

RISK PERCEPTIONS AND VENTURE CREATION DECISIONS: ESTABLISHING THE  
BOUNDARY CONDITIONS OF OVERCONFIDENCE AND PERCEIVED  
ENVIRONMENTAL MUNIFICENCE

by

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## ABSTRACT

This dissertation leverages cognition theory to examine the relationship between risk perceptions and venture creation decisions and seeks to establish overconfidence and perceived environmental munificence as boundary conditions for that relationship. Risk perceptions of the new venture are negatively associated with venture creation decisions. As the threat of possible loss and uncertainty associated with the new venture increase, the likelihood for gains associated with deciding to create the new venture decrease. Overconfidence and perceived environmental munificence are expected to moderate the relationship between risk perceptions of the new venture and venture creation decisions. Overconfidence is a cognitive bias that mitigates the relationship between risk perceptions of the new venture and venture creation decisions because the overconfident, while aware of risks, tend to be less sensitive to the possibilities of loss affecting their new ventures based upon skewed perceptions. Additionally, greater amounts of perceived environmental munificence are expected to weaken the negative relationship between risk perceptions of the new venture and venture creation decisions. The effects of risks on the new venture decision are perceived as less likely in resource-rich environments. The relationship between perceived risks and venture creation decisions is, thus, likely to be influenced by the boundary conditions of overconfidence and perceived environmental munificence. The results provide support for the hypothesized relationship between risk perceptions and venture creation decisions. It also provides evidence that perceived environmental munificence moderates the relationship between risk perceptions and venture creation decisions. However, it does not provide support for the hypothesized boundary condition of overconfidence.

## DEDICATION

I dedicate this dissertation to everyone who helped me throughout the process of completing my doctoral degree and this manuscript. My committee members, the faculty in the Management and Marketing departments, my family members, and close friends all made significant contributions to these efforts and for that I am grateful. In particular, I dedicate this dissertation to my parents, Lana Jimmerson and Albert Robinson, Jr. Their love and guidance continue to be sources of great strength in my life.

## LIST OF ABBREVIATIONS AND SYMBOLS

<i>AVE</i>	Average variance explained
<i>PEM</i>	Perceived environmental munificence
<i>RP</i>	Risk perceptions
<i>VCD</i>	Venture creation decision
<i>CFA</i>	Confirmatory factor analysis
<i>CFI</i>	Comparative fit index: model fit evaluation
<i>NFI</i>	Normed fit index: model fit evaluation
<i>RMSEA</i>	Root mean square error of approximation: model fit evaluation
<i>SRMR</i>	Standardized root mean square residual
$\alpha$	Cronbach's index of internal consistency
$\beta$	Beta coefficient for variables
<i>df</i>	Degrees of freedom: number of values free to vary after certain restrictions have been placed on the data
<i>F</i>	Fisher's <i>F</i> ratio: A ration of two variances

$M$	Mean: the sum of a set of measurements divided by the number of measurements in the set
$N$	Numeric value of the sample size
$SD$	Standard deviation
$p$	Probability associated with the occurrence under the null hypothesis of a value as extreme as or more extreme than the observed value
$r$	Pearson product-moment correlation
$t$	Computed value of $t$ test
$\chi^2$	Chi-square: model fit evaluation
$<$	Less than
$>$	Greater than
$=$	Equal to

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# CHAPTER 1

## INTRODUCTION

Venture creation decisions involve choices to launch new businesses (Gartner, 1985; Specht, 1993), which rely on important cognitive processes. For example, cognitive processes such as risk perceptions have important implications for venture creation decisions (Forlani & Mullins, 2000; Simon, Houghton, & Aquino, 2000). Risk perceptions refer to one's mental image regarding the possibility of loss whereas venture creation decisions involve the choice to start a new business. Although there is some evidence that relationships may exist between risk perceptions and venture creation decisions, the overall body of work around these constructs is incomplete (Camerer & Lovallo, 1999). For instance, research has done little to establish the important boundary conditions for this relationship. This dissertation seeks to examine and understand the boundary conditions for the relationship between risk perceptions and the venture creation decision.

Other cognitive processes and artifacts such as cognitive biases and heuristics may impinge upon the venture creation decision-making process. Cognitive heuristics and biases such as overconfidence are cognitive artifacts, which matter for the venture creation decision process (Simon et al., 2000) in a variety of ways. For instance, the effects of overconfidence on venture creation decisions may be direct, mediated, or moderated. Whereas overconfidence is a type of cognitive bias that impinges on aspects of entrepreneurship such as risk perceptions and venture creation, it has not been shown to be a consistent factor which directly influences the new venture creation decision (Lowe & Ziedonis, 2006). More specifically, while researchers have found that entrepreneurs tend to be overconfident, it is not clear how overconfidence is

associated with the venture creation decision (Baron, 1998; Busenitz, 1999). This research explores the moderating effects of overconfidence.

The presence of cognitive biases such as overconfidence may impact the venture creation decision through its interaction with risk perceptions. In this way, overconfidence reduces the negative effect of risk perceptions on venture creation decisions by causing skewed perceptions based upon overestimations of success. Such an explanation offers clear mechanisms by which overconfidence is associated with venture creation decisions. Hence, hypotheses are developed and tested in this dissertation to explore whether such relationships exist with the expressed goal of identifying any interactive implications of overconfidence on entrepreneurial processes.

Another cognitive artifact, perceived environmental munificence, may act as a moderator for the relationship between risk perceptions and venture creation decisions, thereby, influencing the venture creation decision. In this sense, cognitive contextual considerations may matter for risk perceptions and its subsequent impact on the venture creation decision. The characteristics of a firm's external environment may form boundary conditions for some expected relationships. For instance, several studies have examined the interactive effects of environment-level variables in their models (Miller & Friesen, 1982; Thornhill, 2006). Others identify behavior as a function of the potential entrepreneur and the environment (Shaver & Scott, 1991). Arguably entrepreneurship is described as the nexus of entrepreneurs and opportunities (Shane & Venkataraman, 2000) leading to the notion that munificent environments, which give rise to greater resources and opportunities also may produce greater amounts of new ventures. Yet, none model and test for the interactive influences of the venture's external environment when addressing risk perceptions. Including external environmental representations in models of

venture formation creation decisions help to create a more accurate and a more complete picture of the venture decision process (Gartner, 1985; Shaver et al., 1991).

Examining cognitive processes and constructs with a contingent approach has important implications for entrepreneurship research (Wiklund & Shepherd, 2005). Understanding the interactive effects of characteristics within the organization such as the entrepreneur along with external characteristics informs entrepreneurial research efforts. More specifically, the effects of risk perceptions on venture creation decisions may be weaker or stronger under certain circumstances such as those in which the entrepreneur is overconfident and those in which the environment provides greater resource abundance. Failing to examine how these factors interact to affect venture creation decisions ignores the complexity of critical phenomena in entrepreneurship, which give rise to new ventures and domestic growth.

This study seeks to address the absence of established cognitive boundary conditions for the risk perceptions-venture creation decision relationship in the literature by examining the interrelationships between risk perceptions, venture creation decisions, overconfidence and perceived environmental munificence as depicted in Figure 1. Specifically, I address the following research questions: (1) Are risk perceptions concerning new ventures associated with venture creation decisions? (2) Does overconfidence moderate the relationship between risk perceptions concerning new ventures and venture creation decisions? (3) Does perceived environmental munificence moderate the relationship between risk perceptions concerning new ventures and venture creation decisions?

In the following section, I present the theoretical basis for this study. Subsequently, I establish the direct relationship between risk perceptions and venture creation decisions. In the following sections, I introduce overconfidence and perceived environmental munificence as

moderators for the relationship between the risk perceptions and venture creation decisions. Next I discuss the research design and methodology used to test the hypotheses presented in this dissertation. Finally, I discuss the results, contributions, limitations, and suggestions for future research.

## **Theoretical Background**

Cognitive theory represents the theoretical canvas upon which this study is cast. It refers to information processing activities such as the gathering, interpreting, and synthesizing of information in the context of organizational decision making. Cognition is defined as all processes by which sensory input is transformed, reduced, elaborated, stored recovered, and used (Neisser, 1967). The perceptions of individuals and their memories and thinking form the foundations of early cognitions (Estes, 1975). Currently, cognitions research focuses on various cognitive functions such as making sense of the complex world around us, reasoning, forming judgments, making decisions, information storage and retrieval, language and symbol use, perceptions (i.e. acquiring, interpreting, selecting, and organizing sensory information), memory, problem-solving, and thinking. Recently, several key findings in cognitions research have impacted the study of entrepreneurship: humans experience information processing overload as a consequence of our limited capacity to process new information; humans seek to minimize cognitive effort and, thus, engage in mental short cuts; and a wide range of human thinking is subject to biases and errors, which causes irrational thinking (Baron, 1998).

The formation of knowledge structures is central to cognitions research. Knowledge structures, mental models, and schemas are the mechanisms through which cognitive theory explains human information processing and behavior. They act as mental filters through which people subjectively interpret their external objective realities. Mental models (Barr, Stimpert, & Huff, 1992) are formed as people make sense of the world around them through perception, the process of acquiring, interpreting, selecting, and storing information. Cognitive theory finds that people tend to see what they want to see by accessing particular schema (Fiske & Taylor, 1991). These schemas may be referred to as knowledge/cognitive structures or mental models and are

formed by experiences and predisposed mental tendencies. Sense-making, as it relates to experience, is the primary way in which these mental models are created (Weick, 1995). They represent the lens through which the world is perceived and are the product of one perceiving the world. Accessing these schemas helps individuals to process information from new stimuli as they attempt to make decisions in various contexts and act. Hence, these cognitive representations of the world are translated into actions (Shaver & Scott, 1991) through decision-making.

Another important aspect of cognitions involves heuristics and cognitive biases, whereby individuals may not always engage in rational decision-making (Barnes, 1984; Baron, 1998; Bazerman, 1984). This is particularly true given that there are boundaries of rationality (March & Simon, 1958) that impose cognitive limitations on humans, thus, encouraging the susceptibility of some to heuristics and biases, which seek to minimize information requirements for the decision. Heuristics reflect the rules of thumb that, subsequently, may lead to biases. Heuristics act as decision rules, which allow decision-makers to arrive at probabilities, assess values, or make actionable decisions (Tversky & Kahneman, 1974) more efficiently and sometimes more effectively than might be the case under time constraints and based upon human cognitive limitations. Acting as cognitive short cuts, they increase the simplicity and efficiency of decision-making by reducing the complexity associated with some decision processes (Barnes, 1984). Essentially, they reduce the amount of information that must be considered when making a decision (Schwenk, 1986). As these simplification strategies are employed, cognitive biases may be manifestations of these heuristics. Cognitive biases are subjective beliefs that help individuals cope with difficult decisions (Bazerman, 1984). These cognitive biases help reduce the degree of difficulty regarding these decisions which may ensue based upon the cognitive

limitations of decision makers or other environmental factors surrounding decision contexts. It is important to note that while typically helpful, these heuristics and biases may result in persistent and systematic errors (Barnes, 1984; Tversky & Kahneman, 1974)

Various heuristics and cognitive biases have been identified in the literature. A few examples of these heuristics and cognitive biases include representativeness, illusion of control, belief in the law of small numbers, overconfidence, availability, and planning fallacy (Barnes, 1984; Baron, 1998; Mitchell et al., 2002; Shaver et al., 1991; Simon et al., 2000). The representativeness heuristic, which involves assumptions of commonality based upon similarities or representativeness, was first introduced by Tversky and Kahneman (1974). Essentially, people predict frequency outcomes that are most consistent with what they believe to be similar events despite other important considerations such as the reliability of the evidence or the probability of that outcome (Barnes, 1984). This bias has been linked to the illusion of control bias (Schwenk, 1986), which occurs when individuals overestimate their ability to achieve a particular outcome through their skill sets when chance plays a larger role (Langer, 1975). The illusion of control along with the belief in the law of small numbers biases have been shown to negatively influence risk perceptions (Simon et al., 2000). The belief in the law of small numbers exists when conclusions are drawn from a small sample of occurrences despite the reality that this sampling technique may not reflect real probabilities (Tversky & Kahneman, 1974). Overconfidence, one of earliest identified biases (Oskamp, 1965), involves the failure to know the limits of one's knowledge. Individuals overestimate their certainty about information (Simon et al., 2000). The availability heuristic occurs when individuals rely on similar instances that can more easily be recalled to form judgments about future occurrences (Tversky & Kahneman, 1974). For instance, "one may evaluate the probability that a given business venture will fail by imagining various

difficulties it could encounter” (Tversky & Kahneman, 1974: 1127). Planning fallacy is a cognitive mechanism by which individuals overestimate what can be achieved in a certain time period or underestimate that amount of time required to complete particular tasks (Kahneman & Lovallo, 1993). This occurs because individuals ignore past experiences and focus on future events and outcomes (Barnes, 1998).

The existence of heuristics and cognitive biases is not independent of the environment in which they are induced. Uncertain or ill-defined environments, complexity, time constraints, limited information, and novel situations tend to increase the likelihood of these decision rules. Judgments under uncertainty typically result in the usage of rules to arrive at subjective assessments of probabilities (Tversky & Kahneman, 1974). In addition to being uncertain, these decisions may have a level of complexity that requires cognitive coping mechanisms to simplify them in an effort to make more timely decisions (Schwenk, 1986). Higher levels of complexity may lead to information overloads resulting in decision simplifying strategies (Baron, 1998). Time constraints impede more comprehensive information examination leading to approximations of the best course of action (Busenitz & Barney, 1997). These time constraints may or may not limit access to information used in the decision process. Heuristics and biases allow decision-makers to move forward with a degree of confidence despite limited access to relevant information (Schwenk, 1986). Finally, when confronted with new situations, individuals may not be able to rely on preexisting knowledge to effectively and efficiently make decisions (Fiske & Taylor, 1991). New decision rules must be formed and may arise from existing heuristics and biases that were developed based upon similar experiences. Essentially, the ill-defined decision contexts where an abundance of new stimuli exist and time pressures mandate

rapid decision-making creates a suitable environment for simplifying strategies such as heuristics to produce cognitive biases.

Hence, one might argue that the rapidly changing and highly uncertain environments in which entrepreneurs make decisions often makes them more susceptible to the use of heuristics and biases (Baron, 1998; Busenitz & Barney, 1997). They help to simplify the decision-making process allowing decision-makers to move forward. Such processes are helpful since decision makers are constrained by their cognitive limitations (March & Simon, 1958) and since entrepreneurs frequently find themselves in novel situations, with limited information and surrounded by ill-defined decision contexts (Busenitz, 1999; Duhaime & Schwenk, 1985). The nature of entrepreneurial settings suggests that much can be learned about entrepreneurship by examining cognitive mechanisms such as heuristics and biases. Moreover, there is a growing body of evidence that suggests that overconfidence appears to offer some promise in helping to distinguish entrepreneurs from non-entrepreneurs (Busenitz & Barney, 1997) and, perhaps, to help explain venture formation activities (Simon et al., 2000).

Applying a cognitive theory lens in entrepreneurship is consistent with the assertion by Shaver and Scott (1991: p. 26) who explain that, “a psychological approach to new venture creation must involve cognitive processes that occur with the individual.” This is particularly true since humans have limitations in their ability to process information (Simon, 1976). Hence, entrepreneurial cognitions emerge as a meaningful extension of cognitive theory. According to Mitchell et al. (2002: p. 97), “*entrepreneurial cognitions are the knowledge structures that people use to make assessments, judgments, or decisions involving opportunity evaluation, venture creation, and growth.*” Given this, the cognitive perspective offers new insights into current research questions concerning entrepreneurship.

Cognition research is increasingly becoming an important perspective for studying entrepreneurship-related phenomenon. Defined as “the knowledge structures that people use to make assessments, judgments or decisions involving opportunity evaluation and venture creation and growth” (Mitchell et al., 2002, p. 07), entrepreneurial cognitions continues to help researchers address important questions regarding why some choose to become entrepreneurs while others do not, how some recognize profitable opportunities, and what separates successful entrepreneurs from those who are less successful (Mitchell, Busenitz, et al., 2007). In its essence, it seeks to understand how entrepreneurs think and act upon those thoughts. This understanding is critical because the cognitive representations of entrepreneurs are often translated into actions affecting new venture choices and outcomes (Shaver & Scott, 1991). Hence, the interaction between the person who becomes an entrepreneur, the process by which opportunities are exploited and the choice to create a new venture give rise to a more psychological view of venture formation (Shaver & Scott, 1991). This emerging perspective allows for discovery of new insights into existing entrepreneurial questions.

Under the umbrella of entrepreneurial cognitions, overconfidence has significant implications for entrepreneurial decision-making and processes. Often defined as the failure to know the limits of one’s knowledge (Keh, Foo, & Lim, 2002; Simon et al., 2000), overconfidence yields extreme certainty judgments and overestimation of event occurrences (Zacharakis & Shepherd, 2001). Failing to understand how much additional information one needs may produce undesired consequences (Barnes, 1984) such as founders depriving their ventures of resources (Hayward, Shepherd & Griffin 2006) or continuing unsuccessful development efforts (Lowe & Ziedonis, 2006). Additionally, risky products are introduced (Simon & Houghton, 2003) and venture capitalists overestimate new venture success at great

costs (Zacharakis & Shepherd, 2001). The ill-defined contexts associated with new venture creation produce fertile environments for heuristics and cognitive biases to become prevalent among some entrepreneurs making them more susceptible to overconfidence (Busenitz, 1999; Busenitz & Barney, 1997; Barnes, 1984). Hence, entrepreneurs may become more overconfident due to their settings.

Alternatively, there may be a relationship between overconfidence and venture creation choices ex ante the decision to become an entrepreneur based upon their mental representations of risk. When considering that the relatively high rate of failure among newly created ventures indicates a statistical improbability of success, failing to perceive the risks associated with this decision offers some explanation about venture creation choices. This may be explained by examining the effect of the overconfidence cognitive bias on the way in which entrepreneurs perceive or do not perceive risks and venture creation decisions (Kahneman et al., 1993; Palich & Badgy, 1995).

## Summary

As depicted in Figure 1, I contend that risk perceptions are associated with venture creation decisions. Perceptions of chances for loss and uncertainty (i.e., risks) reduce decisions to start new ventures. This logic is consistent with and supported by empirical evidence (Forlani et al., 2000; Simon et al., 2000).

Overconfidence is a cognitive bias that has significant implications for entrepreneurship research. It is the failure to understand the limitations of one's knowledge leading to high certainty judgments, which may adversely affect decision-making (Baron, 1998; Russo & Schoemaker, 1992). The existence and consequences of this cognitive bias are particularly salient in the ill-structured decision contexts in which entrepreneurs often make decisions coupled with the cognitive limitations that exist. There are limits to the amount of information we can acquire, process, and hold.

This study establishes overconfidence as a boundary condition which reduces the impact of risk perceptions on venture creation decisions. Whereas perceptions of risk may exist for the new venture, they may be mitigated by the existence of overconfidence since the overconfident tend to overestimate their chances for success, thereby, reducing the impact of risk perceptions on the venture creation decision. Additionally, the overconfident may tend to focus on the opportunities associated with risks rather than with the challenges associated with them. For instance, focusing on the risk-reward relationship, overconfidence may cause greater focus on the greater rewards associated with high risks. This cognitive bias also may cause individuals to underestimate how risks may adversely affect the potential success and survival of new ventures causing overconfident actors to believe that they can achieve success where others cannot despite the associated risks.

Perceived environmental munificence moderates the relationship between risk perceptions and venture formation activities such that greater perceived environmental munificence weakens the relationship for several reasons. First, greater perceived environmental munificence provides more opportunities for exploitation. This helps to offset the negative relationship between risk perceptions and venture formation activities because perceived environmental munificence mitigates the role risk perceptions may have on venture formation activities. Second, greater perceived environmental munificence creates greater access to resources, which may be critical for venture formation activities. Stronger economies are associated with resource munificence. Resources are critical inputs towards the success of new ventures. As access to these resource inputs increases, the relationship between risk perceptions and venture activities becomes weaker. This line of reasoning is true for the relationships between both types of risk perceptions and venture formation activities based upon the perception and belief that stronger economies provide better contextual settings relative to weaker economies for venture success and growth. This is particularly true since the potential growth and success of the venture is linked to that of the entrepreneur.

## **Contributions and Implications**

The research conducted in this dissertation contributes to entrepreneurial research and practice in several ways. First, it is among the first to establish overconfidence as a boundary condition for the relationship between risk perceptions and venture creation decisions. This boundary condition helps to explain how the interaction of overconfidence and risk perceptions may be associated with venture creation decisions. Hence, it offers an alternative explanation for why potential entrepreneurs who perceive high levels of risk may still choose to start new ventures. Such an explanation offers insights for practicing founders and investors concerning the risks of dealing with overconfident entrepreneurs since the risks they perceive may be minimized by the overconfident lens through which they are viewed, thus, providing the basis for more objective analyses in some cases more than others.

Second, this study includes the moderating role of perceived environmental munificence to help establish the context in which important decisions are made concerning venture creation since behavior is often a function of potential entrepreneurs and their environments (Shaver & Scott, 1991). Perceived environmental munificence provides a boundary condition to help researchers understand and further establish the extent to which contextual factors influence important decisions such as venture creation. These considerations are equally important for practitioners who seek to understand some of the risks associated with failing to realize the impact of their perceptions of the environment on their decisions. During strong economic environmental conditions, the risks entrepreneurs perceive as having implications for their new ventures are mitigated and, thus, lead to risky decisions such as venture creation. While the reality is that such ventures may survive under those circumstances, negative changes in economic conditions may prove to be catastrophic for those new ventures and their entrepreneurs

who fail to fully address the risks associated with their new ventures and their subsequent impact on venture survival and success.

Third, this research adds to a growing body of literature, entrepreneurial cognition research, by linking several cognitive constructs to important entrepreneurship-related phenomena. In so doing, it answers the calls for domain specific research that integrates the role that cognitions play in the entrepreneurial process (Mitchell et al., 2007; Mitchell et al., 2002, 2004). By addressing a central question in entrepreneurship research concerning the decision to start a new venture in a unique way, this examination builds upon current conversations that more broadly seek to understand and explain why some and not others choose to start new ventures based upon differences in their cognitive states and processes (Mitchell et al., 2002; Mitchell et al., 2004; Mitchell et al., 2007).

In the following chapter, I develop the theoretical background for the research presented here by first discussing the relationship between risk perceptions and venture creation decisions along with developed corresponding hypotheses. Subsequently, overconfidence and perceived environmental munificence are introduced and discussed as moderators for the relationship between the risk perceptions and venture creation decisions. In the subsequent chapter, I discuss the research design and methodology used to test the hypotheses presented in this dissertation. Finally, I discuss the results, contributions, limitations, and suggestions for future research.

## **CHAPTER 2**

### **LITERATURE REVIEW**

As depicted in Figure 1, this dissertation explores the relationship between risk perceptions and venture creation decisions and establishes overconfidence and perceived environmental munificence as boundary conditions to the risk perception, venture creation relationship. More specifically, it addresses the following research questions: (1) Are risk perceptions concerning new ventures associated with venture creation decisions? (2) Does overconfidence moderate the relationship between risk perceptions concerning new ventures and venture creation decisions? (3) Does perceived environmental munificence moderate the relationship between risk perceptions concerning new ventures and venture creation decisions?

This chapter discusses the cognitive theory lens that will be employed in this dissertation and establishes the relationship between risk perceptions and venture creation. Additionally, it puts forth that overconfidence and perceived environmental munificence act as boundary conditions for this relationship. Testable hypotheses based upon the supporting literature also are presented for the proposed relationships.

## **Risk Perceptions and Venture Creation Decisions**

Venture creation decisions may result in choices to launch new ventures (Gartner, 1985; Specht, 1993). In this study, I adopt a psychological approach to explain new venture creation decisions as being a function of the way in which individual actors perceive risks to the new venture (Shaver et al., 1991), thereby contributing to entrepreneurial cognitions research. This approach focuses on the individual actor and employs a cognitive lens to explain entrepreneurship-related phenomena such as the behaviors that differentiate entrepreneurs from non-entrepreneurs (Gartner, 1988).

Researchers have attempted to explain why some decide to create new ventures while others do not. Perspectives that have been employed in attempting to understand this phenomenon have included a transaction cost perspective, resource based view, resource dependence to name a few. A cognitive approach offers a different perspective to entrepreneurship and argues that the mental representations of the world formed by potential entrepreneurs affect the behaviors in which they engage such as venture creation (Shaver & Scott, 1991). Under this approach, decision makers make sense of the world around them and arrive at decisive choices based upon their perceptions of risks (Forlani & Mullins, 2000), chances for success (Cooper et al., 1988), and potential threats or opportunities (Palich & Bagby, 1995). Hence, this approach argues that individuals make decisions and that decisions are not made for individuals by the costs of transactions, resources, etc.

Risk perceptions play a central role in Cognitions based theory. Within this context, risks represent the possibility for loss (Forlani & Mullins, 2000) and uncertainty (Knight, 1921) and, subsequently, influence decisions to act in more or less risky ways. Specifically, if a decision-maker conceives risks as possible loss, then possible gains may not be pursued if they are

perceived to be tied to the relatively greater possibilities for loss (Janney & Dess, 2006). Alternatively, as the perceived possibilities for gains increases due to a particular action, the possibility for loss decreases. This creates the perception that new ventures represent a less risky alternative and, thus, are a more attractive choice than other more risky alternatives. Risks also may be conceptualized as uncertainty of outcomes. For instance, the generation of future revenues or the suitability of market characteristics for growth may be unpredictable. These perceived risks tend to have inverse relationships with pursuing, otherwise, risky alternatives. This suggests that perceived risks are less likely to produce risky decisions such as venture creation decisions (Sitkin & Pablo, 1992; Sitkin & Weingart, 1995).

Risk perceptions involve the way in which people interpret and understand the degree of uncertainty and the possibility for loss associated with particular actions (Knight, 1921; Forlani & Mullins, 2000). In this sense, it is a form of cognition that is often viewed as the potential for loss and tends to be more closely associated with negative outcomes (Sitkin & Weingart, 1995) as opposed to potential for gain. Individuals arrive at judgments regarding these mental representations, which involves sensory input (Neisser, 1967) and complex sense-making of the world around us based upon the acquisition and interpretation of information (Estes, 1975).

Risk perceptions also may be conceptualized as “the extent to which there is uncertainty about whether potentially significant and/or disappointing outcomes of decision will be realized” (Sitkin & Pablo, 1992: 10). Hence, risk perceptions are not limited to perceptions of economic variability but rather, are more closely linked to undesired outcomes. Consistent with this argument, I take the perspective of risk as a hazard which is distinct from variability given the high failure rates among new ventures (Forlani & Mullins, 2000). I seek to examine how varying degrees of possible loss matter for venture creation decisions rather than mere unpredictability

since the nature of venture creation is riddled with a lack of predictability. Moreover, I extend important research conducted with this perspective in which perceptions of loss are likely to affect venture creation decisions (Forlani & Mullins, 2000; Grichnik, 2008). Importantly, risk perception is unique relative to risk propensity since the latter refer to “an individual’s current tendency to take or avoid risks” (Sitkin & Weingart, 1995:1575) and may not be a main determinant of risk taking behavior. Hence, striving to understand risk perceptions informs entrepreneurship research. Likewise, failing to understand risk perceptions as it relates to entrepreneurship impedes our ability to understand new venture activities such as venture formation (Sitkin & Pablo, 1992).

The way in which individuals perceive risk may influence venture creation decisions based upon expected chances for success (Cooper, Dunkelberg, & Woo, 1988; Koellinger, Minniti, & Schade, 2007; Palich et al., 1995). Whereas some may consider venture creation to be a risky activity, the absence of perceived risks in such actions help to explain why ventures are formed at such high rates relative to their deterring rates of failure (Kahneman & Lovallo, 1993). For instance, ninety-five percent of entrepreneurs believe that their new ventures will be successful despite the reality that about half fail (Cooper et al., 1988). They overestimate the chances of success and make use of less information to arrive at conclusions that opportunities associated with an entrepreneurial event are greater than the threats associated with that entrepreneurial event (Palich & Bagby, 1995). Hence, entrepreneurs believe that chances for favorable outcomes are greater than chances for undesired outcomes based upon their misperceptions (Barnes, 1984). This assertion is supported by evidence, which finds that biased perceptions are associated with venture creation and that perceptions precede behavior, particularly, under uncertain circumstances such as venture creation (Koellinger et al., 2007).

More specifically, the inherent perceptions of risk associated with the new venture are associated with new venture creation decisions in negative ways (Cooper et al., 1988; Forlani & Mullins, 2000). As perceived chances for hazard or variability to either the new venture increase, decision makers are less likely to engage in risky behavior such as venture creation (Simon & Houghton, 2003) or investments since the probability of success becomes less likely. Additionally, greater variance in successful opportunity exploitation makes the notion of creating a new venture or investing in one less attractive when compared to other more predictable alternatives. This is especially true since venture formation activities are thought to be more risky given their ill-defined environments, a lack of history upon which to forecast future earnings and limited resources with which to compete against larger more resource rich incumbents.

Several studies have helped to establish the relationship between risk perceptions and venture creation decisions. For instance, Simon et al. (2000) found empirical evidence that risk perceptions and venture creation decisions are associated. They argue that individuals who perceived lower levels of risk were more likely to decide to start new ventures. In their study, differences in perceptions of risks explained over thirty-three percent of the variance associated with decisions to start a new venture. Likewise, Forlani and Mullins (2000) found that differences among new venture choices were associated with differences in risk perceptions. As individuals perceived lower risks associated with a new venture, they were more likely to start that venture. Finally, Grichnik (2008) provides evidence in his study that the relationship between risk perceptions and venture creation exists in such a way that higher levels of risk perceptions are associated with fewer venture creation decisions. Together this body of research

provides compelling evidence that risk perceptions are associated with venture creation decisions. Hence, I offer the following hypotheses:

Hypothesis 1: Risk perceptions of the new venture are negatively associated with venture creation decisions.

The extent to which risk perceptions are associated with venture creation decisions is influenced by various aspects of that individual's cognitive state. For instance, overconfidence may bias one's belief about how risks inform the decisions making process. Following this line of reasoning, I introduce overconfidence as a boundary condition for the relationship between risk perceptions and venture creation decisions in the following section.

## **Overconfidence**

Overconfidence is a type of cognitive bias that originates from heuristics and influences decision-making (Bazerman, 1990). Like other biases, overconfidence helps individuals to minimize their cognitive efforts, which can be helpful in light of human cognitive limitations (i.e. limited information processing capabilities) (Baron, 1998). These biases can be beneficial since they facilitate faster decision-making for complex problems or for those in which environmental ambiguity exists such as may be the case for entrepreneurs (Duhaime & Schwenk, 1995). In essence, they simplify the decision-making process where complexity and the constraints of cognitive limitations (March & Simon, 1958) might impede decision-making. Increasingly challenging efforts to consider multiple factors taxes the information processing capabilities of decision makers compelling them to simplify the process of making decisions. Such complexities may include novel situations, limited information, and ill-defined decision contexts (Busenitz, 1999; Duhaime & Schwenk, 1995). While enabling faster decision-making in complex situations, these cognitive simplification processes may produce primarily negative outcomes by adversely affecting the quality of decisions and judgments (Barnes, 1984; Tversky & Kahneman, 1974). This occurs as decision makers engage in less-than rational thinking (Baron, 1998). In other words, information may not be processed correctly. While the process of simplification allows for a faster decision, which may be more beneficial in some contexts such as those of entrepreneurship, the quality of those decisions may not be high. The complex decision environment in which entrepreneurs find themselves may make their decision-making processes more susceptible to this less-than rational thinking (Baron, 1998; Busenitz & Barney, 1997).

Overconfidence is a construct that has been defined in many ways. It is associated with aspects of certainty regarding estimation or predictions and refers to failures to realize information or knowledge limits. Klayman et al. (1999) describe overconfidence according to one's certainty about predictions. Decision makers express high degrees of certainty concerning predictions (Klayman, Soll, Gonzalez-Vallejo, & Barlas, 1999). Overconfidence exists when decision makers have a tendency to be over optimistic in their estimation abilities with minimal information, particularly for unfamiliar problems (Busenitz, 1999). Along these lines, Hayward et al. (2006: 161) define overconfidence "as arising when founders overestimate their personal wealth that they will generate from their ventures." Similarly, it has been described as "overoptimistic perceptions of success" (Lowe & Ziedonis, 2006: 176). Entrepreneurs overestimate their ability relative to others (Koellinger et al., 2007). They believe that they possess an entrepreneurial skill set that is better than others and, thus, allows them to exploit opportunities and appropriate entrepreneurial rents more effectively than others. Some have described overconfidence as assigning a higher probability of success to one's own venture relative to others (Cooper et al., 1988).

These above mentioned definitions of overconfidence are narrower than that of overconfidence as a metacognition. Zacharakis and Shepherd (2001) adopt a more broad definition of overconfidence as described by Griffen and Vary (1996) which describes two types of overconfidence. First, optimistic overconfidence is the tendency to overestimate the chance that a desired outcome will transpire. This type of overconfidence is consistent with the narrower definition presented above. A second definition of overconfidence as an overestimation of one's knowledge that occurs concerning one's judgment even when there is no desired outcome is broader in nature. It refers to a cognitive state that is more pervasive across various domains.

This second type of overconfidence is similar to overconfidence being defined as the failure to know the limits of one's knowledge, which has been adopted by various researchers (Griffin & Varey, 1996; Keh et al., 2002; Russo et al., 1992; Simon et al., 2000).

Overconfidence also can be understood according to its various dimensions. Hayward et al., (2006) mention three categories – overconfidence in knowledge, overconfidence in prediction, and overconfidence in personal abilities. First, overconfidence studies have primarily examined overconfidence as it relates to knowledge. In this sense, overconfidence is a metacognitive concept since it covers a broad sense of knowledge and the extent to which individuals do not know the limits of their knowledge. Most studies describe and test this type of overconfidence (Russo & Schoemaker, 1992; Simon et al., 2000). Overconfidence also is discussed as overestimation of predictive accuracy in which case the accuracy of one's predictions are significantly lower than expected (Koellinger et al., 2007). Finally, overconfidence in one's personal abilities is still yet another categorization of overconfidence. Kahneman and Lovalllo (1993) describe this type of overconfidence as being self-centered and reflective of individuals' overestimated beliefs concerning their ability to be successful. Entrepreneurs may consider the odds of their own venture success to be significantly greater than the odds of another's venture success even when considering similar ventures (Cooper et al., 1988).

Moore and Healy (2008) describe the aspects of overconfidence according to states of overestimation, overplacement, and overprecision. Similar to overconfidence in personal abilities as described by Hayward et al., (2006), overconfidence can be conceptualized as overplacement of one's abilities for success relative to others (Moore & Healy, 2008). Overestimation of one's realized performance is similar to metacognition or overconfidence in one's knowledge. It also

includes perceived levels of control and success probabilities, which is similar to overconfidence in one's personal abilities. Overprecision is overconfidence in the accuracy of one's precisions. These categories of overconfidence overlap with ones previously discussed and account for most empirical studies regarding overconfidence (Hayward, Shepherd, & Griffin, 2006; Moore et al., 2008). Together this research suggests that overconfidence can be thought of as a multidimensional construct.

For this study, there are two critical considerations underlying these definitions and aspects of overconfidence: (a) certainty regarding predictions and; (b) failed awareness regarding the limits of one's knowledge or abilities (Busenitz & Barney, 1997; Keh, Foo & Lim, 2002; Simon et al., 2000; Klayman et al., 1999; Zacharakis & Shepherd, 2001). The absence, misuse, or misinterpretation of information reduces the accuracy of certainty concerning predictions. Hence, individuals believe that they can estimate the probability of a particular outcome more accurately than is likely to be the case given the information available. Information gaps help reduce the accuracy of predictions often leading to misplaced high degrees of confidence concerning the estimated probability of particular events occurring. This degree of certainty may be based on assumptions that are taken to be factual, resulting in a more simplified decision-making process or stemming from the inability of decision makers to recognize alternative undesired outcomes associated with those assumptions (Schwenk, 1984; Simon et al., 2000; Tversky & Kahneman, 1974).

Based upon these underlying considerations, I define overconfidence as the failure to know the limits of one's knowledge leading to certainty judgments, which is consistent with previous researchers' definitions (Klayman et al., 1999; Simon et al., 2000; Zacharakis & Shepherd, 2001). This definition is similar to those used by researchers who view

overconfidence as a metacognitive state. Hence, overconfidence is believed to be stable across various domains. Moreover, this definition includes the two important components of overconfidence as described in prior studies – extreme certainty judgments and failure to recognize knowledge limits. This definition is important since it allows for a clear distinction between overconfidence and other constructs, which have been linked to, described as, or associated with overconfidence.

Several other constructs have been associated with overconfidence; however, overconfidence is unique relative to these constructs. Those constructs include hubris (Hayward et al., 2006; Hiller & Hambrick, 2005; Moore et al., 2008) and overoptimism (Lowe & Ziedonis, 2006). Hubris refers to one's sense of excessive pride or a sense of exaggerated pride (Hiller & Hambrick, 2005). It is sometimes described as a high degree of self-confidence but more accurately, may be the outcome of said confidence levels. Interestingly, Hayward et al. (2006) offer a hubris theory of entrepreneurship to explain venture creation. Their hubris account considers three types of overconfidence: (1) in knowledge, (2) in prediction and (3) in personal abilities. Whereas Hiller and Hambrick (2005) relate hubris to core self-evaluations, Hayward et al. (2006), associate it more with overconfidence to explain the various types of overconfidence, thereby, offering what is more analogous to a theory of overconfidence rather than one of hubris. Aside from their title and a few other notable mentions, they prefer the term overconfidence to develop their theory. Moreover, they offer no definition for hubris. It seems that they develop a theory of those who fail to understand that which they do not know rather than one of excessive pride to explain the formation of new ventures in light of high failure rates. This suggests that the use of the term "hubris" is primarily for nomenclature rather than explanation, thus, forgoing

efforts to build consistency regarding definitions of distinctions between hubris and overconfidence.

Overoptimism also has been associated with overconfidence. Unlike some studies examining overconfidence, overoptimism may not be associated with entrepreneurs who decide to start new ventures (Lowe & Ziedonis, 2006). Optimism refers to the tendency to see events as more likely to produce favorable outcomes despite situational and individual considerations. It is a type of personality characteristic (Scheier & Carver, 1985) that is sometimes thought to be similar to overconfidence, yet, unique from it (Bazerman, 2002). For instance, optimism tends to be more externally focused whereas overconfidence is internally focused. This assertion is supported by empirical evidence (Simon et al., 2000) whereby researchers found no significant correlations between optimism and overconfidence. However, the term is used interchangeably with overconfidence in developing hypotheses of some research (Lowe & Ziedonis, 2006). Nonetheless, a closer examination of the term refers to an attitude of perceived future success that may be slightly exaggerated or unusually high given actual circumstances. In this sense, the term is more narrowly applied to specific events such as venture success and does not necessarily refer to one's metacognition, which is how overconfidence has typically been developed in the literature. It is important to acknowledge that like hubris, overoptimism has been used to describe a state of overconfidence. Notwithstanding the similarities, the concepts are notably different in that one (i.e. overconfidence) refers to a state of metacognition, another (i.e. hubris) refers to a sense of gross pride and the other (i.e. overoptimism) refers to an overly favorable disposition or attitude. Hence, overconfidence is more closely associated with knowledge or information rather than merely with an outlook or an attitude. Additionally, overconfidence is more internally (e.g. individual levels of knowledge, estimation accuracy, etc.) focused whereas

overoptimism is more externally (e.g. good things will happen in the world) focused. For example, the overconfident may believe unjustifiably that they can accurately predict a reduction in the unemployment rate (i.e. five percent reduction in three months) whereas the overoptimistic may believe that the economy will generally improve.

The more cognitive nature of overconfidence suggests that information plays a critical role in the existence of cognitive biases like overconfidence. As a cognitive bias, overconfidence is more likely to exist under circumstances of limited or equivocal information (Duhaime & Schwenk, 1995). The nature of environments in which entrepreneurs operate is one such that insufficient information is the norm, uncertainty abounds and feedback is scant (Hayward et al., 2006). Under these circumstances, overconfidence and information are directly related based upon amounts and types (Zacharakis & Shepherd, 2001). Whereas one might think that more information leads to more informed decision-making, Zacharakis and Shepherd (2001) found that greater amounts of information are associated with greater levels of overconfidence for venture capitalists. Additionally, they found that familiarity with the information and decision are associated with greater levels of overconfidence. It is important to note that more complete information may adversely affect venture formation activities (Simon et al., 2000). Whereas environmental uncertainty and limited information may help trigger cognitive simplification mechanisms, greater amounts of information do not appear to be the solution. More information does not necessarily increase the accuracy of predictions (Schwenk, 1986). Entrepreneurs who seek more information run the risk of feeding the bias and may selectively use information to justify their decisions, particularly, where overconfidence already exists (Russo & Schoemaker, 1992). In this way, overconfidence impedes perceptions (Palich & Bagby, 1995) by preventing the accurate noticing and/or interpretation of information that might be used to make, to support,

or to change strategic decisions. Hence, new information that confirms old decisions is selectively perceived and used to the exclusion of additional information that contradicts expressed positions. Alternatively, the overconfident may be slow to incorporate new information into their assessments (Busenitz & Barney, 1997).

Prior research also has shown that the environment matters where overconfidence is considered. Specifically, the more ill-defined and uncertain the environment the more likely cognitive biases like overconfidence are to be employed to simplify decision-making (Baron, 1998). The novelty of entrepreneurial ventures along with the reality of limited information and the presence of high uncertainty suggests that entrepreneurs may be more susceptible to biases in making complex decisions (Baron, 1998; Busenitz, 1999; Busenitz & Barney, 1997; Duhaime & Schwenk, 1995). The cognitive challenges of ill structured decision environments (Simon & Houghton, 2003) along with human cognitive limitations (March et al., 1958) create fertile decision contexts for overconfidence to be more prevalent. Decision simplifying techniques may arise given temporal constraints typified by the dynamic nature of entrepreneurial environments, which further complicate the decision-making process. Hence, cognitive biases like overconfidence tend to exist in extremely ill structured decision environments (Simon & Houghton, 2003) such as those characterized by entrepreneurial decision-making. The cognitive limitations confronting entrepreneurs (March & Simon, 1958) may challenge to a greater extent decision-making in these contexts.

Ironically, the ambiguous and uncertain nature of decision contexts may not prevent one's extreme certainty about their knowledge (Busenitz & Barney, 1997). Despite the absence of familiarity with or clarity with decision contexts, which might improve the effectiveness of decision-making, individuals proceed with extreme certainty regarding their chosen courses or

action, which may lead to unexpected outcomes following unfounded extreme certainty (Simon & Houghton, 2003). Under these circumstances, decision makers fail to realize how little is known about the decision they will make. They also fail to realize how much additional information is needed to make more informative decisions (Barnes, 1984). While there may be negative consequences associated with this decision-making process, entrepreneurs may be beneficial recipients since they may be expected to arrive at decisions more quickly than is warranted by the available information.

The nature of entrepreneurship (i.e. ill-defined decision contexts coupled with information processing limitations) suggests that there are real and meaningful differences between entrepreneurs and non-entrepreneurs to some extent based upon the environments in which they operate that can be examined through the lens of cognitive research. For example, research establishes that entrepreneurs are more susceptible to overconfidence than managers (Busenitz, 1999; Busenitz & Barney, 1997) and, thus, express a greater degree of certainty relative to available information despite ambiguous contexts. The pressure to respond to dynamic markets quickly is substantial and, thus, leads to situations whereby the ability of entrepreneurs to make effective decisions in a timely manner may be proportionately less relative to their cognitive abilities. When compared to managers that operate in ongoing markets, which can be described as more stable, less uncertain, and more predictable, entrepreneurs are more likely to have their cognitive capacities overloaded by more uncertain and novel situations (Baron, 1998). The cognitive challenges of ill-structured decision environments (Simon et al., 2003) along with human cognitive limitations (March & Simon, 1958) create fertile decision contexts for overconfidence to be more prevalent. Additionally, temporal constraints typified by the dynamic nature of entrepreneurial environments further complicate the decision-making process such that

decision simplifying techniques may arise. The definition of overconfidence put forward in this study along with the assertion that entrepreneurs are more susceptible to overconfidence than managers (Busenitz & Barney, 1997; Busenitz, 1999) are important distinctions given the potential for its significant impact on their risk perceptions as discussed later in this thesis.

The domain of entrepreneurship has given rise to several interesting and relevant examinations concerning overconfidence. For instance, research finds that cognitive simplification processes like overconfidence yield primarily negative outcomes by adversely affecting the quality of decisions and judgments (Barnes, 1984; Tversky & Kahneman, 1974). Unwarranted certainty about the potential success and wisdom of the decision to start a new venture (Simon et al., 2000) and the introduction of novel and risky products even though those products may prove to be less successful thereby adversely impacting organizational performance (Simon & Houghton, 2003) are examples of these undesired outcomes. Overconfident venture capitalists frame information more favorably than is justified by their outcomes leading to decisions to fund new ventures (Zacharakis & Shepherd, 2001). Overconfidence influences escalating resource commitments resulting in potentially positive implications for resource-seeking entrepreneurs (Schwenk, 1986). Along these lines, Busenitz (1999:337) suggests that “the use of biases and heuristics may be potentially advantageous,” and that “without using biases and heuristics extensively, most new ventures would never get launched within an appropriate window of opportunity,” implying that overconfidence also helps explain venture creation decisions (Hayward et al., 2006; Lowe & Ziedonis, 2006). Consequently, optimal levels of overconfidence may exist (Zacharakis & Shepherd, 2001) and may be beneficial for promoting initial resource commitments early in the life of young ventures when the identification and acquisition of resources is crucial for its long-term success

(Chrisman, Bauerschmidt, & Hofer, 1999; Lichtenstein & Brush, 2001; Stevenson & Gumpert, 1985). Alternatively and, perhaps, paradoxically overconfidence is associated with new venture survival among nascent entrepreneurs (Koellinger et al., 2007).

Other studies have produced findings relevant to research concerning cognitive biases when examining overconfidence. For instance, the overconfident tend to make financial predictions that are not warranted by the available information (Lichtenstein & Fischhoff, 1977). This may affect investment decisions for new ventures. Additionally, overconfidence is shown to lead to risky product introductions (Simon & Houghton, 2003). This finding provides some evidence that overconfidence may affect risk perceptions and subsequent risky behavior such as venture creation. Neale & Bazerman (1985) found that negotiators who were overconfident tended to be less concessionary about reaching an agreement than those who were not. Hence, they were less likely to make compromises. Entrepreneurs may exhibit this type of optimistic persistence in their business pursuits (Neale & Bazerman, 1985).

The existence of biases such as overconfidence may lead to skewed perceptions. These skewed perceptions may affect the way in which the relationship between risk perceptions and risky decisions are made sense of and, thus, help explain risk taking such as venture creation decisions despite high failure rates associated with this type of risk taking (Cooper et al., 1988). In the following section, I explore the possible relationships between risk perceptions and venture creation decisions and put forth that overconfidence influences the perceived risks – venture creation decisions activities as depicted in Figure 1.

### **Overconfidence as a Boundary Condition**

There is evidence to suggest that cognitive biases like overconfidence may help differentiate entrepreneurs from non entrepreneurs (Busenitz & Barney, 1997) and, thus, may be useful in understanding entrepreneurial risk-taking. People are interpretation systems where scanning leads to interpretation and subsequent learning (i.e. action) (Daft & Weick, 1984); thereby, affecting perceptions. These interpretation systems affect selective perceptions among managers and entrepreneurs. Additionally, managers are more sensitive to threat inferences (threat-consistent and opportunity-discrepant information) (Jackson & Dutton, 1993) resulting in selective perceptions (Dearborn & Simon, 1958). Alternatively, entrepreneurs also tend to interpret their external worlds differently relative to non entrepreneurs by perceiving situations as having more strengths and opportunities along with greater potential for gain (Palich & Bagby, 1995). Entrepreneurial types tend to see opportunities rather than threats in their environments. If it is true that entrepreneurs tend to be overconfident, then its role as a cognitive bias may help explain skewed perceptions among those who are or those who intend to become entrepreneurs. These differences provide some evidence that cognitive theory is well-suited to address central questions in entrepreneurship (Shaver & Scott, 1991) such as what helps explain venture formation decisions.

Cognitive biases affect perceptions of risk and the threats they pose (Busenitz & Barney, 1997; Palich & Bagby, 1995) resulting in “optimistic judgments of risk” taking (Kahneman & Lovallo, 1993:29). More specifically, overconfidence influences the relationship between perceived risk regarding the new venture and subsequent venture creation decisions (Hayward et al., 2006). For instance, overconfidence tends to produce biased perceptions of risk leading to the pursuit of riskier behavior (Simon & Houghton, 2003). Additionally, actors tend to lower their

perceptions of risk when they are overconfident (Russo & Schoemaker, 1992); thereby, potentially perceiving less threat to the new venture associated with these risks. This cognitive perspective for risk-taking offers that entrepreneurs are subject to biases (Kahneman & Lovallo, 1993), which increase perceptions of control and may reduce the influence of perceived risks on venture creation decisions.

Overconfidence mitigates the negative relationship between risk perceptions and venture creation decisions because would be entrepreneurs believe that they have a better chance for success despite existing challenges. Interestingly, potential entrepreneurs believe that their new ventures have been undervalued and, thus, possess greater opportunities to generate rents and wealth as compared to the perceptions of more objective observers (Forbes, 2004; McCarthy, Schoorman & Cooper, 1993). Overestimated expectations of success reduce the negative affects of risk perceptions on the decision to start a new venture (Hayward et al., 2006). These actors interpret the chances of successful outcomes for the venture to be greater than may be warranted according to the more objective perceiver.

Overconfidence may cause individuals to focus on the opportunities associated with risks rather than with the challenges associated with them. If those who are more interested in entrepreneurship tend to be overconfident (Busenitz & Barney, 1997) about new venture success, then the finding that entrepreneurs perceive fewer threats than opportunities compared to non-entrepreneurs (Palich & Bagby, 1995) lends credence to the notion that overconfidence reduces the affect of risk perceptions (Barnes, 1984) on activities such as venture creation. Arguably, entrepreneurial types understand that there are risks associated with starting new ventures but may believe that the risk-reward relationship is acceptable given the opportunities associated with venture creation. Even as the chance for loss increases due to higher risks, greater rewards

framed as opportunities are expected. Those opportunities may include the chance for financial gain, the prospect of pursuing career goals, and the freedom associated with running one's own business.

Overconfidence may be associated with the underestimation of the effects of risks on venture survival. Being overconfident doesn't mutually exclude the perceptions of risk because both high levels of overconfidence and high levels of risk perceptions may exist simultaneously even as one arrives at the decision to start a new venture. Given distorted threat perceptions, the overconfident (Palich & Bagby, 1995) may not adequately acknowledge the strength of perceived risks (Kahneman & Lovallo, 1994) despite recognizing their existence, perhaps, in greater degrees. More specifically, threats to the survival and to the possibility for financial gain are reduced despite the more objective reality that many new ventures do not survive and, thus, do not produce long term earning potential (Cooper et al., 1988). In essence, predictions for financial gain despite obvious challenges are distorted when viewed through overconfident lenses (Lichtenstein & Fischhoff, 1977) suggesting that the entrepreneur believes that the choice of new venture creation is a less risky alternative (Forlani & Mullins, 2000) despite its inherent risks and other associated risks. This suggests that predictions of financial gain may not be warranted.

Essentially, the risks of the new venture do not act alone to influence the venture creations decision. Overconfidence tends to skew perceptions of this relationship in several ways. Overconfidence increases one's belief that they have better chances for success, thereby, mitigating the negative affects of risk perceptions of venture creation decisions. Also, overconfidence tends to be associated with perceptions of opportunities rather than threat causing individuals to focus on more positive aspects of choices rather than the more risky or negative

aspects of risks. Finally, overconfidence tends to cause decisions makers to underestimate the impact of risk on the success of new ventures. This results in the following hypothesis:

Hypothesis 2: Overconfidence moderates the relationship between risk perceptions of the new venture and venture creation decisions such that greater overconfidence weakens the negative relationship between risk perceptions of the new venture and venture creation decisions.

Whereas perceived risk to the new venture will influence the decision to create a new venture, the decision context has significant implications for such decisions. Actors interpret the world around them to arrive at decisions informed based upon their mental representations of the world around them. Hence, decisions regarding venture formation activities are a function of their individual risk perceptions and the conditions of their external environments.

### **Perceived Environmental Munificence as a Boundary Condition**

Contextual factors influence the relationships between new venture formation activities (Forbes, 2004; Forlani & Mullins, 2000; Gartner, 1985; Shaver & Scott, 1991) and perceptions (Koellinger et al., 2007). The individual actor doesn't make business decisions concerning venture creation absent an understanding of the general environment in which it will function. Decision-makers develop mental representations of their external environments to inform their decision-making such as the decision to create a new venture. Hence, the behavior (i.e. venture creation decision) of the entrepreneur can be thought of as a function of the person and the environment in which opportunities will be exploited.

Environmental munificence refers to the degree to which the general environment can support sustained growth and stability and, thus, its favorability for entrepreneurial activity (Dess & Beard, 1984). Greater environmental munificence supports successful entrepreneurship activity due to an abundance of available resources (Castrogiovanni, 1991). These environments tend to be characterized by the abundance of resources critical to new ventures such as potential consumers with disposable incomes, ample credit for entrepreneurs to fund operations and the availability of resources for inputs for production. Alternatively, environments that lack munificence create greater challenges for managers and limit opportunities and choices for entrepreneurs (DeTienne, Sheperd, & Castro, 2008). Hence, environmental munificence affects factors such as the following: (1) accessibility to customers and new markets; and (2) resource availability (i.e. human, capital venture, credit, etc.) and, thus, influence venture creation decisions (Gartner, 1985; Specht, 1993).

More specifically, the overall attractiveness of industries and markets affect the availability of consumers, intensity of rivalry, and opportunities for new markets in which new

ventures may emerge (Castrogiovanni, 1991; Porter & Millar, 1985). The more healthy the environmental munificence, the greater the chances for new venture success despite perceptions of risk due to the availability of critical resources to support venture creation activities and survival (Chrisman et al., 1999; Lichtenstein & Brush, 2001; Stevenson & Gumpert, 1985). Put differently, the negative relationship between risk perceptions and venture formation activity is mitigated by more favorable economic conditions suggesting that the environmental munificence moderates the relationship between risk perceptions and venture formation activities such that greater environmental munificence weakens the relationship for several reasons.

First, environmental munificence is associated with market opportunities (Begley, Tan, & Schoch, 2005). An abundance of consumers creates a greater likelihood that opportunities will be successfully exploited. As the number of available consumers increases, the intensity of rivalry will decrease, which is a key characteristic of greater environmental munificence (Castrogiovanni, 1991). Markets in which the demand for a particular good or service exceeds the availability of suppliers tend to be more attractive for entry. Rivals focus their efforts on segmenting and attracting available consumers rather than focusing on taking consumers from competitors. Additionally, holding all things constant more consumers with disposable income lead to more opportunities for successful exploitation among new ventures. For instance, greater environmental munificence provides more opportunities for exploitation as the number of available consumers with disposable income increases.

Additionally, an environment characterized by greater environmental munificence as indicated by more consumers creates viable options for new ventures to target primary, secondary, and tertiary groups for sales growth and stability. An increase in sales growth positively affects profitability but equally important, it increases available cash flow, which is

essential for keeping the doors of new ventures open. This suggests that perceptions of risk to the new venture and the individual are not independent of the environment in which venture formation activities may take place. Essentially, greater environmental munificence helps to offset the negative relationship between risk perceptions and venture formation activities because environmental munificence mitigates the role risk perceptions may have on venture formation activities. This creates an environment more suitable for new venture formation (Begley et al., 2005).

Environmental munificence or the abundance of resources affects success for new ventures. Greater resource access creates a more favorable environment for new market entry (Chrisman et al., 1999; Dess & Beard, 1984). Stronger economies are associated with resource munificence. Resources are critical inputs towards the success of new ventures. As access to these resource inputs increases, the relationship between risk perceptions and venture activities becomes weaker. For instance, credit availability represents an important resource that is critical for the short-term survivability of new ventures. Many new ventures lack sufficient cash flow management to eliminate gaps between the occurrence of production costs and sales revenues. Hence, they rely on credit to fund productions until sale are realized. Credit tends to be more available in more munificent environments.

The availability of skilled human resources is a function of environmental munificence (Begley et al., 2005). Resources such as skilled workers are necessary to successfully realize profitable operations from organizations. This is particularly true early in the lives of new ventures (Chrisman, Bauerschmidt & Hofer, 1999; Lichtenstein & Brush, 2001). As the environment provides the means by which entrepreneurs can acquire resources necessary to exploit opportunities, the chances for success increase and concerns for loss associated with

inadequate human resources decreases. Experienced workers with strong skill sets affect venture success and, thus, concerns for failure. This suggests that environments with greater skilled workers allay perceptions of potential loss that affect venture formation activities.

Venture capital represents another resource for fast growing and promising new ventures that result from environmental munificence. Hence, venture creation decisions are affected by the availability of capital (Gartner, 1985). As the economy becomes stronger, investors seek more aggressive avenues such as venture capital investments to grow their wealth. This line of reasoning is true for the relationships between both types of risk perceptions and venture formation activities based upon the perception and belief that stronger economies provide better contextual settings relative to weaker economies for venture success and growth. This is particularly true since the potential growth and success of the venture is linked to that of the entrepreneur.

Perceived environmental munificence involves individuals noticing the environment around them as it relates to resources that affect strategic alternatives (Dess & Beard, 1984; Sutcliffe, 1994). This involves the process of sense making regarding the availability of resources that exist in the environment. Moreover, decision makers provide opinions regarding the extent to which the environment can support sustained growth based upon the resources that exist. Hence, it is more cognitive in nature than objective environmental munificence because biases and other information processes both influence and are influenced by the act of perceiving external events.

Essentially, the way in which one perceives risk and, subsequently, acts is influenced by the way in which mental representations of one's external environment are formed. An environment that is filled with opportunity helps to mitigate the perceived consequences of risky

choices that fail to produce desired outcomes. Additionally, the likelihood of these negative consequences is perceived as less likely to occur in an external environment that is thought to be more conducive with success or a decreased possibility of failure. In this way, a greater perceived environmental munificence weakens the negative relationship between perceived risks and risk-taking such as venture formation activities. The impact of perceived environmental munificence is expected to be consistent across both types of risk (i.e. to the new venture and to the entrepreneur) as they relate to both types of venture formation activities (i.e. venture creation and personal investment levels). As the possibility for loss to either the new venture or the entrepreneur becomes less predictable, venture formation activities become less attractive. Starting a business with real financial implications or investing in one becomes less appealing as the chances for realizing financial, emotional, or social benefits diminish.

In summary, perceptions of risk to the venture suggest that a degree of uncertainty or variability exists regarding that venture. Hence, its future path to predictable success is less discernable. That coupled with the relatively risky act of venture creation impedes acts of entrepreneurship (Cooper et al., 1988). However, there are various conditions under which new ventures are more likely to be created despite perceptions of risks. Creating new ventures under resource abundant environmental conditions helps entrepreneurs perceive multiple paths for success via the availability of more potential consumers and other resources needed to sustain the young venture. Under these conditions, potential entrepreneurs believe that creating a successful new venture is possible due to increased market opportunities and available critical resources such as skilled workers (Begley et al., 2005). Hence, consistent with these arguments and a call for entrepreneurial research that considers context (Morrison, 2006), I develop the following hypothesis:

Hypothesis 3: Perceived environmental munificence moderates the relationship between risk perceptions of the new venture and venture creation decisions such that greater perceived environmental munificence weakens the negative relationship between risk perceptions of the new venture and venture creation decisions.

In the following section, I offer a methodology for testing the hypotheses developed and presented in this manuscript. A sample group is recommended along with measures for the variables of interest. The analytical approach for moderation is presented.

## **CHAPTER 3**

### **METHODS**

#### **Sample**

The data collected in this study were collected from a population of individuals with work experience in a variety of industries by a survey research firm – MarketTools of San Francisco, CA. The online survey was made available until the designated number of completed surveys was reached, which was four days and then the survey was closed. Several surveys were clicked on but were not started and/or completed. Nine hundred and twenty-one respondents across the four regions of the United States were allowed to initiate an online survey.

Respondents from the non-student sample were allowed to participate on the basis that they had at least three years of work experience. The student sample was not required to have work experience. The overall sample was representative of the U.S. population of individuals with work experience and of students since these groups are potential entrepreneurs. Participants selected by MarketTools were done in such a way to fill four cells (i.e. high and low risk perceptions and perceived environmental munificence) equally across four regions (i.e. north east, south east, north west, and south west including non-continental states). Responses were captured from all fifty states for this group. Four hundred and ninety-seven completed surveys were collected from this group. Students who were attending courses at the University of Alabama were also invited to participate in the survey. One hundred and fifteen completed surveys based upon conditions identified in the four scenarios were collected from this group. The non-student sample was not significantly different from the student sample (see Table 1).

The final sample consisted of six hundred and twelve respondents who provided completed surveys. Fifty-five percent of the sample was comprised of males and forty-five

percent was comprised of females. Ninety-two percent were of non-minority status and eight percent were of minority status. Eighty-seven percent of respondents had some college and thirteen percent had no college experience. One percent of respondents had no work experience and six percent had less than three years of work experience resulting in ninety-four percent with three or more years of work experience. Fifty-four percent of the respondents had entrepreneurial experience. The average years of work experience was twenty-four and the average age of respondents was forty-four years old.

The survey instruments had four different scenarios designed to create variance in the degrees of risk perceptions and perceived environmental munificence (see Appendix). Whereas the scenarios were meant to create variance in risk perceptions and perceived environment munificence, the origins of variance were not of particular interest in this study. Consistent with other studies that have taken this approach, I introduced the scenarios to ensure that variance in these perceptions exist (Shepherd & De Tienne, 2005). Respondents received one scenario and were asked to respond to the questionnaire portion of the survey with queries pertaining to the new venture. The four scenarios varied according to dimensions of perceived environmental munificence and risk perceptions as indicated here: (1) low munificence – low risk (LL); (2) high munificence – low risk (HL); (3) high munificence – high risk (HH); and (4) low munificence – high risk (LH). A manipulation check was conducted to test the effects of the treatments (i.e. risk perceptions and perceived environmental munificence). ANOVA tests offered preliminary evidence that manipulations were effective at the  $p < .0001$  (see Table 2). The mean values were determined based upon a two-point scale with 1.5 as the midpoint. The reported scores suggest that the intended effects of manipulations were successful. However, further post hoc test analysis of multiple comparisons indicates that there were not significant differences between the

HH and LL, HL and HH groups for both manipulations. These findings have little impact on the study since other individual factors provided variance for the variables of interest. Furthermore, the goal of the manipulations was to ensure the existence of sufficient variance rather than to be the source of said variation.

## Measures

**Overconfidence.** Overconfidence involves the failure to know the limits of one's knowledge and is measured with a well-established scale used in previous studies (Keh et al., 2002; Russo & Schoemaker, 1992; Simon et al., 2000). Respondents were asked to provide high and low estimates for ten statements such that they are ninety-percent confident that the range they provide includes the correct responses (see Appendix). There is only one correct numerical answer. Responses that are within the range established by respondents were coded as zero. Incorrect responses were coded one. The values were summed to determine overconfidence.

**Risk Perceptions.** Risk perceptions entail the degree of uncertainty and potential for loss associated with particular actions (Forlani & Mullins, 2000). Scales used in previous studies to measure risk perceptions were adapted for use in this study since the nature of those scales used language specific to their opportunities (Keh et al., 2002; Simon et al., 2000). Respondents were asked about the level of risks associated with creating a new venture using four items that were averaged (see Appendix). Responses were recorded on a scale of 1 ("strongly disagree") to 5 ("strongly agree"). The Cronbach alpha (i.e. reliability) for this scale is .82. This scale was chosen because it best operationalized the conceptualization of risk perceptions in this study.

**Venture Creation Decision.** Venture creation decision is the choice to begin a process of creating a business or the organizing of new organizations (Gartner, 1985). Consistent with previous research (Keh et al., 2002; Simon et al., 2000), respondents were asked about choices to create a new venture (see Appendix). Three items were used and the values among those choices were averaged. Responses were recorded on a scale of 1 ("strongly disagree") to 5 ("strongly agree"). The Cronbach alpha (i.e. reliability) for this scale is .86.

**Perceived environmental munificence.** Perceived environmental munificence is the degree to which individuals believe that the environment can support sustained growth (see Appendix). Four items were adapted from a previously established scale (Sutcliffe, 1994). Those item scores were averaged. Responses were recorded on a scale of 1 (“strongly disagree”) to 5 (“strongly agree”). The Cronbach alpha (i.e. reliability) for this scale is .82.

**Control variables.** Data were collected for several control variables argued to influence variables of interest such as age gender, race, education, risk propensity, and optimism. Age may be associated with risky behavior and overconfidence (Forbes, 2005). It was measured as the respondents’ age at the time of this study. Data concerning respondent’s gender and race also were collected since it may be associated with venture creation decisions. Gender was measured accordingly: 1 = male and 2 = female. Race was measured accordingly: 1 = White, 2 = Black, 3 = Asian, 4 = Indian, and 5 = Hawaiian. Education may influence the extent to which biases and heuristics are employed (Busenitz & Barney, 1997). Education was measured according to the highest level of education respondents completed at the time of this study. Scores were reported accordingly: 1 = some high school, 2 = high school, 3 = some college, 4 = associate’s degree, 5 = bachelor’s degree, 6 = master’s degree, and 6 = doctoral degree. Risk propensity was measured using an established five item scale since it is associated with risk-taking such as venture creation (Forlani & Mullins, 2000; Simon et al., 2000; Sitkin & Weingart, 1995). Respondents were asked to choose among two alternatives for five items in which one is more risky than the other (see Appendix 7). Selecting the more risky selection was scored 1, whereas selecting the less risky option was scored 0. The scores were summed to determine risk propensity levels. Finally, optimism ( $\alpha = .81$ ) was measured using an established three item measure (Simon et al., 2000). This variable was included as a control because theoretically, it may be similar to

overconfidence. However, empirical evidence has found that this is not the case (Simon et al., 2000).

## Analysis

Tests were conducted to establish discriminant validity among constructs of interest. Low correlations among variables are indicative of discriminant validity. The absence of a strong and significant correlation among optimism and overconfidence provide some evidence of discriminant validity among those variables (see Table 3). A discriminant validity test using the average variance explained (Fornell and Larcker, 1981) was also conducted. Table 3 indicates the square roots of the average variance explained for venture creation decision, risk perceptions, and perceived environmental munificence. If the square roots of the average variance explained exceed variable correlations in the corresponding rows and columns, then discriminant validity is said to exist among the variables. The results in Table 3 suggest that discriminant validity exists for venture creation decision (.84), risk perceptions (.75), and perceived environmental munificence (.74) since the square roots of the average variance explained exceed variable correlations in the corresponding rows and columns.

The nature of this study suggests that common method variance may be an issue given the possibility of common rater effects and measurement context effects. If present, common method variance could inflate or deflate the variance (i.e. correlations) among variables due to the method in which the data was collected. Several suggestions (Podsakoff, MacKenzie, Lee & Podsakoff, 2003) were followed to minimize occurrences of common method bias. For instance, the anonymity of respondents was protected. Scale items were clear and unambiguous. Additionally, the data was submitted to a Harman one-factor test (Podsakoff & Organ, 1986) to further evaluate threats of common method variance. All of the items from variables used were entered into exploratory factor analysis with varimax rotation. The unrotated matrix (i.e. component matrix) was interpreted and showed that multiple factors emerged. Additionally, the

first factor did not explain the majority of the variance (i.e. 41%) (see Table 4). This analysis suggests that common method variance was not a significant threat to this study. Confirmatory factor analysis also was utilized to test how well the data fit a one-factor model. Consistent with this approach, I included all of the items of constructs in the study to determine whether the data would fit a single factor better than the proposed three factor model. A good fit would suggest that common method variance may be a problem. The fit of the single factor model was poor,  $\chi^2(40, N=612) = 529.85, p < 0.0$ , RMSEA = 0.14, CFI = 0.89, SRMR = 0.12, NFI = 0.89, which suggested that the items were not indicative of a single general construct (see Table 5). This further suggests that common method variance was not a significant threat for this study. Additionally, none of the predictor variables had correlations greater than .70 (Vogt, 2007), which might indicate a problem with multicollinearity and the collinearity statistics show that no VIF was greater than 5 further reducing the likelihood of multicollinearity within the study (Vogt, 2007).

I conducted confirmatory factor analysis of the study items using Lisrel 8.80 (Jöreskog & Sörbom, 2001) to confirm the factor structures of the scales used. Maximum likelihood estimations were used for this analysis. Eighteen items and three latent variables were entered. The latent variables included venture creation decision (three items), risk perceptions (seven items), and perceived environmental munificence (eight items). The latent variables were permitted to correlate with one another. Items associated with different latent variables were not permitted to correlate and item correlations were kept to a minimum. Assessing the modification indices, t-values and standardized solutions to modify the measurement model resulted in the following three factor model - venture creation decision (three items), risk perceptions (four items), and perceived environmental munificence (four items). Three pairs of items associated

with each of the latent variables were permitted to correlate: (1) two venture creation decision items; (2) two risk perceptions items; and (3) two perceived environmental munificence items. The fit indices of the three-factor model were good,  $\chi^2$  (38,  $N=612$ ) = 114.60,  $p < 0.00$ , RMSEA = 0.06, CFI = 0.99, SRMR = 0.03, NFI = 0.98 (see Table 5). Additionally, a chi-square difference test shows that that models are significantly different and the fit indices for the three-factor model was significantly better than that of the two-factor model, which had fit indices of  $\chi^2$  (39,  $N=612$ ) = 403.64,  $p < 0.00$ , RMSEA = 0.12, CFI = 0.91, SRMR = 0.12, NFI = 0.91 and better than that of the four-factor model, which had fit indices of  $\chi^2$  (36,  $N=612$ ) = 235.44,  $p < 0.00$ , RMSEA = 0.10, CFI = 0.96, SRMR = 0.08, NFI = 0.95 (see Table 6).

Hierarchical linear regression analysis was used to test the hypotheses presented in this study. This approach is appropriate when examining interaction terms (Cohen & Cohen, 1983). Control, independent and then two-way multiplicative variables were introduced in sequential higher orders of the hierarchical analysis.

Several models were used to analyze the data. First, in Model 1 the dependent variable, venture creation decision, was regressed on the control variables. The control variables included age, race, gender, educational level, optimism, and risk propensity. Model 2 regressed venture creation decision on the control variables along with the independent variable, risk perceptions. Overconfidence and perceived environmental munificence were introduced as predictors in Models 3 and 4, respectively. The first interaction term, the product of risk perceptions and overconfidence, was added to the model, which included the control variables and all predictors in Model 5. Finally, the second interaction term, the product of risk perceptions and perceived environmental munificence, was added to complete Model 6. The interaction term was calculated by mean centering each of the predictor variables and then by multiplying the predictor variables

of interest. The control variables, predictors, and interaction terms were introduced separately and sequentially to more clearly examine the variance explained, beta weights, and significance levels when variables were introduced to the model since the effects of two interaction terms were examined in this study.

The equations for the models tested (excluding the control variables only model) are listed below where  $Y$  = venture creation decision,  $X$  = risk perceptions,  $Z_1$  = overconfidence and  $Z_2$  = perceived environmental munificence:

$$(1) Y = b_0 + b_1X + E$$

$$(2) Y = b_0 + b_1X + b_2Z_1 + E$$

$$(3) Y = b_0 + b_1X + b_2Z_1 + b_3Z_2 + E$$

$$(4) Y = b_0 + b_1X + b_2Z_1 + b_3Z_2 + b_4XZ_1 + E$$

$$(5) Y = b_0 + b_1X + b_2Z_1 + b_3Z_2 + b_4XZ_1 + b_5XZ_2 + E$$

## CHAPTER 4

### RESULTS

The means, standard deviations, correlations, reliability coefficients (i.e. Cronbach alphas) for the independent and dependent variables are reported in Table 3 using SPSS 16.0 along with the average variance explained (AVE) for the three factors – venture creation decision (AVE = .71), risk perceptions (AVE = .56), and perceived environmental munificence (AVE = .51). The acceptable cutoff for the AVEs is .50. Cronbach alphas were considered acceptable if they met or exceeded the cutoff of .70 and are reported for venture creation decision ( $\alpha = .86$ ), risk perceptions ( $\alpha = .82$ ), perceived environmental munificence ( $\alpha = .82$ ), and optimism ( $\alpha = .81$ ).

The correlation matrix reveals several significant relationships between a number of the predictor variables and the dependent variable offering preliminary support for the hypothesized relationships. Race and risk propensity are positively associated with venture creation decisions. Additionally, the correlation matrix offers preliminary support for relationships examined in this study. Risk perceptions ( $r = -0.32, p < .01$ ) is associated with venture creation decisions. Higher degrees of risk perceptions are associated with reductions in decisions to create ventures. Overconfidence and perceived environmental munificence are also associated with venture creation decisions. Greater levels of overconfidence ( $r = 0.09, p < .05$ ) are associated with more decisions to create ventures. Perceived environmental munificence ( $r = 0.60, p < .01$ ) is also strongly associated with decisions to create ventures. These predictor variables are correlated with venture creation decisions as expected based upon the hypotheses presented in this study.

All regression analysis results are presented in Table 7. When analyzing the control variables included in each model, only risk propensity ( $\beta = 0.14, p < .01$ ) remained a significant

predictor for venture creation decisions in all models tested. The role of age ( $\beta = 0.06, p < .10$ ) as a predictor was marginal in all models tested. Increases in age and risk propensity were associated with increases in decisions to create ventures. Race ( $\beta = 0.05, p < .10$ ) was a marginal predictor of venture creation decisions until Model 6 when the second interaction term (i.e. risk perceptions and perceived environmental munificence) ( $\beta = 0.05, p < .01$ ) was entered and gender ( $\beta = -0.07, p < .10$ ) was a marginal predictor until Model 4 when perceived environmental munificence ( $\beta = 0.54, p < .01$ ) was entered as a significant predictor of venture creation decisions.

**Hypothesis 1.** Hypothesis 1 proposed a negative relationship between risk perceptions and venture creation decisions. The risk perception variable was entered in Model 2 and significantly predicted venture creation decisions ( $\beta = -0.29, p < .01$ ), which was consistent with the hypothesized relationship. Hence, greater amounts of risk perceptions were accompanied by fewer decisions to create ventures.

**Hypothesis 2.** Hypothesis 2 proposed that the relationship between risk perceptions and venture creation decisions would be moderated by overconfidence such that higher levels of overconfidence would mitigate the negative relationship between risk perceptions and venture creation decisions. In Model 3, overconfidence was entered as a predictor but did not significantly predict venture creation decisions. In Model 5, the interaction term for risk perceptions and overconfidence was entered and also was found not to be a significant predictor of venture creation decisions.

**Hypothesis 3.** Hypothesis 3 proposed that the relationship between risk perceptions and venture creation decisions would be moderated by perceived environmental munificence such that higher levels of perceived environmental munificence would mitigate the negative

relationship between risk perceptions and venture creation decisions. In Model 4, perceived environmental munificence was entered as a predictor and did significantly predict venture creation decisions ( $\beta = 0.54, p < .01$ ). The beta coefficient indicates a strong effect size for this variable on venture creation decisions. In Model 6, the interaction term for risk perceptions and perceived environmental munificence was entered. The interaction term was determined to be a marginally significant (Noymer, 2008) predictor of venture creation decisions since the acceptability of its  $p$ -value was debatable ( $\beta = 0.05, p < .10$ ). However, since the results presented in these analyses are based on a two-tailed test and since the hypotheses propose a specific direction regarding the nature of the predictors and interaction terms, the effect of this interaction term may be considered significant at the  $p < .05$  level. Moreover, a simple slope test (Aiken & West, 1991) indicates that this interaction is significant at two levels of perceived environmental munificence (i.e. +1 SD and -1 SD). The slopes of the line for high levels of perceived environmental munificence ( $\beta = -0.156, t = -3.971, p < .001$ ) and for low levels of perceived environmental munificence ( $\beta = -0.232, t = -4.98, p < .001$ ) were both significantly different from zero. I offer a graph of the moderated regression for this significant effect (see Figure 2).

In the following section, I offer post hoc analysis to explore whether a different operationalization of overconfidence might further reveal insights. The literature suggests that differences in the way in which overconfidence is operationalized might be meaningful for this research (Moore & Healy, 2008).

## **Post Hoc Analysis and Results**

Researchers have disputed the aspects of overconfidence. For instance, the way in which overconfidence is conceptualized (Griffin & Varey, 1996) and operationalized has been disputed (Moore & Healy, 2008). Some define it as the failure to know the limits of one's knowledge (Keh, Foo, & Lim, 2002; Simon et al., 2000) and argue that it yields extreme certainty judgments and overestimation of event occurrences (Zacharakis & Shepherd, 2001). Others believe that overconfidence exists when entrepreneurs overestimate their ability relative to others (Koellinger et al., 2007). The overconfident believe that their entrepreneurial skill set is better than others and, thus, allows them to more effectively exploit opportunities and earn entrepreneurial rents. Along these lines, overconfidence may be described as assigning a higher probability of success to one's own venture relative to others (Cooper et al., 1988). I describe this type of overconfidence as venture overconfidence and operationalize it with a procedure utilized by Cooper et al. (1988).

I offer post hoc analysis utilizing measures of venture overconfidence to explore the extent to which it may act as a boundary condition since it also is expected to bias the decision-making process (see Figure 3). This different conceptualization of venture overconfidence is accompanied by an operationalization, which is different than metacognitive overconfidence. Venture overconfidence is measured asking respondents to rate the likelihood that a new business started by them would be successful using a scale of one out of ten to ten out of ten (see Appendix). Cooper et al. (1988) use this approach to measure venture overconfidence, which requires that respondents base their assessments on beliefs of venture success. The same scale is used to measure the likelihood that another business opened by someone else would be successful. The second venture success rating is subtracted from the first venture rating resulting

in a venture overconfidence score. Positive differences reflect levels of venture overconfidence with higher numbers corresponding to higher amounts of venture overconfidence.

The data for this post hoc analysis was conducted similarly to that of the previous study. The venture overconfidence and overconfidence scores were not significantly correlated. Several regression models were analyzed using SPSS 16.0 to examine expected hypotheses. First, in Model 1 the dependent variable, venture creation decision, was regressed on the control variables. The control variables included age, race, gender, educational level, optimism, and risk propensity. Model 2 regressed venture creation decision on the control variables along with the independent variable, risk perceptions. Venture overconfidence and perceived environmental munificence were introduced as predictors in Models 3 and 4, respectively. The first interaction term, the product of risk perceptions and venture overconfidence, was added to the model, which included the control variables and all predictors in Model 5. Finally, the second interaction term, the product of risk perceptions and perceived environmental munificence, was added to complete Model 6. The interaction term was calculated by mean centering each of the predictor variables and then by multiplying the predictor variables of interest. The control variables, predictors, and interaction terms were introduced separately and sequentially to more clearly examine the variance explained, beta weights, and significance levels when variables were introduced to the model since the effects of two interaction terms were examined in this study.

The correlation matrix shows significant relationships between several predictor variables and the dependent variable, which support the hypothesized relationships. The control variables of race, gender, and risk propensity are positively associated with venture creation decisions. Similar to the previous analysis, risk perceptions ( $r = -0.24, p < .01$ ) is associated with venture creation decisions suggesting that higher degrees of risk perceptions are associated with a

decrease in decisions to create ventures. Venture overconfidence and perceived environmental munificence maintained similar relationships with venture creation decisions. Greater levels of venture overconfidence ( $r = 0.10, p < .05$ ) accompany more decisions to create ventures. Perceived environmental munificence ( $r = 0.60, p < .01$ ) has a strong positive association with decisions to create ventures. Since the predictor variables are correlated with venture creation decisions as expected, they offer preliminary support for the hypotheses established in this study.

All regression analysis results are presented in Table 6. Risk propensity ( $\beta = 0.13, p < .01$ ) was the only control variable that remained a significant positive predictor for venture creation decisions in all models tested. Age ( $\beta = 0.06, p < .10$ ) and race ( $\beta = 0.06, p < .10$ ) were marginal positive predictors in all models that included the interaction terms. Following are hypotheses results as they would appear with the new conceptualization of overconfidence (i.e. venture overconfidence).

**Hypothesis 1.** Hypothesis 1 proposed a negative relationship between risk perceptions and venture creation decisions. Risk perception significantly predicted venture creation decisions ( $\beta = -0.29, p < .01$ ) as indicated in Model 2. This provided support for the hypothesized relationship indicating that greater amounts of risk perceptions were accompanied by fewer decisions to create ventures.

**Hypothesis 2.** Hypothesis 2 proposed that venture overconfidence would moderate the relationship between risk perceptions and venture creation decisions such that higher levels of venture overconfidence would mitigate the negative relationship between risk perceptions and venture creation decisions. In Model 3, venture overconfidence was entered as a predictor and did significantly predict venture creation decisions ( $\beta = 0.10, p < .01$ ). The prior analysis of the previously operationalized overconfidence did not significantly predict venture creation

decisions. In Model 5, the interaction term for risk perceptions and venture overconfidence was entered and was found not to be a significant predictor of venture creation decisions.

**Hypothesis 3.** Hypothesis 3 proposed that perceived environmental munificence would moderate the relationship between risk perceptions and venture creation decisions such that higher levels of perceived environmental munificence would mitigate the negative relationship between risk perceptions and venture creation decisions. Perceived environmental munificence was entered as a predictor in Model 4 and did significantly predict venture creation decisions ( $\beta = 0.53, p < .01$ ). According to the beta coefficient, a strong effect size exists for this variable on venture creation decisions. The interaction term for risk perceptions and perceived environmental munificence was entered in Model 6. The interaction term was determined to be a significant predictor of venture creation decisions based upon a one-tailed test given the directional prediction of the interaction term.

## **CHAPTER 5**

### **DISCUSSION**

This study contributes to the existing entrepreneurship literature concerning venture creation decisions and entrepreneurial cognitions in several ways. Antecedents and consequences of venture creation decisions are relevant topics in entrepreneurship research (Gartner, 1988). Entrepreneurial cognitions seeks to explain phenomena associated with entrepreneurship such as venture creation decisions by examining the perceptions, knowledge structures and decision making processes of entrepreneurs (Mitchell, 2002). Such an approach is consistent with those who call for a psychological approach to new venture creation which involves cognitive processes that occur within the individual (Shaver & Scott, 1991). The research conducted here addresses such entrepreneurial phenomena examining the impact both direct and indirect of cognitive and perceptual constructs on venture creation decisions. First, the results presented provide strong evidence to support the negative relationship between risk perceptions and entrepreneurial outcomes such as venture creation decisions. Second, the results suggest that overconfidence is not directly associated with venture creation decisions and that it does not provide a boundary condition for the relationship between risk perceptions and venture creation decisions. Few if any studies have examined the extent to which overconfidence may act as a boundary condition for predictor variables and phenomena of interest. Finally, the results suggest that perceived environmental munificence is directly associated with venture creation decisions and that it forms a boundary condition for venture creation decisions. This study is among the first to use cognition theory to test and establish such a boundary condition Together, these results help to inform research concerning the role that entrepreneurial cognitions may play in examining important entrepreneurial activities such as venture creation decisions.

This study confirms the role that risk perceptions play regarding venture creation decisions by providing empirical support for their associations. Confirming such relationships provides non-circuitous evidence that perceptual measures are directly associated with entrepreneur's decisions and quite possibly with the processes in which they are made (Forlani & Mullins, 2000). Risk perceptions are negatively associated with venture creation decisions (Simon et al., 2000) such that higher degrees of risk perceptions result in the decreased likelihood of deciding to start a new venture. Unlike previous studies which have relied on a sample of students located in one geographical area and often university, this study uses a more generalizable sample. I use a sample of U.S. respondents across fifty states with varying degrees of work experience and age to show that the extent to which potential entrepreneurs perceive risks associated with the creation of a new venture will be negatively associated with their decision to create that new venture. Examining the effects of risk perceptions among this sample contributes to our understanding of entrepreneurial cognitions by offering more generalizable results given the relevance, breadth, and diversity of respondents on the basis of age, work experience, and geographical location.

The results presented in this study fail to find support for overconfidence having a direct effect on the venture creation or for its acting as a boundary condition for the relationship between risk perceptions and venture creation decisions. Overconfidence is a cognitive bias, which has received considerable attention in the entrepreneurship literature. It involves the failure to know the limits of one's knowledge and often results in certainty judgments (Oskamp, 1965; Russo & Schoemaker, 1992). Although some studies have found evidence for the impact of overconfidence on entrepreneurial activities (Hayward et al., 2006) and on entrepreneurs (Busenitz & Barney, 1997; Forbes, 2005), others have not (Simon et al., 2000). This raises

interesting questions about the extent to which a psychological approach to entrepreneurship can help to explain venture creation decisions. Hence, these results help to inform research about the ways in which overconfidence may not directly affect some entrepreneurial activities such as venture creation decisions, thereby, providing preliminary guidance regarding the limitations of its role, which can be further examined in subsequent research. The theory presented here seeks to more specifically understand how the cognitive bias overconfidence influences entrepreneurial decision outcomes. More specifically, these results suggest that overconfidence does not act as a moderator for the relationship between risk perceptions and venture creation decisions. Put differently, overconfidence doesn't appear to mitigate the negative impact of risk perceptions on venture creation decisions as argued here. The data indicate that overconfidence does not bias perceptions of risks. Moreover, the absence of significant findings regarding overconfidence for this study and for that conducted by Simon et al. (2000) raises questions regarding the way in which overconfidence is measured (Moore & Healy, 2008). Overconfidence was not directly associated with venture creation decisions according to correlation and regression analyses of the data. This study and that of Simon et al. (2000) measured overconfidence in the same way, whereas, others who found significant results measured it using alternative methods (Busenitz & Barney, 1999). Interestingly, an alternative measure of overconfidence (i.e. venture overconfidence) did not produce significant findings for either its indirect effects on venture creation decisions (Cooper et al., 1988). However, venture overconfidence, which refers to inflated beliefs of chances for venture success was found to be positively and significantly associated with venture creation decisions further indicating the relevance of cognitions in entrepreneurial research. These findings also raise questions about differences in the way

researchers conceptualize and operationalize overconfidence in research (Griffin & Varey, 1996; Klaymann, et al., 1999).

The results of this study offer additional evidence of the role that entrepreneurial cognitions may play in understanding perceptual constructs associated with environmental considerations such as munificence (Castrogiovanni, 1991). The findings establish perceived environmental munificence as having a direct effect on risk perceptions and as having a marginal moderating effect on the relationship between risk perceptions on venture creation decisions. The moderating effects of perceived environmental munificence were marginally significant at the  $p < .10$  level for a two-tailed test. The predicted hypothesis was directional suggesting consistency with the interpretation of a one-tailed test. Hence, the interaction term was deemed to be significant at the .05 level based upon a one-tailed test. This research is among the first to empirically examine this type of moderating relationship, which involves cognitive variables. According to the data, perceived environmental munificence reduced the strength of the negative relationship of risk perceptions on venture creation decisions raising support for interests in both the perceived and real effects (Specht, 1993) of environmental characteristics on entrepreneurial activities. Perceptions concerning one's environment's ability to support the creation and growth of new ventures via the presence of sufficient resources contribute to entrepreneurial research by approaching the initial establishment of a perceptual environmental construct in the venture creation decision process. The data suggests that increased perceptions of environmental munificence are relevant for choices individuals make regarding venture creation and, thus, is relevant for and contributes to entrepreneurial research.

In essence, this study contributes to entrepreneurial cognitions research by drawing linkages between cognitive constructs and an important entrepreneurial outcome such as the

venture creation decision. Perceptions constitute a foundation of cognitions research (Estes, 1978) and are shown to be associated with venture creation decisions. A growing body of research suggests that entrepreneurial cognitions investigations offer a unique perspective for understanding entrepreneurship phenomena (Mitchell et al., 2007) by taking a more psychological approach (Shaver & Scott, 1991). The findings presented in this study join that conversation. More specifically, establishing linkages between risk perceptions, perceived environmental munificence, and venture creation decisions informs entrepreneurial cognitions research by reinforcing the importance of cognitive constructs in venture creation decision outcomes.

This research also has important practical implications. First, the data suggest that risk perceptions are negatively associated with venture creations decisions. Hence, perceiving higher degrees of risk reduce the likelihood of choosing to start a new venture. Such decisions have important implications for economic growth since entrepreneurship contributes to the gross domestic product of countries like the U.S. Finding methods to reduce risk perceptions (i.e. by providing training and education to demystify entrepreneurship, increasing entrepreneurial role models available to potential entrepreneurs, and enhancing the managerial skills of entrepreneurs) will help spurn economic growth through the creation of new ventures. This study also sheds light on the extent to which individuals' beliefs concerning environmental resource richness will facilitate venture creation decisions. Efforts to spurn economic growth through entrepreneurship are improved upon when accompanied with perceptions of environmental resource support. This is of particular relevance for governmental officials at various levels who seek to see economic growth and to developers who pursue a strategy of gentrification. Such an

approach may increase venture creation choices if businesses perceive that local resources are sufficient to support its venture's growth.

## **Limitations and Future Research**

There are limitations in this study. First, the data for this study were collected from one source at one time. Collecting the data from one source at one time raises concerns for common method bias (Podsakoff & Organ, 1986). Although several steps were taken to mitigate the risks of common method variance and various tests were conducted, these efforts do not guarantee that common method variance does not exist within the data. Future research might alter the research design by collecting data at different times or in different ways. For instance, future research might measure predicting variables at time one and then measure the dependent variables at time two on some later date. Additionally, future research might measure the dependent variable more objectively (i.e. consider actual decision outcomes). These steps could further help to reduce any concerns associated with common method bias.

Second, the data in this study are perceptual in nature. The study relies on the accurate perceptions of respondents. The possibility of inaccurate responses may raise questions about the validity of the findings. Future research might seek to examine other operationalizations of the constructs in this study. Additionally, examining actual risks, etc. based on external measures offer insights into the relationships proposed in this research. It is important to note that future studies in this direction might compliment the findings of this cognitive study and, thus, reinforce or refine efforts in entrepreneurial cognitions research.

Future research should consider boundary conditions of overconfidence utilizing different measures. This study measures metacognitive overconfidence (Russo & Schoemaker, 1992) and was unable to find significant results in so doing. This type of overconfidence is defined as the failure to know the limits of one's knowledge resulting in certainty judgments (Simon et al., 2000). Future research should consider utilizing different measures of overconfidence which

measure inaccuracies in prediction and/or personal abilities (Hayward et al., 2006). Such measures may make contributions to entrepreneurial cognitions research and produce significant findings.

Consistent with recommendations for future research, the post hoc analysis conducted in this study did explore the effects of an alternative overconfidence measure. Venture overconfidence refers to inflated chances of success (Cooper et al., 1988). This different operationalization resulted in significant direct effects but did not produce moderating effects for the relationship between risk perceptions and venture creation decisions.

Future research also should consider the boundary conditions of other environmental factors such as environmental hostility. Environmental hostility is “characterized by precarious industry settings, intense competition, harsh, overwhelming business climates, and the relative lack of exploitable opportunities (Covin & Slevin, 1989:75).” Future research should explore the extent to which environmental hostility, both real and perceived, affects potential entrepreneurs’ decisions to start new ventures. Comparing the effects of objective evidence of environmental hostility, both direct and indirect, with the effects of subjective perceptions of environmental munificence might offer significant contributions to entrepreneurial cognitions research and research, which seeks to establish a configurational approach.

Notwithstanding these limitations, this study makes significant contributions to both entrepreneurship theory and practice. First, I extend entrepreneurial cognitions research by establishing relationships between perceptual measures and venture creation decisions. The results provide strong evidence of a negative relationship between risk perceptions and venture creation decisions and of the positive relationship between perceived environmental munificence and venture creation decisions. Additionally, there was marginal support for the moderating

effects of perceived environmental munificence on the relationship between risk perceptions and venture creation decisions. Practical implications and future research recommendations also have been suggested, which further outline contributions of this study.

## REFERENCES

- Aiken, L. S. & West, S. G. (1991). Multiple Regression: Testing and Interpreting Interactions. Newbury Park, CA: Sage.
- Barnes, J. H., Jr. 1984. Cognitive biases and their impact on strategic planning. Strategic Management Journal, 5: 129 - 137.
- Baron, R. A. 1998. Cognitive mechanisms in entrepreneurship: Why and when entrepreneurs think differently than other people. Journal of Business Venturing 13: 275 - 294.
- Barr, P. S., Stimpert, J. L. & Huff, A. S. 1992. Cognitive change, strategic action, and organizational renewal. Strategic Management Journal, 13: 15 - 36.
- Bazerman, M. H. 1984. Judgment in Managerial Decision-Making (2nd ed.). New York: Wiley.
- Begley, T. M., Tan, W.L. & Schoch, H. 2005. Politico - Economic Factors Associated with interest in starting a business: A multicountry study. Entrepreneurship Theory and Practice, 29: 35 - 55.
- Busenitz, L. 1999. Entrepreneurial risk and strategic decision-making. Journal of Applied Behavioral Science, 35: 325 - 340.
- Camerer, C. & Lovallo, D. 1999. Overconfidence and excess entry: An experimental approach. American Economic Review, 89(1): 306 - 318.
- Castrogiovanni, G. J. 1991. Environmental munificence: A theoretical assessment. Academy of Management Review, 16: 542 - 565.
- Chrisman, J. J., Bauerschmidt, A. & Hofer, C. W. 1999. The determinants of new venture performance: An extended model. Entrepreneurship Theory and Practice(Fall): 5 - 29.
- Cohen, J. & Cohen, P. 1983. Applied Multiple Regression/Correlations Analysis for the Behavioral Sciences (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Cooper, A. C., Dunkelberg, W. C., & Woo, C. Y. 1988. Entrepreneurs' perceived chances for success. Journal of Business Venturing, 3(2): 12.
- Covin, J.G. & Slevin D.P. 1989. Strategic management of small firms in hostile and benign environments. Strategic Management Journal, 10: 75 - 87.

- Dess, G. G. & Beard, D. W. 1984. Dimensions of organizational task environments. Administrative Science Quarterly, 29: 52 - 73.
- DeTienne, D. R., Shepherd, D. A., & Castro, J. O. D. 2008. The fallacy of "only the strong survive": The effects of extrinsic motivation on the persistence decisions for underperforming firms. Journal of Business Venturing, 23: 528 - 546.
- Duhaime, I. & Schwenk, C. R. 1985. Conjectures on cognitive simplification in acquisition and divestment decision making. Academy of Management Review, 10: 287 - 295.
- Estes, W. K. 1975. Handbook of Learning and Cognitive Processes (Vol. 1 ed.). Hillsdale, NJ: Lawrence-Erlbaum.
- Fiske, S. T. & Taylor, S. E. 1991. Social Cognition (2nd ed.). New York: McGraw-Hill.
- Forbes, D. P. 2005. Are some entrepreneurs more overconfidence than others? Journal of Business Venturing, 20; 623 - 640.
- Forlani, D. & Mullins, J. 2000. Perceived risks and choices in entrepreneurs' new venture decisions. Journal of Business Venturing, 15: 305-322.
- Fornell, C. & Larcker, D.F 1981. Evaluating structural equation models with unobservable variables and measurement error. Journal of Marketing Research, 18, 39 - 50.
- Gartner, W. 1985. A conceptual framework for describing the phenomenon of new venture creation. Academy of Management Review, 10(4): 696 - 706.
- Griffin, D. W. & Varey, C. A. 1996. Towards a consensus on overconfidence. Journal of Organizational Behavior and Human Decision Processes, 65(3): 227 - 231.
- Hayward, M. L., Shepherd, D., & Griffin, D. 2006. A hubris theory of entrepreneurship. Management Science, 52(2): 16-10 - 172.
- Hiller, N. J. & Hambrick, D. C. 2005. Conceptualizing executive hubris: The role of (hyper-) core self-evaluations in strategic decision-making. Strategic Management Journal, 26: 297 - 319.
- Janney, J. J. & Dess, G. G. 2006. The risk concept for entrepreneurs reconsidered: New challenges to the conventional wisdom. Journal of Business Venturing, 21(3): 385 - 400.

- Jöreskog, K. & Sörbom, D. 2001. LISREL 8: User's Reference Guide, Chicago: SSL.
- Kahneman, D. & Lovallo, D. 1993. Timid choices and bold forecasts: A cognitive perspective on risk taking. Management Science, 39(1): 17 - 31.
- Keh, H., Foo, D. & Lim, B. 2002. Opportunity evaluation under risky conditions: The cognitive processes of entrepreneurs. Entrepreneurship Theory and Practice: 125 - 148.
- Klayman, J., Soll, J., Gonzalez-Vallejo, J., & Barlas, S. 1999. Overconfidence: It depends on how, what and whom you ask. Organizational Behavior and Human Decision Processes, 79: 216 - 247.
- Knight, F. H. 1921. Risk, Uncertainty, and Profit. Boston: Houghton Mifflin.
- Koellinger, P., Minniti, M., & Schade, C. 2007. "I think I can, I think I can": Overconfidence and entrepreneurial behavior. Journal of Economic Psychology, 28: 502 - 527.
- Langer, E. J. 1975. The illusion of control. Journal of Personality and Social Psychology, 32(2): 311 - 328.
- Lichtenstein, M. B. & Brush, C. G. 2001. How do "resource bundles" develop and change in new ventures? A dynamic model and longitudinal exploration. Entrepreneurship Theory and Practice, Spring: 37-58.
- Lichtenstein, S. & Fischhoff, B. 1977. Do those who know more also know more about how much they know. Organizational Behavior & Human Performance, 20: 159 - 183.
- Lowe, R. A. & Ziedonis, A. A. 2006. Overoptimism and the performance of entrepreneurial firms. Management Science, 52(2): 173 - 186.
- March, J. & Simon, H. 1958. Organizations. New York: Wiley.
- Miller, D. & Friesen, P. H. 1982. Innovatin in conservative and entrepreneurial firms: Two models of strategic management. Strategic Management Journal, 3(1): 1 - 25.
- Mitchell, R. K., Buseniz, 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: 93 - 104.

- Mitchell, R. K., Buseniz, 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: 505 - 518.
- Mitchell, R. K., Buseniz, 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: 1 - 27.
- Moore, D. A. & Healy, P. J. 2008. The trouble with overconfidence. Psychological Review, 115(2): 502 - 517.
- Neale, M. A. & Bazerman, M. H. 1985. The effect of framing on conflict and negotiator overconfidence. Academy of Management Journal, 28(2): 34 - 39.
- Neisser, U. 1967. Cognitive Psychology. New York: Appleton-Century-Crafts.
- Noymer, A. 2008. Alpha Significance Level of Test. In P.J. Lavrakas (Eds.). Encyclopedia of Survey Research Methods. (p. 18). Thousand Oaks: Sage.
- Oskamp, S. 1965. Overconfidence in case-study judgments. Journal of Consulting Psychology, 29: 261 - 265.
- Palich, L. & Badgy, D. 1995. Using cognitive theory to explain entrepreneurial risk-taking: Challenging conventional wisdom Journal of Business Venturing, 10(6): 425 - 438.
- Podsakoff, P.M., MacKenzie, S.B., Lee, J.Y., & Podsakoff, N.P. 2003. Common method biases in behavioral research: A critical review of the literature and recommended remedies. Journal of Applied Psychology, 88: 879 - 903.
- Podsakoff, P. M. & Organ, D. W. 1986. Self-reports in organizational research: Problems and prospects. Journal of Management, 12: 531 - 544.
- Porter, M. & Millar, J. 1985. How information gives you competitive advantage. Harvard Business Review: 149 - 174.
- Russo, J. E. & Schoemaker, P. J. 1992. Managing overconfidence. Sloan Management Review, 23: 7 - 17.
- Scheier, M. R. & Carver, C. S. 1985. Optimism, coping, and health: Assessment and implications of generalized outcome expectancies. Health Psychology, 4: 219 - 247.

- Schwenk, C. R. 1986. Information, cognitive biases, and commitment to a course of action. Academy of Management Review, 11: 298 - 310.
- Shane, S. & Venkataraman, S. 2000. The promise of entrepreneurship as a field of research. Academy of Management Review, 25(1): 217-226.
- Shaver, K. G. & Scott, L. R. 1991. Person, process, choice: The psychology of new venture creation. Entrepreneurship Theory and Practice, 16(2): 23 - 39.
- Simon, H. A. 1976. Bounded rationality and organizational learning. Organization Science, 2(1): 125 - 134.
- Simon, M., Houghton, S., & Aquino, K. 2000. Cognitive biases, risk perception, and venture formation: How individuals decide to start companies. Journal of Business Venturing, 15(2): 113 - 134.
- Simon, M. & Houghton, S. 2003. The relationship between overconfidence and the introduction of risky products: Evidence from a field study. Academy of Management Journal, 46(2): 139 -149.
- Sitkin, S. & Pablo, A. 1992. Reconceptualizing the determinants of risk behavior. Academy of Management Review, 17(1): 9 - 38.
- Sitkin, S. & Weingart, L. 1995. Determinants of risky decision-making behavior: A test of the mediating role of risk perceptions and propensity. Academy of Management Journal, 38(6): 1573 - 1592.
- Specht, P. H. 1993. Munificence and carrying capacity of the environment and organization formation. Entrepreneurship Theory and Practice, 17: 77 - 86.
- Stevenson, H. H. & Gumpert, D. E. 1985. The heart of entrepreneurship. Harvard Business Review, 63(2): 85 - 94.
- Sutcliffe, K. M. 1994. What executives notice: Accurate perceptions in top management teams. Academy of Management Journal, 37(5): 1360 - 1378.
- Thornhill, S. 2006. Knowledge, innovation and firm performance in high- and low-technology regimes. Journal of Business Venturing, 21: 687 - 703.

Tversky, A. & Kahneman, D. 1974. Judgment under uncertainty: Heuristics and biases. Science, 185(4157): 1124 - 1131.

Vogt, W.P. 2007. Quantitative Research Methods for Professionals. Boston: Pearson.

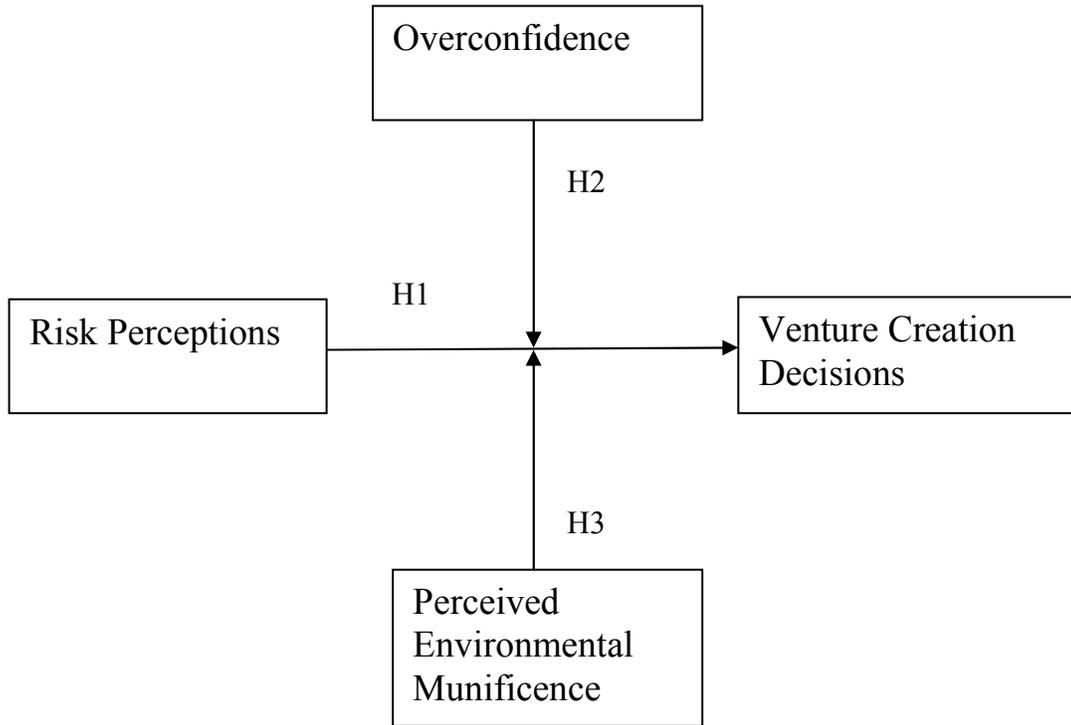
Weick, K. E. 1995. Sensemaking in Organizations. Newbury Park, CA: Sage Publications.

Zacharakis, A. & Shepherd, D. 2001. The nature of information and overconfidence on venture capitalists' decision making. Journal of Business Venturing, 16: 311 - 332.

**APPENDIX**

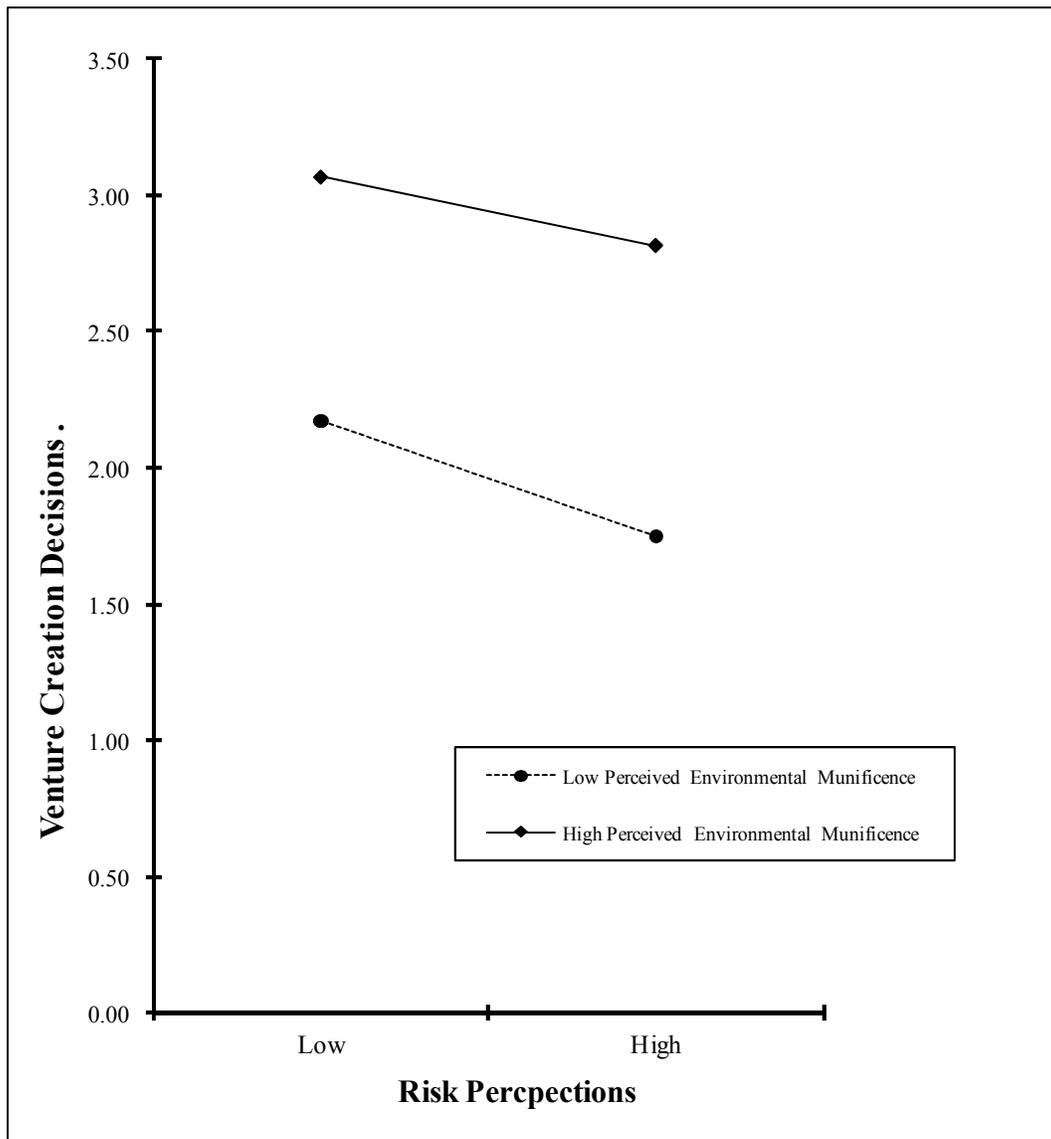
**Figure 1**

**Conceptual Model of Moderation**



**Figure 2**

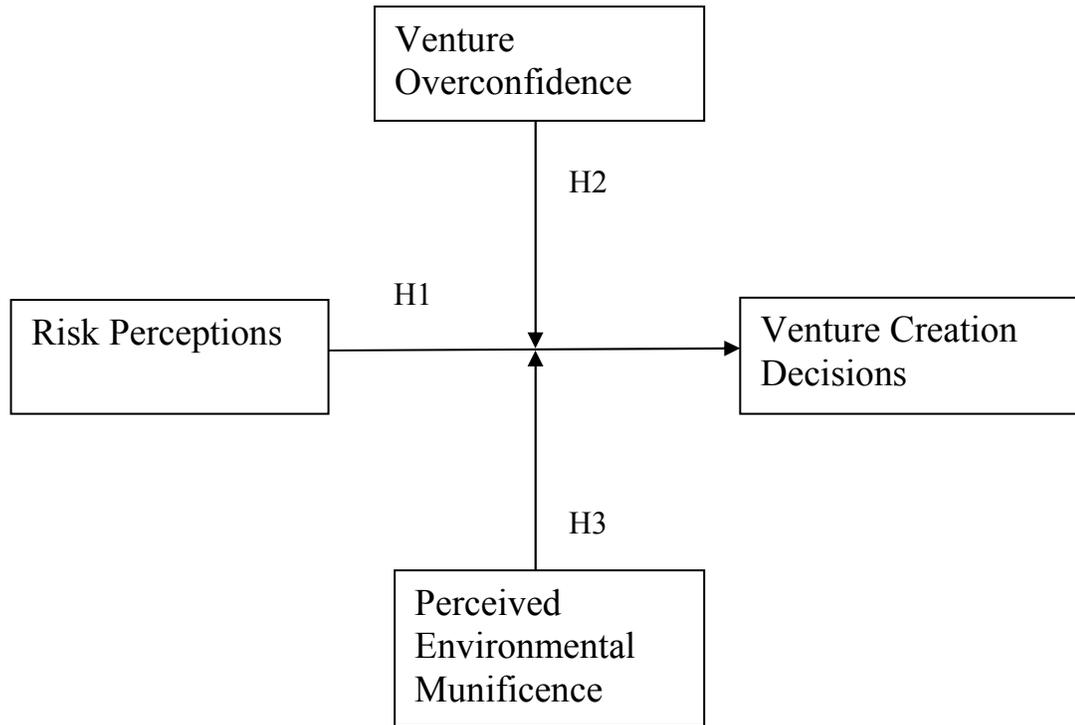
**Interaction Model**



Interaction of Risk Perceptions and Perceived Environmental Munificence on Venture Creation Decision

**Figure 3**

**Post Hoc Conceptual Model of Moderation**



**Table 1**

**T-test to Compare Non-Students and Student Means**

Variables of Interest	Student	N	Mean	Std. Deviation	Sig. (2-tailed)	Std. Error Mean
Venture Creation Decision	1	115	2.43	0.81	0.362	0.08
	0	497	2.52	0.96	0.313	0.04
Risk Perceptions	1	115	3.85	0.66	0.294	0.06
	0	497	3.92	0.66	0.293	0.03
Perceived Environmental Munificence	1	115	3.00	0.60	0.852	0.06
	0	497	3.01	0.74	0.831	0.03
Overconfidence	1	115	8.37	1.46	0.709	0.14
	0	497	8.31	1.77	0.675	0.08

**Table 2**

**Manipulation Check Results Using ANOVA**

Manipulated Items	Survey 1	Survey 2	Survey 3	Survey 4	P Value
	L/L*	L/H	H/H**/**	H/L**	n/a
Risk Perceptions	1.87	1.60	1.91	1.94	< 0.001
Environmental Munificence	1.20	1.46	1.25	1.20	< 0.001

Mean values are points on a 2-point scale, with 1.5 as the midpoint. Paired items for \* and \*\* are not significantly different.

**Table 3**

**Descriptive Statistics and AVE for Variables**

Descriptive Statistics, Correlations, Alphas, and Average Variance Explained for Study Variables and/or Scales														
Variables	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	Alphas	AVE
1. Age	43.65	14.93												
2. Race	1.13	0.50	-0.05											
3. Gender	1.45	0.50	0.00	-0.06										
4. Education	3.98	1.34	0.20**	0.02	-0.05									
5. Optimism	3.38	0.77	0.21**	0.01	0.03	0.14**							0.81	
6. Risk Propensity	0.22	0.26	-0.15**	0.13**	-0.14**	-0.04	0.01							
7. Overconfidence	8.32	1.71	-0.03	0.10*	0.07	-0.13**	0.03	0.05						
8. Perceived Environmental Munificence	3.01	0.72	0.02	0.14**	-0.07	-0.06	0.06	0.13**	0.13**	<b>0.74</b>			0.82	0.55
9. Risk Perceptions	3.91	0.66	0.04	-0.09*	-0.06	0.06	-0.10*	-0.16**	-0.11**	-0.24**	<b>0.75</b>		0.82	0.56
10. Venture Creation Decision	2.50	0.93	0.03	0.16**	-0.08	-0.07	0.01	0.23**	0.09*	0.60**	-0.32**	<b>0.84</b>	0.86	0.71

*N=612. Pearson Correlations (2-tailed) \*  $p < .05$ , \*\*  $p < .01$ . Cronbach's Alpha coefficients are reported.  
Average variance explained (AVE) is reported along with square roots, which are in bold italics on the diagonals.*

**Table 4**

**Principal Axis Factoring Results**

Factor	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	4.524	41.123	41.123
2	2.100	19.090	60.213
3	0.989	8.994	69.207
4	0.700	6.366	75.573
5	0.586	5.330	80.903
6	0.513	4.668	85.570
7	0.411	3.733	89.304
8	0.338	3.072	92.376
9	0.315	2.860	95.236
10	0.265	2.412	97.648
11	0.259	2.352	100.000

N=612. Principal axis factoring extraction method with Oblimin rotation.

**Table 5**

**Three Factor Model CFA Results**

Items	Venture Decision		Risk Perceptions		Perc'd Env. Mun.	
	Path Loadings	T-values	Path Loadings	T-values	Path Loadings	T-values
VCD1	0.88	24.69				
VCD2	0.76	20.13				
VCD3	0.76	20.1				
RP1			0.82	20.88		
RP2			0.86	21.82		
RP3			0.70	16.61		
RP4			0.51	12.57		
PEM1					0.81	22.15
PEM2					0.73	19.52
PEM3					0.66	16.39
PEM4					0.78	21.71

CFA results -  $\chi^2$  (38, N=612) = 114.60,  $p < .00$ , RMSEA = 0.057, CFI = 0.99, SRMR = 0.034, NFI = 0.98.

**Table 6**

**Fit Indices and Chi-square Differences for Nested Models**

Model	$\chi^2$	df	$\chi^2$ diff	df <sub>diff</sub>	SRMR	RMSEA	NNFI	NFI	CFI
One-factor*	529.85	40	415.25	2	0.12	0.14	0.85	0.89	0.89
Two-factor*	403.64	39	289.04	1	0.12	0.12	0.88	0.91	0.91
Three-factor	114.6	38	n/a	n/a	0.03	0.06	0.98	0.98	0.99
Four-factor*	235.44	36	120.84	2	0.08	0.10	0.93	0.95	0.96

N=612.\* $p < 0.01$ . All models compared to the Three-factor model.

**Table 7**

**Hierarchical Regression Analysis Results**

Regressed on Venture Creation Decision						
Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Age	0.08**	0.09**	0.09**	0.06*	0.06*	0.06*
Race	0.13***	0.11***	0.11***	0.05*	0.05*	0.05
Gender	-0.45	-0.07*	-0.07*	-0.03	-0.03	-0.03
Education	-0.08**	-0.06	-0.06	-0.02	-0.02	-0.03
Optimism	0.00	-0.03	-0.03	-0.05	-0.05	-0.04
Risk Propensity	0.22***	0.17***	0.17***	0.13***	0.13***	0.14***
Risk Perceptions (RP)		-0.29***	-0.29***	-0.17***	-0.17***	-0.18***
Overconfidence (OC)			0.05	0.00	0.00	0.00
Perceived Environmental Munificence (PEM)				0.54***	0.54***	0.53***
RP x OC					0.00	-0.01
RP x PEM						0.05*
R <sup>2</sup>	0.082	0.161	0.163	0.421	0.421	0.424
Adj. R <sup>2</sup>	0.072	0.151	0.152	0.412	0.412	0.413
ΔR <sup>2</sup>	0.082	0.08	0.002	0.258	0.000	0.003
ΔF	8.95***	57.34***	1.43	268.30***	0.00	2.66*

N=612. Standardized regression coefficients are reported.

\* p < .10, \*\* p < .05, \*\*\* p < .01.

**Table 8**

**Descriptive Statistics and AVE for Post Hoc Analysis**

Post Hoc Analysis of Descriptive Statistics, Correlations, Alphas, and Average Variance Explained for Study Variables and/or Scales

Variables	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	Alphas	AVE
1. Age	43.65	14.93												
2. Race	1.13	0.50	-0.05											
3. Gender	1.45	0.50	0.00	-0.06										
4. Education	3.98	1.34	0.20**	0.02	-0.05									
5. Risk Propensity	0.22	0.26	-0.15**	0.13**	-0.14**	-0.04								
6. Optimism	3.38	0.77	0.21**	0.01	0.03	0.14**	0.01						0.81	
7. Venture Overconfidence	-0.005	1.53	-0.02	-0.08*	-0.01	-0.01	0.07	0.01						
8. Perceived Environmental Munificence	3.01	0.72	0.02	0.14**	-0.07	-0.06	0.13**	0.06	0.03	<b>0.74</b>			0.82	0.55
9. Risk Perceptions	3.39	0.66	0.04	-0.09*	-0.06	0.06	-0.16**	-0.10**	0.00	-0.24**	<b>0.75</b>		0.82	0.56
10. Venture Creation Decision	2.50	0.93	0.03	0.16**	-0.08*	-0.07	0.23**	0.01	0.10**	0.60**	-0.32**	<b>0.84</b>	0.86	0.71

*N*=612. Pearson Correlations (2-tailed) \* *p* < .05, \*\* *p* < .01. Cronbach's Alpha coefficients are reported.

Average variance explained (AVE) is reported along with square roots, which are in bold italics on the diagonals.

**Table 9**

**Post Hoc Hierarchical Regression Analysis Results**

Regressed on Venture Creation Decision						
Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Age	0.08**	0.09**	0.09**	0.06*	0.06*	0.06*
Race	0.13***	0.11***	0.12***	0.06*	0.06*	0.06*
Gender	-0.45	-0.07*	-0.07*	-0.03	-0.03	-0.03
Education	-0.08**	-0.06	-0.06	-0.02	-0.02	-0.03
Optimism	0.00	-0.03	-0.03	-0.05	-0.05	-0.04
Risk Propensity	0.22***	0.17***	0.16***	0.13***	0.13***	0.13***
Risk Perceptions (RP)		-0.29***	-0.29***	-0.17***	-0.17***	-0.18***
Venture Overconfidence (VOC)			0.10***	0.08***	0.08***	0.08***
Perceived Environmental Munificence (PEM)				0.53***	0.53***	0.53***
RP x VOC					0.00	-0.00
RP x PEM						0.05
R <sup>2</sup>	0.082	0.161	0.171	0.427	0.427	0.43
Adj. R <sup>2</sup>	0.072	0.151	0.16	0.419	0.418	0.419
ΔR <sup>2</sup>	0.082	0.08	0.009	0.257	0.000	0.002
ΔF	8.95***	57.34***	6.824***	270.13***	0.004	2.37

N=612. Standardized regression coefficients are reported.

\* p < .10, \*\* p < .05, \*\*\* p < .01.

## Scenario 1

Please take on the role of a potential entrepreneur. You are asked to handle this case as your own and to respond to the questions in terms of your own preferences. Please read the case carefully at first and then follow the additional instructions on the next pages for further details.

### **Low Risk – Low Environmental Munificence (1)**

Imagine that you are considering whether to start a new business. Your knowledge, skills, and abilities will be used to help start and grow the business. A part of your decision will involve deciding whether you are excited about the idea of becoming your own boss and taking calculated risks to make your fortune along with other important business considerations.

You have an idea for a new business and decide to ask around to see if it is a good idea. You have some positive feedback from some potential customers and some associates who know the industry well. Your market research and published data suggest that businesses that perform well have a good chance of surviving and earning a profit. You feel that there is money to be made based on the positive feedback from potential customers and your associates. You have some industry experience, which will affect how you decide to organize your business.

There are many large companies in the same industry and they have targeted the market segment for which you are aiming. You feel that the large companies are likely to move into the market even if the new business is not overly successful and you may not be able to fend off this major threat. You are fairly confident that the market is not still growing and has matured. Because of this, it is not unlikely for a new business to be squeezed out of the market and the new business may not be able to survive the entry of other company's into this market segment. You find out that there are only a few small businesses that are still surviving in the industry.

You estimate that you will need at least \$150,000 to finance the new business. As you have only \$40,000 in savings, you have to borrow from the bank or find partners to get the rest of the investment funds needed.

## Scenario 2

Please take on the role of a potential entrepreneur. You are asked to handle this case as your own and to respond to the questions in terms of your own preferences. Please read the case carefully at first and then follow the additional instructions on the next pages for further details.

### **Low Risk – High Environmental Munificence (2)**

Imagine that you are considering whether to start a new business. Your knowledge, skills, and abilities will be used to help start and grow the business. A part of your decision will involve deciding whether you are excited about the idea of becoming your own boss and taking calculated risks to make your fortune along with other important business considerations.

You have an idea for a new business and decide to ask around to see if it is a good idea. You have some positive feedback from some potential customers and some associates who know the industry well. Your market research and published data suggest that businesses that perform well have a good chance of surviving and earning a profit. You feel that there is money to be made based on the positive feedback from potential customers and your associates. You have some industry experience, which will affect how you decide to organize your business.

There are a few large companies in the same industry but they have not targeted the market segment for which you are aiming. You feel that the large companies are not likely to move into the market as long as the new business is not overly successful but you should be able to fend off this major threat. You are fairly confident that the market is still growing and has not matured, yet. Because of this, it is not likely for a new business to be squeezed out of the market and the new business will be able to survive the entry of other company's into this market segment. You find out that there are several small businesses that are still surviving in the industry.

You estimate that you will need at least \$150,000 to finance the new business. As you have only \$40,000 in savings, you have to borrow from the bank or find partners to get the rest of the investment funds needed.

### Scenario 3

Please take on the role of a potential entrepreneur. You are asked to handle this case as your own and to respond to the questions in terms of your own preferences. Please read the case carefully at first and then follow the additional instructions on the next pages for further details.

#### **High Risk – High Environmental Munificence (3)**

Imagine that you are considering whether to start a new business. Your knowledge, skills, and abilities will be used to help start and grow the business. A part of your decision will involve deciding whether you are excited about the idea of becoming your own boss and taking calculated risks to make your fortune along with other important business considerations.

You have an idea for a new business and decide to ask around to see if it is a good idea. You have some negative feedback from some potential customers and some associates who know the industry well. Your market research and published data suggest that businesses that perform well have a not so good chance of surviving and earning a profit. You feel that there isn't a lot of money to be made based on the negative feedback from potential customers and your associates. You have no industry experience, which will affect how you decide to organize your business.

There are a few large companies in the same industry but they have not targeted the market segment for which you are aiming. You feel that the large companies are not likely to move into the market as long as the new business is not overly successful but you should be able to fend off this major threat. You are fairly confident that the market is still growing and has not matured, yet. Because of this, it is not likely for a new business to be squeezed out of the market and the new business will be able to survive the entry of other company's into this market

segment. You find out that there are several small businesses that are still surviving in the industry.

You estimate that you will need at least \$150,000 to finance the new business. As you have only \$40,000 in savings, you have to borrow from the bank or find partners to get the rest of the investment funds needed.

## Scenario 4

Please take on the role of a potential entrepreneur. You are asked to handle this case as your own and to respond to the questions in terms of your own preferences. Please read the case carefully at first and then follow the additional instructions on the next pages for further details.

### **High Risk – Low Environmental Munificence (4)**

Imagine that you are considering whether to start a new business. Your knowledge, skills, and abilities will be used to help start and grow the business. A part of your decision will involve deciding whether you are excited about the idea of becoming your own boss and taking calculated risks to make your fortune along with other important business considerations.

You have an idea for a new business and decide to ask around to see if it is a good idea. You have some negative feedback from some potential customers and some associates who know the industry well. Your market research and published data suggest that businesses that perform well have a not so good chance of surviving and earning a profit. You feel that there isn't a lot of money to be made based on the negative feedback from potential customers and your associates. You have no industry experience, which will affect how you decide to organize your business.

There are many large companies in the same industry and they have targeted the market segment for which you are aiming. You feel that the large companies are likely to move into the market even if the new business is not overly successful and you may not be able to fend off this major threat. You are fairly confident that the market is not still growing and has matured. Because of this, it is not unlikely for a new business to be squeezed out of the market and the new business may not be able to survive the entry of other company's into this market segment. You find out that there are only a few small businesses that are still surviving in the industry.

You estimate that you will need at least \$150,000 to finance the new business. As you have only \$40,000 in savings, you have to borrow from the bank or find partners to get the rest of the investment funds needed.

## Manipulation Checks

1. Based upon the scenario you read, which item below best describes the level of risks associated with starting the new business? \_\_\_\_\_
  - a. Low
  - b. High
  
2. Based upon the scenario you read, which item below best describes the amount of available resources in the market to help a new business survive? \_\_\_\_\_
  - a. Low
  - b. High

## Overconfidence Scale

For each of the following questions, provide a low and a high estimate such that you are 90 percent certain the correct answer will fall within these limits. You should aim to have 90 percent hits and 10 percent misses.

1. How many patents did the U.S. Patent and Trademark Office issue in 1990?

Low estimate: \_\_\_\_\_ High estimate: \_\_\_\_\_

2. How many of Fortune's 1990 "Global 500," the world's biggest industrial corporations (in sales), were Japanese?

Low estimate: \_\_\_\_\_ High estimate: \_\_\_\_\_

3. How many passenger arrivals and departures were there at Chicago's O'Hare airport in 1989?

Low estimate: \_\_\_\_\_ High estimate: \_\_\_\_\_

4. What was the total audited worldwide daily circulation of all Street Journal during the first half of 1990?

Low estimate: \_\_\_\_\_ High estimate: \_\_\_\_\_

5. How many master's degrees in business and management were conferred in the United States in 1987?

Low estimate: \_\_\_\_\_ High estimate: \_\_\_\_\_

6. How many passenger deaths occurred worldwide in scheduled commercial airliner accidents in the 1980's?

Low estimate: \_\_\_\_\_ High estimate: \_\_\_\_\_

7. What is the shortest navigable distance (in statute miles) between New York City and Istanbul?

Low estimate: \_\_\_\_\_ High estimate: \_\_\_\_\_

8. What was General Motors' total worldwide factory sales of cars and trucks (in units) in the 1980's?

Low estimate: \_\_\_\_\_ High estimate: \_\_\_\_\_

9. How many German automobiles were sold in Japan in 1989?

Low estimate: \_\_\_\_\_ High estimate: \_\_\_\_\_

10. What was the total U.S. merchandise trade deficit with Japan (in billions) in the 1980's?

Low estimate: \_\_\_\_\_ High estimate: \_\_\_\_\_

## **Risk Perception Scales**

Items selected based upon CFA analysis:

1. The overall risk of this business is high.
2. The probability of failure for this business is high.
3. The business stands to lose a lot financially.
4. There is a lot of uncertainty when predicting how well the business will do.

Initial items used based upon research:

1. The overall risk of this business is high.
2. The probability of failure for this business is high.
3. The business stands to lose a lot financially.
4. There is a lot of uncertainty when predicting how well the business will do.
5. The probability of this business growing is high.
6. This business is likely to be very profitable.
7. This business is likely to have substantial losses.
8. The likelihood of success for this business is very unpredictable.

## **Venture Creation Decision Scales**

Items selected based upon CFA analysis:

1. I would start a business in this industry.
2. I would forgo other career choices to start a business in this industry.
3. I would quit my job to start a business in this industry.

Initial items used based upon research:

1. I would start a business in this industry.
2. I would forgo other career choices to start a business in this industry.
3. I would quit my job to start a business in this industry.

## **Perceived Environmental Munificence Scales**

Items selected based upon CFA analysis:

1. Demand for the products/services of this industry is growing and will continue to grow.
2. The investment or marketing opportunities for firms in this industry are very favorable at the present time.
3. Resources for growth and expansions are easily accessible in this industry.
4. In this industry, sales have been growing and are likely to grow.

Initial items used based upon research:

1. Demand for the products/services of this industry is growing and will continue to grow.
2. The investment or marketing opportunities for firms in this industry are very favorable at the present time.
3. The opportunities for firms in this industry to expand the scope of their existing products/markets are extremely limited.
4. Resources for growth and expansions are easily accessible in this industry.
5. In this industry, sales have been growing and are likely to grow.
6. The total value of assets for the firms within this industry are declining and will continue to decline.
7. Capital expenditures in this firm's principal industry are growing and will continue to grow.

## Risk Propensity Scale

Select the alternative that you would feel most comfortable with:

1. a) an 80% chance of winning \$400, or  
b) receiving \$320 for sure
  
2. a) receiving \$300 for sure, or  
b) 20% chance of winning \$1,500
  
3. a) an 90% chance of winning \$200, or  
b) receiving \$180 for sure
  
4. a) receiving \$160 for sure, or  
b) 10% chance of winning \$1,600
  
5. a) an 50% chance of winning \$500, or  
b) receiving \$250 for sure

### Venture Overconfidence Scale

Please indicate the odds of your business succeeding in the long run. Check the survival rate of the venture you selected (select only one).

Odds	Please tick one of the boxes below.
0 out of 10	<input type="checkbox"/>
1 out of 10	<input type="checkbox"/>
2 out of 10	<input type="checkbox"/>
3 out of 10	<input type="checkbox"/>
4 out of 10	<input type="checkbox"/>
5 out of 10	<input type="checkbox"/>
6 out of 10	<input type="checkbox"/>
7 out of 10	<input type="checkbox"/>
8 out of 10	<input type="checkbox"/>
9 out of 10	<input type="checkbox"/>
10 out of 10	<input type="checkbox"/>

Please indicate the odds of any business like yours succeeding in the long run. Check the survival rate of a competing venture (select only one).

Odds	Please tick one of the boxes below.
0 out of 10	<input type="checkbox"/>
1 out of 10	<input type="checkbox"/>
2 out of 10	<input type="checkbox"/>
3 out of 10	<input type="checkbox"/>
4 out of 10	<input type="checkbox"/>
5 out of 10	<input type="checkbox"/>
6 out of 10	<input type="checkbox"/>
7 out of 10	<input type="checkbox"/>
8 out of 10	<input type="checkbox"/>
9 out of 10	<input type="checkbox"/>
10 out of 10	<input type="checkbox"/>

July 6, 2009

Office for Research  
Institutional Review Board for the  
Protection of Human Subjects

THE UNIVERSITY OF  
**ALABAMA**  
R E S E A R C H

Anthony Robinson  
Department of Management & Marketing  
College of Commerce & Business Administration  
The University of Alabama

Re: IRB # EX-09-CM-042 "Risk Perceptions and Venture Creation  
Decisions: The Boundary Conditions of Overconfidence and Perceived  
Environmental Munificence"

Dear Mr. Robinson:

The University of Alabama Institutional Review Board has granted  
approval for your proposed research.

Your protocol has been given exempt approval according to 45 CFR part  
46.101(b)(2) as outlined below:

(2) Research involving the use of educational tests (cognitive, diagnostic,  
aptitude, achievement), survey procedures, interview procedures or  
observation of public behavior, unless:  
(i) information obtained is recorded in such a manner that human subjects  
can be identified, directly or through identifiers linked to the subjects; and  
(ii) any disclosure of the human subjects' responses outside the research  
could reasonably place the subjects at risk of criminal or civil liability or  
be damaging to the subjects' financial standing, employability, or  
reputation.

Your application will expire on July 6, 2010. If your research will  
continue beyond this date, complete the relevant portions of Continuing  
Review and Closure Form. If you wish to modify the application,  
complete the Modification of an Approved Protocol Form. When the  
study closes, complete the appropriate portions of FORM: Continuing  
Review and Closure.

Should you need to submit any further correspondence regarding this  
proposal, please include the assigned IRB application number.

Good luck with your research.

Sincerely,  
Carpatito T. Myles, MSW, CIM  
Director & Research Compliance Officer  
Office for Research Compliance  
The University of Alabama



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