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CREATING AN ENTREPRENEURIAL FRAME OF MIND

By

Robert F. Sinclair
B.A.A., Central Michigan University, 2003
M.B.A., Central Michigan University, 2004

A Dissertation
Submitted to the Faculty of the
College of Business of the University of Louisville
in Partial Fulfillment of the Requirements
for the Degree of

Doctor of Philosophy

Department of Management and Entrepreneurship
University of Louisville
Louisville, Kentucky

May 2012

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B.A.A., Central Michigan University, 2003
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A Dissertation Approved on

April 17, 2012

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Lyle Sussman

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DEDICATION

To my children, grandchildren, and all that will follow:

Jennifer Ieleen, Matthew Robert, Joseph Frederic, Amanda

Lynne, Jozsef Noah, Arianna Li, and all those still yet to

come—I will always love you.

And

To my father **Frederic Joseph Sinclair**, I know it was hard for

you to believe I would do it at times, but thank you for

believing in me anyway.

And

To my mother **Lynne Claire Sinclair** and all those that have gone

before me. You have made me the man I am today.

I hope I have made you proud—I miss you.

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Next, I would like to offer my deepest gratitude to all the members of my committee. Dr. James Fiet, thank you for chairing my committee. Your willingness to work on this topic and your dedication is a credit to your professionalism as both an academic and as a person. Dr. Reginald Bruce, I need to express my sincerest appreciation for your guidance, patience, unwavering support, and for challenging me every step of the way. My dissertation and I are all the better for it. It has truly been an honor working with you. Dr. Per Davidsson, it is you who gave me the strength to stick to my guns in choosing this topic. While many others urged me to choose a less ambitious topic, you were the first to see the potential in my vision and encouraged me to follow it—I am forever in your debt. Dr. Lyle Sussman, I want to thank you for sharing your understanding of the topic and for assisting me in navigating the pitfalls of the dissertation process. Dr. Sherry Thatcher, your support, attention to detail, quick responses to the many, many, many revisions of my dissertation helped me stay on track. You kept me grounded when I tended to reach for the sky and supported me when I questioned my direction—thank you.

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ABSTRACT

CREATING AN ENTREPRENEURIAL FRAME OF MIND

Robert F. Sinclair

May 11, 2012

This dissertation is comprised of three essays that address the question: *what specific cognitions lead to the formation of entrepreneurial intentions?*

Essay 1, "Explaining and Predicting Entrepreneurial Intentions," investigates currently theorized antecedents of entrepreneurial intentions to determine *the degree to which they predict entrepreneurial intentions*. Findings suggest that proximal cognitions such as feelings, desires, emotions, and attitudes predict intention formation, albeit limited to situations where entrepreneurial behavior is imminent. Additionally, distal cognitions, such as biases, heuristics, scripts and maps, although useful in explaining intentions, are of little predictive value except when predicting the distal intention to become an entrepreneur in those with no entrepreneurial experience. Overall, results indicate that the antecedents used to explain entrepreneurial intentions are of limited predictive value.

Essay 2, "The Role of Cognitions in the Formation of an Entrepreneurial Mindset," examines *which specific core-level antecedents act to form entrepreneurial mindset and how these cognitions relate to the formation of entrepreneurial intentions*. It posits that core-level cognitions related to "the self" (entity-schema, possible-self, and

self-efficacy) lead to the formation of an entrepreneurial mindset. The essay further posits that entrepreneurial mindset is the principal antecedent to entrepreneurial intentions. This conceptual investigation culminates in the presentation of a general theory of volitional behavior.

Essay 3, "An Empirical Evaluation of Entrepreneurial Mindset Using the Theory of Volitional Behavior," tests *to what degree entrepreneurial mindset affects the formation of entrepreneurial intentions*. Results indicate that individuals who possess an entrepreneurial entity-schema, an entrepreneurial possible-self, and entrepreneurial self-efficacy, on average, tend to form an entrepreneurial mindset. Furthermore, those individuals possessing an entrepreneurial mindset are more likely to form entrepreneurial intentions and ergo, are most likely to undertake entrepreneurial behavior.

When taken together, these three essays show that (1) currently theorized antecedents of entrepreneurial intentions, although useful for explaining entrepreneurial intentions, are of limited use in the prediction of intention formation. (2) Core-level cognitions, specifically those relating to "the self", represent a viable means of predicting formation of an entrepreneurial mindset. (3) Entrepreneurial mindset leads to the formation of entrepreneurial intentions, which offer one possible answer to the primary research question, *what specific cognitions lead to the formation of entrepreneurial intentions?*

Key terms: Theory of Volitional Behavior, Entity-Schema, Entrepreneurial Self-Concept, Entrepreneurial Possible-Self, Entrepreneurial Self-Efficacy, Mindset, Entrepreneurial Mindset, Entrepreneurial Intentions, Entrepreneurial Behavior, Dyslexia, Learning Disabilities

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CHAPTER 1

Dissertation Introduction

For the past 40 years, theories of behavior have been central to our understanding of individual, team, and firm behavior (Ajzen, 1985, 1991; Ajzen & Fishbein, 2005; Fishbein & Ajzen, 1975). In the course of this research, increasing evidence supporting the predicted relationship between intention and behavior has been established (Ajzen, 1985). Extending such theories to the domain of entrepreneurship, researchers have found support for the role intentions play in the entrepreneurial process (Brice, 2002; Crant, 1996; Davidsson, 1995; Grundsten, 2004; Krueger & Carsrud, 1993; Zhao, Seibert, & Hills, 2005), showing that intentions are the single best predictor of entrepreneurial behavior. However, despite continued theoretical convergence on the process leading to entrepreneurial behavior, researchers have increasingly pointed to a gap between the predicted relationship of theorized antecedents of entrepreneurial intentions and actual empirical findings (Drnovsek & Erikson, 2005; Krueger & Kickul, 2006; Krueger, Reilly, & Carsrud, 2000).

Such mixed findings in the research could be a result of confounding constructs as suggested by Sarasvathy (2004). However, according to Baron and Ward (2004), the problem is the need for better understanding of the *cognitions* which affect the entrepreneurial process. Still others suggest such findings are because researchers have

yet to create a theory that accurately explains the entrepreneurial process¹ (Shane & Venkataraman, 2000), which according to Gartner (1989a), is a crucial component of any cognitive view of the entrepreneur. Based on these arguments, the need for new cognitive-based research to examine the entrepreneurial process is clear (Baron, 1998, 1999, 2004, 2006; Davidsson, 2004, 2006, 2007, 2008).

Research Questions

With such mixed results and propositions in the literature, it is likely existing models and empirical approaches are fragmented. This further highlights the need for a theoretical framework that explains and potentially predicts entrepreneurial behavior. To that end, the primary question addressed by this research is *what specific cognitions lead to entrepreneurial intentions?*

To answer the primary research question, this research investigates the following sub-questions. 1) *To what degree do currently theorized antecedents predict entrepreneurial intentions?* 2) *What specific cognitions act to form entrepreneurial mindset?* 3) *To what degree does entrepreneurial mindset affect the formation of entrepreneurial intentions?*

The Significance of Studying the Antecedents to Entrepreneurial Intentions

Unlike many more traditional career paths, entrepreneurship is equifinal. This is to say that persons may take many different paths to become an entrepreneur (Markman & Baron, 2003). This is evident through the research available on opportunity

¹ For a complete listing of definitions, see Appendix A.

recognition. Researchers have shown entrepreneurs have a number of different methods to choose from when attempting to create or locate an entrepreneurial opportunity. These range from passive forms of search, often referred to as alertness (Ardichvili, Cardozo, & Ray, 2003; Baron, 2006; Busenitz, 1996), to active forms of search, such as constrained systematic search (Fiet, 2002, 2007; Fiet & Patel, 2008). Additionally, potential entrepreneurs have several different paths to choose from in order to acquire the knowledge necessary for entrepreneurial behavior. These options include academic education, informal internship, trial and error, or any combination. These alternatives suggest entrepreneurship may afford individuals the ability to use their cognitive strengths to overcome cognitive weaknesses. For example, individuals who are unable to read can work for an entrepreneur, in essence as an intern, in order to learn through first-hand experience rather than taking classes or reading books. Thus, empirical comparison of models may reveal the specific nuances (cognitions) that create the equifinal nature of entrepreneurship.

Although this research does not offer a complete theoretical framework, knowledge of which cognitions lead to the formation of entrepreneurial intentions may contribute a conceptual framework that synthesizes existing theories into a single theory of entrepreneurial behavior. Such research has the potential to contribute to the distinctiveness for which the field of entrepreneurship has been searching. An increased understanding of the process has the potential not only to increase our understanding of entrepreneurs, but also offers the opportunity to advance the prescriptive nature of existing theories of behavior. Although strong support exists for the premise that intentions act as the best predictor of behavior (Ajzen, 2005; Ajzen & Fishbein, 1980;

Sheppard, Hartwick, & Warshaw, 1988), equally strong support for the theorized predictors of intentions has yet to be achieved. One goal of this research is to determine why previously theorized antecedents of intentions have been unable to achieve the degree of support seen in the intention-behavior relationship and to seek out and test high-potential alternatives.

General Outline of Chapters

In order to address the primary research question, *what specific cognitions lead to entrepreneurial intentions*, Chapter 2, "Explaining and Predicting Entrepreneurial Intentions," empirically assesses the use of theorized antecedents to entrepreneurial intentions as a viable means of predicting entrepreneurial behavior². The essay presents an unambiguous specification of the differences and relative contributions each type of cognition makes to understanding the entrepreneurial process, "all the functions, activities, and actions associated with perceiving opportunities and [a means of exploiting such opportunities] (Bygrave & Zacharakis, 2004; p. 2). The essay offers empirically based explanations as to why existing cognitions used in entrepreneurship research are limited in their predictive ability to later stages of the process (nascence) and why other cognitions are of no predictive value on their own. The findings presented suggest a new theory of behavior, inclusive of the concept of entrepreneurial mindset, is a viable candidate to address the primary research question.

² Because prior research has shown that intentions are the single best predictor of behavior, this research focuses on the prediction of intentions with the assumption that such intentions will ultimately lead to behavior.

Chapter 3 is entitled, "The Role of Core-Level Cognitions in the Formation of Entrepreneurial Mindset." This essay posits a theory of volitional behavior that has the potential to explain and predict the formation of entrepreneurial intentions. The essay conceptually answers the primary research question, *what specific cognitions lead to entrepreneurial intentions*, through the proposition that entity-schema, self-concept, and self-efficacy lead to the formation of entrepreneurial mindset and that mindset is a prime antecedent to intention.

Chapter 4 is an empirical test of the theory presented in Chapter 3. This essay, entitled "An Evaluation of Entrepreneurial Mindset Using the Theory of Volitional Behavior," uses three representative samples to test the theory at theoretically different stages of the entrepreneurial process. Results imply the theory is sound, suggesting that cognitions relating to "the self" do in fact lead to the formation of entrepreneurial mindset and that this mindset does tend to lead to the formation of entrepreneurial intentions.

Chapter 5 provides a summary of the most important theoretical and empirical findings as they relate to the primary research question. Assessment of the suggested theoretical framework and the results of this research are discussed as they pertain to how to refine current theory. The chapter concludes with a discussion of the current study's limitations, possible means of overcoming these limitations, and directions for future research.

CHAPTER 2

Essay 1: Explaining and Predicting Entrepreneurial Intentions

Theories of behavior have been central to our understanding of individual, team, and firm activity (Ajzen, 1985, 1991; Ajzen & Fishbein, 2005; Fishbein & Ajzen, 1975). Extending such theories to the domain of entrepreneurship, researchers have shown intentions are, although not perfectly, the single best predictor of entrepreneurial behavior (Krueger et al., 2000). For example, researchers have shown entrepreneurial intentions predict individuals choice to start a venture (Carter, Gartner, & Shaver, 2004; Krueger et al., 2000), their motivation to persist and grow a venture (Krueger & Kickul, 2006), and even their willingness to convert from illegal to legal ventures (Aidis & Van Praag, 2007).

Despite such continued empirical convergence on the entrepreneurial intention-behavior relationship, researchers have increasingly revealed a disparity between the theorized relationship between purported antecedents of entrepreneurial intentions and actual empirical findings (Drnovsek & Erikson, 2005; Krueger & Kickul, 2006; Krueger et al., 2000). For example, a meta-analysis of entrepreneurial risk performed by Stewart (2001) found, as a whole, no difference in risk propensity exists between entrepreneurs and managers. However, a meta-analysis performed by Miner and Raju (2004), adding 14 studies not previously considered by the Stewart (2001) study, found entrepreneurs are more risk-averse than managers and significantly more risk-averse than the general population (Xu & Ruef, 2004). Although this is but a single example of the

aforementioned disparity, reports of similarly conflicting results exist for many of the theorized antecedents to entrepreneurial intentions.

Sarasvathy (2004) suggested that mixed findings in relation to antecedents to entrepreneurial intentions are likely the result of confounding constructs. Other researchers have suggested a lack of a generally accepted theory of entrepreneurship as the root of the conflict because current theories of behavior have yet to yield a generally accepted theory to explain and predict entrepreneurial behavior (Alvarez & Busenitz, 2001; Shane & Venkataraman, 2000). Social cognitive theory (Bandura, 1977) also provides a possible reason for the mixed findings. With such conflicting results in the literature and possible solutions offered, the question is *to what degree do currently theorized antecedents actually predict entrepreneurial intentions?* Understanding why currently theorized antecedents to intentions have been unable to achieve a consistent degree of support is crucial to understanding the entrepreneurial process and our cognitive view of the entrepreneur (Gartner, 1989a). Without this knowledge, the prediction of entrepreneurial behavior is limited to only those who have already formed entrepreneurial intentions. To that end, this research investigates antecedents to entrepreneurial intentions to determine the degree to which such cognitions are useful in the prediction of entrepreneurial intentions.

The research proceeds as follows: first, a review of the previous research relating to antecedents to entrepreneurial intentions takes place to determine what cognitions likely affect the formation of entrepreneurial intentions. Next, the advancement of theoretically based hypotheses, a description of the research design, data gathering

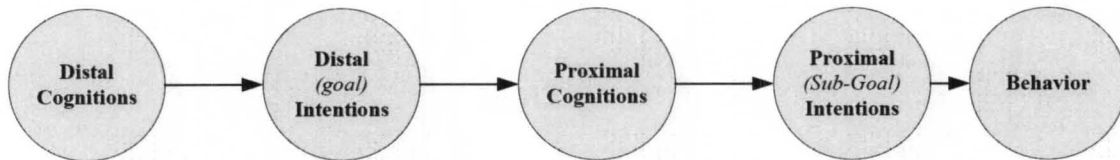
techniques, and testing procedures takes place. Finally, the essay will conclude with a discussion of the findings and their importance to the field of entrepreneurship.

Previous Research on Antecedents to Entrepreneurial Intentions

Research used to explain or predict entrepreneurial intentions can be clustered into one of two distinct groups—*distal* or *proximal cognitions*. The first group view distal cognitions such as biases, heuristics, schemata, scripts and maps (Neisser, 1967, 1976), as the central devices leading to entrepreneurial intentions (c.f. Baron, 1998; Baron & Ward, 2004; Bryant, 2007; Corbett & Hmieleski, 2007; Mitchell et al., 2007). The second group use proximal cognitions such as feelings, desires, emotions, and the most widely used in entrepreneurship research—attitudes, in an attempt to explain and predict entrepreneurial intentions (c.f. Davidsson, 1995; Harris & Gibson, 2008; Lindsay, 2005).

According to social cognitive theory, intentions are formed based on two types of *cognitions* which are sensitive to behavioral proximity (Bandura, 1991; Bandura & Simon, 1977). *Distal cognitions*, represents the capacity to envision future possibilities that are worth doing or achieving; this type of cognition is often referred to in entrepreneurship research as desirability (Shapiro, 1984). In addition to distal cognitions, there are *proximal cognitions*, which act to create incentives, guidelines, and designate the type and amount of effort needed to bring about future possibilities (Bandura, 1977). Thus, distal cognitions form distal or goal intentions (e.g. intention to start a business) and proximal cognitions form proximal or sub-goal intentions (e.g. to locate or create an opportunity). See Figure 2.1.

Figure 2.1: Social Cognitive Model of Behavior



Distal Cognitions Used to Explain Entrepreneurial Intentions

Researchers using distal cognitions view such variables as the appropriate mental structures for explaining and predicting entrepreneurial intentions. This is because such structures are the result of the cognitive processing of information, which results in a general tendency toward or against a given behavior (Brandimonte, Bruno, & Collina, 2006). Such constructs are what individuals use to make sense of the world around them and their place within it. Therefore, it is reasonable that researchers assume that distal cognitions play a distinctive role in the formation of entrepreneurial intentions (Krueger & Kickul, 2006; Sarasvathy, 2001).

Empirical research on distal cognitions has provided important insights into specific aspects of the entrepreneur. Such research has shown that entrepreneurs use *counterfactual thinking*, imagining outcomes other than those which actually occur (Baron, 1999), not as a means of dwelling on the past but as a means of learning from their mistakes (Baron, 1998). By imagining alternative outcomes, entrepreneurs gain insight into the factors necessary for accomplishing alternative outcomes (Gaglio & Katz, 2001). From such inference entrepreneurs identify specific causes of failure to be avoided (Baron, 2000), create means of improving strategies (Baron & Ward, 2004), and reduce overconfidence (Hayward, Shepherd, & Griffin, 2006).

Overconfidence, an unrealistically high belief in the accuracy of one's judgment (Baron & Ward, 2004), in moderation has been also shown to be an important concept, allowing potential entrepreneurs to proceed without complete information or full knowledge of the odds against them (Aldrich & Ruef, 2006; Aldrich, 1999; Aldrich & Martinez, 2001), it also helps in persuading others to help or join them (Busenitz & Barney, 1997), and allows the entrepreneur to function when faced with multiple obstacles (Busenitz, 1999; Hayward et al., 2006). *Self-serving bias*, the strong tendency to attribute positive outcomes to person's own skill, talent, good judgment or hard work serves entrepreneurs by allowing attribution of success to their own actions (Baumeister & Leary, 1995; Zacharakis, Meyer, & DeCastro, 1999). *Confirmation bias*, a predisposition toward information that confirms beliefs, helps individuals to locate support for the decision to become an entrepreneur and new business concepts (Landier & Thesmar, 2003; McGrath, 1999). A differing *risk perception* allows entrepreneurs to rely more on instinct and intuition than on conventional decision-making rules (Busenitz & Barney, 1997; Caliendo, Fossen, & Kritikos, 2009; Janney & Dess, 2006). Through the use of *effectuation*, entrepreneurs manages risk by starting early without complete information or preparation, and accepting failure (if it happens) when risk and expenditure of resources is small, thus using failure as a means of learning and improving future success (Sarasvathy, 2001, 2008). Entrepreneurs also use effectuation to create new means of creating and exploiting entrepreneurial opportunities (Sarasvathy, 1998). Entrepreneurs use *self-efficacy*, judgment of the perceived ability to effectuate a given outcome partially independent of underlying skill (Bandura, 1977, 1982, 1986), to

undertake entrepreneurial behavior without specific knowledge of how such behavior will be accomplished.

Based on comprehensive studies and meta-analyses, entrepreneurs have been reported to possess a higher need for achievement, approval, and an internal locus of control (Rauch & Frese, 2000), and substantially higher motivation to achieve than managers (Stewart Jr & Roth, 2007). Entrepreneurs tend to be highly innovative (Buttner & Gyskiewicz, 1993), possess a greater tolerance for ambiguity (Wincent & Örtqvist, 2009), an intrinsic work motivation (Green, David, Dent, & Tyshkovsky, 1996), and a strong need for control (Kets de Vries, 1985). Contrary to popular opinion, entrepreneurs often do not undertake entrepreneurial behavior solely for financial success and actually tend to be risk averse rather than risk seeking (Miner & Raju, 2004).

In all, the study of distal cognitions has made valuable contributions to our understanding of how the entrepreneurial mind works and *how* entrepreneurs function in dynamic and uncertain environments. To be precise, based on the research, entrepreneurs are understood to possess a *perceptual bias* toward information that supports entrepreneurial behavior. Distal cognitions may also offer a possible means of determining if individuals possess the cognitive strength and ability to function as entrepreneurs and even a possible means of preparing individuals to become entrepreneurs through the development of cognitive structures used by successful entrepreneurs.

Distal cognitions relate to the formation of distal or goal intentions (Bandura, Adams, & Beyer, 1977). In entrepreneurship, the distal intention is to become an entrepreneur, although it may be stated more specifically as to "start a business" or

"become a corporate entrepreneur". Because the formation of distal intentions requires little or no commitment on the part of individuals, it is likely competing distal intentions also exist (i.e. get a job, find a rich spouse, etc). Since any number of competing distal intentions may exist based on a myriad of factors (i.e. intelligence, access to funds, geographic location, personal preference, knowledge of options, etc), the total number of possible competing distal intentions is different for each person. Because the prediction of behavior based on distal intentions would require the inclusion of an unknown number of distal intentions (in order to determine which one offers the highest potential), the prediction of proximal intentions to undertake specific behaviors using distal cognitions is not feasible. Thus, the role of distal cognitions in the entrepreneurial process is likely limited to the formation of the distal intention to become an entrepreneur (traditional or corporate).

Hypothesis 1: Distal cognitions are positively related to the distal intention to become an entrepreneur.

However, problems exist with the use of distal cognitions as a means of predicting the formation of proximal entrepreneurial intentions. Entrepreneurs are not born; they are made (Krueger & Brazeal, 1994). Although some researchers have suggested a genetic component to entrepreneurial behavior may exist (Nicolaou, Shane, Cherkas, Hunkin, & Spector, 2008), there is a general consensus that entrepreneurial behavior is influenced by perception-driven processes (Krueger & Brazeal, 1994). Without a specific understanding of when distal cognitions develop within individuals or the length of time they take to form, any determination of the appropriate degree of temporality for use would be purely subjective. This determination would be necessary for the prediction of proximal

entrepreneurial intentions. For example, first-time entrepreneurial behavior occurs in both the very young and the very old. This suggests the formation of distal cognitions may occur at virtually any point within individuals' lifetime. Additionally, based on the sheer number of discontinued entrepreneurial ventures per year (estimated as high as 50% after 5 years), it is possible that distal cognitions continue to develop throughout the entrepreneurial process. Consequently, this is likely why the use of distal cognitions as predictors of proximal entrepreneurial intentions is inconsistent. Thus, although a relationship may exist between distal cognitions and proximal entrepreneurial intentions, it is unlikely direct.

From a social cognitive perspective, the effectiveness of predicting behavior is dependent on the type of cognition used. Too far removed to be effective predictors of behavior, distal intentions are likely not indicators of when, or if, individuals will become entrepreneurs, simply that entrepreneurial behavior represents a reasonable possibility. This possible self is critical to the formation of proximal entrepreneurial intentions, because if individuals do not see entrepreneurship as a valid possibility no effort toward becoming an entrepreneur will take place (Markus & Nurius, 1986). In essence, without the existence of the distal intention to become an entrepreneur, proximal entrepreneurial intentions should not form. However based on social cognitive theory, distal intentions do not directly affect the formation of proximal entrepreneurial intentions. Therefore, although a relationship likely exists between the distal intention to become an entrepreneur and proximal entrepreneurial intentions, the relationship is likely not direct.

The relationship between the distal intention to become an entrepreneur and proximal cognitions toward entrepreneurship is important for explaining entrepreneurial

behavior for two reasons. 1) Proximal cognitions determine willingness to participate through determination of desirability and 2) without the distal intention—proximal cognitions will likely not form. See Figure 2.1. Therefore, based on this argument, the distal intention to become an entrepreneur should lead to the formation of proximal entrepreneurial cognitions.

Hypothesis 2: The distal intention to become an entrepreneur is positively related to proximal cognitions relating to entrepreneurial behavior.

Proximal Cognitions Used to Explain Entrepreneurial Intentions

Researchers using proximal cognitions emphasize these variables as the appropriate constructs for explaining and predicting entrepreneurial intentions. Such cognitions can be empirically robust when used to *explain* entrepreneurial intentions (Forbes, 1999; Krueger, 2003). However, support for such variables as *predictive* mechanisms of intentions is at best problematic (Fishbein & Ajzen, 2009). Researchers using proximal variables tend to focus on perceptions of personal feasibility and desirability in addition to social desirability to explain the formation of entrepreneurial intentions (Krueger, 2000; Krueger & Kickul, 2006).

As would be expected, researchers have found strong correlations between proximal entrepreneurial intentions and individuals' overall attitude toward entrepreneurial behavior. However, they have also shown correlation between entrepreneurs' attitude toward risk and independence (Douglas & Shepherd, 2002; McMullen & Shepherd, 2006), between entrepreneurial experience and a more positive attitude toward failure (Politis & Gabrielsson, 2009), between attitude toward self-employment, money (Schwarz, Wdowiak, Almer-Jarz, & Breitenecker, 2009), change

orientation, conviction, achievement (Davidsson, 1995), and proximal entrepreneurial intentions. In addition to correlation between attitude toward independence (Douglas & Shepherd, 2000) and the willingness to become an entrepreneur. While the use of attitudes has been the mainstay of this research stream, recently researchers are taking a deeper look at the role emotions play in the entrepreneurial process (Cardon, Zietsma, Saporito, Matherne, & Davis, 2005; Shepherd, 2004). Although this stream of research is still in the early stages, it shows that negative affect (failure or unsatisfactory outcomes) can prompt entrepreneurs to work harder (Foo, Uy, & Baron, 2009). Researchers theorize that passion for entrepreneurial behavior likely leads to greater commitment, higher levels of creative problem solving and persistence (Cardon, 2008; Cardon, Wincent, Singh, & Drnovsek, 2009).

Overall, the study of proximal cognitions offers valuable contributions to our understanding of the emotional role such cognitions play in motivating the entrepreneur. In essence, these researchers confirm that when individuals choose to become entrepreneurs (distal intention) they are highly motivated toward specific forms of entrepreneurial behavior. Thus, proximal cognitions relating to entrepreneurial behavior likely play a significant role in the formation of proximal entrepreneurial intentions.

Hypothesis 3: Proximal cognitions relating to entrepreneurial behavior are positively related to the formation of proximal entrepreneurial intentions.

The Mediating Role of Proximal Entrepreneurial Cognitions

The theories of reasoned action (Fishbein & Ajzen, 1975) and planned behavior (Ajzen, 1991) view the relationship between intentions and behavior as causal. However, unlike social cognitive theory (Bandura, 1991), these theories make no distinction

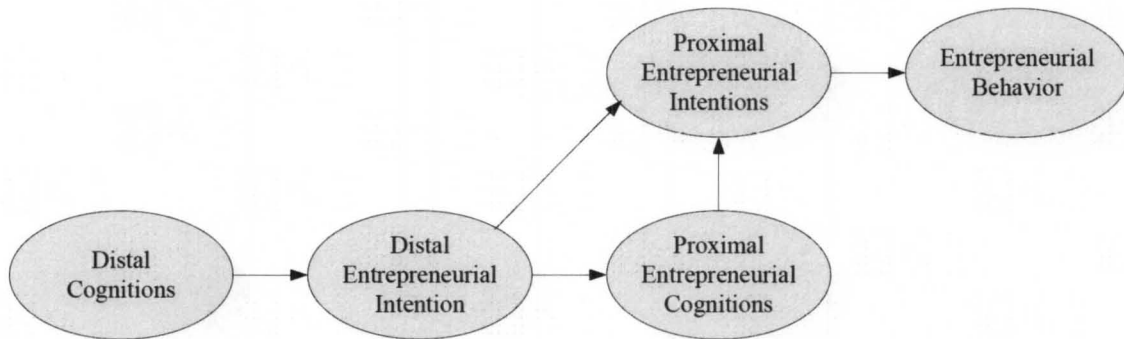
between distal and proximal intentions. Although social cognitive theory does not explicitly suggest a direct relationship between distal intentions and behavior, as previously discussed, it does not exclude the possibility. In fact, an implicit relationship between distal intentions and behavior may exist based on the assumption that any intention toward a given behavior will result in at least some investigative behavior regardless of the outcome (Bandura, 1977). For example, the distal intention to become an entrepreneur will likely result in forms of entrepreneurial behavior (such as looking for an entrepreneurial opportunity) as a means of forming proximal entrepreneurial cognitions. Therefore, although in general the distal intention to become an entrepreneur leads to the formation of proximal entrepreneurial cognitions, which in turn leads to the formation of proximal entrepreneurial intentions and ultimately entrepreneurial behavior, an indirect relationship between the distal intention to become an entrepreneur and the formation of proximal entrepreneurial intentions likely exists. Thus, proximal entrepreneurial cognitions act to mediate the relationship between the distal intention to become an entrepreneur and the formation of proximal entrepreneurial intentions.

Hypothesis 4: Proximal entrepreneurial cognitions mediate the effect of distal entrepreneurial intention on proximal entrepreneurial intentions.

In summary, based on social cognitive theory (Bandura, 1999), the theory of reasoned action (Fishbein & Ajzen, 1975), and the theory of planned behavior (Ajzen, 1991), this research proposes the following model of the entrepreneurial process. It is posited that distal cognitions, mediated by the distal intention to become an entrepreneur, leads to the formation of proximal entrepreneurial intentions toward entrepreneurial behavior. Furthermore, proximal entrepreneurial cognitions act to strengthen the

relationship between the distal intention to become an entrepreneur and proximal entrepreneurial intentions, which leads to the entrepreneurial behavior. See Figure 2.2.

Figure 2.2: Hypothesized Model of the Entrepreneurial Process



Methods

Sample 1

Sample 1 consisted of 137 respondents (a 68% response rate) from a midsize University, located in a large metropolitan Midwestern city. Respondents were in the process of completing business-related degrees with approximately 10 percent of the population known to have at least some academic exposure to the concept entrepreneurship. The demographic profile of this sample indicates that it was comprised of 59 percent male and 41 percent female, 26 percent married or in a long-term committed relationship, with 21 percent having children. The age of the respondents ranged from 18 to 53 years old at the time of data collection. The ethnicity was 85 percent Caucasian, 15 percent African American, Hispanic, Oriental, Indian, Native American or other. The political affiliation was diverse with 39 percent Democrat, 38 percent Republican, and 23 percent independent or other.

Sample 2

Sample 2 consisted of 131 respondents (a 56% response rate) from a midsize University, located in a small rural Northwestern town. Although the respondents were in the process of completing business-related degrees, they had no known exposure to academic concepts relating to entrepreneurship exists. The demographics for this sample indicated it was made up of 55 percent male and 45 percent female; 20 percent were married or in a long-term committed relationship, with 15 percent having children. The age of the respondents ranged from 17 to 55 years old at the time of data collection. The sample's ethnicity consisted of 75 percent Caucasian, 25 percent African American, Hispanic, Oriental, Indian, Native American or other. Political affiliation was again diverse with 46 percent Democrat, 28 percent Republican, and 26 percent independent or other.

Sample 3

Sample 3 consisted of 155 respondents (a 21% response rate) who were in the process of starting a business or who were undertaking entrepreneurship in a large Midwestern city. These respondents had been associated with the entrepreneurship center of a midsized Midwestern university within the last 10 years and were uniquely suited for this study due to their diversity. Because the location of the center borders on the edge of a large metropolitan city and a rural community, the population of entrepreneurs is extremely diverse. The population ranges from the highly educated to the minimally or uneducated, from the affluent to the underprivileged, and is comprised of virtually all age groups. Thus, the results should generalize well to the overall population of entrepreneurs.

The demographics for this sample indicated that it consisted of 16 percent nascent entrepreneurs (n=25), 47 percent first-time entrepreneurs (n=74), 14 percent serial entrepreneurs (n=21), and 23 percent parallel entrepreneurs (n=35). The sample ranged in age from 22 to 92 years old at the time of data collection, 58 percent were male and 42 percent were female, 68 percent married or in a long-term committed relationship, and 88 percent with children. Education included 2 percent with less than a high school education, 7 percent with a high school education or GED, 22 percent with some college, 14 percent with an Associate degree, 31 percent with a bachelor degree, 17 percent with a master degree, and 7 percent with a doctoral or professional degree. The sample's ethnicity consisted of 47 percent Caucasian, 47 percent African American, and 6 percent Hispanic, Oriental, Indian, Native American or other. The political affiliations were diverse with 40 percent considering themselves to be Democrat, 18 percent Republican, and 42 percent independent or other.

Data Collection Procedure

A modified version of Dillman's Tailored Design Method (2007; Dillman, Smyth, & Christian, 2009) was used to obtain a maximum response rate for all samples. The first contact was in the form of an email from a highly recognized individual within the degree-granting institution or the entrepreneurship center. This email included the institution's graphics and logos intended to lend legitimacy to the request. The purpose of the email was to explain the study, to introduce the researcher, to explain the value of participation, and, when to expect a formal invitation to participate in the study.

The second contact took place three days later as specified in the first correspondence. This email consisted of a brief re-introduction of the researcher, further

expression of the contribution made by participation, and a link to the survey software used to administer the questionnaire (Qualtrics). One week later, those who had not yet started and those who had started but had not completed the survey received a reminder. This reminder-email again expressed the importance of participation and acted as a second request to take or complete the survey. In both cases upon completion of the survey, respondents received an email thanking them for their participation.

Four days after the second request for participation, those who had not yet taken or completed the survey received a third email reiterating the importance of participation and requesting participation or completion within the next three days. Final contact occurred 3 days later, the stated final day of data collection. It expressed the value their participation would bring to the study. It also provided the specific time the questionnaire would deactivate, and, one final request for participation.

Measures

Proximal Cognitions

Using Liñán & Chen's (2009) entrepreneurial intentions questionnaire and items from Davidsson's (1995) determinates of entrepreneurial intentions questionnaire, the following measures were selected as representatives of proximal cognition.

Entrepreneurial Intentions Questionnaire (Liñán & Chen, 2009) measures three constructs using a 7-point Likert type scale ranging from 7, "Strongly Agree" to 1 "Strongly Disagree." Dimensions included a respondent's attitude toward entrepreneurial behavior (*attitude*) measured using five items such as "A career as an entrepreneur is attractive to me" and "Among various options, I would rather be an entrepreneur."

Dimensions also included three items measuring respondent's perception of family, friends, and colleagues approval toward starting a business (*subjective norm*), i.e. "If you decided to create a firm, would people in your close environment approve of that decision?" (A response is required for each of the three social groupings). Six items addressing a respondent's perception of their ability to start a firm (*behavioral control*), including items such as, "I am prepared to start a viable firm" and "If I tried to start a firm, I would have a high probability of succeeding" were included.

Liñán and Chen (2004, 2006) tested the questionnaire on two separate cross-cultural samples including Spanish business and economic students in 2004 (n=387) and Taiwanese students at a business plan competition on technology innovation in 2006 (n=132). Using Cronbach's alpha on the first sample the three dimensions were found to be reliable with attitude at .90, subjective norm at .77 and behavioral control at .89. By using the second sample, Liñán and Chen determined the dimensions were consistent with Cronbach's alpha ranging from .78 to .95. These results were found to be consistent with the measure producing alpha's in the current study with attitude ($\alpha = .91$), subjective norm ($\alpha = .99$), and behavioral control ($\alpha = .93$). Validity was determined using a Kaiser-Meyer-Olkin test for sample adequacy (0.91) and Bartlett's sphericity test ($p < 0.001$) to determine suitability for factor analysis and again found to be consistent with results found in this study.

Within the *Determinates of Entrepreneurial Intentions Questionnaire* (Davidsson, 1995), four constructs relating to proximal cognitions are used. The instrument measures items using a 4-point Likert type scale ranging from "Agree" to "Disagree." Dimensions include a 5-item measure of *conviction*, using questions such as

"I would be very happy running my own business" and "To run my own firm would probably be the best way for me to improve my financial position." A 9-item scale measuring expected *payoff* from entrepreneurial behavior using items like (1) "Most business owner-managers are well off" and (2) "Considering the work effort most business owner-managers are actually underpaid (reverse coded)" was also employed. A 4-item measure of *social contribution* using questions like (1) "Entrepreneurs create employment and are therefore very important for the nation's economy" and (2) "Individuals who founded firms created our national wealth" are used. In addition, a 2-item measure of *know-how* asking a response to (1) "If I came up with a good business concept I know precisely how get the funds to get started" and (2) "If I came up with a good business concept I know precisely where to turn for the counseling and aid I might need to get started." These items represent specific beliefs and attitudes toward entrepreneurial behavior and as such are representative of proximal cognitions.

Davidsson (1995) tested the questionnaire on six separate samples with a response rate of 73 percent (n=1313). Using Cronbach's alpha on the combined sample Davidsson found the four dimensions to be reliable with conviction at .77, payoff at .73, societal contribution at .52 and know-how at .77. The measures were converted to a 7-point Likert type scale for use in this research ranging from 7, "Strongly Agree" to 1 "Strongly Disagree" and the results were found to be consistent with Davidsson's (conviction $\alpha = .82$, payoff $\alpha = .73$, societal contribution $\alpha = .54$, and know-how $\alpha = .77$).

Distal Cognitions

Using Davidsson's (1995) *Determinates of Entrepreneurial Intentions* Questionnaire and single concept measures previously discussed, the following measures were selected as representatives of distal cognitions.

Dimensions taken from Davidsson's *Determinates of Entrepreneurial Intentions* Questionnaire (1995) include *resistance to change* ($\alpha = .58$), a 4-item measure with items such as (1) "In order to really feel satisfied with life I need some dramatic change now and then" and (2) "Dramatic changes in one's life situation are for the most part an enrichment in the long run". In addition a 4-item measure is used, *Achievement motivation* ($\alpha = .60$) with items such as (1) "To face new challenges and to manage to cope with them is extremely important to me" and (2) "I'm probably a bit pushy and try to improve all the time." Although these measures were also converted to a 7-point Likert type scale ranging from 7, "Strongly Agree," to 1, "Strongly Disagree," the results were again found to be consistent with previous usage (resistance to change $\alpha = .70$, competitiveness $\alpha = .84$, value of money $\alpha = .79$, and achievement motivation $\alpha = .70$). Finally, two scales created by Lynn (1991) and used in Davidsson's questionnaire were also used, a 5-item measure of *Competitiveness* ($\alpha = .76$) with such items as (1) "I enjoy working in situations involving competition with others" and (2) "It is important to me to perform better than others on a task". Also a 5-item measure for the *Value of money* ($\alpha = .70$) using items such as (1) "I firmly believe money can solve all my problems" and (2) "I would do practically anything legal for money if it were enough".

Optimism is measured using the 6-item Life Orientation Test (Scheier, Carver, & Bridges, 1994). Items include, (1) "In uncertain times, I usually expect the best" and (2)

“If something can go wrong for me, it will” (reverse coded) and are measured using a 7-point Likert type scale ranging from 7, "Strongly Agree" to 1 "Strongly Disagree." The measure is reported to be stable over time and reliable with Cronbach's alpha as high as .80 (Hmieleski & Baron, 2009). These results are consistent with the current study, producing an alpha of .82.

Proximal Entrepreneurial Intentions

Because the causal relationship between intentions and behavior has received such strong support in the literature (Ajzen, 2005), and because proximal intentions are theorized to generally lead to behavior within an extremely short period, it is reasonable to assume that many proximal entrepreneurial intentions lead quickly to corresponding entrepreneurial behaviors. For example, when individuals decide to start a business (a distal intention) they are likely to plan on determining the type of business best suited for them (proximal intention), and within a very short period of time, begin the search for the right type of business (entrepreneurial behavior). The reason this type of intention leads to behavior so quickly is likely due to the minimal outlay of time, effort, or money required. For this reason, measuring proximal entrepreneurial intentions prior to entrepreneurial behavior is extremely difficult.

In addition, because proximal intentions require no expenditure of time, effort, or money they may begin to form by the simple act of asking a question. For example for individuals who wish to become entrepreneurs the question "Do you plan to determine the type of business for which you are best suited?" will likely cause a respondents to actually form the intention, if they have not previously done so, based on an assumption formed by the question that they *should be* making such a determination. Therefore,

because the intention-behavior relationship is strong, and the likelihood of consistently measuring proximal entrepreneurial intentions prior to the existence of a corresponding behavior is low, and because the act of inquiring if proximal entrepreneurial intentions exist may actually cause the formation of said intentions, for this research entrepreneurial behavior will act as a proxy for proximal entrepreneurial intentions.

Entrepreneurial Behavior

Six items act as a measure of entrepreneurial behavior. These items represent behaviors relating to the preparation for business start-up (pre-nascence) with the greater accumulation of behaviors representing a greater measure of entrepreneurial behavior ranging from 0-6.

- I am watching for the opportunity to start my own business.
- I am actively searching for the opportunity to start my own business.
- I have taken classes in preparation for starting my own business.
- I have chosen the type of business I am going to start.
- I have chosen a name for my business.
- I have chosen a logo or letterhead.

Distal Intention to Become an Entrepreneur

Measurement of distal entrepreneurial intention consists of a single item requesting the selection of the statement that best describes the respondent's intention to start a business.

The choices included are as follows and scored on a scale of 0 to 5:

- I would like to start a business within the next year (score 5).
- I would like to start a business within the next 1 to 2 years (score 4).
- I would like to start a business within the next 3 to 5 years (score 3).
- I would like to start a business someday, but I do not think it will be within the next 5 years (score 2).
- I have no intention of ever starting a business, but anything is possible (score 1).
- I have no intention of ever starting my own business (score 0).

Measurement

To ensure uniformity across measures due to variations in the number of items used per construct, conversion to a single scale based on mean score for each measure took place. Missing data were not an issue because only respondents completing all questions were included in the samples previously described.

Statistical Procedures

Although several non-parametric test are applied using SPSS 20 to determine reliability and validity of measures and samples, the primary statistical technique used for examining the relationship between cognitions and intentions is structural equation modeling (SEM) using AMOS 20.

Results

Hair, Black, Babin, and Anderson (2010) suggest evaluating the measurement model prior to testing of the structural model to determine the usefulness of the measures. For the sake of parsimony and model reliability, the removal of indicators with loadings below .50 is warranted (Byrne, 2001). Therefore the following constructs were removed prior to structural analysis, expected payoff ($\beta=.05$), societal contribution ($\beta=.08$), know-how ($\beta=.40$), value of money ($\beta=.31$), change orientation ($\beta=.30$), general optimism ($\beta=.26$), need for autonomy ($\beta=.45$), and entrepreneurial conviction ($\beta=.34$). Although perceived behavioral control was below the recommended cutoff, because it is commonly

used in the literature (i.e. Gollwitzer, 1996a; Krueger & Carsrud, 1993) and it is close to the cutoff ($\beta=.45$) it was allowed to remain.

Analysis of the distal-proximal measurement model on both the combined and individual samples found the model does not converge. Because these analyses seek to determine if a means exist to explain and predict the entrepreneurial process using cognitions found in prior entrepreneurship research, post hoc analysis were performed to determine if different variations of the model might fit particular samples/groups. Therefore, separate analyses of the distal and proximal models took place to determine if either independently offers a viable model for any of the samples/groups.

Analysis of the distal measurement model found that it does not converge on the combined samples. However, individual analysis shows the model represents an adequate fit for both sample 1 and 2 suggesting a distal model may explain the entrepreneurial process in non-entrepreneurs. See Table 2.1.

Table 2.1: Fit Indices for Distal Measurement Model by Sample

Index	Sample 1 Non- Entrepreneurs Urban	Sample 2 Non- Entrepreneurs Rural	Sample 3a First-Time Entrepreneurs	Sample 3b Serial & Parallel Entrepreneurs
Chi-Square (χ^2)	1.327	2.177	2.934	3.617
Degrees of freedom (<i>df</i>)	1	1	1	1
χ^2/df	1.327	2.177	2.934	3.617
Root Mean Squared Error (RMSEA)	.067	.087	.119	.142
Lower bounds of 90% confidence interval	.000	.038	.073	.096
Upper bounds of 90% confidence interval	.149	.135	.168	.191
Test of close fit (PCLOSE)	.338	.093	.010	.001
Standardized Root Mean Square Residual (RMR)	.084	.068	.104	.159
Comparative Fit Index (CFI)	.813	.800	.766	.694
Parsimony Comparative Fit Index (PCFI)	.426	.419	.401	.364

Path analysis comparing estimates between the two samples of non-entrepreneurs shows no significant differences exist between the two groups. This suggests the model is consistent between the independent samples of non-entrepreneurs. See Table 2.2.

Table 2.2: Difference by Path for Non-Entrepreneurs

		Sample 1 Non-Entrepreneurs Urban		Sample 2 Non-Entrepreneurs Rural			
		Estimate	P	Estimate	P	z-score	
Distal Entrepreneurial Intention	<---	Distal Cognitions	0.629	0.027	1.046	0.000	1.053
Entrepreneurial Behavior	<---	Distal Entrepreneurial Intention	1.352	0.000	1.176	0.000	-1.25
Competitiveness	<---	Distal Cognitions	2.628	0.203	1.222	0.000	-0.673
Need For Achievement	<---	Distal Cognitions	0.380	0.203	0.818	0.000	1.201

Notes: *** p-value < 0.001; ** p-value < 0.01; * p-value < 0.05

Next, analysis of the combined non-entrepreneur samples and entrepreneurs (sample 3) took place to determine if the variance between those with no entrepreneurial experience and those with entrepreneurial experience exists. Table 2.3 shows that the two groups differ significantly on the estimate between the distal intention to become an entrepreneur and entrepreneurial behavior. This suggests the reason the distal model does not converge when all samples combine relates to the distal intention – entrepreneurial behavior relationship.

Table 2.3: Difference by Path for Non-Entrepreneurs & Entrepreneurs

		Non-Entrepreneurs		Sample 3 Entrepreneurs			
		Estimate	P	Estimate	P	z-score	
Distal Entrepreneurial Intention	<---	Distal Cognitions	0.820	0.000	1.733	0.025	1.144
Entrepreneurial Behavior	<---	Distal Entrepreneurial Intention	1.257	0.000	-0.088	0.139	-14.59***
Competitiveness	<---	Distal Cognitions	1.530	0.000	3.845	0.208	0.752
Need For Achievement	<---	Distal Cognitions	0.653	0.000	0.260	0.208	-1.480

Notes: *** p-value < 0.001; ** p-value < 0.01; * p-value < 0.05

Because data were available to determine specific types of entrepreneurs and entrepreneurs at different stages of the entrepreneurial process may possess different

cognitions that affect the entrepreneurial process, the creation of two additional groups took place. This is intended to facilitate further evaluation of differences between those who are currently in the process of running a business (operational entrepreneurs) and those who are in the process of starting a business (nascent, serial, and parallel entrepreneurs). Based on this comparison, no significant difference exists in estimates between entrepreneurs at different stages of the entrepreneurial process. See Table 2.4. This analysis, in conjunction with the poor fit of the measurement model to sample/groups of entrepreneurs, suggests the distal model may offer a means of explaining and possibly predicting the entrepreneurial process for non-entrepreneurs, but offers no explanatory power for entrepreneurial behavior in operational and pre-operational entrepreneurs.

Table 2.4: Difference by Path for Operational Entrepreneurs & Pre-Operational Entrepreneurs

		Operational Entrepreneurs		Pre-Operational Entrepreneurs			
		Estimate	P	Estimate	P	z-score	
Distal Entrepreneurial Intention	<---	Distal Cognitions	1.359	0.273	1.472	0.037	0.079
Entrepreneurial Behavior	<---	Distal Entrepreneurial Intention	-0.016	0.802	0.089	0.410	0.835
Competitiveness	<---	Distal Cognitions	1.165	0.270	9.469	0.643	0.406
Need For Achievement	<---	Distal Cognitions	0.859	0.270	0.106	0.643	-0.929

Notes: *** p-value < 0.001; ** p-value < 0.01; * p-value < 0.05

Analysis of the proximal measurement model on all samples combined found the model does converge but does not represent an adequate fit to the data (RMSEA=.237, PCLOSE= .000, $\chi^2=98.625$, df=4, CFI=.661, PCFI=.264). However, individual sample/group analysis of the proximal model shows the model does represent an adequate fit for the two groups of entrepreneurs. See Table 2.5.

Table 2.5: Fit Indices for Proximal Measurement Model

Index	Sample 1 Non- Entrepreneurs Urban	Sample 2 Non- Entrepreneurs Rural	Sample 3a First-Time Entrepreneurs	Sample 3b Serial & Parallel Entrepreneurs
Chi-Square (χ^2)	26.920	30.518	7.896	11.034
Degrees of freedom (<i>df</i>)	4	4	4	4
χ^2/df	6.730	7.630	1.974	2.244
Root Mean Squared Error (RMSEA)	.205	.226	.093	.095
Lower bounds of 90% confidence interval	.136	.155	.000	.016
Upper bounds of 90% confidence interval	.282	.304	.204	.270
Test of close fit (PCLOSE)	.000	.000	.230	.078
Standardized Root Mean Square Residual (RMR)	.127	.177	.085	.085
Comparative Fit Index (CFI)	.683	.643	.807	.676
Parsimony Comparative Fit Index (PCFI)	.273	.257	.403	.338

Path analysis comparing estimates between the two groups of entrepreneurs shows the two groups of entrepreneurs differ significantly on the estimate between proximal cognitions and entrepreneurial behavior. This suggests the model is not consistent between entrepreneurs who are operational and those in the process of starting a venture (pre-operational) and as such may possess a different meaning for each. See Table 2.6.

Table 2.6: Difference by Path for Operational Entrepreneurs & Pre-Operational Entrepreneurs

		Operational Entrepreneurs		Pre-Operational Entrepreneurs		
		Estimate	P	Estimate	P	z-score
Proximal Cognitions	<--- Distal Intention	0.107	0.078	0.153	0.042	0.482
Entrepreneurial Behavior	<--- Proximal Cognitions	0.457	0.037	1.142	0.000	2.071*
Attitude	<--- Proximal Cognitions	0.729	0.002	0.726	0.000	-0.012
Social Norms	<--- Proximal Cognitions	1.372	0.002	1.378	0.000	0.012
Behavioral Control	<--- Proximal Cognitions	0.753	0.003	0.776	0.000	0.072

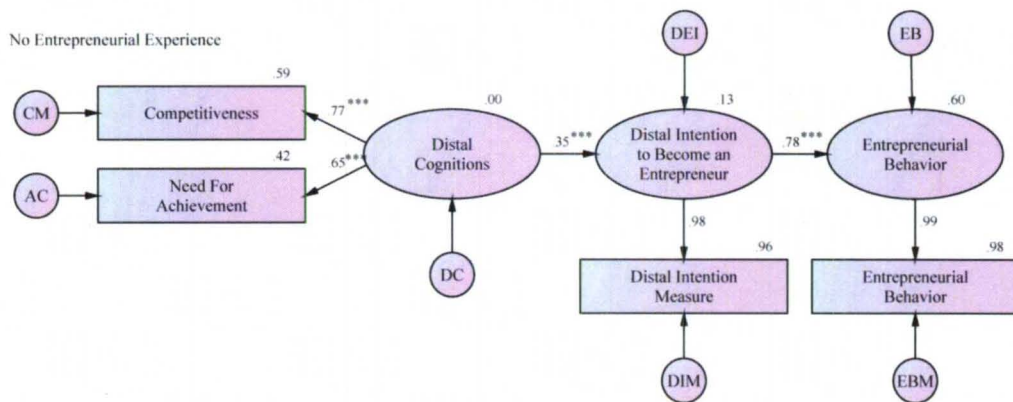
Notes: *** p-value < 0.001; ** p-value < 0.01; * p-value < 0.05

Based on these analyses, the proximal-distal model is not appropriate for hypothesis testing. However, separate proximal and distal models are acceptable for hypothesis testing although are limited to specific groups.

Results of Hypothesis Testing

Hypothesis 1 suggests distal cognitions are a factor in the formation of the distal intention to become an entrepreneur. Because the distal-proximal model (the theorized cognitive model of the entrepreneurial process) does not converge on the combination of all samples, no support exists for hypothesis 1 as it relates to the overall entrepreneurial process. However, because post hoc evaluation performed on the model suggests the model may work for individual samples or groups, further analysis took place on the separate distal and proximal models.

Figure 2.3: Distal Model of the Entrepreneurial Process



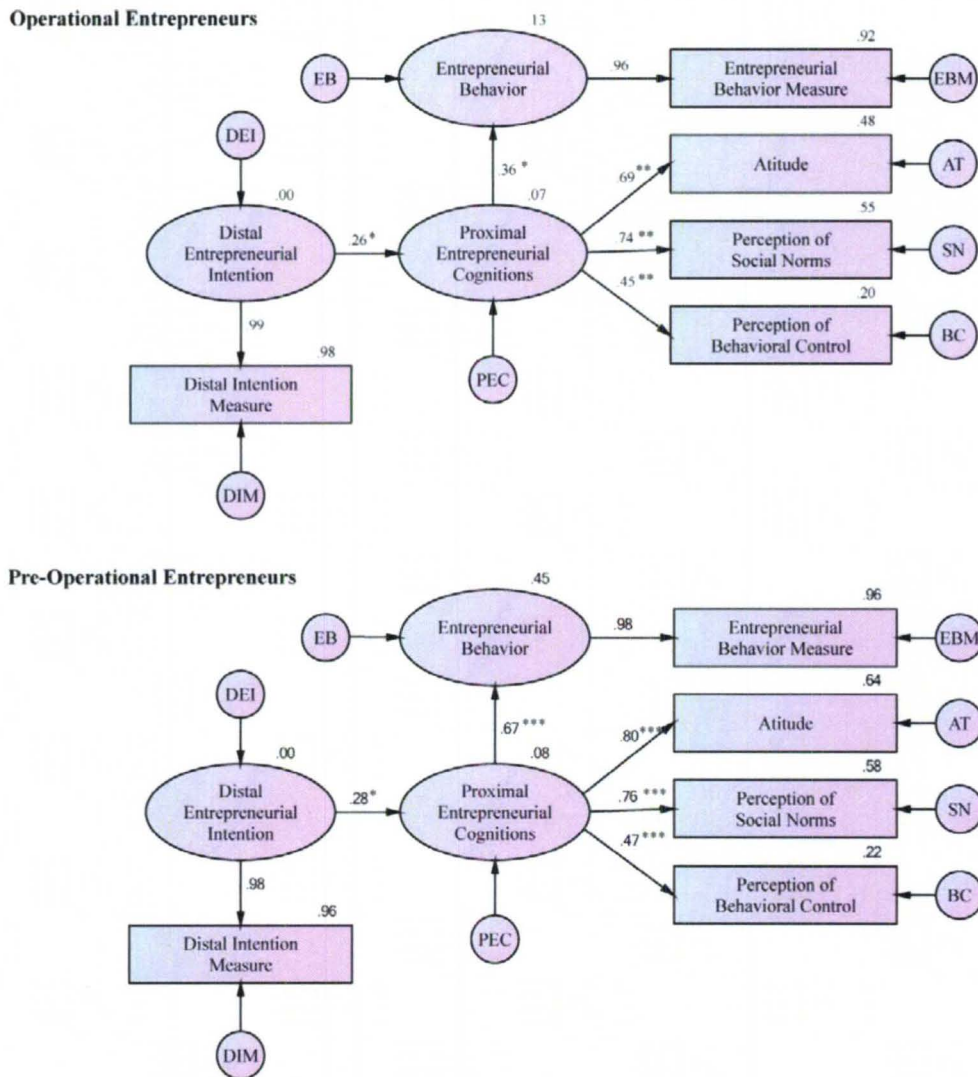
As expected based on analysis of the distal measurement model, the distal structural model does not represent a good fit to the data with the combined samples. However, it does adequately fit the data when applied to those with no entrepreneurial

experience (RMSEA=.080, SRMR=.057, PCLOSE=.158, $\chi^2=10.776$, $df=4$, CFI=.949, PCFI=.316). Analysis of those with no entrepreneurial experience shows the distal cognitions-distal intention relationship to be both positive ($\beta =.35$) and significant ($p<.001$) explaining 13 percent of the variance ($R^2=.13$), thus support for hypothesis 1 exists when limited to those with no prior entrepreneurial experience. See Figure 2.3.

Hypothesis 2 suggests the distal intention to become an entrepreneur is a factor in the formation of proximal entrepreneurial cognitions. Again, because both the distal-proximal and the proximal models do not converge on all samples combined, no support exists for hypothesis 2 as it relates to those both with and without entrepreneurial experience as a whole. However, analysis of entrepreneurs shows the relationship be both positive ($\beta=.26$, $\beta=.28$) and significant ($p<.05$) explaining 7 percent and 8 percent of the variance ($R^2=.07$, $R^2=.08$). Thus, support for hypothesis 2 exists when limited to those with entrepreneurial experience. See Figure 2.4.

Hypothesis 3 suggests proximal entrepreneurial cognitions are a factor in the formation of entrepreneurial behavior (as a proxy for proximal entrepreneurial intentions). Analysis shows support for this hypothesis when limited to the two groups of entrepreneurs with the relationship being both positive and significant for both operational ($\beta=.36$, $p<.05$, $R^2 =.13$) and pre-operational entrepreneurs ($\beta=.67$, $p<.001$, $R^2 =.45$). See Figure 2.4.

Figure 2.4: Proximal Model of the Entrepreneurial Process



*Model Notes:
 1. Chi-Square = 20.352, df = 10, GFI = .947, AGFI = .840, RMSEA = .082, PCLOSE = .136
 PCLOSE > .05 means, at a 95% confidence level, RMSEA is not statically different from an RMSEA < .05 indicating a close fit.

Hypothesis 4 suggests a mediated relationship exists between the distal intention to become an entrepreneur and entrepreneurial behavior (as a proxy for proximal entrepreneurial intentions). Because the test of mediation shows a significant increase in estimate ($\Delta\beta=.39$, $\Delta\beta=.58$) and the direct effect is non-significant, no support for

hypothesis 4 exists—the relationship is not mediated for either group of entrepreneurs.

See Table 2.7.

Table 2.7: Test of Mediation

Operational Entrepreneurs	Direct Effect unmediated	Direct Effect mediated	Indirect Effect
Distal Entrepreneurial Intention – Entrepreneurial Behavior	-.03ns	-.06ns	.38***
Distal Entrepreneurial Intention – Proximal Entrepreneurial Cognitions	.36*		
Pre-Operational Entrepreneurs	Direct Effect unmediated	Direct Effect mediated	Indirect Effect
Distal Entrepreneurial Intention – Entrepreneurial Behavior	.09ns	-.08ns	.69***
Distal Entrepreneurial Intention – Proximal Entrepreneurial Cognitions	.67***		

Therefore, because a direct relationship exists between the distal intention to become an entrepreneur and entrepreneurial behavior for non-entrepreneurs and no such relationship either direct or mediated by proximal cognitions exists for entrepreneurs it is reasonable to conclude the entrepreneurial process has two distinct models as it relates to distal and proximal cognitions. Tables 2.8, 2.9, 2.10 and 2.11 provide the means, standard deviations, and correlations for the constructs by group used in the study.

Table 2.8: Correlation Matrix Sample 1 - No Entrepreneurial Experience Urban

	Mean	SD	Correlations					
			1	2	3	4	5	6
1. Distal Intention	1.83	1.08						
2. Entrepreneurial Behavior	2.39	1.91	.727**					
3. Attitude	3.58	.70	-.343**	-.326**				
4. Social Norms	3.82	.73	.584**	.555**	-.288**			
5. Behavioral Control	3.23	.81	-.377**	-.299**	.586**	-.203*		
6. Competitiveness	5.61	.99	.189*	.263**	-.154	.235**	-.134	
7. Need for Achievement	4.78	.80	.082	.216*	-.127	.205*	-.116	.503**

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

n=137

Table 2.9: Correlation Matrix Sample 2 - No Entrepreneurial Experience Rural

	Correlations							
	Mean	SD	1	2	3	4	5	6
1. Distal Intention	1.82	1.20						
2. Entrepreneurial Behavior	2.08	1.79	.757**					
3. Attitude	3.64	.76	-.171	-.232**				
4. Social Norms	3.91	.82	.589**	.604**	-.150			
5. Behavioral Control	3.51	.98	-.266**	-.359**	.627**	-.226**		
6. Competitiveness	5.33	.96	.322**	.313**	-.003	.258**	-.064	
7. Need for Achievement	4.62	.75	.334**	.365**	-.089	.364*	-.021	.528**

** Correlation is significant at the 0.01 level (2-tailed).
 * Correlation is significant at the 0.05 level (2-tailed).
 n=131

Table 2.10: Correlation Matrix Sample 3a – Operational Entrepreneurs

	Correlations							
	Mean	SD	1	2	3	4	5	6
1. Distal Intention	2.77	1.58						
2. Entrepreneurial Behavior	5.70	.87	-.030					
3. Attitude	6.05	.91	.237*	.068				
4. Social Norms	5.73	1.16	.112	.365**	.438**			
5. Behavioral Control	5.23	1.07	.220	.067	.379**	.223		
6. Competitiveness	4.77	1.21	.130	.089	-.040	.048	.087	
7. Need for Achievement	4.88	.62	.219	.191	.230*	.132	.395**	.282*

** Correlation is significant at the 0.01 level (2-tailed).
 * Correlation is significant at the 0.05 level (2-tailed).
 n=74

Table 2.11: Correlation Matrix Sample 3b – Pre-Operational Entrepreneurs

	Correlations							
	Mean	SD	1	2	3	4	5	6
1. Distal Intention	3.94	1.24						
2. Entrepreneurial Behavior	4.85	1.16	.089					
3. Attitude	6.27	.82	.281*	.402**				
4. Social Norms	5.97	1.18	.161	.571**	.517**			
5. Behavioral Control	5.31	1.14	-.014	.185	.439**	.242*		
6. Competitiveness	4.93	1.13	.294**	.230*	.337**	.110	.117	
7. Need for Achievement	4.79	.71	.049	.071	.264*	.071	.065	.374**

** Correlation is significant at the 0.01 level (2-tailed).
 * Correlation is significant at the 0.05 level (2-tailed).
 n=81

Discussion

Based on social cognitive theory (Bandura, 1999), the theory of reasoned action (Fishbein & Ajzen, 1975), the theory of planned behavior (Ajzen, 1991), and on prior research pertaining to entrepreneurship, theory-based categorization of cognitions used to

either explain or predict entrepreneurial behavior took place. From these research two cognitive models of the entrepreneurial process emerged as a means of evaluating the degree to which currently theorized antecedents effectively explain and predict entrepreneurial intentions. Segregation of these cognitions into appropriate categories based on theory, either distal or proximal cognitions, afforded the means of testing the models. Data collected from multiple samples allowed evaluation of respondent differences representing differing points in the entrepreneurial process.

Although this research was unable to create a singular model based on existing cognitions, two individual cognitive models appear to offer a means of explaining the entrepreneurial process—the distal model for non-entrepreneurs (Figure 2.5) and the proximal model for entrepreneurs (Figure 2.6).

Figure 2.5: Cognitive Process for those with No Entrepreneurial Experience (Distal Model)

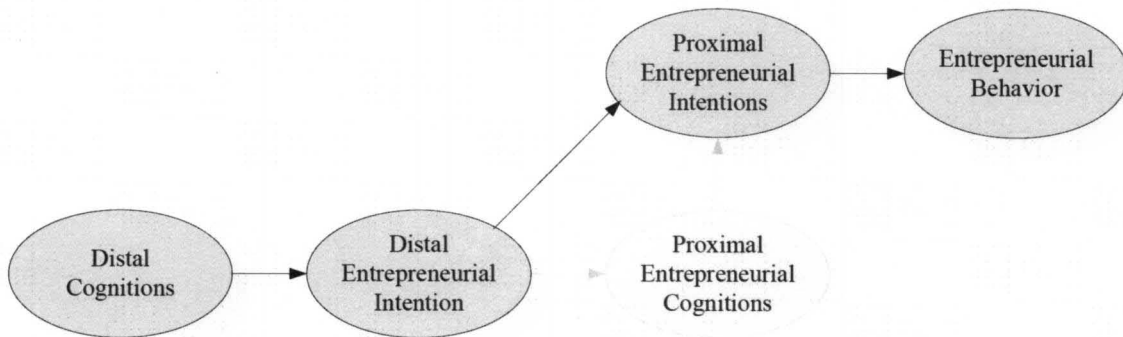
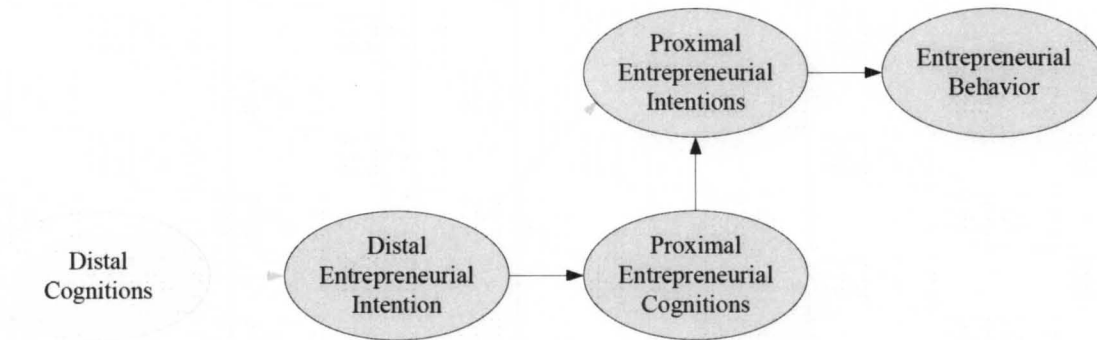


Figure 2.6: Cognitive Process for those with Entrepreneurial Experience (Proximal Model)



These models suggest that distal cognitions do play a role in the formation of the distal entrepreneurial intention to become an entrepreneur in those with no entrepreneurial experience. However, for those currently undertaking entrepreneurship (operational entrepreneurs) and those in the process of starting a venture (nascent, serial, and parallel entrepreneurs) distal cognitions appear to play no significant role in the decision to undertake additional entrepreneurial behavior. This suggests that distal cognitions may afford a means of predicting entrepreneurial behavior, but only in those with no entrepreneurial experience.

The results presented here suggest that distal cognitions used in prior research do not explain the entrepreneurial process for those actually starting a venture (pre-operational, i.e. nascent, serial and parallel entrepreneurs). Research on distal cognitions such as biases, heuristics, schemata, scripts and maps have been shown to be quite valuable to our understanding of what experienced entrepreneurs do and why (c.f. Baron, 1998; Baron & Ward, 2004; Bryant, 2007; Corbett & Hmieleski, 2007; Mitchell et al., 2007). However, it is precisely this ability to explain parts of the phenomenon coupled with its lack of explanatory power for other parts of the process, which suggests the

cognitions used in this study are more likely a product of the process itself than major causal factors. Nonetheless, distal cognitions are a factor in the decision to become an entrepreneur for those with no prior experience and likely explain approximately 13 percent of the reason individuals choose to follow a career in entrepreneurship. Based on this research, distal cognitions, such as competitiveness and need for achievement, appear to explain part of the entrepreneurial process (career choice) but lose explanatory power once individuals begin to commit to the entrepreneurial process.

The distal intention to become an entrepreneur does not appear to play a role in the formation of proximal entrepreneurial cognitions in those with no entrepreneurial experience. However, it appears to become a significant factor once the commitment to a career in entrepreneurship has begun explaining up to 8 percent of the variance. This suggests a fundamental shift takes place in the cognitions that lead to entrepreneurial behavior during the entrepreneurial process. Based on this observation, proximal cognitions likely begin to form after the decision to become an entrepreneur. Therefore, proximal cognitions are likely not a factor in the formation of entrepreneurial behavior in those with no prior entrepreneurial experience, although it plays a significant role once entrepreneurial behavior has been undertaken.

This research has shown the distal intention to become an entrepreneur plays a fundamental role in explaining entrepreneurial behavior for two reasons. It leads to entrepreneurial behavior in those with no entrepreneurial experience and the formation of proximal entrepreneurial intentions in those with entrepreneurial experience. This suggests the possible self (distal intention to become an entrepreneur), as proposed by Markus and Nurius (1986), does play a fundamental role in the entrepreneurial process.

The existence of a possible entrepreneurial self allows individuals with no entrepreneurial experience to form intentions to undertake entrepreneurial behaviors (proximal entrepreneurial intentions). However, as important as the distal intention to become an entrepreneur is in explaining entrepreneurial career choice, it is an insufficient condition for prediction on its own as no indicator is present to suggest when behavior may occur.

The results presented in this research suggest proximal entrepreneurial cognitions are also important, explaining as much as 67 percent of entrepreneurial behavior in those with entrepreneurial experience. In as much as the distal intention to become an entrepreneur acts as the foundation for the entrepreneurial career choice, proximal cognitions act as the building blocks for venture creation. Proximal entrepreneurial cognitions lead to the formation of entrepreneurial intentions and eventually entrepreneurial behavior, which, although not specifically addressed in this research, leads to the strengthening of existing proximal cognitions or the formation of new ones (Ajzen & Fishbein, 1980; Ajzen & Fishbein, 2005; Fishbein & Ajzen, 1975). This recursive relationship likely occurs until the distal entrepreneurial intention becomes a reality or dismissed as being no longer preferred or feasible. This research has shown that distal and proximal cognitions do afford limited prediction of the entrepreneurial process.

Based on this research, three reasons exist for why currently used cognitions are unable to achieve a consistent degree of support in the literature. 1) The explanatory power of distal cognitions such as competitiveness and need for achievement are limited to entrepreneurial career choice. Distal cognitions such as biases, heuristics, schemata, scripts and maps are only of use in explaining *a posteriori*, reasoning from observed fact, the entrepreneurial process or in the development of academic tools to assist those

pursuing entrepreneurship through an academic path (i.e. a degree or specialized training in entrepreneurship). 2) Prediction of the entrepreneurial process must include both distal and proximal intentions. This necessity is due to the intricate relationship between the two. The use of distal cognitions without the support of proximal intentions will only show that entrepreneurship is a viable possibility and offers no support for when or even if entrepreneurial behavior will take place. The use of proximal intentions without the inclusion of distal intentions is equally flawed. This is because although proximal entrepreneurial intentions may exist, if no distal intention exists these intentions will likely not lead to behavior. Quite simply put, if individuals cannot see themselves as an entrepreneur (distal intention), the decision to take a class on entrepreneurship (a proximal intention) does not mean they will become an entrepreneur. More likely, it means it was the only class available. However, admittance to classes should not be limited based on such information. It is entirely possible that simple exposure to entrepreneurship in such classes could act as a catalyst for the formation of the distal intention to become an entrepreneur.

The final issue relating to why currently used cognitions may be unable to achieve a consistent degree of support in the literature is the misuse of proximal entrepreneurial cognitions. 3) Although proximal cognitions are reliable predictors of the formation of proximal entrepreneurial intentions, they are not reliable predictors of distal intentions. Therefore, the use of proximal cognitions in the prediction of distal intention formation is inherently flawed. Logic dictates that most often proximal intentions will not form without the existence of the distal intention. As a result, the use of proximal cognitions in

the prediction of the distal intention to become an entrepreneur is akin to the mistake of putting the cart before the horse.

In summary, although the prediction of intention formation is possible within the entrepreneurial process, prediction is limited to a time very close to nascent entrepreneurship. This research suggests that the earliest point in which one could predict the likelihood of entrepreneurial behavior is after proximal entrepreneurial cognitions have formed, subject to the existence of the distal intention to become an entrepreneur. The prediction of entrepreneurial behavior prior to this point in time is not currently possible. For prediction of entrepreneurial behavior at an earlier point, the location of deeper core-level cognitions is necessary based on the importance of the possible entrepreneurial self (core-level cognition). One such possibility is entrepreneurial mindset. Such core-level cognitions may offer a possible means of overcoming the current limitation of near nascence and may afford earlier prediction of entrepreneurial behavior.

CHAPTER 3:

Essay 2: The Role of Cognition in the Formation of an Entrepreneurial Mindset

Researchers studying cognitions have offered useful insight into many different mindsets, a *way of thinking* that shapes individuals behavior (Dweck, 1996). For example, researchers have shown the important role that mindset plays in the development of attitude (Heckhausen & Gollwitzer, 1987), the learning process (Diener & Dweck, 1980; Dweck & Reppucci, 1973; Goetz & Dweck, 1980), and the decision process (Henderson, de Liver, & Gollwitzer, 2008). They have also shown mindset to be a significant factor in the adoption of personal morals (Dweck, 1996), motivation (Dweck & Leggett, 1988; Elliott & Dweck, 1988; Gollwitzer & Bayer, 1999; Nelson & Dweck, 1977), and on the illusion of control (Gollwitzer & Kinney, 1989; Taylor & Gollwitzer, 1995).

Despite such research, it remains unclear how mindset forms. This is evident in the continuously unanswered call for a means of implementing numerous forms of mindset. In recent years, there have been calls for a means to foster a consulting mindset (Nord, 1996), a continuous-learning mindset (Elstein & Driver, 2007; Walton, 2004), a discovery mindset (Benson & Dresdow, 2003), a global mindset (Gupta & Govindarajan, 2002; Harvey & Novicevic, 2001; Herbert, 2000; Levy, Beechler, Taylor, & Boyacigiller, 2007), and even an innovation mindset (Kuczarski, 1996, 1998; Kuczarski, Seamon, Spilotro, & Johnston, 2003). This lack of response from the academic community has occurred because researchers have yet to create a cognitive framework that accurately

explains and predicts mindset, in essence, a means of implementing such calls. This is especially true for entrepreneurship (Alvarez & Busenitz, 2001; Shane & Venkataraman, 2000). This raises the question, *what specific cognitions act to form entrepreneurial mindset*.

Entrepreneurial mindset may represent a key component of the entrepreneurial process because it is the cognitive state through which new business and business processes are created (McGrath & MacMillan, 2000). Thus, how entrepreneurial mindset is formed is important not only to academia, but to entrepreneurs, managers, and virtually everyone choosing to enter the modern business environment. In addition, it is crucial to our understanding of the entrepreneurial process (Baron, 2004; Baron & Ward, 2004). Based on the importance of such a concept, it is essential to “understand how the entrepreneurial mindset develops in the general population” (Zahra, Ireland, Gutierrez, & Hitt, 2000, p. 521). This conceptual exploration creates a theoretically grounded theory that explains the entrepreneurial process based on extensive evaluation of research on mindset and prior theories of behavior.

This exploration proceeds as follows: first, a review of the previous research relating to mindset takes place to determine if it represents a possible antecedent to intentions. Next, evaluation of existing theories of behavior takes place to determine a possible foundation for the creation of a theory that is inclusive of mindset. In the next section, application of the newly created theory to the domain of entrepreneurship takes place. Finally, the essay concludes with a discussion of the implications of such a theory and its importance to the field of entrepreneurship.

Prior Research on Mindset

Theoretical conceptualization begins with the determination of the basic nature or structure of a phenomenon (Locke, 2007; Van de Ven, 2007; Whetten, 1989), in essence the definition. Within the entrepreneurship literature, there are several definitions of entrepreneurial mindset. McGrath and MacMillan (2000) define entrepreneurial mindset as *a way of thinking*, created by uncertainty, that allows a person to rapidly identify and adaptively exploit an entrepreneurial opportunity. Ireland, Kuratko, and Morris (2006) define entrepreneurial mindset as *a way of thinking* about opportunities that allows individuals to increase their ability to sense opportunities and mobilize the resources and knowledge required to exploit them.

Whereas the focus of such definitions may vary, they both suggest a cognitive foundation, *a way of thinking*. The problem is—what *way of thinking*? If we are to understand, test, and apply the concept of entrepreneurial mindset to research and practice, theoretical conceptualization of the *way of thinking* referred to in these definitions is necessary. To that end, the primary focus of this article is the conceptualization of the cognitive factors that comprise the *way of thinking* referred to in definitions of mindset.

Mindset

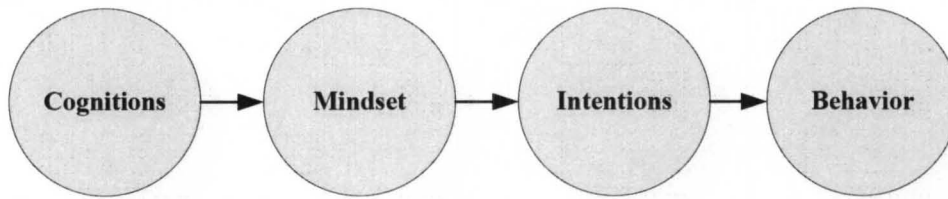
The cognitive phenomenon known as mindset has received, in one form or another, a large amount of attention, not only from the fields of entrepreneurship (c.f. Haynie, Shepherd, Mosakowski, & Earley, 2010; Mitchell, 2007; Shepherd, Patzelt, & Haynie, 2010; Smith, Mitchell, & Mitchell, 2009) and cognitive and social psychology,

but also from fields such as business and sociology³. Based on this research, it is apparent that mindset acts to shape individuals behavior (Dweck, 1996). However a review of several theories of behavior, including attribution theory (Heider, 1944, 1958), Lewin's field theory (1936, 1938, 1951), the theory of planned behavior (Ajzen, 1985, 1991, 2005), social cognitive theory (Bandura, 1986, 1997; Bandura et al., 1977; Bandura & Dweck, 1988), and the theory of reasoned action (Ajzen & Fishbein, 2005; Fishbein & Ajzen, 1975), confirms that they make no mention of *a way of thinking* or the concept of mindset.

From a cognitive psychology perspective, *behavior* is a predictable action based on individuals cognitive processes (Broadbent, 1958; Neisser, 1967, 1976). Cognitive processes are, by definition, *a way of thinking* (Merriam-Webster, 2001). Mindset is a *way of thinking* that shapes individuals behavior (Dweck, 1996). It therefore follows that cognitions are fundamentally the *way of thinking* that is mindset and behavior is a direct result of this *mindset*. However, for this to be true these individuals must consider the behavior in question to be within their control—volitional. When behavior is volitional, that is to say seen as a choice, intentions precede behavior. Therefore, it is reasonable to assume that mindset leads to intentions when behavior is volitional. Accordingly, a basic cognitive model of the behavioral process suggests, *cognitions* lead to the formation of a *mindset* (a way of thinking) that ultimately lead to the formation of *intentions* to undertake specific *behavior*. See Figure 3.7.

³ A review of the literature on mindsets indicates that there are more than 700 articles, books, book sections, conference proceedings, and dissertations purporting to address a particular form or aspect of mindset. However, the majority of these 700 studies fail to probe empirically the basic component factors of "mindset." Only 76 of these studies contain research in which cognitive factors relating to mindset were its focus. Understanding of the basic nature of mindset came from these articles. See Appendix B for a complete list of these articles.

Figure 3.7: Basic Model of the Cognitive Process Leading to Volitional Behavior



Expanding the Theory of Reasoned Action

In the hope of building upon existing theories, comparison of the aforementioned theories of behavior reveal Fishbein and Ajzen's theory of reasoned action offers the best theoretical foundation from which to build because it delves deepest into the cognitive workings of behavior. According to Fishbein and Ajzen (1975, 2005), based on the sum of individuals beliefs, these individuals will create generally positive or negative attitudes toward a given phenomenon. These attitudes lead to intentions toward, and potentially participation in, the phenomenon. Although "research conducted over the past [35] years has provided strong support for the utility of the reasoned action approach" (Ajzen & Fishbein, 2005, p. 195), and researchers have shown the theory can afford highly accurate predictions of intention-behavior relationships (Ajzen, 1985), the theorized antecedents to intentions, beliefs and attitudes, have yet to achieve a comparable degree of support. This is because beliefs and attitudes are poor indicators of the underlying cognitions or the way of thinking that leads to intentions⁴.

Beliefs represent the convictions formed by a person in an attempt to make sense of the world around them (Fishbein & Ajzen, 1975). In other words, the theory of reasoned action assumes beliefs are the fundamental building blocks from which we perceive our world. This interpretation is too broad to allow for the prediction of specific

⁴ Justification of this statement takes place in detail later.

behavior unless said behavior is imminent. People hold beliefs about virtually everything. Beliefs can be as general as *the sun will rise again tomorrow*, or as specific as *I will wake up tomorrow*; they can be as reasonable as *I will live a good long life*, or as unreasonable as *I will live to be 250 years old*. Based on the sheer number, diversity, and varying strength of each belief, I posit that it is unreasonable to assume that the sum of individuals' beliefs or attitudes about a given phenomenon can accurately predict behavior unless that behavior is imminent. To predict behavior, I propose it is necessary to move beyond beliefs into the deeper-cognitions that work to form the *way of thinking* that create beliefs and attitudes.

It is reasonable to assume that from the sea of beliefs held by any given person, general groupings of similar beliefs will tend to emerge. I propose these groupings act as indicators of the underlying cognitions at work. For example, beliefs such as *I am or am not* signify self-perception, *I like or do not like* communicate personal preference, and *I can or cannot* symbolize self-confidence. These cognitions can also work through inference to create new beliefs about an unknown phenomenon. This occurs through comparison of experiential, observed, and/or learned knowledge of a known phenomenon, perceived to be similar, and the perceived attributes of the unknown phenomenon (Bandura, 1986). Thus, cognitions are used to group together experiential, observed, and learned knowledge into intentions that are the "*way of thinking*" referenced by existing definitions of mindset. While this explains how cognitions use individuals' knowledge and experience as the raw materials to form intentions, it does not explain what specific cognitions are at work. To determine what specific cognitions work to form

mindset, it is important to evaluate the prior research pertaining to mindset from the fields of entrepreneurship, cognitive and social psychology, business, and sociology.

Prior Research on Mindset

Research pertaining to mindset primarily falls into three distinct categories; these are (1) learning, (2) decision, and (3) applied perspectives. The *learning perspective* offers general insight into the role cognitions pertaining to "the self" play in the formation of mindset. When viewed from a learning perspective, mindset is seen as a cognition that determines individuals cognitive performance (Dweck, 1986). In essence, it represents the amount of effort individuals are willing to exert in order to acquire the knowledge, skills, and abilities necessary to undertake a specific behavior. The *decision perspective* contributes general understanding to the multiple roles mindset plays within the behavioral process. These cognitions relate to the interaction between individuals and their environment and are limited to behavior considered under their control—volitional (Gollwitzer, 1996b; Heckhausen & Gollwitzer, 1987; Irwin, 1942). Additionally, because aspects of mindset are domain specific, conceptualization requires reference to a specific form of mindset. Thus, inclusion of an *applied perspective* is necessary for the discussion of specific content and context. For this conceptual exploration, entrepreneurial mindset is the domain used to conceptualize specific context and aspects as they relate to the learning and decision perspectives of entrepreneurs. From this categorization, three distinct cognitions appear to have particular relevance as cognitions leading to mindset; these are *entity-schemata*, *self-concept*, and *self-efficacy*.

Entity-Schemata

Based on the theories of fixed and malleable intelligence (Dweck, 2000), researchers from cognitive psychology have shown that cognitions known as entity-schemata exist in one of two distinct states (Burger, 2007; Dweck & Leggett, 1988). These theories suggest that *entity-schemata* are essentially a bi-polar continuum on which the concepts of static entity-schema (theory of fixed intelligence) and dynamic entity-schema (theory of malleable intelligence) sit on opposite ends of the continuum (Dweck, Chiu, & Hong, 1995; Levy & Dweck, 1999). Driven by self-fulfilling behavior, these mechanisms function using the perceived nature of ability (Dweck & Sorich, 1999). Specifically, based on individuals perception of learning, abilities are seen as either *static*, an inherent or genetic characteristic (and, as such, unchangeable), or *dynamic*, the result of hard work and, thus, a work in progress or changeable (Molden & Dweck, 2006).

Static-Entity Schema

Static-entity schema, also referred to as a fixed (Dweck, 1996) or helplessness (Dweck, 1975) mindset, posits that a person's cognitive abilities are an inherit or genetic characteristic, and as such, unchangeable (Dweck, 2006). Individuals with this schema see themselves as born with or somehow having a natural ability that is beyond their control. From this perspective, any attempt to exceed their current abilities is fruitless, thus limiting these individuals ability for growth. This perception is not to be confused with low self-esteem or pessimism. Persons with a static-entity schema have been shown to be just as confident, optimistic, or positive as persons with a dynamic-entity schema, often even to the point of hubris (Dweck, 2000). The difference lies in how these

individuals interpret failure. For individuals with a static-entity schema, failure is a direct reflection of who they are rather than their abilities. For example, failure of a business to individuals with a static-entity schema is an indicator of stupidity or incompetence, rather than a sign of poor preparation or bad timing in the market. Thus, individuals with a static-entity schema expend large amounts of effort in the attempt to avoid situations that have the potential for failure, rather than exerting effort in an attempt to ensure success.

Based on the work of researchers in this perspective⁵, certain individuals adopt a static-entity schema in an attempt to gain the love and respect of others. However, a static-entity schema is not limited to learning. For example, children all need to feel valued and loved. When the perception of love is missing, a static-entity schema represents a simple and straightforward means of obtaining needed affections. In these instances, individuals will search for a personal feature or characteristic that allows them to stand out or appear special to those around them (for example, being naturally talented, intelligent, or attractive) as a means of bolstering their self-esteem. For these individuals, static-entity schema becomes the main source of self-worth. Since such self-worth comes from the perception of others rather than through accomplishment, building interpersonal perception, not on improvement of ability, becomes the primary goal. The problem with a static-entity schema is that focus on interpersonal perception most often results in the belief that individuals have little or no control over this characteristic. This results in the need to maintain the illusion of effortless accomplishment, talent, or beauty. This perception leads to the avoidance of situations where failure is possible, rather than an attempt to avoid failing. For example, individuals with a static-entity schema will make

⁵ See Appendix B for a complete listing of articles relating to the learning perspective.

every effort or excuse to avoid starting a business for which they feel failure is a possibility (which is always the case), rather than making every effort to avoid failing such as taking classes, learning the market, or looking for a partner with complementary knowledge, skills, and ability.

Dynamic-Entity Schema

Dynamic-entity schema, also known as a mastery-oriented (Diener & Dweck, 1980), malleable (Elliott & Dweck, 1988), or growth mindset (Dweck, 2006), posits that the abilities of individuals are largely the result of hard work. For individuals with this a dynamic entity-schema, ability or accomplishment is seen as the result of effort and hard work. Natural ability is seen as, at best, an advantage to be built upon, not the primary determinant of success. Individuals with this schema see failure as a lack of preparation and often even an opportunity to learn. This is not to say that individuals with a dynamic-entity schema are unaffected by failure. On the contrary, research has shown these individuals to be just as affected by significant failure as those with a static-entity schema (Dweck, 2000). Differentiation lies in the response to failure. Whereas individuals with a static-entity schema interpret failure as a reflection on them personally, individuals with a dynamic-entity schema view failure as a reflection on their preparedness. Whereas those with a static-entity schema avoid further activities for which failure has occurred, those with a dynamic-entity schema, after an appropriate time for self-reflection and doubt, focus on determining the reason for failure and implementing a strategy for future success.

Much of the past research on entrepreneurs focused on their ability or willingness to operate under conditions of risk or uncertainty (c.f. Amit, Glosten, & Muller, 1990;

Brockhaus, 1980; Janney & Dess, 2006; Knight, 1921; Krueger & Dickson, 1994; McGrath, MacMillan, & Scheinberg, 1992; Palich & Bagby, 1995; Simon, Houghton, & Aquino, 2000). Although a good deal of this research has yielded conflicting results, Krueger and Dickson (1994) have suggested this is due to the situation-specific nature of entrepreneurial risk-taking indicating that entrepreneurs tend to be more open to risk than risk seeking. People with a dynamic entity-schema are known to be far less adverse to risk and uncertainty (Dweck, 1986), and, when deemed appropriate even risk-seeking, provided failure is seen as a learning mechanism rather than a reflection on them personally. Thus, individuals with the potential for entrepreneurial behavior should most often possess a dynamic entity-schema. This is not to say that everyone with a dynamic entity-schema are entrepreneurs, or even potential entrepreneurs, only that those *not* possessing a dynamic entity-schema are much less likely to undertake entrepreneurial behavior unless they believe they inherently possess all the abilities needed to undertake entrepreneurial behavior.

In summary, entity-schemata, one's perception of the ability to learn, likely plays an important role in the formation of mindset and is dependent on the type of behavior to be undertaken. If a given behavior requires individuals to be cognitively adaptable, comfortable with change and uncertainty (Haynie, 2005), and resistant to failure, as is the case with entrepreneurial behavior, those most likely to form the mindset required for that type of behavior will possess a dynamic entity-schema. When behavior requires individuals to be cognitively rigid, those most likely to form this type of mindset will possess a static entity-schema. However, this is not the only cognition that holds relevance to the concept of mindset.

Self-Concept

In general, self-concept is the cognitive representation of "the self" used to organize and process self-relevant information (Markus, 1977, 1983). It includes the features on which individuals rate themselves highly, without contradiction (Fiske, 2004). It includes not only how individuals perceive themselves today, the *current self-concept*, but also who they aspire to become in addition to the possible self they fear they may one day become, the *possible-self* (Markus & Nurius, 1986). Self-concept "interprets and organizes self-relevant actions and experiences; it has motivational consequences, providing the incentive, standards, plans, rules, and scripts for behavior; and it adjusts in response to challenges from the social environment" (Markus & Wurf, 1987, p. 299).

Although primarily considered a unidimensional concept, there is support for a multi-dimensional interpretation. From the multi-dimensional view, self-concept has four unique sub-dimensions (1) academic, (2) social, (3) emotional, and (4) physical self (Shavelson & Bolus, 1982; Shavelson, Hubner, & Stanton, 1976) and are important in any discussion of a specific phenomenon (Winne, Marx, & Taylor, 1977). It is possible the answer to the debate between the unidimensional and multidimensional nature of self-concept lies within each person. In some individuals, these dimensions are uniform, allowing for virtually no differentiation from the general self-concept, and in others, they are highly disassociated, thus easily distinguishable from the other dimensions of self.

Academic Self

The academic-self consists of scholastic achievements, such as grades and test scores, which foster a self-perception of individuals general cognitive abilities (Shavelson et al., 1976). However, this concept limits the cognitive aspect of self-concept. A better

construct is *intellectual-self*, this would represent the perception of general cognitive abilities, rather than specific skills relating to academic accomplishment, such as mathematics, reading, and writing ability. In essence, *intellectual-self* represents the ingenuity, determination, and drive that individuals possess, with regard to their ability to acquire knowledge. For example, individuals lacking formal education, or with a learning disability, could possess the perception of being an intellectual based on an acute sense of observation, on a finely tuned ability to transfer auditory information to memory, or on a highly developed skill of deductive reasoning. This is because individuals possessing sub-standard academic skills or a learning disability can still possess a high degree of perceived intellectual ability. It is this sense of *intellectual-self* that bolsters individuals' confidence and determines if individuals perceive themselves as mentally capable of undertaking a particular behavior. Thus, *intellectual-self* is the perception of possessing the intellect necessary to acquire the knowledge needed for a given behavior and is inclusive of the perception of intelligence regardless of academic achievement. For example, a strong sense of *intellectual-self* may come from holding a position that requires extensive problem solving, requires deductive reasoning, the general tendency to be persistent in any goal set, or any means deemed effective in the acquisition of knowledge. The key, whether accurate or not, is the perception of possessing the cognitive capacity to acquire the knowledge necessary for a given behavior.

When applied to the domain of entrepreneurship, *intellectual-self* is the perception of possessing the cognitive abilities necessary to facilitate entrepreneurial behavior (i.e. creative, innovative, determined, etc). Therefore, perceptions specifically relating to abilities seen as necessary for entrepreneurial behavior, such as the ability to see

opportunities where others do not, of being imaginative, of being open to new possibilities, or being good at problem solving, are indicators that these individuals believe they possess the intellect necessary for entrepreneurial behavior. This is an important aspect in the formation of an entrepreneurial mindset. If individuals do not feel they possess, or are intelligent enough to acquire, the knowledge needed to undertake entrepreneurial behavior it is highly unlikely that any attempt would take place. This does not suggest that all individuals possessing an intellectual-self conducive to entrepreneurial behavior intend to or are going to become an entrepreneur. Rather, it suggests that such individuals possess one of the dimensions necessary for the formation of entrepreneurial self-concept.

Social Self

The *social-self* is the perception of possessing the ability to simultaneously mix with and differentiate from others in social groups, in essence, social identity (Brewer, 1991; Byrne & Shavelson, 1996). If a given form of behavior requires interaction with others, the social-self could play a role in the formation of mindset. It may consist of a social network perceived as capable of supporting the behavior, a personality perceived as capable of successfully interacting with previously unknown individuals once the behavior takes place, or both. In this context, if individuals believe they are well adapted to social interaction, they will seek out behavior that requires social interaction. However, if individuals believe they are socially inept, they are likely to avoid any behavior that requires extensive social interaction.

Entrepreneurial behavior often requires a high degree of social interaction (i.e. dealing with customers, employees, vendors, etc.). Therefore, the social-self likely plays

an important role in the formation of entrepreneurial mindset. Perceptions such as, "I am comfortable dealing with people I do not know" and "I like to deal with other businesspeople," are good indicators of a social-self compatible with entrepreneurial behavior. The key is the perception of social ability consistent with the perceived requirements of entrepreneurial interactions. This perception acts to augment individuals' entrepreneurial self-concept by creating comfort with the social interactions necessary to entrepreneurial behavior. Therefore, the existence of a social-self that is compatible with entrepreneurial behavior represents another dimension necessary for the formation of entrepreneurial self-concept.

Emotional Self

Based on the perception of ability to psychologically handle personal, social, and cultural interaction, *emotional-self* directs individuals to seek pleasure or comfort while attempting to avoid pain or discomfort (Shavelson & Bolus, 1982). Thus, if a given behavior is stressful, individuals who do not handle stress well will naturally seek to avoid such behavior. The inverse is also true; individuals who derive satisfaction from accomplishment under duress will naturally seek out behavior that affords the opportunity for high-risk accomplishment, although the decision may be an unconscious one.

When applied to entrepreneurial behavior, emotional-self represents the perception of the ability to handle the personal, social, and cultural stress associated with entrepreneurship. Since uncertainty and risk often accompany entrepreneurial behavior, the ability to stay emotionally strong in stressful conditions and to rebound from failure, *psychological hardiness* (Kobasa, 1979, 1989; Maddi & Kobasa, 1984), is likely to be

valuable for behavior such as entrepreneurial behavior. This overall psychological ability to cope with emotionally charged situations contributes to entrepreneurial self-concept and helps to determine if certain individuals are psychologically capable of handling the stress and possible negative consequences of entrepreneurial behavior. Consequently, existence of an emotional-self compatible with entrepreneurial behavior represents another dimension necessary for the formation of entrepreneurial self-concept.

Physical Self

The *physical-self* represents the perception of the body and its fundamental abilities (Shavelson et al., 1976). Physical-self includes individuals' current perceived body image and ability, in addition to the *potential physical-self*, the perceived ability to change or alter the current physical form or to enhance physical ability. It is important to note that physical-self can have a direct affect on the social-self and emotional-self. Individuals who perceive themselves as being physically flawed or lacking in some way may become highly self-conscious and unable to interact with others. Additionally, such self-consciousness can lead to emotional distress and unwillingness to enter public or social settings. In general, the perception of physical-self affects the general self-concept by determining if individuals perceive themselves as capable of physically undertaking a given behavior.

Within the context of entrepreneurial behavior, physical-self is dependent on the specific form of entrepreneurial behavior. For example, for individuals' intent on starting a business that requires physical interaction, physical-self plays an important role in the formation of entrepreneurial self-concept. However, if individuals seek to form a business that requires little or no physical interaction, physical-self is of little or no

importance. Therefore, when applied to entrepreneurial behavior, the dimension of physical-self would only have value as a qualifier. However, when behavior requires a larger degree of physicality, physical-self would play a much larger role. Accordingly, the existence of a physical-self compatible with the given behavior represents another dimension necessary for the formation of self-concept.

Summary of Self-Concept

The sub-dimensions of self-concept not only work in concert to determine current self-concept but also act as the basis for perceiving a *possible-self*. This is important in the prediction of intentions because possible selves provide direction for future behavior. Taken in the context of entrepreneurial behavior, individuals who believe they are intellectually, socially, emotionally, and physically capable of becoming an entrepreneur, will pay more attention and give a greater degree of commitment to events that are relevant to becoming an entrepreneur. In these cases, such individuals will favor events that support the transition from current self to the desired self—entrepreneur (Markus & Nurius, 1986), which like entity-schemata, further develops the understanding of the *way of thinking* referenced in definitions of entrepreneurial mindset.

Self-Efficacy

Derived from social learning theory, self-efficacy represents the strength of individuals perceptions of their ability to effectuate a given behavioral outcome (Bandura, 1977, 1982, 1986). Formed by *prior experience*, *observed experience* and *social persuasion*, self-efficacy is “a significant determinate of performance that operates partially independent of underlying skill” (Bandura, 1986, p. 391). Although similar, self-efficacy and self-concept differ in method of formation. Self-concepts are *objective*

beliefs about the self, based primarily on specific measurable personal aspects, whereas self-efficacy is a *subjective*, although realistic belief in one's own possibilities. For example, the belief of being capable of starting a business is the result of self-concept when individuals have previous experience starting a business of this exact type or one of a very similar nature. If individuals have never started a business or their prior business experience is of a completely different form, then the belief is likely the result of self-efficacy.

Prior Experience

According to Bandura (1997), prior success acts to raise perceived self-efficacy, whereas failure tends to lower it. This may not always be accurate. Bandura (1997) posited that early failure, especially if not attributable to a lack of preparation, effort, or unforeseen external influences, could substantially lower perceived self-efficacy by leaving these individuals feeling unable to accurately judge their abilities. Although this statement is accurate for individuals possessing a static entity-schema, this is not necessarily the case with individuals possessing a dynamic entity-schema. Individuals possessing a dynamic entity-schema tend to see failure as a learning experience. Based on this perception, a single failure would not have a substantial effect on self-efficacy if attributable to a lack of preparation or effort.

Bandura (1997) also suggests that failure following a string of success is likely to have a minimal effect, as individuals are likely to attribute cause to lack of preparation, insufficient effort, or situational factors, rather than to ability. Again, this statement is not necessarily accurate. It is true that individuals possessing a dynamic entity-schema are likely to see a single failure attributable to a lack of preparation or effort as an anomaly,

and as such, have little or no effect on self-efficacy. In fact, it is even possible that such a failure could raise self-efficacy by allowing these individuals to feel confident in their ability to avoid future failure. However, because individuals possessing a static entity-schema see all failure as a reflection on ability, even failure due to circumstances beyond their control, any failure would result in a substantial reduction of self-efficacy. Based on this refinement of self-efficacy, a dynamic entity-schema has not only a direct effect on intentions, but also a mediating effect on the relationship between prior experience and self-efficacy. Self-efficacy can also be obtained through perceived efficacy of similar phenomenon (Bandura, 1982, 1986).

Observed Experience

Self-efficacy can be obtained by observing others (Bandura, 1997). By observing how others perform in situations, and through comparison of their perceived abilities to those of others, it is possible to *infer* an ability to perform a given behavior (Bandura, 1982). For example, if a co-workers were to start a successful venture and these persons abilities are perceived to be no greater than one's own, it is likely this perception would raise the perceived self-efficacy of the observer (Shapiro, 1984). In this instance, the observed experience of others creates the self-perception "if others can do it, so can I." However, it is just as likely that observed failure by others, with equal perceived ability to their own, can act to reduce self-efficacy.

Although observed experiences generally have a weaker effect on self-efficacy than personal experience (Bandura, 1986), these observations may have a significant impact on individuals willingness to persist at a given behavior. For example, if individuals observe many successful entrepreneurs, and they are not currently doing well

with their own attempt, these observations of successful others may motivate them to continue and try harder by bolstering their self-perception of their ability to succeed. In essence creating the perception, “if others can do it, I know I can too if I just work a little harder.”

Social Persuasion

The formation of self-efficacy is not limited to prior and observed experiences with a given phenomenon. Self-efficacy can also form through social persuasion, the attempts of others to convince individuals they possess, or do not possess, the ability to succeed. While “social persuasion alone may be limited in its power to create enduring increases in self-efficacy” (Bandura, 1986, p. 400), it may act as a much needed boost in times of self-doubt. However, social persuasion can have a much greater effect when used to undermine individuals' self-efficacy. This is because those who have been convinced of self-inefficacy are more likely to avoid that specific behavior, or give up quickly in the face of difficulty, seeing impending failure as confirmation of self-inefficacy.

Summary of Self-Efficacy

The three sub-dimensions of self-efficacy (*prior experience, observed experience, and social persuasion*) work together to form self-efficacy. This is important to the prediction of intentions because it provides a means of determining the degree to which individuals will persist under conditions of uncertainty or difficulty.

Toward a Theory of Behavior Inclusive of Mindset

Based on existing theories of behavior and an extensive review of the literature on mindset, the following arguments have emerged. 1) Beliefs and attitudes are poor indicators of intentions. 2) Beliefs and attitudes are imperfect indicators of the *way of thinking* needed for the formation of intentions. 3) Definitions of mindset suggest mindset may be the way of thinking needed for the formation of intentions. 4) Review of the literature on mindset shows three cognitions relating to "the self" act to form the way of thinking that is mindset. These cognitions are *entity-schemata*, *self-concept*, and *self-efficacy*. 5) No existing theory of behavior is inclusive of mindset or adequately addresses the *way of thinking* needed for the formation of mindset.

Although these insights represent several potential contributions to academia, on their own they do not represent a means of explaining or predicting the entrepreneurial process. In order for this to take place, it is necessary to bring these agreements together into a single theory. By integrating the concept of mindset into an existing theory of behavior, explanation and prediction of the entrepreneurial process may be possible.

Integrating Mindset into a Theory of Behavior

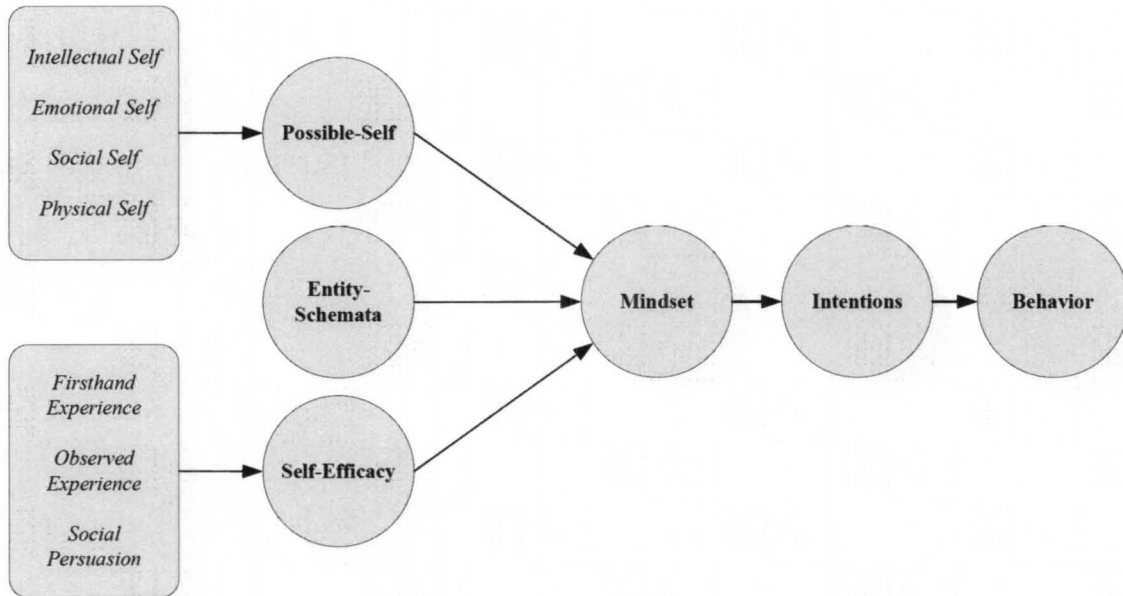
The theory of reasoned action, assumes individuals will form *intentions* to undertake a specific *behavior* based on their *beliefs* and *attitudes* toward the object of that behavior (Ajzen & Fishbein, 2005; Fishbein & Ajzen, 1975). In essence, under this theory, individuals undertake a specific behavior simply because they believe they can. However, as previously discussed, the statement is likely limited to behavior that is

imminent. To allow for the prediction of intentions when behavior is not at hand, it is necessary to determine the presence of a mindset consistent with the formation of intentions relating to a specific behavior.

Based on social cognitive theory (Bandura, 1986), personal characteristics are described as attitudes, values, and emotional proclivities. These characteristics are a function of learned experiences from prior behavior (prior experience with a phenomenon), the environment through social modeling (the prior experience of others), and social persuasion (factors that act to encourage or discourage such behavior). The theory in essence focuses on the creation or formation of self-efficacy (Bandura, 1997; Bandura et al., 1977), and as previously discussed self-efficacy is likely only part of the way of thinking that is mindset, as such, it is incomplete as a theory for predicting intentions. Based on this review, a fusion of the two theories, with the addition of self-concept and entity-schemata, may create a viable theory that is inclusive of mindset.

As a result, a theory of behavior inclusive of mindset would be as follows. The perception of being intellectually, socially, emotionally, and physically capable of undertaking a given behavior (self-concept) leads to the perception that such behavior is feasible and may be desirable (possible-self). This in conjunction with the perception of possessing, or having the capability to acquire, the knowledge needed to participate in the behavior (entity-schema) and the perception of possessing the ability to effectuate a given behavioral outcome (self-efficacy), indicates the existence of a *mindset* which acts as the means through which *intentions* to participate in a given *behavior* form. See figure 3.8.

Figure 3.8: Cognitive Model of Volitional Behavior



The theory of volitional behavior offers a possible means of explaining and predicting behavior. However, because several dimensions of the theory require domain specificity, a true logic test requires the application of the theory to a specific domain. Since examples throughout this work have used entrepreneurial behavior as the basis for illustration, it affords a convenient logic test of the theory.

Applying the Theory of Volitional Behavior to the Domain of Entrepreneurship

Unlike many more traditional career paths, entrepreneurship is equifinal. This is to say that individuals may take many different paths to become an entrepreneur (Markman & Baron, 2003). This is evident through the research on opportunity recognition. Researchers have shown entrepreneurs have a number of different methods to choose from when attempting to create or locate an entrepreneurial opportunity. These

range from a passive search, most often referred to as alertness (Ardichvili et al., 2003; Baron, 2006; Busenitz, 1996), to active searches, such as constrained, systematic search (Fiet, 2002, 2007; Fiet & Patel, 2008). Additionally, potential entrepreneurs have several different paths to choose from in order to acquire the knowledge necessary for entrepreneurial behavior. These options include academic education, informal internship, trial and error, or any combination. Based on this variety of options and paths, it is likely that entrepreneurial behavior is most often under the volitional control of the individual. Therefore, entrepreneurial behavior meets the primary assumption of the theory—*volitionality*.

Entrepreneurial Entity-Schema

By definition, an entrepreneur functions in an environment of uncertainty (McGrath & MacMillan, 2000). Thus, failure is a very real possibility even under the best of circumstances. The generally accepted failure rate of entrepreneurial ventures varies from 33 percent to 90 percent within the first four years (*USA Today*, 2003). Because of the widely known risk of failure and environment of uncertainty, under normal conditions, primarily individuals with a dynamic-entity schema are likely to pursue a career as an entrepreneur. As previously stated, this is not to say that everyone with a dynamic entity-schema will become an entrepreneur, only that individuals not possessing a dynamic entity-schema are much less likely to choose entrepreneurial behavior.

Entrepreneurial Self-Concept

Due to the equifinal nature of entrepreneurship, self-concept as it relates to entrepreneurial behavior is multi-dimensional. Therefore, conceptualization of entrepreneurial self-concept requires specification of each dimension.

Intellectual Self-Concept

Entrepreneurial behavior does not require a degree or any formal education. Well known people have become successful entrepreneurs without virtually any formal education. For example, Andrew Carnegie, industrialist and one of the first multi-billionaires dropped out of elementary school. Benjamin Franklin, inventor, scientist, and author was self-taught. Dave Thomas, founder of Wendy's, dropped out of high school at 15. George Eastman, founder of Kodak, dropped out of high school. Richard Branson, founder of Virgin Records, Virgin Mobile, and more dropped out of high school at age 16, and the list goes on and on. What all these people have in common is the belief that they were intelligent enough to undertake entrepreneurial behavior irrespective of their academic achievements or lack thereof. While researchers can argue these individuals are but exceptions to the rule, the perception of the general population is entrepreneurial behavior does not require formal education. Consequently, those individuals believing they possess the intellect necessary for entrepreneurial behavior are more likely to form an entrepreneurial mindset.

Social Self-Concept

As previously noted, entrepreneurial behavior often requires a high degree of social interaction (i.e. dealing with customers, employees, vendors, etc.). Possessing a social-self, which acts to support the entrepreneurial self-concept, is therefore important.

Entrepreneurs rarely, possess all the knowledge and experience needed to recognize and exploit an entrepreneurial opportunity (Baron, 2010). Entrepreneurs need to have social networks in areas of weakness that augment their own knowledge and experience—*social capital* (De Carolis & Saporito, 2006). The creation of social capital requires individuals who are capable of forming such relationships. As a result, the formation of entrepreneurial self-concept is unlikely to take place within individuals for whom social interaction is very difficult or not possible. Therefore, those individuals believing they possess the social skills necessary for entrepreneurial behavior, as they perceive it, are more likely to form an entrepreneurial mindset.

Emotional Self-Concept

Entrepreneurs must also possess an emotional-self capable of handling the personal, social, and cultural stress associated with entrepreneurial behavior (Ensley, Pearce, & Hmieleski, 2006; Lau, Hem, Berg, Ekeberg, & Torgersen, 2006). Uncertainty and risk often accompany entrepreneurial behavior. Therefore, the ability to remain emotionally strong in stressful situations and to rebound from failure is extremely important to the formation of entrepreneurial self-concept. Without such emotional strength, individuals would discontinue entrepreneurial behavior in favor of more pleasurable or comfortable behavior before the satisfaction of accomplishment is achieved (Shavelson & Bolus, 1982). Due to perceptions of a highly stressful environment associated with entrepreneurial behavior, individuals who are likely to form an entrepreneurial mindset do not fear stressful situations and may even thrive on such situations. Hence, individuals with a strong emotional constitution or psychological hardiness are more likely to form an entrepreneurial mindset.

Physical Self-Concept

Because the physical-self is dependent on the specific form of entrepreneurial behavior, the only requirement from this dimension is individuals see no physical limitation. However, because physical-self represents two distinct aspects: individuals perception of their body and its fundamental abilities (Shavelson et al., 1976). Body image is also important to the formation of entrepreneurial self-concept when the form of entrepreneurial behavior requires the potential entrepreneur physically represent them self or the type of entrepreneurial behavior to be undertaken. If the form of entrepreneurial behavior requires personal interaction with persons previously unknown, those with a substandard body image are likely to avoid the physical interactions necessary to this form of entrepreneurial behavior. The same is true about fundamental physical ability. If individuals wish to undertake entrepreneurial behavior that requires physical ability, they are unlikely to do so if they do not believe they possess the physicality needed. Due to this aspect, physical-self has a direct effect on the social and emotional-self. If individuals truly wish to undertake a form of entrepreneurial behavior that requires a physical type or ability they do not possess or are unable or unwilling to achieve, these people are likely to avoid the social interactions necessary for the type of entrepreneurial behavior chosen. Additionally, this cognitive dissonance, the conflict between what individuals want and what they feel they are capable of (Bercovitz & Feldman, 2008), results in stress that is highly destructive to the formation of entrepreneurial self-concept. Therefore, individuals who see no physical-self related barrier (either appearance or physicality) are more likely to form an entrepreneurial mindset.

Entrepreneurial Possible-Self

Built on entrepreneurial self-concept, the entrepreneurial possible-self is crucial to the formation of entrepreneurial mindset. Consistent with the work of Markus and Nurius (1986), if individuals do not see entrepreneurial behavior as a real possibility, no effort will take place or attention paid to entrepreneurial opportunities. Thus, individuals possessing a possible entrepreneurial-self are most likely to form an entrepreneurial mindset.

Entrepreneurial Self-Efficacy

Entrepreneurial self-efficacy is the strength of individuals' perception of their ability to effectuate entrepreneurial behavior, which is partially independent of perceived skill and specific prior experience (Chen, Greene, & Crick, 1998). This is important to the prediction of entrepreneurial behavior because it suggests a willingness to persist through the uncertainty of entrepreneurial behavior. While formed through prior and observed experience and social persuasion, entrepreneurial self-efficacy is in this context unidimensional. Thus, the strength of entrepreneurial self-efficacy, regardless of how it is formed, determines the likelihood that entrepreneurial mindset will form.

In summary, through the application of entrepreneurial behavior to a theory of volitional behavior, I have posited entrepreneurial mindset is the *way of thinking* that leads to entrepreneurial intentions and forms through the interaction of three specific cognitions relating to "the self." These cognitions are entrepreneurial entity-schema, entrepreneurial self-concept, and entrepreneurial self-efficacy.

Discussion

The view of behavior presented here is based on the premise that mindset represents a key component in the behavioral process, particularly when behavior is volitional. Although consistent with existing theories of behavior, the theory presented goes much further toward identifying the cognitions used to formulate intentions. These cognitions are integral to our understanding of how mindset develops and the effect it has on the process leading to behavior.

Volitional behavior begins with individuals. Thus, a key to explaining and predicting a given future behavior lies in individuals' perceptions of their ability to undertake that behavior—perceptions of "the self." Evidence for this proposition is found in studies showing perceptions of how learning affects the amount of effort put forth when attempting to gain the knowledge needed to undertake a given behavior—entity schemata (Dweck, 1975, 1986, 2000; Dweck & Leggett, 1988; Dweck & London, 2007). Additional evidence exists in studies showing how individuals view themselves ultimately impacts their willingness to undertake a given behavior—self-concept (Markus & Kunda, 1986b; Markus & Nurius, 1986; Markus & Oyserman, 1989; Markus & Wurf, 1987; Shavelson & Bolus, 1982). Furthermore, evidence is given showing individuals perception of their ability to effectuate a given behavioral outcome affects determination and perseverance when attempting a given behavior (Bandura, 1977, 1982, 1986). Thus, specific cognitions pertaining to "the self" explain the effort, the willingness, and the commitment individuals are willing to exert when they choose to undertake a given behavior. Such a framework should provide a useful foundation for further testing.

Calls for implementation or adoption of numerous different mindsets have been made, for example a consulting mindset (Nord, 1996), a continuous-learning mindset (Elstein & Driver, 2007; Walton, 2004), a discovery mindset (Benson & Dresdow, 2003), a global mindset (Gupta & Govindarajan, 2002; Harvey & Novicevic, 2001; Herbert, 2000; Levy et al., 2007), and an innovation mindset (Kuczmarski, 1996, 1998; Kuczmarski et al., 2003). However, such calls have gone unanswered in most cases due to the lack of a framework that accurately explains and predicts the phenomena. Thus, how mindset forms is important not only to cognitive psychology, but to researchers, academics, and practitioners from virtually every field in the behavioral sciences. Researchers seeking to explain and predict the behavior of entrepreneurs, managers, or virtually any individual choosing to undertake a given behavior, should look to the cognitions of entity-schemata, self-concept, and self-efficacy to explain and predict the formation of intentions. Academics can then use such research to develop educational tools and techniques to help those who wish to undertake a given behavior but feel they are unqualified, unable, and/or possess a fear of failure. Practitioners, such as managers, can use such knowledge to help support and encourage employees to meet their full potential for the benefit of the individual and company alike. Definitions of mindset such as those with entrepreneurial behavior can be refined to include the specific *way of thinking* that makes a given mindset unique.

This conceptualization adds to the distinctiveness of the field of entrepreneurship by offering a new theory specifically designed to explain and predict the entrepreneurial process. In identifying the relationship between cognitions related to "the self" and the process leading to volitional behavior, new agendas for future research are established by

developing clear propositions about the relationships between "the self" and mindset, and, mindset and intentions; new areas of research have opened with the potential to both complement and extend existing theories of behavior.

CHAPTER 4:

Essay 3: An Empirical Evaluation of Entrepreneurial Mindset Using the Theory of Volitional Behavior

Researchers have shown that modern business is characterized by rapid and radical change and that it must become more entrepreneurial than ever just to survive (Shepherd, McMullen, & Jennings, 2007). Researchers have also shown that promoting entrepreneurial behavior within such an environment requires individuals possess the capacity to think and act with an entrepreneurial mindset (McGrath & MacMillian, 2000; Mitchell, 2007). Research has also shown that not only has entrepreneurial mindset become important to entrepreneurs, but also is equally important for CEOs, managers, and employees (Haynie et al., 2010; Shepherd et al., 2010).

Despite agreement on the need for possessing and fostering an entrepreneurial mindset (c.f. Ireland et al., 2006; Mitchell, 2007), it remains unclear how mindset forms in the domain of entrepreneurship, based on its equifinal nature, the reality that individuals may take many different paths to become an entrepreneur (Markman & Baron, 2003). These varying paths have made testing for entrepreneurial mindset difficult at best. Additionally, we do not know if entrepreneurial mindset actually leads to the formation of entrepreneurial intentions as this relationship has yet to be tested. With unanswered questions such as these, it is apparent that issues remain over whether or not mindset is an important aspect of the entrepreneurial process or its relationship to intentions.

To that end, this research seeks to determine *to what degree entrepreneurial mindset affects the formation of entrepreneurial intentions*. Knowledge of the true relationship between mindset and intentions, and, the antecedents to mindset will offer valuable insight into the entrepreneurial process. This is important as it delves into an area that has the potential to add to the distinctiveness of the field of entrepreneurship, which according to Gartner (1989a), is an essential component in studying entrepreneurs. Additionally, understanding of the cognitions leading to the formation of entrepreneurial mindset will afford academics a foundation from which to build courses and programs specifically designed to promote entrepreneurial mindset and ultimately entrepreneurial behavior. This research investigates entrepreneurial mindset and its relationship to entrepreneurial intentions to determine the degree to which it affects the entrepreneurial process.

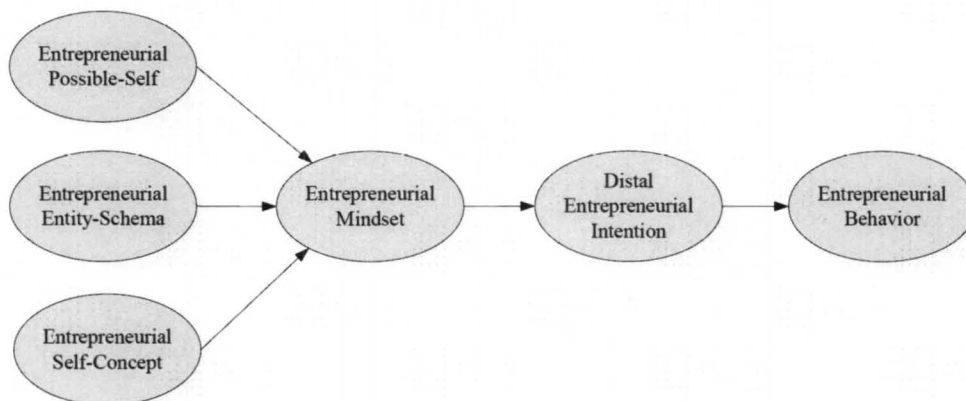
The research proceeds as follows: first, a brief review of the theory of volitional behavior will lead to the formation of hypotheses relating to cognitions necessary to explain and predict entrepreneurial mindset and its relationship to entrepreneurial intentions. Next, selection of appropriate measures to test the concepts takes place after which, a description of the methodology used and a report of the findings leads to a discussion of the implications and limitations of the research.

Theory and Hypotheses

The theory of volitional behavior offers a potential means to overcome the equifinality issue in entrepreneurship by looking to the cognitive factors that foster formation of entrepreneurial mindset (chapter 3). The theory states individuals'

perceptions of learning—entity-schemata, combined with the way they perceive themselves—possible-self, and their perceptions of their ability to make things happen—self-efficacy, create a way of thinking that is mindset and acts as the impetus through which intentions to participate in or avoid a given behavior form. Because the theory suggests mindset forms in relation to a specific behavior, the application of the theory requires domain specificity. As described previously in chapter 3, the theory of volitional behavior posits entrepreneurial mindset as one *way of thinking* that leads to the distal intention to become an entrepreneur. From the proposed perspective, entrepreneurial mindset is determined, in part, by three specific cognitions relating to "the self"—entrepreneurial entity-schema, entrepreneurial possible-self, and entrepreneurial self-efficacy. See Figure 4.9.

Figure 4.9: Hypothesized Model of Entrepreneurial Intention



Entrepreneurial Entity-Schema

An entrepreneurial entity-schema is likely that of a dynamic entity-schema (chapter 3), which is the perception that learning is the result of hard work, and as such, always a work in progress (Molden & Dweck, 2006), as opposed to being, an inherent or

genetic characteristic that does not change—static-entity schema (Dweck, 1996). Expanding on this further, entrepreneurial behavior exists primarily within an environment of change and uncertainty (McGrath, 1999; McMullen & Shepherd, 2006; Patel & Fiet, 2009). Most nascent entrepreneurs understand they are entering such an environment and must be capable of continuously adapting to the changing circumstances (Austin, Stevenson, & Wei Skillern, 2006). Since continuous change requires individuals to absorb and assimilate new knowledge as it becomes available (Quintas, 2002), choosing to enter such an environment suggests individuals who do enter, believe they are capable of learning as they go. This is consistent with possessing a dynamic-entity schema. Individuals with a dynamic entity-schema see change, and even failure, as a challenge to be met, unlike those possessing a static-entity schema who see change, and especially failure, as a force to be avoided at all cost (Dweck, 2000). Therefore, individuals' level of entrepreneurial mindset is likely to be strongly related to their level of entrepreneurial entity-schema.

Hypothesis 1: Entrepreneurial (dynamic) entity-schema is positively related to entrepreneurial mindset.

Entrepreneurial Possible-Self

Due to the equifinal nature of entrepreneurship, an entrepreneurial self-concept likely requires the existence of each of the four sub-dimensions, intellectual-self, emotional-self, social-self, and physical-self as they specifically relate to the form of entrepreneurial behavior chosen by the individual. These self-concepts lead to the existence of an entrepreneurial possible-self. This factor is important to entrepreneurial mindset because if someone does not see entrepreneurial behavior as a real possibility, no

effort will take place or attention be paid to entrepreneurial opportunities when they arise (Markus & Nurius, 1986).

Hypothesis 2: Entrepreneurial possible-self is positively related to entrepreneurial mindset.

Entrepreneurial Self-Efficacy

Entrepreneurial self-efficacy is the strength of individuals' perception of their ability to effectuate entrepreneurial behavior, which is partially independent of perceived skill and specific prior experience (Chen et al., 1998). Self-efficacy acts as a motivator to undertake and persist once a specific behavior is chosen (Zhao et al., 2005). This is a particularly important aspect of entrepreneurial behavior because the perception of control affects the course of action, the level of effort, the willingness to persist under duress, as well as resilience to obstacles, adversity and failure (Markman, Balkin, & Baron, 2002). In short, *entrepreneurial self-efficacy* refers to the perception of the ability to undertake entrepreneurial behavior without fully knowing or understanding what skills or abilities said behavior require (Ajzen, 2002). Thus, self-efficacy provides the means by which individuals perceive entrepreneurial behavior as feasible (Krueger, 1993, 2000). It also affects the degree to which they will persist under the uncertainty of entrepreneurial behavior. Therefore, individuals possessing entrepreneurial self-efficacy are most likely to possess an entrepreneurial mindset.

Hypothesis 3: Entrepreneurial self-efficacy is positively related to entrepreneurial mindset.

Entrepreneurial Mindset

As described in chapter 3, the level of entrepreneurial mindset is shaped by a specific set of cognitions (entrepreneurial entity-schema, possible-self, and self-efficacy).

Entrepreneurial mindset affects sensitivity to entrepreneurial opportunities allowing individuals to sense opportunities and rapidly act upon them (Haynie et al., 2010; Shepherd et al., 2010). As a result, entrepreneurial mindset can act as a lens through which entrepreneurs, and potential entrepreneurs, see their environment. Through this lens, opportunities can be located, or created, and, feasibility and desirability is determined (Gollwitzer & Kinney, 1989). Thus, entrepreneurial mindset leads to the distal intention to become an entrepreneur.

Hypothesis 4: Entrepreneurial mindset is positively related to the distal intention to become an entrepreneur.

Distal Intention to Become an Entrepreneur

Although entrepreneurial intentions in general have been shown to be the single best predictor of entrepreneurial behavior (Krueger et al., 2000), research has shown that only the distal intention to become an entrepreneur remains consistent as an indicator of entrepreneurial behavior throughout the entrepreneurial process (Chapter 2). Thus, the distal intention to become an entrepreneur most likely leads to entrepreneurial behavior.

Hypothesis 5: The distal intention to become an entrepreneur is positively related to entrepreneurial behavior.

The Mediating Role of Distal Entrepreneurial Intention

Although the theory of volitional behavior make no mention of the existence of a direct or mediated relationship between entrepreneurial mindset and entrepreneurial behavior, an implicit relationship between distal intentions and behavior may exist based on the assumption that any intention toward a given behavior will result in at least some investigative behavior regardless of the outcome (Bandura, 1977). For example, the distal intention to become an entrepreneur will result likely result in forms of entrepreneurial

behavior (such as looking for an entrepreneurial opportunity) as a means of further determining if entrepreneurship is feasible. Therefore, although in general entrepreneurial mindset leads to the distal intention to become an entrepreneur, which in turn leads to entrepreneurial behavior, an indirect relationship between the entrepreneurial mindset and entrepreneurial behavior likely exists. Thus, the distal intention to become an entrepreneur acts to mediate the relationship between entrepreneurial mindset and entrepreneurial behavior.

Hypothesis 6: The distal intention to become an entrepreneur mediates the effect of entrepreneurial mindset on entrepreneurial behavior.

Predicating Entrepreneurial Behavior

A scholarly explanation is the statement of relationships between factors which describes what, how, and why relationships occur (Whetten, 1989, 2002). However, for this to result in a complete theory it must also afford prediction of when, where, and by whom occurrence of a phenomenon is expected to take place (Bacharach, 1989; Dubin, 1969; Sutton & Staw, 1995; Weick, 1989, 1995). Thus far, this research has posited a scholarly explanation using the theory of volitional behavior. However, for the theory to be a complete theory of the entrepreneurial process, it must have the potential for prediction (Dubin, 1969). Prediction in this case requires the ability to differentiate between groups at differing stages of the entrepreneurial process.

Hypothesis 7: Significant variance exists between groups at different stages of the entrepreneurial process.

Methods

Procedures and Samples

Because data collected were longitudinal, and hypothesis testing required the comparison of constructs at differing stages of the process leading to entrepreneurial intentions, representative samples were used at theoretically different stages of the process.

Sample 1

Sample 1 consisted of 139 respondents (a 68% response rate) from a midsize University, located in a large metropolitan Midwestern city. Respondents were in the process of completing business-related degrees with approximately 10 percent of the population known to have at least some academic exposure to the concept entrepreneurship. The demographic profile of this sample indicates that it was comprised of 59 percent male and 41 percent female, 26 percent married or in a long-term committed relationship, with 21 percent having children. The age of the respondents ranged from 18 to 53 years old at the time of data collection. The ethnicity was 85 percent Caucasian, 15 percent African American, Hispanic, Oriental, Indian, Native American or other. The political affiliation was diverse with 39 percent Democrat, 38 percent Republican, and 23 percent independent or other.

Sample 2

Sample 2 consisted of 132 respondents (a 56% response rate) from a midsize University, located in a small rural Northwestern town. Although the respondents were in the process of completing business-related degrees, they had no known exposure to academic concepts relating to entrepreneurship exists. The demographics for this sample

indicate the sample was 55 percent male and 45 percent female; 20 percent married or in a long-term committed relationship, with 15 percent having children. The age of the respondents ranged from 17 to 55 years old at the time of data collection. The sample's ethnicity consisted of 75 percent Caucasian, 25 percent African American, Hispanic, Oriental, Indian, Native American or other. Political affiliation was again diverse with 46 percent Democrat, 28 percent Republican, and 26 percent independent or other.

Sample 3

Sample 3 consisted of 175 respondents (a 21% response rate) who were in the process of starting a business or who were undertaking entrepreneurship in a large Midwestern city. These respondents had been associated with the entrepreneurship center of a midsized Midwestern university within the last 10 years and were uniquely suited for this study due to their diversity. Because the location of the center borders on the edge of a large metropolitan city and a rural community, the population of entrepreneurs is extremely diverse. The population ranges from the highly educated to the minimally or uneducated, from the affluent to the underprivileged, and is comprised of virtually all age groups. Thus, the results should generalize well to the overall population of entrepreneurs.

The demographics for this sample indicated that it consisted of 16 percent nascent entrepreneurs (n=25), 47 percent first-time entrepreneurs (n=74), 14 percent serial entrepreneurs (n=21), and 23 percent parallel entrepreneurs (n=35). The sample ranged in age from 22 to 92 years old at the time of data collection, 58 percent were male and 42 percent were female, 68 percent married or in a long-term committed relationship, and 88 percent with children. Education included 2 percent with less than a high school

education, 7 percent with a high school education or GED, 22 percent with some college, 14 percent with an Associate degree, 31 percent with a bachelor degree, 17 percent with a master degree, and 7 percent with a doctoral or professional degree. The sample's ethnicity consisted of 47 percent Caucasian, 47 percent African American, and 6 percent Hispanic, Oriental, Indian, Native American or other. The political affiliations were diverse with 40 percent considering themselves to be Democrat, 18 percent Republican, and 42 percent independent or other.

Data Collection Procedure

A modified version of Dillman's Tailored Design Method (2007; Dillman et al., 2009) was used to obtain a maximum response rate for all samples. The first contact was in the form of an email from a highly recognized individual within the degree-granting institution or the entrepreneurship center. This email included the institution's graphics and logos intended to lend legitimacy to the request. The purpose of the email was to explain the study, to introduce the researcher, to explain the value of participation, and, when to expect a formal invitation to participate in the study.

The second contact took place three days later as specified in the first correspondence. This email consisted of a brief re-introduction of the researcher, further expression of the contribution made by participation, and a link to the survey software used to administer the questionnaire (Qualtrics). One week later, those who had not yet started and those who had started but had not completed the survey received a reminder. This reminder-email again expressed the importance of participation and acted as a second request to take or complete the survey. In both cases upon completion of the survey, respondents received an email thanking them for their participation.

Four days after the second request for participation, those who had not yet taken or completed the survey received a third email reiterating the importance of participation and requesting participation or completion within the next three days. Final contact occurred 3 days later, the stated final day of data collection. It expressed the value their participation would bring to the study. It also provided the specific time the questionnaire would deactivate, and, one final request for participation.

Measures

To ensure uniformity across measures due to variations in the number of items used per construct, conversion to a single scale based on mean score for each measure took place. Missing data were not an issue because only respondents completing all questions were included in the samples previously described. Thus for all measures, a high score indicates a strong existence of the construct and a low score indicates a weaker existence.

Entrepreneurial Entity-Schema

Entrepreneurial entity-schema was measured using Dweck's (2000) *Implicit Theories of Intelligence Scale*. The instrument measures attitude toward intelligence, specifically perception of ability to learn, through the self-evaluation of two dimensions: fixed and incremental intelligence. *Fixed intelligence* is the belief that intelligence is a fixed trait (static entity-schema) and that a person possesses a finite amount which cannot be increased (Bandura & Dweck, 1988; Dweck & Leggett, 1988). *Incremental intelligence* is the belief that intelligence is a process which is cultivated through learning (dynamic entity-schema) and as such no limit exists to what can be learned with the

appropriate amount of effort (Bandura & Dweck, 1988; Dweck & Leggett, 1988). This instrument uses an eight item Likert type scale (1=Strongly disagree to 7=Strongly Agree), four fixed and four incremental, to determine individuals perception of their ability to learn. The measure can be used to classify respondents as possessing a static entity-schema (a fixed intelligence perspective) or a dynamic entity-schema (an incremental intelligence perspective), typically 40 to 45 percent per group, as well as a small set of respondents not possessing a well-defined perspective, typically 10 to 15 percent (Levy, Stroessner, & Dweck, 1998).

Although psychometric support for the instrument primarily exists through the study of school age children (5-18), the instrument was adapted for adults and showed consistent results with that of the children's version (Levy et al., 1998). Researchers report Cronbach's alpha for the instrument (both versions) to be between .84 and .93, with and internal reliability across items reported as .93 (Erdley & Dweck, 1993; Levy & Dweck, 1999; Levy et al., 1998). Removal of the four items measuring static entity took place and the remaining four items averaged into an overall score of dynamic entity-schema with high scores indicating the presence of an entity-schema consistent with entrepreneurial behavior. The measure produced an alpha of .93. Discriminant validity, by means of factor analysis on five separate samples, showed all items on a single dimension as theorized with scores ranging from .91 to .96. Additionally, the instrument has been compared to existing measures of cognitive ability (Scholastic Aptitude Test), confidence in intellectual ability (Hong, Chiu, & Dweck, 1995), and self-esteem (Coopersmith, 1981) which suggest no significant relationship existed between the two dimensions. Testing was repeated with the adult version which found responses to the

adult form were also independent of Paulhus' (1984) Social Desirability Scale, the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960), and the Motivation to Control Prejudiced Reactions Scale (Dunton & Fazio, 1997). These findings indicate that the instrument is in fact a unique measure of implicit intelligence theories. Based on the psychometric properties of this instrument, Dweck's Implicit Theories of Intelligence Scale is an appropriate measure of entrepreneurial entity-schemata.

Entrepreneurial Possible-Self

Since a specific measure of entrepreneurial possible-self does not exist, measurement consists of a single item requesting the selection of the statement that best describes respondents' perception of themselves as a potential entrepreneur.

The choices included are as follows and scored on a scale of 0 to 7:

- I am already an entrepreneur (score 7).
- I am already in the process of becoming an entrepreneur (score 6).
- I know I will be an entrepreneur soon (score 5).
- I know I will be an entrepreneur one day (score 4).
- It is possible that I will be an entrepreneur one day (score 3).
- It is unlikely that I would ever be an entrepreneur (score 2).
- It is extremely unlikely that I would ever be an entrepreneur (score 1).
- There is no way I could ever be an entrepreneur (score 0).

Entrepreneurial Self-Efficacy

Two measures of entrepreneurial self-efficacy were evaluated for use in this research, the Chen, Greene, and Crick scale (1998) and De Noble, Jung, and Ehrlich's scale (1999). Although both instruments were found to be psychometrically sound, evaluation of items revealed the Chen, Greene, and Crick scale focused primarily on entrepreneurial self-efficacy toward specific tasks relating to running a business (i.e.

"Conducting a marketing analysis", "Expanding a business", "Controlling cost", etc). The instrument is therefore best suited for individuals who are nearing entrepreneurial nascence or have a business related background.

Although the De Noble, Jung, and Ehrlich scale used general items to access entrepreneurial self-efficacy (i.e. "I can work productively under continuous stress, pressure and conflict" and "I can persist in the face of adversity"), both scales require respondents to possess a level of business knowledge and familiarity with business terms. Consequently, while neither instrument was used in its entirety, several items were revised or reworded from the De Noble, Jung, and Ehrlich's scale for use in this research and measured using a Likert type scale with 1=Strongly disagree and 7=Strongly Agree. This was necessary for the measurement of entrepreneurial self-efficacy in respondents not familiar with the inner workings and terminology relating to business.

Table 4.12: Factor Analysis - Entrepreneurial Self-Efficacy

Component Matrix	Component
ESE_1: can locate an opportunity to start a business	.782
ESE_2: confident that I can exploit an opportunity to start a business once located	.747
ESE_3: not sure I have what it takes to start a business *	.708
ESE_4: certain I can articulate my vision for a business to others	.750
ESE_5: certain I can inspire others to join my business when I start one	.752
ESE_6: confident I can locate sources of funding to start a business	.504
ESE_7: certain I can handle the stress and pressure of owning my own business	.773
ESE_8: not sure I can handle the day-to-day stress and pressure that comes with owning my own business*	.678
ESE_9: not sure I can tolerate the uncertainty that comes with owning your own business*	.690
ESE_10: certain that I can persist in the face of adversity	.765
ESE_11: confident I can recruit employees for my business	.766
ESE_12: confident I can train employees for my business	.736

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

* Items are reverse coded

Analysis of reliability indicates removal of any items would not improve internal consistency ($\alpha=.91$) of the measure. A Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (.93) indicated correlation among variables was large, and consequently, factor

analysis was appropriate. Principal component analysis, with varimax rotation, confirmed all items loaded on the single factor theorized. See Table 4.12.

Entrepreneurial Mindset

Table 4.13: Factor Analysis of Entrepreneurial Mindset

Component Matrix^a	Components	
	Exploitation	Identification
I am ...	$\alpha=.86$	$\alpha=.81$
M_8: persistent when it comes to getting something I want	.967	
M_6: determined to make something happen when I really want it	.849	
M_7: capable of finding a way to get what I want	.823	
M_10: willing to take a chance to get something I really want	.629	
M_9: passionate about making new things happen	.549	
M_2: imaginative		.874
M_4: sees something where others see nothing		.853
M_1: open to new possibilities		.637
M_3: frequently looking for a better way to do things		.621
M_5: sees opportunity in all areas of life		.571

Extraction Method: Principal Component Analysis.
 Rotation Method: Promax with Kaiser Normalization.
 a. Rotation converged in 3 iterations.

Because no measures of entrepreneurial mindset were located⁶, the creation of ten items to measure the concept was necessary. Items were created based on the two conceptualized dimensions of *identification* and *exploitation* (chapter 3) and measured on a Likert type scale with 1 = Strongly disagree and 7 = Strongly Agree.

A Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (.83) indicated correlation among variables was large, and consequently, factor analysis was appropriate as a means of supporting the theorized dimensions of the measure. Principal component analysis, with promax rotation, resulted in all items loading on the two distinct components theorized (Table 4.13). Correlation between exploitation and identification was .51 indicating, while the dimensions are related, differentiation exists. Analysis of reliability indicates removal of any item would not improve internal consistency ($\alpha=.83$).

⁶ For a complete listing of the measures evaluated and the rationale for exclusion, see Appendix C.

Repeat analysis of the measure on two separate samples showed consistent results with KMO of .87 and .92, correlation of .53 and alpha of .87 and .89 respectively, accounting for 61 percent of the variance.

Distal Intention to Become an Entrepreneur

Measurement of distal entrepreneurial intention consists of a single item requesting the selection of the statement that best describes the respondent's intention to start a business.

The choices included are as follows and scored on a scale of 0 to 5:

- I would like to start a business within the next year (score 5).
- I would like to start a business within the 1 to 2 years (score 4).
- I would like to start a business within the 3 to 5 years (score 3).
- I would like to start a business someday, but I do not think it will be within the next 5 years (score 2).
- I have no intention of ever starting a business, but anything is possible (score 1).
- I have no intention of ever starting my own business (score 0).

Entrepreneurial Behavior

Six items act as a measure of entrepreneurial behavior. These items represent behaviors relating to the preparation for business start-up (pre-nascence) with the greater accumulation of behaviors representing a greater measure of entrepreneurial behavior ranging from 0-6.

- I am watching for the opportunity to start my own business.
- I am actively searching for the opportunity to start my own business.
- I have taken classes in preparation for starting my own business.
- I have chosen the type of business I am going to start.
- I have chosen a name for my business.
- I have chosen a logo or letterhead.

Statistical Procedures

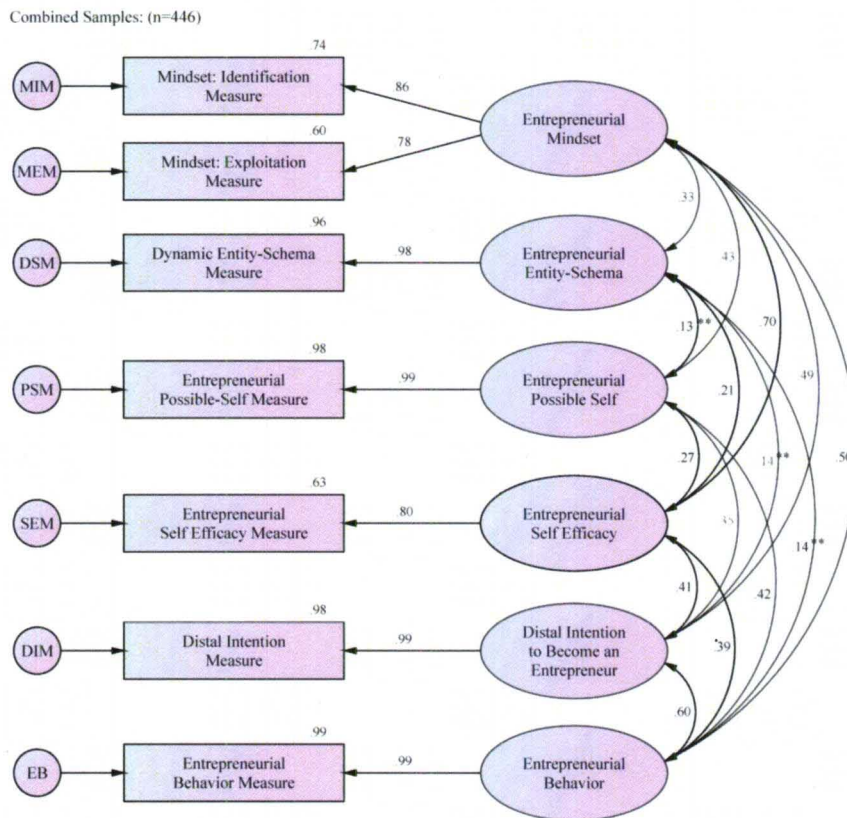
Although several non-parametric tests, using SPSS 19, are used to determine reliability and validity of measures and samples, the primary statistical technique used for

examining the relationship between cognitions and entrepreneurial intentions is structural equation modeling (SEM) using AMOS 19.

Results

Hair, Black, Babin, and Anderson (2010) suggest evaluating the measurement model prior to testing of the structural model to determine reliability of the measures. Although the model does not strictly adhere to the generally preferred criteria in every way (i.e. RMSEA <.05), the analysis shows the measurement model adequately fits the data as a whole for all samples combined. See Figure 4.10.

Figure 4.10: Measurement Model for Combined Samples



*Model Notes:
 1. Chi-Square = 11.340, df = 4, CFI = .967, PCFI = .184, RMSEA = .064, PCLOSE = .245
 2. PCLOSE > .05 means, at a 95% confidence level, RMSEA is not statically different from an RMSEA <.05 indicating a close fit.
 3. All estimates and covariances are significant at .000 except where noted as follows: ***=p<.001, **=p<.01, *=p<.05, ns=non-significant.

Because testing of some hypotheses requires comparison between samples, additional testing of the measurement model is required to ensure model fit for each group prior to evaluation of the structural model (Byrne, 2001). Additionally, because data were available to determine specific types of entrepreneurs and entrepreneurs at different stages of the entrepreneurial process may possess different entrepreneurial mindsets affecting the entrepreneurial process two additional groups were created. These included those who are focusing on running an entrepreneurial venture (operational entrepreneurs) and those in the process of starting a venture (pre-operational: nascent, serial, and parallel entrepreneurs). See Table 4.14.

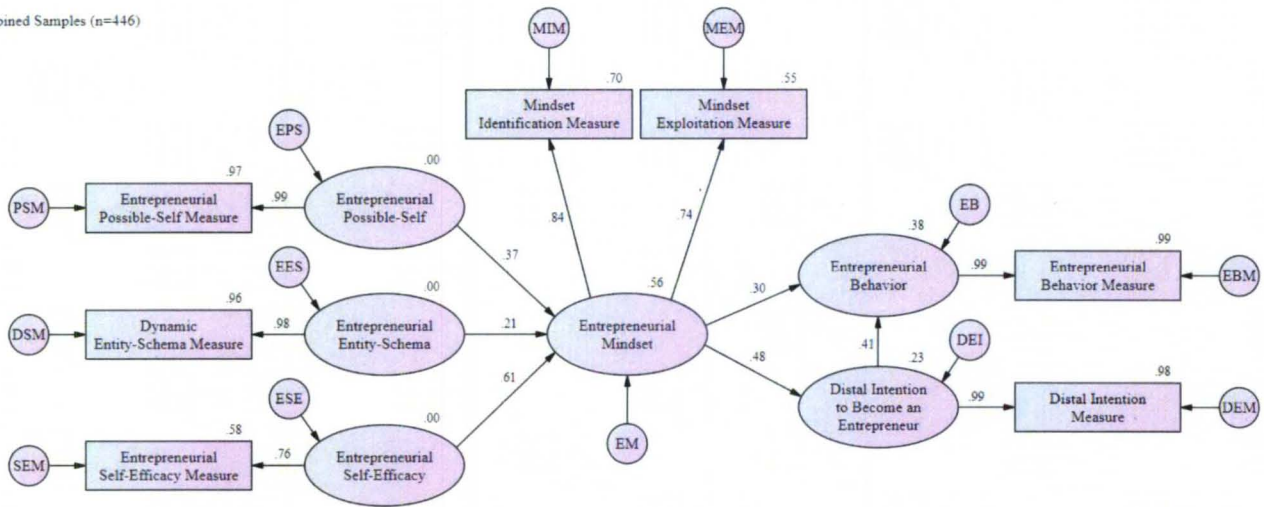
Table 4.14: Fit Indices for Measurement Model by Sample/Group

Index	Sample 1 Non-Entrepreneurs Urban	Sample 2 Non-Entrepreneurs Rural	Sample 3a Operational Entrepreneurs	Sample 3b Pre-Operational Entrepreneurs
Chi-Square (χ^2)	5.839	1.520	3.080	1.841
Degrees of freedom (<i>df</i>)	4	4	4	4
χ^2/df	1.460	0.380	0.770	0.460
Root Mean Squared Error (RMSEA)	.058	.000	.000	.000
Lower bounds of 90% confidence interval	.000	.000	.000	.000
Upper bounds of 90% confidence interval	.151	.079	.146	.109
Test of close fit (PCLOSE)	.366	.893	.642	.829
Standardized Root Mean Square Residual (RMR)	.030	.015	.020	.013
Comparative Fit Index (CFI)	.973	1.000	1.000	1.000
Parsimony Comparative Fit Index (PCFI)	.186	.190	.190	.190

Based on individual analysis of the measurement model, the model represents an adequate fit for all four samples/groups and therefore is acceptable for multi-group analysis. Thus, creation of the structural model for hypothesis testing is appropriate. See Figure 4.11.

Figure 4.11: Structural Model Combined Samples/Groups

Combined Samples (n=446)



Model Notes
 1. Chi-Square = 65.242, df = 13, CFI = .764, PCFI = .473, RMSEA = .095.
 2. All estimates and covariances are significant at <.000 except where noted as follows: *** = <.001, ** = <.01, * = <.05, ns = not significant.

Path analysis comparing estimates between the two samples of non-entrepreneurs shows that no significant differences exist. This suggests the model is consistent between the independent samples of non-entrepreneurs and they were thus combined for further testing as those with no entrepreneurial experience. See Table 4.15.

Table 4.15: Difference by Path for Non-Entrepreneurs

		Sample 1 Non-Entrepreneurs Urban		Sample 2 Non-Entrepreneurs Rural		z-score	
		Estimate	P	Estimate	P		
Distal Entrepreneurial Intention	--->	Entrepreneurial Mindset	1.037	0.000	1.236	0.000	0.640
Entrepreneurial Behavior	--->	Entrepreneurial Mindset	0.503	0.097	0.947	0.001	1.051
Entrepreneurial Possible-Self	--->	Entrepreneurial Mindset	1.323	0.000	1.843	0.000	1.223
Entrepreneurial Entity-Schema	--->	Entrepreneurial Mindset	0.396	0.070	0.801	0.000	1.340
Entrepreneurial Self-Efficacy	--->	Entrepreneurial Mindset	0.571	0.000	0.690	0.000	0.856
Entrepreneurial Behavior	--->	Distal Entrepreneurial Intention	1.132	0.000	0.897	0.000	-1.164

Notes: *** p-value < 0.001; ** p-value < 0.01; * p-value < 0.05

Analysis of sample 3a (operational entrepreneurs) and sample 3b (pre-operational entrepreneurs) to determine variance shows the two groups differ significantly on at least

one estimate. Therefore, the two groups remain independent for further testing. Table 4.16.

Table 4.16: Difference by Path for Entrepreneurs

			Sample 3a Operational Entrepreneurs		Sample 3b Pre-Operational Entrepreneurs		
			Estimate	P	Estimate	P	z-score
Distal Entrepreneurial Intention	→	Entrepreneurial Mindset	0.708	0.068	0.766	0.000	0.132
Entrepreneurial Behavior	→	Entrepreneurial Mindset	0.665	0.083	0.165	0.496	-1.102
Entrepreneurial Possible-Self	→	Entrepreneurial Mindset	0.748	0.014	0.397	0.125	-0.882
Entrepreneurial Entity-Schema	→	Entrepreneurial Mindset	0.953	0.004	0.663	0.005	-0.713
Entrepreneurial Self-Efficacy	→	Entrepreneurial Mindset	0.514	0.000	0.258	0.000	-2.091*
Entrepreneurial Behavior	→	Distal Entrepreneurial Intention	-0.040	0.707	0.129	0.288	1.046

Notes: *** p-value < 0.001; ** p-value < 0.01; * p-value < 0.05

Results of Hypothesis Testing Part 1: Theory of Volitional Behavior Explanatory Power

Hypothesis 1 suggests that a statistically significant relationship exists between an entrepreneurial (dynamic) entity-schema and the level of entrepreneurial mindset. Analysis of the combined model (Figure 4.11) shows the relationship to be both positive and significant ($\beta=.31$, $p<.001$) thus supporting hypothesis 1. Hypothesis 2 states that entrepreneurial possible-self is related to the level of entrepreneurial mindset. The model also shows support for this hypothesis with the relationship being both positive ($\beta=.37$) and significant ($p<.001$). Hypothesis 3 suggests entrepreneurial self-efficacy is an additional factor in determining the level of entrepreneurial mindset. The model once again shows support for this hypothesis with the relationship being both positive ($\beta=.61$) and significant ($p<.001$). These results suggest these three core-level cognitions related to

the self are likely to substantially influence entrepreneurial mindset accounting for 56 percent of the variance ($R^2 = .56$).

Hypothesis 4 suggests an entrepreneurial mindset is a factor in the formation of the distal intention to become an entrepreneur. Analysis shows the relationship to be both positive and significant ($\beta = .48$, $p < .001$) accounting for 23 percent of the variance ($R^2 = .23$) thus support exists for hypothesis 4. Hypothesis 5 suggests the distal intention to become an entrepreneur is a factor in entrepreneurial behavior (as a proxy for proximal entrepreneurial intentions). Analysis shows this relationship to be both positive and significant ($\beta = .41$, $p < .001$) thus support for hypothesis 5 exists. These results suggest that an entrepreneurial mindset is likely a motivating force for entrepreneurial behavior.

Hypothesis 6 suggests a mediated relationship exists between entrepreneurial mindset and entrepreneurial behavior. Although a test of mediation shows a drop in estimate ($\Delta\beta = .20$), supporting hypothesis 6, the direct effect remains significant ($p < .001$). Therefore, the relationship is only partially mediated by the distal intention to become an entrepreneur accounting for 38 percent of the variance in entrepreneurial behavior ($R^2 = .38$). See Table 4.17.

Table 4.17: Test of Mediation

Group	Direct Effect unmediated	Direct Effect mediated	Indirect Effect
Entrepreneurial Mindset – Entrepreneurial Behavior	.50***	.30***	.41***
Entrepreneurial Mindset – Distal Intention	.48***		

Based on these analyses, the theory of volitional behavior offers a viable explanation for the entrepreneurial process. However, in order for the model to present more than a scholarly explanation it must also offer the possibility of prediction.

Results of Hypothesis Testing Part 2: Theory of Volitional Behavior Predictive Power

In order to determine if the theory is predictive, a means of differentiating between individuals at different stages of the entrepreneurial process must exist. Invariance between groups, multi-group analysis, is one such means of determining differentiation.

First, all paths are allowed to vary freely in the three groups simultaneously representing a baseline. Next, all parameters were constrained; the chi-square value of this model was obtained and compared to the unconstrained model. Because the fully constrained model varies significantly from the unconstrained hypothesized model in all comparisons ($p < .001$), further tests were conducted to determine which paths between latent constructs varied and which were invariant. Subsequently paths freed one at a time allowed determination of individual path variance or invariance. See Table 4.18.

Table 4.18: Tests of Invariance between Groups

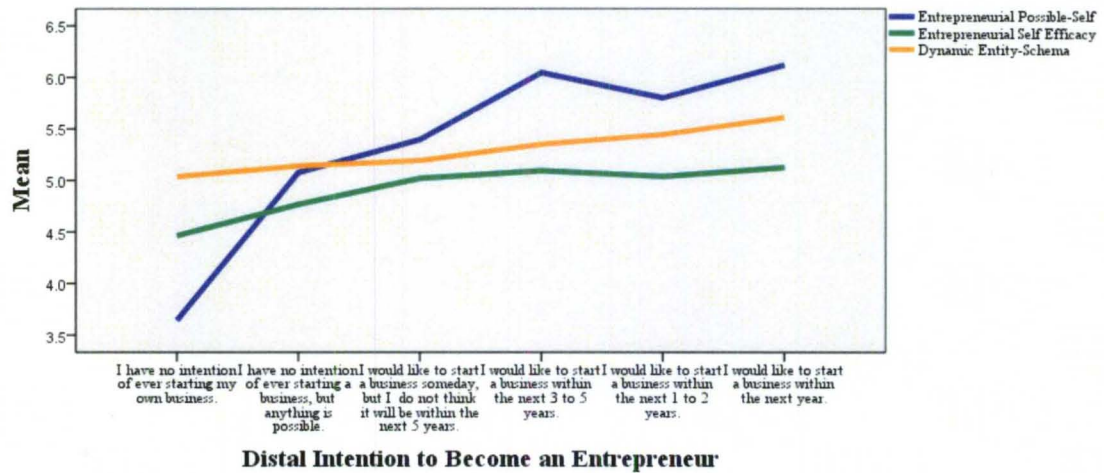
Groups 1 & 2: No Entrepreneurial Experience and Operational Entrepreneurs					
	χ^2	df	$\Delta\chi^2$	Δdf	Sig.
Hypothesized Model (Paths Free to Vary)	60.068	26			
Fully Constrained Model (Baseline)	163.410	41	103.342	15	.000
Test of Relationship Invariance					
Freed: Possible-Self – Mindset (Model 1)	161.499	40	1.910	1	.167
Freed: Entity-Schema – Mindset (Model 2)	162.621	40	0.789	1	.375
Freed: Self-Efficacy – Mindset (Model 3)	163.065	40	0.344	1	.557
Freed: Mindset – Distal Intention (Model 4)	162.878	40	0.532	1	.446
Freed: Mindset – Behavior (Model 5)	162.740	40	0.669	1	.413
Freed: Distal Intention – Behavior (Model 6)	150.763	39	12.647	1	.000
Freed: Structural Model (all six free)	145.569	35	17.840	6	.007

Groups 1 & 3: No Entrepreneurial Experience and Pre-Operational Entrepreneurs					
	χ^2	<i>df</i>	$\Delta\chi^2$	Δdf	<i>Sig.</i>
Hypothesized Model (<i>Paths Free to Vary</i>)	56.551	26			
Fully Constrained Model (<i>Baseline</i>)	149.415	41	92.864	15	.000
Test of Relationship Invariance					
Freed: Possible-Self – Mindset (<i>Model 1</i>)	148.674	40	0.742	1	.389
Freed: Entity-Schema – Mindset (<i>Model 2</i>)	149.219	40	0.196	1	.658
Freed: Self-Efficacy – Mindset (<i>Model 3</i>)	147.198	40	2.217	1	.137
Freed: Mindset – Distal Intention (<i>Model 4</i>)	149.149	40	0.267	1	.605
Freed: Mindset – Behavior (<i>Model 5</i>)	147.974	40	1.441	1	.230
Freed: Distal Intention – Behavior (<i>Model 6</i>)	126.205	40	23.210	1	.000
Freed: Structural Model (all six free)	119.473	35	29.943	6	.000
Groups 2 & 3: Operational Entrepreneurs and Pre-Operational Entrepreneurs					
	χ^2	<i>df</i>	$\Delta\chi^2$	Δdf	<i>Sig.</i>
Hypothesized Model (<i>Paths Free to Vary</i>)	34.154	26			
Fully Constrained Model (<i>Baseline</i>)	56.173	41	22.020	15	.107
Test of Relationship Invariance					
Freed: Possible-Self – Mindset (<i>Model 1</i>)	55.340	40	0.833	1	.361
Freed: Entity-Schema – Mindset (<i>Model 2</i>)	55.254	40	0.920	1	.338
Freed: Self-Efficacy – Mindset (<i>Model 3</i>)	55.853	40	0.320	1	.571
Freed: Mindset – Distal Intention (<i>Model 4</i>)	55.796	40	0.378	1	.539
Freed: Mindset – Behavior (<i>Model 5</i>)	56.101	40	0.073	1	.787
Freed: Distal Intention – Behavior (<i>Model 6</i>)	55.631	40	0.543	1	.461
Freed: Structural Model (all six free)	53.415	35	2.758	6	.839

These analyses reveal that several paths varied between the groups, differentiating those with no entrepreneurial experience from those currently focused on operating an entrepreneurial venture from those in the process of starting an entrepreneurial venture. Thus, support for hypothesis 7 exists. These variances suggest that individuals with and without entrepreneurial experience are likely to undertake entrepreneurial behavior related to starting a venture when they possess an entrepreneurial mindset built on 1) the self-perception of being capable of being an entrepreneur (entrepreneurial possible-self). 2) The perception they can learn whatever they need to know in order to become an entrepreneur (dynamic entity-schema). In addition to 3) the perception they can overcome

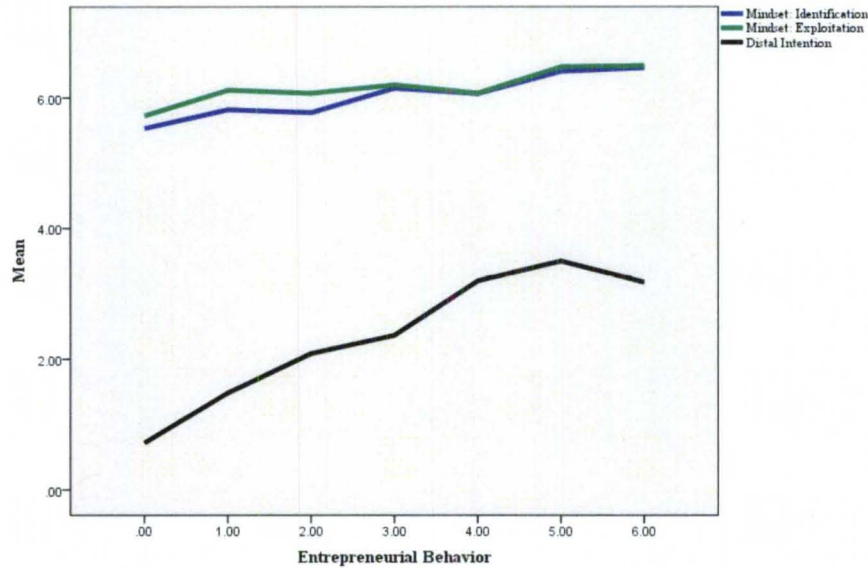
any unknown obstacles that may occur during the entrepreneurial process (entrepreneurial self-efficacy). Furthermore, because these cognitions increase in strength as the distal intention to become an entrepreneur increases, it suggests the decision to become an entrepreneur (distal entrepreneurial intention) is predictable. See Figure 4.12.

Figure 4.12: Entrepreneurial Mindset Indicators in Relation to Distal Intention



Additional analyses suggest that entrepreneurial mindset and the distal intention to become an entrepreneur lead to entrepreneurial behavior. Moreover, that as entrepreneurial mindset and the distal intention increase, entrepreneurial behavior increases. This suggests that prediction of entrepreneurial emergence (nascent entrepreneurship) or re-emergence (serial or parallel entrepreneurship) is possible. See Figure 4.13.

Figure 4.13: Entrepreneurial Mindset Measures in Relation to Distal Intention



Based on these analyses, the theory of volitional behavior offers not only explanatory power but also the potential for prediction of the entrepreneurial process. Tables 4.19, 4.20, 4.21 and 4.22 provide the means, standard deviations, and correlations for the constructs by group used in the study.

Table 4.19: Correlation Matrix Sample 1 - No Entrepreneurial Experience Urban

	Mean	SD	Correlations					
			1	2	3	4	5	6
1. Distal Intention	1.81	1.08						
2. Entrepreneurial Behavior	2.37	1.91	.730**					
3. Mindset: Identification	5.83	.69	.372**	.334**				
4. Mindset: Exploitation	6.06	.76	.321**	.262**	.533**			
5. Possible-Self	5.37	1.44	.465**	.432**	.301**	.310**		
6. Dynamic Entity-Schema	5.11	1.33	.027	.038	.211*	.141	.136	
7. Self-Efficacy	4.88	.53	.280**	.309**	.359**	.520**	.288**	-.018

** Correlation is significant at the 0.01 level (2-tailed).
 * Correlation is significant at the 0.05 level (2-tailed).
 n=139

Table 4.20: Correlation Matrix Sample 2 - No Entrepreneurial Experience Rural

	Correlations							
	Mean	SD	1	2	3	4	5	6
1. Distal Intention	1.82	1.20						
2. Entrepreneurial Behavior	2.07	1.80	.752**					
3. Mindset: Identification	5.90	.74	.400**	.429**				
4. Mindset: Exploitation	6.06	.72	.285**	.325**	.612**			
5. Possible-Self	4.95	1.78	.353**	.392**	.451**	.373**		
6. Dynamic Entity-Schema	5.22	1.15	.097	.188*	.287**	.307**	.120	
7. Self-Efficacy	4.91	.54	.426**	.467**	.518**	.437**	.204*	.254**

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

n=132

Table 4.21: Correlation Matrix Sample 3a – Operational Entrepreneurs

	Correlations							
	Mean	SD	1	2	3	4	5	6
1. Distal Intention	2.84	1.60						
2. Entrepreneurial Behavior	5.28	1.51	.009					
3. Mindset: Identification	6.37	.59	.172	.210				
4. Mindset: Exploitation	6.44	.57	.179	.077	.760**			
5. Possible-Self	5.86	1.26	.211	.145	.246*	.226*		
6. Dynamic Entity-Schema	5.35	1.40	.081	.144	.267*	.278**	.058	
7. Self-Efficacy	5.03	.42	.170	.021	.522**	.463**	.182	.300**

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

n=86

Table 4.22: Correlation Matrix Sample 3b – Pre-Operational Entrepreneurs

	Correlations							
	Mean	SD	1	2	3	4	5	6
1. Distal Intention	3.96	1.23						
2. Entrepreneurial Behavior	4.76	1.22	.068					
3. Mindset: Identification	6.41	.55	.307**	.117				
4. Mindset: Exploitation	6.36	.67	.364**	.133	.794**			
5. Possible-Self	5.94	1.45	-.046	.255*	.107	.180		
6. Dynamic Entity-Schema	5.58	1.31	.120	.000	.290**	.274**	.100	
7. Self-Efficacy	5.03	.44	.256*	-.110	.329**	.321**	-.023	.192

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

n=89

Discussion

The results of the current study show the level of entrepreneurial entity-schema, entrepreneurial possible-self, and entrepreneurial self-efficacy, on average, are strongly related to the level of entrepreneurial mindset. Furthermore, persons possessing an entrepreneurial mindset are more likely to form entrepreneurial intentions and

consequently more likely to undertake entrepreneurial behavior. With the use of entrepreneurial mindset as an antecedent to entrepreneurial intentions, this research was able to account for 38 percent of the variance in entrepreneurial behavior in a mixed population (non-entrepreneurs and entrepreneurs) as opposed to as little as 13 percent in the previous study (chapter 2). This suggests entrepreneurial mindset to be a more consistent indicator of entrepreneurial behavior than distal cognitions. What are missing from the theory, which may account for the other 62 percent of the variance in entrepreneurial behavior, are external factors not related to the self such as situational and environmental factors. These may operate as motivators, which activate the process in those possessing entrepreneurial mindset. Such results support the theory of volitional behavior when applied to entrepreneurs and add to the distinctiveness of the field of entrepreneurship by showing support for a theory specifically designed to explain and predict the process leading to entrepreneurial behavior. In addition, this theory may explain the effort, willingness, and commitment individuals' are willing to exert when undertaking entrepreneurial behavior.

The theory of volitional behavior has the potential to bring coherence to the observation that entrepreneurs may take many different paths to entrepreneurship. Entrepreneurship does not follow a singular career path like most traditional careers (i.e. specific academic training then licensure or certification), because of this many in academia question whether we can teach entrepreneurship or train entrepreneurs (Heriot, Jauregui, & Harris, 2009). This research suggests, even though multiple paths do exist, there may be a basic cognitive foundation that is common to most forms of entrepreneurial behavior. Future research should establish these boundary conditions.

Although this research contributes to our understanding of the entrepreneurial process, one of its limitations is the data. The majority of data are not longitudinal. Although longitudinal data were collected (n=81 [n = 29 from sample 1 and n = 52 for sample 2]) and the analysis of these data (although not reported here) did follow the trend posited by the theory of volitional behavior⁷, data collection was incomplete as of the date of this research. Data collection continues.

An additional limitation related to the theory of volitional behavior is that it does not take into account external factors that affect intention formation. It is likely that situational and environmental factors, like job loss and downsizing, play a significant role in the entrepreneurial process by accounting for those who are forced into entrepreneurship. Although it is feasible that these factors can, and likely will, enter into future revisions of the theory, the current research is limited in its explanatory power to entrepreneurial behavior while not accounting for situational and environmental factors.

This cognitive study of the entrepreneurial process contributes to the field of entrepreneurship by showing support for a theoretically based framework that offers the potential to address such lingering questions as why some people choose to become entrepreneurs whereas others do not. Knowledge of the cognitive structures at work within the entrepreneurial process may also provide us with an understanding of the underlying mechanisms that affect existing businesses, in essence what it takes to foster or create entrepreneurial mindsets in these environments (corporate entrepreneurship). Additionally, this theoretical framework may also prove useful as a prototype for other

⁷ Those individuals not possessing an entrepreneurial foundation (cognitions relating to "the self" necessary to entrepreneurship) showing no increase in entrepreneurial mindset or intentions and those possessing an entrepreneurial foundation showing progression toward formation of entrepreneurial mindset and intentions.

fields, by indicating a way for researchers to determine how to foster or create other types of mindset such as for consulting, innovation, or global business.

Academics may be able to use this research to develop educational tools and techniques to help those whom wish to undertake a given behavior but feel they are unqualified, unable, and/or possess a fear of failure. Practitioners may find this knowledge useful in helping to determine a means of supporting and encouraging employees to meet their full potential for the benefit of the individual and company alike.

CHAPTER 5

Dissertation Summary

The primary objective of this dissertation was to investigate the entrepreneurial process from a cognitive perspective. Based on substantial support for the intention-behavior relationship and the time constraints relating to the measurement of behavior, this research focused on the question *what specific cognitions lead to entrepreneurial intentions*. To address the question this research began in Chapter 2, "Explaining and Predicting Entrepreneurial Intentions," with an investigation of the existing types of cognitions used to determine which, if any, of these consistently afford prediction of entrepreneurial intentions.

Why Current Antecedents to Entrepreneurial Intentions are Not Consistent

Although researchers offered several suggestions for why previously theorized antecedents to entrepreneurial intentions have been unable to achieve consistent empirical support (Baron & Ward, 2004; Gartner, 1985; Sarasvathy, 2004; Shane & Venkataraman, 2000), none attempted to do so by looking at the variables used by cognitive type (in essence, by category). Using social cognitive theory (Bandura, 1991), this research used variables categorized by cognitive type as being either *proximal* or *distal*. Proximal cognitions representing a mental process that acts to create incentives, guidelines, and designate the type and amount of effort needed to bring about future possibilities, in essence sub-goal intentions (Bandura, 1977) and distal cognitions representing a capacity

to envision future possibilities that are worth doing or achieving—goal intentions (Bandura & Simon, 1977). Based on this categorization, evaluation took place to determine *the degree to which currently theorized antecedents were able to predict entrepreneurial intentions.*

Distal Cognitions in the Prediction of Entrepreneurial Intentions

The investigation of distal cognitions offers support for the hypothesis that distal cognitions are positively related to the distal intention to become an entrepreneur. However, this support was to be limited to those with no entrepreneurial experience. Analysis suggests that once chosen as a distal intention (i.e. become an entrepreneur or start a business) distal cognitions remain relatively unchanged throughout the entrepreneurial process. This increase at the initial stage, and then stagnation, suggests that distal cognitions are related to entrepreneurial intentions in general although not likely in a causal manner. In fact, although not tested for in this research, this trend suggests the possibility the opposite may even be true, that the decision to become an entrepreneur may actually play a role in the formation of certain distal cognitions.

Proximal Cognitions in the Prediction of Entrepreneurial Intentions

The investigation of proximal cognitions showed these types of cognitions might in fact predict the formation of proximal entrepreneurial intentions. However, these cognitions are again limited in their predictive capacity to those people who are on the verge of nascence (the planning stage prior to entrepreneurial behavior), for all other points in the entrepreneurial process, no support existed. This limitation so restricts the use of such proximal cognitions that the usefulness of such information is difficult to discern. This is because during nascence, many entrepreneurial intentions have already

formed and the rest will often form in such rapid succession that entrepreneurial behavior is virtually a given.

An additional reason for the limited use of proximal cognitions is the likely intrusion of competing means. Because a single goal (for example supporting oneself) may have several competing means (getting a job, starting a business, theft, etc), each is considered viable, although not always preferable, and thus proximal cognitions exist for each. Consequently, competition of proximal cognitions will likely continue until one specific means emerges as the chosen preference or the only viable option. As a result, prediction of entrepreneurial intentions prior to nascence would require the inclusion of proximal cognitions for all possible competing means. Only in this way could entrepreneurial behavior be determined to be the most likely path, provided situational and environmental factors do not come into play. In short, because individuals' often have more than one option for accomplishing a single goal, the use of proximal cognitions would require a significant number of options be included in order to determine the most likely outcome.

Summary

In summary, although the prediction of intention formation may be possible within the entrepreneurial process using cognitions used in prior entrepreneurship research, prediction is limited to a time very close to nascent entrepreneurship. This research suggests that the earliest point in which one could predict the likelihood of entrepreneurial behavior is after proximal entrepreneurial cognitions have formed, subject to the existence of the distal intention to become an entrepreneur. The prediction of entrepreneurial behavior prior to this point in time is not currently possible. For

prediction of entrepreneurial behavior at an earlier point, the location of deeper core-level cognitions is necessary. One such possibility is entrepreneurial mindset. Such core-level cognitions may offer a possible means of overcoming the current limitation of near nascence and may afford earlier prediction of entrepreneurial behavior.

The Importance of Entrepreneurial Mindset in the Formation of Intentions

Chapter 3, "The Role of Core-Level Cognitions in the Formation of Entrepreneurial Mindset," postulates a theory of volitional behavior based on the investigation of previous research relating to mindset. From this logic experiment, entrepreneurial mindset was determined to be the *way of thinking* that leads to entrepreneurial intentions and forms through the interaction of three specific cognitions relating to "the self." These cognitions are entrepreneurial entity-schema, entrepreneurial possible-self, and entrepreneurial self-efficacy.

The Value of Entrepreneurial Mindset

Entrepreneurial mindset, the way of thinking that leads to entrepreneurial behavior, is a key component of the entrepreneurial process because it is the gateway through which new business and business processes are created (McGrath & MacMillan, 2000). Based on the importance of such a concept, it is essential to "understand how the entrepreneurial mindset develops in the general population" (Zahra et al., 2000; p. 521). However, until now, this "way of thinking" that leads to entrepreneurial behavior has remained unspecified. The theory of volitional behavior offers specification of the cognitions likely responsible for the formation of mindset. This knowledge may allow researchers to determine how entrepreneurial mindset develops in the general population,

and from this, a means of fostering entrepreneurial behavior in virtually every aspect of the modern business world.

This knowledge is important not only to academia, but to entrepreneurs, managers, and virtually everyone choosing to enter the modern business environment. Gone are the days when an employee could simply work hard and leave innovation or process improvement to someone else. In today's business environment, employers are more than ever looking to employees to think and act in an entrepreneurial manner. Understanding of the mindset formation process may be the first step toward addressing these business needs and returning the United States to the entrepreneurial economy suggested by researchers (Kauffman Foundation, 2007).

The Theory of Volitional Behavior

The theory of volitional behavior offers the potential to explain and predict the formation of entrepreneurial intentions. Previous theories of behavior tend to focus primarily on proximal or distal cognitions as the antecedents to intention formation. Fishbein and Ajzen (1975, 2009) suggest that attitudes (proximal cognition) and beliefs (distal cognition) lead to the formation of intentions. Ajzen (1991, 2005) alternatively suggests that attitudes (proximal cognition) and self-efficacy (core-level cognition) lead to the formation of intention. Bandura (1986; 1991) and Lewin (1936, 1951) take a more non-specific approach suggesting cognitive ability in general, and the environment, lead to the formation of intentions. Although valuable contributions all, these theories are extremely limited in their capacity to predict intention formation due to their uses of proximal and distal cognitions or their lack of specificity. The theory of volitional

behavior extends these theories by going deeper into what makes individuals' who they are (core-level cognitions), as it specifically relates to the formation of intentions.

The theory of volitional behavior posits intentions form based on individuals' perceptions of their ability to undertake a given behavior successfully based on three specific cognitions. The first, entity-schema, relates to individuals' perceptions of learning. This cognition represents the amount of effort individuals' are willing to put forth in order to learn what they need to know in order to undertake a given behavior. The second, possible-self, relates to individuals' perceptions of future possibilities, which relate to individuals' willingness to undertake a given behavior. The third is self-efficacy. This cognition relates to individuals' perceptions of their ability to handle the unknown. Together these cognitions allow individuals' to determine if they *can, are willing to, and want to* undertake a specific behavior. When these three conditions exist to a sufficient degree, a mindset forms. This mindset favors information supporting the behavior and once a sufficient amount of support exists, intention formation takes place.

Unexpected Discoveries during Thought Experimentation

The creation of new theory requires the use of *thought experiments*, the projection of circumstances of the past and present into the future. During this process, just like in empirical experimentation, discoveries often take place that are unexpected or counterintuitive. During the creation of the theory of volitional behavior, several unexpected discoveries emerged.

First, the concept of academic-self is bias against individuals with learning disabilities. In psychology, self-concept is how individuals perceive and evaluate themselves. This construct is purported to consist of four sub-dimensions each relating to

a specific aspect of the self (academic, emotional, social, and physical). Although reasonable arguments exist for the use of self-concept as both a unidimensional and multidimensional construct, researchers tend to agree on the importance of the four distinct sub-dimensions. However, conceptualization of the sub-dimension academic-self is inherently flawed.

The academic-self is defined as scholastic achievements, such as grades and test scores, which foster a self-perception of individuals general cognitive abilities (Shavelson et al., 1976). This definition is, and thus measures created based on it are, inherently biased. Individuals with learning disorders are often highly intelligent individuals, however, because of their disorder, lack the necessary skills to perform well academically. While a valid argument may be the inability to perform well academically reduces self-perceptions regardless of actual intelligence, this is not always the case. The best example of this is dyslexia, which represents 80 percent of all learning disabilities in America (Shaywitz & Shaywitz, 2005). Dyslexia is "a disorder manifested by difficulty in learning to read despite conventional instruction, adequate intelligence and sociocultural opportunity" (PubMed, 2011). Most people with dyslexia are of normal intelligence, and many possess above-average intelligence (PubMed, 2011). However, because dyslexics are often unable to succeed academically, they are forced to go around such systems (Logan, 2009). Thus, although dyslexics tend to be highly creative, possess advanced problem solving and intuitive skills (Miller, 2011), they will most often score low scholastically. This does not mean they consider themselves unintelligent. Those individuals diagnosed with dyslexia, and those who have achieved success on their own, are well aware of this discrepancy between their academic aptitude and their cognitive

abilities (intelligence). Many of the most successful people in America have been dyslexic (i.e. Henry Ford, Charles Schwab, Richard Branson, Steve Jobs, Steven Spielberg, Ted Turner, Tommy Hilfiger, Walt Disney, Nelson Rockefeller, Thomas Edison, and Alexander Graham Bell just to name a few). In fact, approximately 35 percent of entrepreneurs in the United States (three times the population average) and 20 percent of entrepreneurs in the United Kingdom (twice the population average) are dyslexic (Logan, 2009). Thus, the use of academic-self as a sub-dimension of self-concept in research is biased against between 10 percent (the population average) to 35 percent (in populations such as entrepreneurs) of the respondents. This may represent a significant problem with self-concept research.

A better construct is *intellectual-self*, this would represent the perception of general cognitive abilities, rather than specific academic skills. In essence, the intellectual-self should be defined as the ingenuity, determination, and drive that individuals possess, with regard to their ability to acquire knowledge. In this way, correct classification will take place for individuals lacking formal education and those with learning disabilities on the self-concept sub-dimension relating to cognitive ability. Additionally, the proper use of both dimensions could act as an indicator of learning disability, which when properly evaluated may explain inconsistent results such as entrepreneurs with little or no education who are extremely successful in areas thought to require extensive academic training.

A second unexpected discovery was the concept of *psychological hardiness*, the ability to stay emotionally strong in stressful conditions and to rebound from failure, (Kobasa, 1979, 1989; Maddi & Kobasa, 1984). Psychological hardiness is an emotional

style associated with resilience, good health, and performance under a wide range of stressful conditions (Bartone, Roland, Picano, & Williams, 2008; Hull, Van Treuren, & Virnelli, 1987; Kobasa, Maddi, & Kahn, 1982). Individuals high in psychological hardiness have a strong sense of commitment to life and work, and are actively engaged in what is going on around them. Such individuals believe they can control or influence what happens, and they enjoy new situations and challenges. In addition, they are internally motivated and tend to create their own sense of purpose. Conceptually, this profile parallels that of entrepreneurs. Thus, the concept may have the potential to explain why entrepreneurs persist under conditions of uncertainty and why they tend to recover quickly from failure.

To date, the concept of psychological hardiness has remained unexplored within the confines of entrepreneurship. This may represent an important concept to entrepreneurs and academics alike. Understanding the factors that encourage formation of psychological hardiness may allow academics to create the tools necessary to help individuals choosing to become entrepreneurs to develop the emotional resilience needed to pursue and survive the entrepreneurial process.

The third unexpected discovery also relates to self-concept. Although primarily considered a unidimensional concept, support exists for its use as a multidimensional construct (Shavelson & Bolus, 1982; Shavelson et al., 1976). In formulating the theory of volitional behavior, additional conceptual support for the use of the multidimensional approach is given. The theory posits that behavior considered under the control of individuals (volitional) stems from concepts specifically related to the self. Among these is self-concept. The theory postulates that in individuals experienced with a specific form

of volitional behavior, the sub-dimensions are likely uniform allowing for virtually no differentiation from the general concept of self. However, in individuals with little or no prior experience these sub-dimensions are more likely to be highly disassociated, thus easily distinguishable from the other sub-dimensions of self. This is because experience with a behavior increases knowledge of the specific intellectual, social, emotional, and physical requirements of that behavior. Accordingly, the dimensionality of self-concept should be looked at more as a bipolar continuum, with uniformity of dimensions taking place as experience with a specific behavior increases.

From this perspective, the dimensionality of self-concept is determined based on the specific usage. For prediction of volitional behavior, unidimensionality is insufficient. This is because although individuals may overall rate themselves high on self-concept, as it relates to a specific behavior, it is unlikely that behavior will occur if they feel inadequate on one or more of the sub-dimensions that deemed necessary for the successful completion of the given behavior. Specifically, a person with a high unidimensional score who is completely lacking in one of the sub-dimensions crucial to the successful completion of a given behavior will most often not undertake this form of behavior and thus inaccurate prediction would take place. Multidimensionality is necessary in order to determine if all the necessary sub-dimensions exist (assuming all sub-dimensions are required for the form of volitional behavior under investigation) and the degree to which development has taken place in each.

Summary

In summary, this essay offers a conceptual response to the second research sub-question, *what specific cognitions act to form entrepreneurial mindset?* In addition, it

offers conceptually an answer to the primary research question, *what specific cognitions lead to entrepreneurial intentions?*

According to the theory of volitional behavior, the specific cognitions that act to form entrepreneurial mindset are: 1) Entrepreneurial entity-schema, the perception that abilities are a result of hard work and failure is part of the learning process. 2) Entrepreneurial possible-self, the perception of possessing the intellectual, social, emotional, and physical ability to undertake entrepreneurial behavior, in addition to the perception that entrepreneurship is desirable. 3) Entrepreneurial self-efficacy, the perception of possessing the ability to effectuate entrepreneurial outcomes. Together these three cognitions create a way of thinking (entrepreneurial mindset) that favors information supporting entrepreneurial behavior. Furthermore, this cognitive bias toward information supporting entrepreneurial behavior leads to the formation of entrepreneurial intentions. In sum, the theory of volitional behavior offers conceptualization not only of entrepreneurial mindset but also of the process leading to entrepreneurial behavior.

Conclusion

Based on the combined findings of these three essays, core-level cognitions related to “the self” are the antecedents that lead to formation of entrepreneurial mindset. Furthermore, entrepreneurial mindset is a prime antecedent to entrepreneurial intentions. This research in total not only answers the primary research question but also offers a potential means of measuring entrepreneurial mindset and entrepreneurial intentions *a priori*. Although this research is merely a beginning, when taken as a whole, it suggests that it is possible to explain and predict specific forms of behavior. Although this

knowledge offers some noteworthy implications for scholars in many different fields, it is especially important to the field of entrepreneurship.

Entrepreneurship scholars have struggled to identify a theory that is capable of explaining and predicting who will (and possibly who should) become an entrepreneur. Although no one asks why some people become doctors, lawyers, accountants, or mechanics, *why some people become entrepreneurs while others do not* seems to be one of the hurdles set for entrepreneurship researchers by the academic community, prior to its acceptance as a legitimate field of study. The theory of volitional behavior presented in chapter 3 offers a starting point for clearing that hurdle of interest. Although this theory is not the silver bullet that will settle the discussion, it is a first step to understanding the complex process that leads to entrepreneurial behavior and offers several potential contributions to the field of entrepreneurship.

First, the theory has implications in the investigation of cognitions relating to the entrepreneurial process. As previously noted, a great deal of research exists which focuses on cognitions as they relate to entrepreneurs. However, little of this research has focused on the formation of entrepreneurial mindset or the specific role entrepreneurial mindset plays in the process leading to entrepreneurial behavior. Based on the findings presented here, it seems essential to include entrepreneurial mindset in the ongoing efforts to investigate the entrepreneurial process. The theory of volitional behavior may facilitate progress toward this goal.

Another contribution of this theory involves its potential value in assessing who is ready to become an entrepreneur and who is not, or possibly even, who should and who should not (although it would be a monumental mistake to restrict entrepreneurship by

formal means such as licensure). The means to determine if individuals possess the cognitive structures needed to navigate the entrepreneurial process successfully, if this assessment potential is confirmed by future research, would constitute a useful contribution to all areas within the field of entrepreneurship. Such assessment would allow researchers to determine the optimum point at which entrepreneurial behavior should be undertaken. It could afford the development of means to foster or enhance entrepreneurial mindset and may allow academics to determine the degree to which education is effective.

An additional contribution of this research is the potential to address the reality that entrepreneurship is an equifinal process. Simply put, many paths ultimately lead to entrepreneurial behavior. Because there are many different forms of entrepreneurship and many different paths to get there, it often seems impossible to explain or predict the process. However, if we focus on the cognitions that an entrepreneur needs to possess in order to attempt entrepreneurial behavior successfully, we may see there are many cognitive similarities between the different forms of entrepreneurship regardless of the path taken. This foundation may offer further insight into how to study and teach such a multivariate process; this too would constitute a useful contribution to the field of entrepreneurship.

Having noted the potential benefits the theory of volitional behavior may offer to our understanding of the entrepreneurial process, it is important to call attention to its limitations. The theory is currently limited to the description of those who *most likely will* undertake entrepreneurial behavior and who most likely *will not*. It cannot predict to any degree of certainty who *will* undertake entrepreneurial behavior. To overcome this

limitation, the theory requires expansion to include situational and environmental factors. Such enhancement of the theory has the potential to afford a greater understanding of who *will* most likely undertake entrepreneurial behavior and *when*.

In all, the primary limitations to the current research are the exclusion of situational and environmental factors and the lack of longitudinal data. Further research should focus on measuring change in the concepts presented within specific individuals, over time, to determine the degree and accuracy of these cognitions as they relate to the prediction of mindset and intention formation. Assessment of the theoretical framework, applied to entrepreneurial behavior, offered in this research suggests the theory of volitional behavior offers a possible means of predicting the formation of intentions. However, this is but one study. A longitudinal study of the general population could further clarify the specific role entity-schema, possible-self, and self-efficacy play in the mindset formation process. Such study would allow for determination of such aspects as, the specific degree to which each of these cognitions affects mindset formation, whether self-concept and self-efficacy form together or separately, and the degree to which self-concept and self-efficacy interact.

Future research should also focus on studies not only relating to entrepreneurial behavior, but other areas of volitional behavior. Such studies will determine if the theory applies to all forms of volitional behavior or just entrepreneurship.

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APPENDIX A: Definitions of Key Concepts

Terms relating to entrepreneurship and cognition are essential concepts of this research and therefore need to be clearly defined. To avoid confusion and to ensure the text is easily understood, I offer the following definitions:

Attitude, a generally positive or negative outlook in regard to a given phenomenon (Ajzen & Fishbein, 2005).

Affect, often synonymous with attitude in the entrepreneurship literature, affect is an emotional state that leads to the formation of entrepreneurial intentions (Davidsson, 1995; Harris & Gibson, 2008; Lindsay, 2005).

Academic Self consists of scholastic achievement, such as grades and test scores, which foster a self-perception of an individual's general cognitive abilities (Shavelson et al., 1976).

Behavior: a predictable action based on an individual's cognitive processes (Broadbent, 1958; Neisser, 1967, 1976).

Belief: "the subjective probability of a relationship between the object of belief and some other object, value, concept, or attribute" (Fishbein & Ajzen, 1975, p. 131).

Conation: behavioral intentions and a predisposition toward the object (Robinson, Stimpson, Huefner, & Hunt, 1991).

Cognition is both the *act of knowing* and *that which is known*. As a result, cognition encompasses the mental *process* by which input is transformed, reduced, elaborated, stored, recovered, and used, *in addition to*, mental *representations* that surface to consciousness when we perceive or reason (Brandimonte et al., 2006; Neisser, 1967).

Cognitive View of Behavior is the focus on the conscious intellectual activity that allows for the prediction of behavior.

Corporate Entrepreneurship: a way of thinking that captures the opportunities created by uncertainty and allows an individual to rapidly identify and adaptively exploit them within the context of existing firms.

Counterfactual thinking: imagining outcomes other than those which actually occur (Baron, 1999).

Effectuation is the perception of control over the future (Sarasvathy, 2008).

Effectual Reasoning is the inverse of causal reasoning and proposed as the primary means of problem solving under conditions of uncertainty (Sarasvathy, 2008).

Entity-Schema, the cognitive representation of a person's ability (Burger, 2007; Dweck & Leggett, 1988). A form of schema which drives self-fulfilling behavior, entity-schema is a person's perception of the nature of ability, specifically, that a person's abilities are either *static*, an inherent or genetic characteristic and as such, unchangeable, or *dynamic*, the result of hard work and, thus, a work in progress, changeable (Molden & Dweck, 2006).

Entrepreneurial Mindset is a cognition that allows a person to rapidly identify and adaptively exploit opportunities created by uncertainty.

Entrepreneurial Proclivity is the inclination of individuals to engage in entrepreneurial behavior.

Entrepreneurial Self-Efficacy is the strength of an individual's perception of their ability to effectuate entrepreneurial behavior (Chen et al., 1998).

Entrepreneurial Success represents the satisfaction an entrepreneur receives from the fruit of their labors.

Emotional Self is an individual's perception of their ability to handle psychologically personal, social, and cultural interaction. The emotional self directs an individual

to seek pleasure or comfort while attempting to avoid pain or discomfort (Shavelson & Bolus, 1982).

Equifinality exists when a single objective can be met through a variety of unique paths (Katz & Kahn, 1978; Van de Ven & Drazin, 1985).

Intellectual Self represents, within the context of entrepreneurial behavior, an individual's perception of the cognitive abilities necessary to facilitate entrepreneurial behavior.

Intentions are a plan to act in a specific manner, toward a given phenomenon, at a particular place and time (Fishbein & Ajzen, 1975).

Mental Representations consist of mental states such as emotions (feelings and desires), beliefs, attitudes, and intentions, *and*, mental structures such as biases, heuristics, schemata, scripts, and maps.

Mindset is a cognitive structure through which an individual makes sense of a given phenomenon.

Overconfidence: "an unrealistically high belief in the accuracy of one's judgment" (Baron & Ward, 2004).

Physical Self represents an individual's perception of their body and its fundamental abilities (Shavelson et al., 1976).

Proclivity is an intense penchant toward participation in a given phenomenon, in essence, a readiness to participate if the opportunity should arise.

Possible Self: the cognitive representation of the person we may one day become (Cantor, Markus, Niedenthal, & Nurius, 1986; Markus & Kunda, 1986a; Ruvolo & Markus, 1992). In particular, self-schema are inclusive of the features people rate themselves highly on, without contradiction, and as important to their concept of self (Fiske, 2004). It is inclusive of the person's dreams and aspirations, as well as their fears and anxieties (Burger, 2007; Markus & Nurius, 1986).

Schemata (the plural form of schema), are the dynamic perceptual filters by which an individual accepts information and directs the search for more (Neisser, 1976). Schemata use all forms of modality (sight, sounds, smell, etc) to gather information, integrate new information with old, and direct the search for more. In total, schemata are “active information seeking structures” (Neisser, 1976, p. 111) which represent a person’s general knowledge of a given concept (Fiske & Taylor, 1991).

Scholarly Description: a contribution that, while informed by theory, is limited to insights of what is happening (Whetten, 2002). The primary difference between a scholarly explanation and a scholarly description lies in the ability to predict future occurrence.

Scholarly Explanation (Whetten, 2002), or *theory*, is the statement of relationships between factors which describes *what, how, and why* relationships occur and are explicated in such a way as to allow prediction of *when, where, and by whom* occurrence of a phenomenon should take place (Bacharach, 1989; Dubin, 1978; Sutton & Staw, 1995; Weick, 1989, 1995; Whetten, 1989, 2002).

Script, or Event Schema: the summation of similar events into a schema of action (Schank & Abelson, 1977) which allow for the rapid interpretation of similar and new experiences and informs a person of what to do in that situation (Carver & Scheier, 2004). It has been suggested that there may be two different scripts running at the same time, one for understanding what others are doing and one for determining what the individual should do (Schank & Abelson, 1977), although there is a very strong link between the two (Carver & Scheier, 2004).

Self-Efficacy is the perception of possessing the ability to effectuate an outcome and likely “a significant determinate of performance that operates partially independent of underlying skill” (Bandura, 1986, p. 391).

Self-Concept: the cognitive representation of self that is used to organize and process self-relevant information (Markus, 1977, 1983). In particular, self-schemata are

inclusive of the features people rate themselves highly on, without contradiction, and as important to their concept of self (Fiske, 2004).

Self-Serving Bias: the strong tendency to attribute positive outcomes one's own skill, talent, good judgment or hard work (Baron, 1998).

Semantic Cognitions are quick-to-change mental states, most notably feelings, desires, emotions, and attitudes. Semantic cognitions represent surface-level states that are highly subjective, with regard to interpretation of cause, except when highly domain specific and extremely proximal in time.

Social Self is an individual's opinion of their ability to simultaneously mix with and differentiate themselves from others in social groups, in essence, their social identity (Brewer, 1991; Byrne & Shavelson, 1996).

Symbolic Cognitions are deep-level, slow-to-change mental states such as biases, heuristics, schemata, scripts and maps.

Volitional Behavior is purposeful behavior resulting from a conscious intention to achieve a specific outcome (Irwin, 1942).

Volitional Control is behavior that is under the control of the individual.

APPENDIX B: Research on Mindset

<i>Authors, Year</i>	<i>Title</i>	<i>Context</i>	<i>Perspective</i>	<i>Construct(s)</i>
Abraham & Dov (1999)	Achievement Motive and Entrepreneurial Orientation: A Structural Analysis	Achievement	Applied	Entrepreneurial Mindset
Alvarez & Barney (2002)	Resource-Based Theory and The Entrepreneurial Firm	Strategy	Applied	Entrepreneurial Mindset
Anderson (1993)	Mindset: An Obstacle to Creativity	Strategy	Applied	Creativity Mindset
Armor & Taylor (2003)	The Effects of Mindset on Behavior: Self-Regulation in Deliberative and Implemental Frames of Mind	Self-Regulation of Behavior	Decision	Deliberative & Implemental Mindset
Bayer & Gollwitzer (2005)	Mindset Effects on Information Search in Self-Evaluation	Illusionary Self-Evaluation	Decision	Deliberative & Implemental Mindset
Beckmann & Gollwitzer (1987)	Deliberative versus Implemental States of Mind: The Issue of Impartiality in Predecisional and Postdecisional Information Processing	Choice Alternatives	Decision	Deliberative & Implemental Mindset
Benson & Dresdow (2003)	Discovery Mindset: A Decision-Making Model for Discovery and Collaboration	Discovery & Collaboration	Decision	Discovery Mindset
Boisot & MacMillan (2004)	Crossing Epistemological Boundaries: Managerial and Entrepreneurial Approaches to Knowledge Management	Knowledge Development	Applied	Entrepreneurial Mindset
Brandstatter & Frank (2002)	Effects of Deliberative and Implemental Mindsets on Persistence in Goal-Directed Behavior	Persistence in Goal-Directed Behavioral	Decision	Deliberative & Implemental Mindset
Brooks (2004)	To Touch the Hearts and Minds of Students with Learning Disabilities: The Power of Mindsets and Expectations	Learning Disabilities	Learning	Learning Mindset
Chin, Dweck, Tong & Fu (1997)	Implicit Theories and Conceptions of Morality	Social-Moral Reality	Learning	Fixed & Malleable Mindset

<i>Authors, Year</i>	<i>Title</i>	<i>Context</i>	<i>Perspective</i>	<i>Construct(s)</i>
Chiu, Hong & Dweck (1997)	Lay Dispositionism and Implicit Theories of Personality	Social Perception	Learning	Fixed & Malleable Mindset
Clapp-Smith, Luthans & Avolio (2007)	The Role of Psychological Capital in Global Mindset Development	Decision Making	Applied	Global Mindset
Cools & Van den Broeck (2007)	The Hunt for the Heffalump Continues: Can Trait and Cognitive Characteristics Predict Entrepreneurial Orientation?	Cognitive Style	Applied	Entrepreneurial Mindset
Cunha, Cunha & Kamoche (2001)	The Age of Emergence: Toward a New Organizational Mindset	Management	Applied	Organizational Mindset
Curtis (1987)	The Mindset for Winning: A Four-Step Training Program to Achieve Peak Performance for all Athletes	Mental Conditioning	Applied	Winning Mindset
Diener & Dweck (1980)	An Analysis of Learned Helplessness: II. The Processing of Success	Learned Helplessness	Learning	Helpless & Mastery-Oriented Mindset
Dweck (1975)	The Role of Expectations and Attributions in the Alleviation of Learned Helplessness	Learned Helplessness	Learning	Helpless & Mastery-Oriented Mindset
Dweck (1986)	Motivational Processes Affecting Learning	Cognitive Performance	Learning	Helpless & Mastery-Oriented Mindset
Dweck (1996)	The Psychology of Action: Cognition and Motivation to Behavior	Goal Directed Behavior	Learning	Fixed & Malleable Mindset
Dweck (2000)	Self-Theories: Their Role in Motivation, Personality, and Development (Essays in Social Psychology).	Personal Development	Learning	Fixed & Malleable Mindset
Dweck (2006)	Mindset: The New Psychology of Success	Self-Perception	Learning	Fixed & Growth Mindset
Dweck & Gilliard (1977)	Expectancy Statements as Determinants of Reactions to Failure: Sex Differences in Persistence and Expectancy Change	Achievement Expectancy	Learning	Persistence

<i>Authors, Year</i>	<i>Title</i>	<i>Context</i>	<i>Perspective</i>	<i>Construct(s)</i>
Dweck & Henderson (1989)	Theories of Intelligence: Background and Measures	Confidence & Goal Orientation	Learning	Fixed & Malleable Mindset
Dweck & Leggett (1988)	A Social-Cognitive Approach to Motivation and Personality	Performance	Learning	Fixed & Malleable Mindset
Dweck & London (2007)	The Role of Mental Representation in Social Development	Attribution	Learning	Conceptual
Dweck & Reppucci (1973)	Learned Helplessness and Reinforcement Responsibility in Children	Learned Helplessness	Learning	Helpless & Mastery-Oriented Mindset
Elliott & Dweck (1988)	Goals: An Approach to Motivation and Achievement	Learning Goals	Learning	Helpless & Mastery-Oriented Mindset
Freitas, Gollwitzer & Trope (2004)	The Influence of Abstract and Concrete Mindsets on Anticipating and Guiding Others' Self-Regulatory Efforts.	Influence on Performance	Decision	Abstract & Concrete Mindset
Fujita, Gollwitzer & Oettingen (2007)	Mindsets and Pre-Conscious Open-Mindedness to Incidental Information	Memory Recognition	Decision	Deliberative & Implemental Mindset
Gagné (2004)	The Role of Mindset in the Accuracy and Bias of Relationship Evaluations	Relationship Evaluation	Decision	Deliberative & Implemental Mindset
Gagné, & Lydon (2001)	Mind-Set and Close Relationships: When Bias Leads to (In)accurate Predictions	Relationship Evaluation	Decision	Deliberative & Implemental Mindset
Gagné & Lydon (2001)	Mindset and Relationship Illusions: The Moderating Effects of Domain Specificity and Relationship Commitment	Relationship Evaluation	Decision	Deliberative & Implemental Mindset
Gagné, Lydon & Bartz (2003)	Effects of Mindset on the Predictive Validity of Relationship Constructs	Relationship Evaluation	Decision	Deliberative & Implemental Mindset
Gollwitzer (1990)	Action Phases and Mind-Sets	Action	Decision	Deliberative, Implemental, Actional & Evaluative Mindset

<i>Authors, Year</i>	<i>Title</i>	<i>Context</i>	<i>Perspective</i>	<i>Construct(s)</i>
Gollwitzer (1996)	The Volitional Benefits of Planning	Goal Achievement	Decision	Deliberative & Implemental Mindset
Gollwitzer & Bayer (1999)	Deliberative versus Implemental Mindsets in the Control of Action	Action	Decision	Deliberative & Implemental Mindset
Gollwitzer, Heckhausen & Heinz (1990)	Deliberative and Implemental Mind-Sets: Cognitive Tuning Toward Congruous Thoughts and Information	Decisional Conflict	Decision	Deliberative & Implemental Mindset
Gollwitzer & Kinney (1989)	Effects of Deliberative and Implemental Mind-Sets on Illusion of Control	Illusion of Control	Decision	Deliberative & Implemental Mindset
Grant & Dweck (2003)	Clarifying Achievement Goals and Their Impact	Achievement Goals	Learning	Helpless & Mastery-Oriented Mindset
Hannah, Sweeney & Lester (2007)	Toward a Courageous Mindset: The Subjective Act and Experience of Courage	Risk	Applied	Courageous Mindset
Harinck & Dreu (2008)	Take a break! or not? The Impact of Mindsets during Breaks on Negotiation Processes and Outcomes	Negotiation	Applied	Competitive Mindset
Haynie (2005)	Cognitive Adaptability: The Role of Metacognition and Feedback in Entrepreneurial Decision Policies	Decision Making	Decision	Entrepreneurial Mindset
Haynie & Shepherd (2007)	Exploring the Entrepreneurial Mindset: Feedback and Adaptive Decision-Making	Decision Making	Decision	Entrepreneurial Mindset
Heckhausen & Gollwitzer (1987)	Thought Contents and Cognitive Functioning in Motivational versus Volitional States of Mind	Decision Making	Decision	Deliberative & Implemental Mindset
Henderson, de Liver & Gollwitzer (2008)	The Effects of an Implemental Mind-Set on Attitude Strength	Decision Making	Decision	Deliberative & Implemental Mindset
Hiemisch, Ehlers & Westermann (2008)	Mindsets in Social Anxiety: A New Look at Selective Information Processing	Social Anxiety	Decision	Deliberative & Implemental Mindset

<i>Authors, Year</i>	<i>Title</i>	<i>Context</i>	<i>Perspective</i>	<i>Construct(s)</i>
Honer (2006)	The Shielding Interruption Dilemma in Sport Games: An Eye-Tracking Study on the Concept Mindsets	Decision Making in Sports Games	Decision	Deliberative & Implemental Mindset
Hong, Chiu, Dweck, Lin, & Wan (1999)	Implicit Theories, Attributions, and Coping: A Meaning System Approach	Attribution	Learning	Fixed & Malleable Mindset
Hynes & Richardson (2007)	Creating an Entrepreneurial Mindset: Getting the Process Right for Information and Communication Technology Students	Education	Applied	Entrepreneurial Mindset
Ireland, Hitt & Sirmon (2003)	A Model of Strategic Entrepreneurship: The Construct and its Dimensions	Strategy	Applied	Entrepreneurial Mindset
Kamins & Dweck (1999)	Person versus Process Praise and Criticism: Implications for Contingent Self-Worth and Coping	Self-Worth	Learning	Fixed & Malleable Mindset
Krauss, Frese, Friedrich & Unger (2005)	Entrepreneurial Orientation: A Psychological Model of Success Among Southern African Small Business Owners	Business Success	Applied	Entrepreneurial Mindset
Kropp, Lindsay & Shoham (2008)	Entrepreneurial Orientation and International Entrepreneurial Business Venture Startup	Business Environment	Applied	Entrepreneurial Mindset
Kuczarski (1996)	Fostering an Innovation Mindset	Strategy	Applied	Innovation Mindset
Kuczarski (1998)	The Ten Traits of an Innovation Mindset	Strategy	Applied	Innovation Mindset
Kuczarski (1998)	Tools@Work: The CEO Innovation Mindset Test	Strategy	Applied	Innovation Mindset
Kuczarski, Seamon, Spilotro & Johnston (2003)	The Breakthrough Mindset	Strategy	Applied	Innovation Mindset

Levenburg	Entrepreneurial Orientation among the Youth of India: The Impact of Culture, Education and Environment	New Business Creation	Applied	Entrepreneurial Mindset
<i>Authors, Year</i>	<i>Title</i>	<i>Context</i>	<i>Perspective</i>	<i>Construct(s)</i>
Levy, Beechler, Taylor & Boyacigiller (2007)	What we talk about when we talk about 'Global Mindset': Managerial Cognition in Multinational Corporations	Management	Applied	Global Mindset
Levy, Stroessner & Dweck (1998)	Stereotype Formation and Endorsement: The Role of Implicit Theories	Social Stereotyping	Learning	Fixed & Malleable Mindset
Licht & Dweck (1984)	Determinants of Academic Achievement: The Interaction of Children's Achievement Orientations with Skill Area	Performance	Learning	Helpless & Mastery-Oriented Mindset
McGrath & MacMillan (2000)	The Entrepreneurial Mindset: Strategies for Continuously Creating Opportunity in an Age of Uncertainty	Management	Applied	Entrepreneurial Mindset
Mitchell (2007)	Instill The Entrepreneurial Mindset	Industrial Researchers	Applied	Entrepreneurial Mindset
Molden & Dweck (2006)	Finding "Meaning" in Psychology: A Lay Theories Approach to Self-Regulation, Social Perception, and Social Development	Psychology	Learning	Fixed & Malleable Mindset
Monsen (2005)	Employees do matter: Autonomy, Teamwork and Corporate Entrepreneurial Culture	Employee Attitude	Applied	Entrepreneurial Mindset
Mueller & Dweck (1998)	Motivation and Competence as Determinants of Young Children's Reward Allocation	Achievement Motivation	Learning	Fixed & Malleable Mindset
Nwankwo (2005)	Characterization of Black African Entrepreneurship in the UK: A Pilot Study	Discovery	Applied	Entrepreneurial Mindset
Parnell, Shwiff, Yalin & Langford (2003)	American and Chinese Entrepreneurial and Managerial Orientations: A Management Education Perspective	Self-Management	Applied	Entrepreneurial Mindset
Pistriu, Welsch, Wintermantel, Liao &	Entrepreneurial Orientation and Family Forces in the New Germany: Similarities and Differences between East and West	Family Business	Applied	Entrepreneurial Mindset

Pohl (2000)	German Entrepreneurs			
Puca (2005)	The Influence of the Achievement Motive on Probability Estimates in Pre- and Post-Decisional Action Phases	Decision Process	Decision	Deliberative & Implemental Mindset
<i>Authors, Year</i>	<i>Title</i>	<i>Context</i>	<i>Perspective</i>	<i>Construct(s)</i>
Puca & Slavova (2007)	Mindsets and Social Comparison: Being Aware of the Competitor	Beliefs	Decision	Deliberative & Implemental Mindset
Ripolles	Personal Networks as Fosterers of Entrepreneurial Orientation in New Ventures	Networking	Applied	Entrepreneurial Mindset
Talke (2007)	Corporate Mindset of Innovating Firms: Influences on New Product Performance	Market & Technology	Applied	Corporate Mindset
Taylor & Gollwitzer (1995)	Effects of Mindset on Positive Illusions	Goal Setting	Decision	Deliberative & Implemental Mindset
van Eeden, Louw & Venter (2005)	Entrepreneurial Traits of Undergraduate Commerce Students: A Three-Country Comparison	Entrepreneurial Prototype	Applied	Entrepreneurial Mindset

APPENDIX C: Evaluation of Existing Entrepreneurship Measures

Entrepreneurial Attitude Orientation Scale

While not explicitly defined, evaluation of items and dimensions used in the instrument suggest the Entrepreneurial Attitude Orientation is conceptualized as an individual's confidence in their ability to start a business. Through self-evaluation of attitudes toward four theorized dimensions, *achievement in business*, *innovation in business*, *perceived personal control of business outcomes*, and *perceived self-esteem in business*, the instrument has been shown to predict venture creation in individuals with knowledge of a business environment.

Sample

Two separate groups were used in the testing and validation of this instrument. The first group, made up of 63 psychology students, was used to determine validity of the attitudinal components (affective, cognitive, and conative) and a second group of 111 (54 businessmen who have started at least one business within the past five years was used to represent entrepreneurs and 57 white-collar managers from two high-tech firms, a municipal government and a financial department of a major university). The second group was used to test the predictability of the instrument.

Reliability

Cronbach's alpha was used to assess the reliability of the attitudinal components and the construct dimensions. All three attitude components showed reliability with α

=.84. The four dimensions obtained acceptable to superior results: achievement with α =.84, self-esteem with α =.73, personal control with α =.70, and Innovation with α =.90.

Validity

Face validity of the instrument was determined using experts (two psychology professors). A test-retest methodology was use on 63 psychology students with each student taking the test on two separate occasions one week apart. MANOVA was used to test discriminate validity between businesspersons and managers. Results indicate significance at the .001 level with 77 percent accuracy in predicting group membership.

Summary

While psychometrically sound, because the majority of the items in this instrument require familiarity with a management environment, the generalizability of the instrument to individuals not familiar with a business environment is in question (e.g. students and blue-collar workers). For these reasons, the Entrepreneurial Attitude Orientation Scale was deemed not appropriate for this research and was not used in its entirety. However, items or modified versions of items have been incorporated.

Carland Entrepreneurial Index

The Carland Entrepreneurial Index purports to measure an individual's Entrepreneurial Drive, the degree to which an individual tends to focus on the creation and growth of a business venture. The construct is operationalized using four dimensions, *cognitive style or personality associated with entrepreneurship, preference for innovation, risk-taking propensity, and strategic posture.*

Sample

Two convenience samples were used in the creation and testing of this instrument. The first sample consists of 151 senior level business students and the second of 211 owners, partners, major shareholders, or principal managers of small businesses. Data indicates 82 percent of the second sample came from retail and service industries (38% and 44% respectfully); 77 percent reporting annual sales of less than \$500,000; 71 percent in business for more than 5 years; and 85 percent with 10 or less employees. *Note:* The age of the businesses used is an area of concern; only 29 percent represents the generally accepted age of less than five years for entrepreneurial businesses.

Reliability

A test/re-test was used to determine consistency. Two months after the initial test, forty members of the second sample group were tested. A comparison of the two sets of scores showed no significant differences at the .001 level. Next, the group was segregated into two groups (based on an odd/even code separation); again, no significant difference between the groups was found at the .001 level. Finally, because data are dichotomous, a Kuder-Richardson test of inter-item reliability (the equivalent of Cronbach's alpha for dichotomous data) was performed yielding a score of .73, indicating that the index produced reliable results.

Validity

Determination of face validity was performed on the first sample group through a comparison of a self-reported evaluation of entrepreneurial drive to the index with correlation at the .001 significance level. Convergent validity was determined by comparing established scales for each dimension in the index. *Cognitive style* was

compared with the Myers-Briggs Type Indicator (Myers & Briggs, 1962), *need for achievement* with the Achievement Scale of the Jackson Personality Research Form (Jackson, 1974), *innovation* with the Innovation Scale of the Jackson Personality Inventory and *risk-taking propensity* with the Risk Taking Scale of the Jackson Personality Inventory (Jackson, 1976). Based on significant positive correlations in all comparisons at the .001 level, Carland and Carland concluded that support for convergent validity was achieved. Finally, tests of discriminate validity were performed, on a segregation of the second group, based on response to a *strategic posture* question of purpose for establishing their business (profit and growth vs. providing for their family); analysis of variance provided support for differentiation between all dimensions at the .001 level. *Note:* Factor analysis failed to show item loading on theorized dimensions. Therefore, use of the instrument must take place with the presumption of unidimensionality.

Summary

The Carland Entrepreneurial Index (Carland & Carland, 1996) purports to measure the intent of an individual to create and grow a business. Operationalized as cognitive style or personality associated with entrepreneurship, preference for innovation, risk-taking propensity, and strategic posture. The sample was questionable with only 29 percent of the respondents in business for five years or less, and support was not found for two of the four reported constructs within the empirical study. For these reasons, the Carland Entrepreneurial Index was deemed not appropriate for this research. However, items or modified versions of items have been incorporated.

Entrepreneurial Inclinations

While the Entrepreneurial Inclinations Questionnaire (Davidsson, 1995) is not inclusive of all semantic and symbolic cognitions postulated in this research, it is a good representative measure of aspects of both perspectives and for that reason was included in this study. However, to ensure consistency of measures, the multi-item measure of entrepreneurial intentions was removed and the single item measure used as the dependant variable for all instruments in this research.

Entrepreneurial Intensity

Based on the previous work of Cooper and Dunkelberg (1986), Keats and Bracker (1988), and, Gundry and Welsch (2001), Entrepreneurial Intensity is conceptualized as the focus and level of commitment a nascent entrepreneur is willing to put forth in an effort to start and grow a business, often at the expense of other important goals. The construct is thus operationalized into two dimensions: that of *focus*, the extent to which an individual will give up other pursuits to start, own, and work toward the health of a venture, and *commitment*, the passion and willingness to spend time and resources on the creation, development, and growth of the venture.

Sample

Data were obtained from the Panel Study of Entrepreneurial Dynamics (PSED)⁸. The sample was composed of a random selection of adults across the United States, gathered between 1998 and 2000, whom were in the process of starting a business and a control group of individuals not involved in the entrepreneurial process. Through listwise

⁸ For a detailed description of the methodology and the data gathering techniques, see the "*Handbook of Entrepreneurial Dynamics: The Process of Business Creation*", pages 457-462.

deletion based on missing data, a sample of 563 usable cases was identified for use in this study.

Reliability

Convergent validity was determined through evaluation of path coefficient significance. All paths were found to be significant at the .05 level. In addition, construct reliability of .77 was calculated using the standardized loadings, further representing a high degree of reliability.

Validity

Confirmatory factor analysis using LISREL was performed to assess construct validity. Analysis showed a superior fit with the two factor model (focus and commitment) achieving a $\chi^2=3.08$, $df=2$; $p=.21$; GFI = 0.99; AGFI =0.98; RMSR =0.03.

Summary

The Entrepreneurial Intensity measure (Liao, Murphy, & Welsch, 2005; Liao & Welsch, 2004), like the Carland Entrepreneurial Index, purports to measure the focus and level of commitment a nascent entrepreneur is willing to put forth in an effort to start and grow a business. However, unlike the Carland index, this instrument was tested on a confirmed group of entrepreneurs. While the constructs are not consistent with those used in this research, many of the items are. Therefore, items from the Entrepreneurial Intensity measure were incorporated into the instrument used in this research.

Entrepreneurial Intentions Questionnaire

Liñán and Chen's (2009) Entrepreneurial Intentions Questionnaire is conceptualized as the effort a person is willing to make to carry out an entrepreneurial

behavior, in this case to start a business. This construct is operationalized using the three dimensions of the Theory of Planned Behavior (Ajzen, 1991), *attitude towards entrepreneurship*, *subjective norm* (family, friends and colleague's perception of starting a business) and *perceived behavioral control*. With a 6-item measure of entrepreneurial intention included used to capture the dependent variable.

Sample

The study utilized several convenience samples in the creation and testing of the questionnaire. First a sample consisting of 310 Spanish business and economic students (67% and 33% respectfully) from the University of Seville, representing an approximate 1:1 ratio of men to women and with an average age of 23.8 was used to evaluate the initial psychometric properties of the instrument. Next, an additional 77 students were added to the study in 2004 from the universities of Pablo Olavide and Jaen, thus changing the demographics of this sample to n=387, 73 percent business and 27 percent economic students, 56 percent female and 44 percent male, with an average age of 23.6. In order to evaluate the cross-cultural applicability of the instrument, a sample of Taiwanese students was obtained in 2006 at a business plan competition on Technology Innovation. This sample (n=132) consisted of 61 percent business, 24 percent engineering, and 15 percent health and life sciences students; of which 42 percent were female and 58 percent male with an average age of 23.1.

Reliability

Cronbach's alpha was used with the first sample (n=310) to assess the internal validity of the questionnaire. The three dimensions showed reliability, attitude with $\alpha = .90$, subjective norm with $\alpha = .77$, and perceived control with $\alpha = .89$, with the direct

measure of intentions achieving $\alpha = .94$. In order to assess concurrent validity, the internal validity of the Taiwanese sample was also tested. Results were consistent with the Spanish sample showing Cronbach's alphas ranging from .078 to .095.

Validity

The Kaiser-Meyer-Olkin test for sample adequacy (0.91) and the Bartlett's sphericity test ($p < 0.001$) were both used to determine suitability for factor analysis. Then a Kolmogorov-Smirnov test was used to check for normality of item distribution. Since normal distribution was not found among the items, a principal axis factorization extraction method was used. A four-factor solution was obtained with eigenvalues greater than .998 with cumulative variance explained by the extraction of 72 percent. As a test of convergent validity, comparison of the factor loadings for both groups was compared, thus showing consistency of the instrument between groups.

Summary

The Entrepreneurial Intentions Questionnaire is not inclusive of the specific semantic cognitions postulated in this research. However, because it is based on the most prominent theory used in the semantic perspective (Theory of Planned Behavior) and has been shown to be psychometrically sound, it is a good representative measure. Therefore, it was included in this study as one of two measures representing the semantic perspective. However, to ensure consistency of measures the multi-item measure of entrepreneurial intentions was removed. This was replaced with the single item measure used as the dependant variable for all instruments.

Entrepreneurial Intention Questionnaire

Personal attitude

Indicate your level of agreement with the following sentences from 1 (total disagreement) to 7 (total agreement).

	1	2	3	4	5	6	7
Being an entrepreneur implies more advantages than disadvantages to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A career as entrepreneur is attractive for me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If I had the opportunity and resources, I'd like to start a firm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Being an entrepreneur would entail great satisfactions for me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Among various options, I would rather be an entrepreneur	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Subjective norm

If you decided to create a firm, would people in your close environment approve of that decision?
Indicate from 1 (total disapproval) to 7 (total approval).

	1	2	3	4	5	6	7
Your close family	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your friends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your colleagues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Perceived behavioral control

To what extent do you agree with the following statements regarding your entrepreneurial capacity?
Value them from 1 (total disagreement) to 7 (total agreement).

	1	2	3	4	5	6	7
To start a firm and keep it working would be easy for me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am prepared to start a viable firm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can control the creation process of a new firm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know the necessary practical details to start a firm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know how to develop an entrepreneurial project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If I tried to start a firm, I would have a high probability of succeeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Entrepreneurial Management Scale

Based on the work of Howard Stevenson (1983), and in an effort to create a comprehensive firm-level measure, Brown, Davidsson and Wiklund (2001) created the Entrepreneurial Management Scale. In the instrument, Entrepreneurial Management is conceptualized as an opportunity based management approach, in which individuals are encouraged to pursue opportunities without regard to the resources they currently control. The construct is operationalized with 20 items spanning six dimensions: *strategic*

orientation, resource orientation, management structure, reward philosophy, growth orientation, and entrepreneurial culture.

Sample

Statistics Sweden (the Swedish Bureau of Census) was used to select the firms for three separate samples. An initial convenience sample of 121 small and medium-sized firms was used to develop the instrument. After modifications, a second round of 200 surveys was sent out and the responses were analyzed for final changes; these two groups were subsequently excluded from the final test sample. In order to ensure proper representation of the necessary types of firms, a stratified sampling method was used for the third group. The CEO of each firm was contacted, either by phone interview or mail survey, and asked to participate in the study. A 52 percent response rate was achieved and, after exclusion of surveys with incomplete responses, yielded a final sample of 1233 firms for analysis.

Reliability

Cronbach's alpha was used to assess the reliability of the survey. Four of the dimensions, strategic orientation ($\alpha = .82$), management structure ($\alpha = .78$), growth orientation ($\alpha = .71$), and entrepreneurial culture ($\alpha = .68$), achieved near or above recommended levels. The other two dimensions, reward philosophy ($\alpha = .58$) and resource orientation ($\alpha = .58$), were just below the recommended level. With high inter-item correlation variance, ranging from .23 to .66, the authors concluded that the items share a high degree of variance with respect to their construct and thus the addition of items with similar measurement properties would likely correct the problematic indices.

Validity

Kaiser-Meyer-Olkin's test for sample adequacy (0.77) and the Bartlett's sphericity test ($p < 0.001$) were used to determine suitability for factor analysis. Next, principal component extraction, with a varimax rotation and eigenvalues of 1.00, was performed yielding a six-factor solution. Although this was not consistent with the eight factors theoretically expected, it does explain 60 percent of the cumulative variance and supports discriminant validity in the instrument. Using nine of the stratification subsamples, a comparison of analyses showed Kaiser-Meyer-Olkin scores ranging from 0.70 to .077 with Bartlett's test ($p < .000$) and cumulative variances from 60 percent to 62 percent. Based on these results, convergent validity was supported.

Summary

While the instrument was shown to be both valid and reliable, its use of firm-level measures yielded no useable items for this research.

Entrepreneurial Self-Efficacy

Two measures of entrepreneurial self-efficacy were evaluated for use in this research, the Chen, Greene, and Crick scale (1998) and De Noble, Jung, and Ehrlich's scale (1999).

Chen, Greene, and Crick Scale

Based on Bandura's (1977) concept and recommendation of domain specificity (1982, 1986), Entrepreneurial Self-Efficacy is conceptualized as the strength of an individual's belief that they are capable of performing various entrepreneurial actions. In

this work, the construct is operationalized as 22 items within the five dimensions of *marketing, innovation, management, risk-taking, and financial control*.

Sample

In this study, two sample groups were used. The first consists of 141 MBA graduate (n=112) and organizational psychology undergraduate students (n=29) of a large northeastern university. The second sample consists of 175 small business owners and executives from a county Chamber of Commerce in a northeastern state, yielding a 14 percent response rate. This second group was divided into two for comparisons. Owners and executives who founded the company were considered entrepreneurs while all others were considered managers. The demographics of the second group were as follows: the average respondent age was 45, average age of the business was 28 (20% < 5, 50% < 15, and 80% < 50), and the average number of employees was 135 (60% < 20 and 88% < 100).

Reliability

The researchers reported Cronbach's alpha's of .89, with the individual dimensions achieving $\alpha = .86$ for marketing, $\alpha = .74$ for innovation, $\alpha = .75$ for management, $\alpha = .65$ for risk-taking, and $\alpha = .77$ for financial control.

Validity

Face validity of the items were assessed using 30 MBA graduate students who had completed entrepreneurship electives. The students scored each of the items, based on how essential the activity was to entrepreneurship, on a 5 point Likert type scale ranging from 1 (absolutely nonessential) to 5 (absolutely essential); items with an average score less than .40 were dropped from the instrument. Factor analysis was used to assess

construct validity. The items loaded on the five dimensions as theoretically proposed, explaining 57 percent of the variance, with factor loadings for marketing ranging from .46 to .86, innovation from .58 to .71, management from .50 to .82, risk-taking from .40 to .75, and financial control from .47 to .88, with no significant cross loadings on any of the items. Comparisons of results to establish measures for locus of control (.30) and entrepreneurial intention items (.24) included in the study were found to correlate at the .01 level of significance, thus showing support for convergent validity. Discriminate validity was assessed through a comparison of results between the entrepreneur and manager groups; significant differences were found between the two groups at the .01 level.

De Noble, Jung, and Ehrlich Scale

As is the case with the Chen, Greene, and Crick scale (1998), this instrument is also based on Bandura's (1977) concept and recommendation of domain specificity (1982, 1986). Here, Entrepreneurial Self-Efficacy is conceptualized as the judgment of an individual's own capability to take entrepreneurial action. In this work, 22 items within six dimensions (*developing new product and market opportunities, building an innovative environment, initiating investor relationships, defining core purpose, coping with unexpected challenges, and developing critical human resources*) operationalize the construct.

Sample

The sample consisted of 272 undergraduate entrepreneurship and 87 non-entrepreneurship graduate students in a large southwestern public university. The undergraduate students were randomly divided into two sub-samples numbered one

(n=115), to examine the factor structure using factor analysis, and two (n=157), used for confirmatory factor analysis.

Reliability

The dimensions within the instrument are reported to have Cronbach's alpha's of .84 for *developing new product and market opportunities*, $\alpha = .79$ for *building an innovative environment*, $\alpha = .77$ for *initiating investor relationships*, $\alpha = .85$ for *defining core purpose*, $\alpha = .88$ for *coping with unexpected challenges* and $\alpha = .89$ for *developing critical human resources*. In addition, the measurement model showed a high coefficient of determinate (.98).

Validity

Face validity of the instrument was assessed using eight practicing entrepreneurs to develop a list of relevant entrepreneurship issues. Factor analysis, using principle component methods with varimax rotation, was used to determine construct validity. This resulted in a model explaining 62 percent of the variance (factor loadings for *developing new product and market opportunities* ranging from .44 to .80, *building an innovative environment* from .56 to .84, *initiating investor relationships* from .65 to .85, *defining core purpose* from .80 to .87, *coping with unexpected challenges* from .67 to .79, and *developing critical human resources* ranging from .57 to .75). Confirmatory factor analysis, performed on sample 2, showed that while the RMSR was within the acceptable range ($\leq .05$), other indices such as GFI (.82) and AGFI (.77) were below optimum levels, thus indicating only a reasonable fit for a newly created measure. Comparisons of results to establish measures of entrepreneurial intention items, included in the study, found to correlate at the .001 level of significance, thus showing support for convergent

validity. Discriminate validity of this instrument was tested by comparing the scores of entrepreneurship students (sample 1) to non-entrepreneurship (graduate) students using a series of one-way analysis of variance. Results indicate significant differentiation between groups at the .001 level.

Summary of Entrepreneurial Self-Efficacy Scales

While both instruments were found to be psychometrically sound, evaluation of items revealed the Chen, Greene, and Crick scale to be focused on entrepreneurial self-efficacy toward primarily specific tasks relating to running a business (i.e. "Conducting a marketing analysis", "Expanding a business", and "Controlling cost"). This instrument is therefore best suited for individuals whom are nearing entrepreneurial nascence or have a business related background.

The De Noble, Jung, and Ehrlich scale uses general items to access entrepreneurial self-efficacy (i.e. "I can work productively under continuous stress, pressure and conflict" and "I can persist in the face of adversity") allowing assessment of entrepreneurial self-efficacy in individuals at an earlier stage of development and with a less-business related background. However, both scales require respondents to possess a degree of business knowledge and familiarity with certain business terms.

While neither instrument was used in this research, several items were revised or reworded from the De Noble, Jung, and Ehrlich's scale for use in this instrument. This is necessary for the measurement of entrepreneurial self-efficacy in respondents who are less informed in regards to the inner workings and terminology relating to business.

Entrepreneurial Orientation

Measures of Entrepreneurial Orientation are designed to capture the degree to which an organization is acting in an entrepreneurial manner. Specifically, does the management of an organization tend to think, and act, like an entrepreneur? Since most instruments utilize cumulative individual information to assess organizational orientation, measures were evaluated for possible inclusion in this research.

Discussion of Instruments

Depending on the instrument, the entrepreneurial orientation construct consists of either three or four dimensions with the most widely used instrument being the *Covin and Slevin Entrepreneurial Orientation scale*. This instrument is an extension of work done by Miller, Friesen, and Khandwalla (Khandwalla, 1977; Miller, 1983; Miller & Friesen, 1977, 1978, 1982). Through the evaluation of an organization's top management, Covin and Slevin use three dimensions to measure an organizations entrepreneurial orientation, these are: 1) *willingness to take business related risks*, 2) *dedication to innovation* and 3) *propensity for proactiveness*. In their evaluation of the construct, Covin and Slevin assert the three dimensions covary to the degree that a high score on one dimension implies the existence of an equally high score on the other two. Based in this assertion, Covin and Slevin developed a unidimensional or single factor scale for the measurement of entrepreneurial orientation. However, the validity of this single factor solution has been called into question. It has been suggested that while the three dimensions used by Covin and Slevin are interrelated; they likely capture different aspects of entrepreneurial orientation and thus require a multidimensional approach in order to fully understand the

contribution of each dimension to the construct (Kreiser, Marino, & Weaver, 2002; Lumpkin & Dess, 1996, 1997; Wiklund, 1998).

Lumpkin and Dess (1996,1997), concerned with the unidimensionality of the Covin and Slevin scale, postulated that in addition to its multidimensionality the entrepreneurial orientation construct consists of four and not three dimensions. They argue that proactiveness and competitive aggressiveness are distinct dimensions, and as such, are likely to vary independently. Differentiation of the two dimensions is based on the nature of the subject, with proactiveness being directed toward opportunities and competitive aggressiveness directed toward threats. Based on a multidimensional perspective, they contend that while all four dimensions are required for interpretation of an organization's entrepreneurial orientation, the degree to which each dimension covaries will depend on the type of opportunities pursued. Therefore, the *Lumpkin and Dess Entrepreneurial Orientation scale* operationalizes the construct by evaluating an organization's top management based on: 1) *willingness to take business related risks*, 2) *dedication to innovation*, 3) *propensity for proactively seeking opportunities*, and 4) *readiness to aggressively respond to threats from competitors*.

Zahra's (1993) critique of the Covin and Slevin scale, in addition to raising concerns about the unidimensionality of the scale, posits that the measure would be greatly enhanced through greater specification of terms. For example, Covin and Slevin characterize entrepreneurial orientation as frequent and extensive technological and product innovation, an aggressive competitive orientation, and a strong risk-taking propensity of the top management. Zahra postulates that entrepreneurial orientation could also be interpreted as the intensity of entrepreneurial behavior, the formality, type and

duration of the activities a company undertakes in an effort to rejuvenate or redefine the business. Whereas his concern is valid, to date this proposition has yet to be tested. An additional concern has been the link between entrepreneurial orientation and performance.

In his study of the relationship between entrepreneurial orientation and performance, Wiklund (1998) evaluates the inference that the entrepreneurial orientation scale is actually a measure of performance (as suggested by Covin & Slevin, 1986; Covin & Slevin, 1988, 1989, 1991; Miller, 1983) to determine what affect entrepreneurial orientation has on a company's performance and behavior. The Wiklund (1998) study found that entrepreneurial orientation does have a positive effect on company performance and entrepreneurial behavior, thus supporting the assumption. Another concern has been cross-cultural applicability of the entrepreneurial orientation scale.

Two studies, Knight (1997) and Kreiser, Marino and Weaver (2002), tested cross-cultural psychometric properties of the entrepreneurial orientation scale. Knight (1997) tested the scale on a sample of French Canadians, thus the measure was translated into French, whereas, Kreiser, Marino and Weaver (2002), tested the instrument on samples from six different countries including, Australia, Finland, Mexico, the Netherlands, Norway, and Sweden. In all cases, the instrument was translated into the primary language of the country, then back into English. The process was then repeated in order to adhere to established guidelines for the equivalence of language translations. Both studies used eight of the nine items in the Covin and Slevin (1989) scale and one from the Miller and Friesen (1982) instrument. The studies found support for the cross-cultural applicability of the scale.

To summarize, scales of entrepreneurial orientation have been shown to be a valid and reliable multi-dimensional means of gauging the degree to which individuals within an organization are acting in an entrepreneurial manner. However, none of the instruments were deemed appropriate for this research although items or modified versions of items have been incorporated.

Implicit Theories of Intelligence Scale

Dweck's (2000) *Implicit Theories of Intelligence Scale* measures an individual's attitude toward their intelligence, specifically their ability to learn. This is accomplished through the self-evaluation of two dimensions: fixed and incremental intelligence. *Fixed intelligence* is conceptualized as the belief that someone's intelligence is a fixed trait which dwells within them and that they possess a finite amount which cannot be increased (Bandura & Dweck, 1988; Dweck & Leggett, 1988). *Incremental intelligence* is the belief that intelligence is a process which is cultivated through learning and that there is no limit to what can be learned with the appropriate effort (Bandura & Dweck, 1988; Dweck & Leggett, 1988). This instrument uses eight items, four fixed and four incremental, to determine someone's perception of their ability to learn. This measure can be used to classify respondents as possessing a static entity-schema (a fixed intelligence perspective) or a dynamic entity-schema (an incremental intelligence perspective), typically 40 to 45 percent per group, as well as a small set of respondents not possessing a well-defined perspective, typically 10 to 15 percent (Levy et al., 1998).

While much of the psychometric support for this instrument is based on the study of school age children (5-18), the instrument has been adapted for use on adults and

testing has shown the adult version to be consistent with the children's version (Levy et al., 1998). Researchers report Cronbach's alpha for the instrument (both versions) to be between .84 and .93, with an internal reliability across items reported as high ($\alpha = .93$) (Erdley & Dweck, 1993; Levy & Dweck, 1999; Levy et al., 1998). Factor analysis was used to determine discriminant validity of the two dimensions on five separate samples. In all cases, items were loaded on the theorized dimension with scores ranging from .91 to .96 with no cross loading. Additionally, the instrument was compared to existing measures of cognitive ability (Scholastic Aptitude Test), confidence in intellectual ability (Hong et al., 1995), and self-esteem (Coopersmith, 1981). As expected, no significant relationship was found to exist. The test was repeated with the adult version which found that responses to the adult form of the measure were independent of the Paulhus (1984) Social Desirability Scale, the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960), and the Motivation to Control Prejudiced Reactions Scale (Dunton & Fazio, 1997). These findings indicate the instrument is in fact a unique measure of implicit intelligence theories.

Based on the conceptualization, operationalization, and psychometric properties of this instrument, Dweck's Implicit Theories of Intelligence Scale was found to be an appropriate measure for use in this research as an indicator of *entity-schemata*.

CURRICULUM VITAE

ROBERT F. SINCLAIR

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EDUCATION

2012	Ph.D.	Entrepreneurship University of Louisville, Louisville, Kentucky
2004	M.B.A.	Management, Management Consulting Central Michigan University, Mt. Pleasant, Michigan
2003	B.A.A. <i>Laude</i>	Entrepreneurship, Business Administration Minor, <i>Cum</i> Central Michigan University, Mt. Pleasant, Michigan

EMPLOYMENT

Jan 2010 - Present	<i>Assistant Professor of Entrepreneurship</i> Governors State University, University Park, Illinois
Aug - Dec 2009	<i>Visiting Instructor of Management</i> Central Washington University, Ellensburg, Washington
2007 – 2009	<i>Instructor of Entrepreneurship</i> University of Louisville, Louisville, Kentucky
2005 – 2007	<i>Research & Teaching Assistant</i> University of Louisville, Louisville, Kentucky
2004 – 2005	<i>Graduate Instructor and Guest lecturer</i> Central Michigan University, Mt. Pleasant, Michigan
2003 – 2004	<i>Graduate Assistant</i> Central Michigan University, Mt. Pleasant, Michigan
1996 – 2002	<i>Founder, President/CEO</i> Ultra-Box Inc., Columbiaville, Michigan Manufacturer of EMS boxes
1994 – 2001	<i>Founder, President/CEO</i> RFS Industries Inc., Columbiaville, Michigan Die cast manufacturer

1990 – 1994	<i>Operations Manager</i> General Die Casting, Oak Park, Michigan Manufacturer of automotive die-castings
1980 – 1990	<i>Production Control Manager</i> Automatic Die Casting, Detroit, Michigan Manufacturer of automotive die-castings

TEACHING EXPERIENCE

<i>Entrepreneurship*</i>	Average rating: 3.80 (on a 4.0 scale)
<i>Organizational Behavior</i>	Average rating: 4.59 (on a 5.0 scale)
<i>Operations Management</i>	Average rating: 4.81 (on a 5.0 scale)
<i>Management</i>	Average rating: 4.46 (on a 5.0 scale)
<i>Managerial Decision Making</i>	Average rating: 4.73 (on a 5.0 scale)

* Received an 88% average satisfaction rating as an instructor and an 83% average satisfaction rating with the way I teach my courses.

Inspirational Speaker, “If you don’t know where you’re going, any road will get you there.”

By sharing my own personal journey through life, this monologue seeks to inspire students to take notice of every day moments. By showing the value of preparation and forward thinking, this talk focuses on the value of properly prioritizing work, family, and fun to take full advantage of the college experience as preparation for life (presented to more than 500 students, faculty, and staff).

PROFESSIONAL DEVELOPMENT

Gateway Entrepreneurial Research Conference designed to promote specification, measuring, and teaching of entrepreneurial behavior through the exploration of advanced research and techniques applicable to entrepreneurial pedagogy and practice. St. Louis, Missouri (April 2010).

Faculty Development in International Entrepreneurship Program, sponsored by the Center for International Business Education (CIBER), designed to foster learning, pedagogy, and the creation of new concepts relating to the intersection between international business and entrepreneurship. Denver, Colorado (June 2010).

DISSERTATION

Creating an Entrepreneurial Frame of Mind

Abstract: Drawing on various theories of behavior, this research extends the cognitive psychology and entrepreneurship literature by testing a cognitive model that includes entrepreneurial mindset as an antecedent to entrepreneurial intentions. Investigation takes place within multiple populations to determine the degree to which mindset explains and predicts entrepreneurial intentions. Expectations are these structures represent further advancement to our understanding of the cognitive processes used by entrepreneurs emerging from the general population.

Committee: James Fiet (Chair); Reginald Bruce; Per Davidsson; Lyle Sussman; Sherry Thatcher

PAPERS UNDER JOURNAL REVIEW

Sinclair, R. F. Legitimizing the Study of Illegal Entrepreneurship (Under revision for the *Entrepreneurship Theory and Practice*)

Sinclair, R. F. & Nelson, T. E. A Cognitive View of Strategic Behavior (Under revision for *Strategic Management Journal*).

Sinclair, R.F. Why Aren't All Entrepreneurs the Same? A Typology of the Entrepreneur (Under review at the *Journal of Marketing Development and Competitiveness*)

Ahuja, M., Sinclair, R. F., Sarker, S. The Influence of Outsourcing Models on Vendor Knowledge Integration (Under revision for at *Journal of Information Technology Theory and Application*).

WORKING PAPERS

Sinclair, R. F. Explaining and Predicting Entrepreneurial Intentions (Targeted toward the *Academy of Management Journal*, October 2011)

Sinclair, R. F. The Role of Cognition in the Formation of an Entrepreneurial Mindset (Targeted toward the *Academy of Management Review*, November 2011)

Sinclair, R. F. Empirical Evaluation of Entrepreneurial Mindset Using the Theory of Volitional Behavior (Targeted toward the *Academy of Management Journal*, January 2012)

Bruce, R. A. & Sinclair, R. F. Exploring the Psychological Hardiness of Entrepreneurs (Targeted toward the *Journal of Applied Psychology*, January 2012)

Sinclair, R. F. Entrepreneurial Mindset; The Development and Assessment of a New Measure (Targeted toward *Entrepreneurship Theory & Practice*, Feb 2012)

Sinclair, R. F. & Bruce, R. A. Determining Entrepreneurial Commitment in the Entrepreneur *a Priori* (Targeted toward the *Academy of Management Journal*, March 2012)

Sinclair, R. F. & D'Souza, R. R. An Examination of the Effect of Situational Awareness on Opportunity Recognition (Targeted toward *Entrepreneurship Theory & Practice*, July 2012)

REFEREED PRESENTATIONS

Sinclair, R. F. & D'Souza, R. R. (2011). An Examination of the Effect of Situational Awareness on Opportunity Recognition. *Babson College Entrepreneurship Research Conference*. Syracuse, NY.

Ahuja, M., Sinclair, R. F., Sarker, S. (2011). The Influence of Outsourcing Models on Vendor Knowledge Integration. *The Pacific Asia Conference on Information Systems*. Hyderabad, India.

Sinclair, R.F. (2011). Why Aren't All Entrepreneurs the Same? A Typology of the Entrepreneur. *Midwest Business Administration Association (MBAA)*, Chicago, Illinois.

Nelson, T. & Sinclair, R. F. (2009). Testing the Strategic Mindset Theory. *The 29th Annual Strategic Management Society Conference*. Washington, D. C.

Sinclair, R. F. & Bruce, R. A. (2009). Determining Entrepreneurial Commitment in the Entrepreneur *a Priori*. *Babson College Entrepreneurship Research Conference*. Babson Park, Massachusetts.

Bruce, R. A. & Sinclair, R. F. (2009). Exploring the Psychological Hardiness of Entrepreneurs. *Babson College Entrepreneurship Research Conference*. Babson Park, Massachusetts.

Sinclair, R. F. (2008). A General Theory of Entrepreneurial Action: The Cognitive Process Leading to the Creation of an Entrepreneur. *The 68th Annual Meeting of the Academy of Management*. Anaheim, California.

Sinclair, R. F. (2008). Legitimizing the Study of Illegal Entrepreneurship. *Babson College Entrepreneurship Research Conference*. Chapel Hill, North Carolina.

Sinclair, R. F. (2008). The First Step toward a Theory of the Entrepreneurial Career. *United States Association for Small Business and Entrepreneurship (USASBE) Conference*. San Antonio, Texas.

Sinclair, R. F. (2007). The First Step toward Empirical Support of the Entrepreneurial Career. *The 5th Annual Symposium on the PSED*, Kauffman Foundation & Clemson University, Greenville, South Carolina.

Sinclair, R. F. (2007). A Theory of the Entrepreneurial Career. *Society of Entrepreneurship Scholars Conference & Manuscript Boot Camp*, Ohio State University, Columbus, Ohio.

SERVICE

Committees Serve on:

- Faculty and Student Development
- AACSB Accreditation (Sub-Committee)
- Faculty Excellence Awards (Sub-Committee)

Developed and implemented a comprehensive entrepreneurship discipline at GSU including:

- Bachelor of Art in Entrepreneurship Degree
- Bachelor of Art in Business Administration, Entrepreneurship Concentration (Major)
- Entrepreneurship Minor
- Master of Business Administration Specialization in Corporate Entrepreneurship

Developed eleven new courses specifically designed to support the aforementioned discipline, specifically designed to focus on areas crucial to the entrepreneur but often glossed over or ignored by entrepreneurship classes. Courses offer a combination of specialized learning and practical application specific to the formation of new entrepreneurial ventures.

- Principles of Entrepreneurship
- Entrepreneurial Opportunity Creation and Recognition
- Entrepreneurial Accounting
- Entrepreneurial Ethics & the Law
- Entrepreneurial Finance
- Entrepreneurial Leadership
- Entrepreneurial Marketing
- Entrepreneurial Project (Capstone)
- Principles of Corporate Entrepreneurship
- Corporate Entrepreneurial Opportunity
- Corporate Entrepreneurial Leadership

Developed three online courses designed as a mixture of traditional online courses (using Blackboard to deliver audio enhanced PowerPoint slides, assessments, and exams) and video conferencing to allow students to work at their own pace for tutorial aspects of courses and come together in an environment similar to the classroom for interactive portions of the courses. These courses are for students from differing areas to take courses while affording them the opportunity to have moderated discussions with individuals from varying environments.

- Principles of Entrepreneurship
- Entrepreneurial Opportunity Creation and Recognition
- Entrepreneurial Leadership

CITIZENSHIP

Guest Speaker:

- GSU College of Business Etiquette Luncheon (2010)
- CenterPoint Global Entrepreneurship Week (*Featured Entrepreneur - 2010*)
- Joliet Community College (*Recruitment Drive for the Dual-Degree Program -2011*)
- Prairie State College (*Recruitment Drive for the Dual-Degree Program - 2011*)

- Governors State Universities Honors Program (*Should we be moving Toward an Entrepreneurial Economy? - 2011*)

Unpaid Consultant helping local individuals with ways to increase sales and expand or start their business increasing employment with the surrounding communities

- DeVonna's Decor
- Green Guy Solutions
- Lifeline Plus
- Daniel Burke

Reviewer:

- Strategic Management Journal (guest reviewer)
- Academy of Management Conference
- Babson College Entrepreneurship Research Conference

RESEARCH INTEREST

My research currently focuses on the cognitive processes that lead to entrepreneurship, and the external forces affecting them. More specifically, the cognitive structures and environmental factors which affect the decision to undertake entrepreneurial behavior.

Before entering academia, I was a serial entrepreneur and never truly understood why I was so very driven to be one. Therefore, discussions such as “who is an entrepreneur?” (Gartner, 1989b; Schiller & Crewson, 1997) and “why some people choose to become entrepreneurs while others do not?” (Alsos, Ljunggren, & Pettersen, 2003; Baron, 1999) have always peaked my academic curiosities. It is because of these questions, and questions like them, I felt compelled to research the topic of entrepreneurial behavior.

My current research seeks to expand our understanding of the role that mindset and proclivity play as antecedents to intentions. I theorize that mindset and proclivity form based on core beliefs and attitudes, and as such represent more stable cognitive structures. Because previous research has shown that intentions lead to behavior (Ajzen & Fishbein, 2005), my research holds the potential for extending existing theories of behavior by suggesting a possible means of measuring intentions a priori. I am currently testing this theory on a population of recent graduates in which a significant portion are likely to be in the process of choosing an entrepreneurial career. I expect that this study will support my theory and lead to additional insight of the entrepreneurial process along the way.

FUTURE RESEARCH

When my current research stream wanes, I anticipate focusing on one of the following areas: family, green, social, strategic, or corporate entrepreneurship. I hope to be a part of a vibrant team of researchers looking at expanding our understanding of one or more of these important areas of study.

Because I feel it is important to continue honing and refining our theories over time. At some point in the future, I would like to put the knowledge I obtain from studying emerging entrepreneurs and my practical experience as an entrepreneur to use. I would like to accomplish this through association with an entrepreneurship center, to both study and assist the next generation of entrepreneurs and managers.

I expect my research to make theoretical and empirical contributions to the field of entrepreneurship, as well as to the fields of management, behavioral, organizational, and cognitive psychology.