*, 17(2), 294-307.

Zahra, S. A. (1991). Predictors and financial outcomes of corporate entrepreneurship: An exploratory study. *Journal of Business Venturing*, 6(4), 259-285.

Zahra, S., Korri, J., & Yu, J. (2005). Cognition and international entrepreneurship: implications for research on international opportunity recognition and exploitation. *International Business Review*, 14, 129-146.