

**THE IMPACT OF PERSONALITY ON  
ENTREPRENEURIAL INTENTION AND PERFORMANCE:  
COMPETING MODELS AND THEORY PRUNING**

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Accepted by the Graduate Faculty, Indiana University, in partial fulfillment of the requirements of the Degree of Doctor of Philosophy in Business.

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Date: December 15, 2010

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## ACKNOWLEDGEMENTS

Margaret Mead states that *“A small group of thoughtful people could change the world. Indeed, it’s the only thing that ever has.”* I entered the Kelley School of Business doctoral program after an extensive career in industry, consulting, and entrepreneurship with a mission devoted to being one of those *thought leaders* who make a difference in the world. Born into a family lineage with many generations in the education profession, I was inspired to continue this legacy of touching the minds and lives of youth. I integrated my career experiences in positions in management, corporate entrepreneurship, and independent entrepreneurship with my passion for learning and teaching in the classroom experience. However, I found that embarking on this doctoral academic path in the role of “a student” demanded new levels of resilience, perseverance, faith, and self efficacy. I am grateful for the journey’s contribution to my personal and professional growth, internal capacity, and to the incremental opportunities to serve the local, national and global communities.

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I entered the program with the goal of studying the intersections of the fields of entrepreneurship, human resource management and organizational behavior. It was my intention to blend this theoretical training with my practical experience in corporate America, entrepreneurship, and extensive cross-cultural engagement in 24 countries, including work in Africa. I am grateful for the opportunity to engage with Indiana University's "Global Business and Social Entrepreneurship" and "Peace through Prosperity" initiatives resulting in consulting, alliance building, and mentorship programs with Peruvian entrepreneurs.

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**Denise Elizabeth Williams**

**THE IMPACT OF PERSONALITY ON ENTREPRENEURIAL INTENTION AND PERFORMANCE:  
COMPETING MODELS AND THEORY PRUNING**

This dissertation addresses an issue at the intersection of the fields of entrepreneurship, human resource management, and organizational behavior. Specifically, the goal is to understand the relationship among entrepreneurs' Big Five personality traits (i.e., Openness to Experience, Conscientiousness, Extraversion, Agreeableness, Emotional Stability/Neuroticism), their Intention to behave entrepreneurially, and their Entrepreneurial Performance (firm survival). Currently, there are competing theoretical perspectives regarding the relationships among these three factors. Rather than conducting one more study that would test just one of the prevailing models, this dissertation compares three competing models. To do so, it integrates meta-analysis and structural equation modeling and uses a comprehensive database extracted from more than 200 independent studies including approximately 150,000 individuals. The results indicate that a model that produces the best fit for the data is one in which the Big Five personality traits predict the mediator of Entrepreneurial Intention which, in turn, predicts Entrepreneurial Performance. This dissertation makes a contribution to theory by adopting a "theory pruning" approach that informs the current debate regarding competing theoretical perspectives. It also makes a contribution to practice in that it provides guidance regarding interventions (e.g., training and development activities) that will maximize the chance of future entrepreneurial success.



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## CHAPTER 1

### INTRODUCTION

Entrepreneurial ventures are the dominant source of innovation, job creation and economic growth. In the USA, small businesses with fewer than 500 employees account for: 99.7% of all employer firms; just over half of all private sector workers; 65% of net new jobs over the past 17 years; 43% of high tech workers; 97.5% of all identified exporters, producing 31.2% of the known export value; and 13 times more patents per employee than large patenting firms (U.S. Dept. of Commerce, Census Bureau and International Trade Administration, 2007). With the capacity to alter existing industries or create new ones (Schumpeter, 1934), the innovative contributions of these entrepreneurial initiatives have profound effects on employment and economic growth on the societal level (McGrath, 1999). Entrepreneurship is defined in this dissertation as a process that involves the discovery, evaluation and exploitation of opportunities to introduce new products, services, processes, and ways of organizing or marketing (Shane & Venkataraman, 2000; Venkataraman, 1997).

Driven by the financial and human resources implications of these emerging organizations (Gartner, Bird, & Starr, 1992), scholars and practitioners have increasingly directed their attention to further understand this entrepreneurial phenomenon---its process and, even more importantly, the people behind the process. Whatever the significance of a given entrepreneurial organization, it is the 'entrepreneur', the founder or business owner, who stands pivotal to the organization's strategic direction and culture. Psychologists and organizational scholars have debated the role of individual

characteristics, specifically personality traits defined by the Big Five personality factor model (McCrae & Costa, 1987) in predicting the behavior of this enterprising individual—the ‘entrepreneur’, founder or business owner. How do individual characteristics such as personality dimensions influence the intention to become an entrepreneur or to act entrepreneurially? How do they influence the individual’s subsequent performance as an entrepreneur?

While some researchers have linked personality significantly to entrepreneurial behaviors (McClelland, 1965; Hornaday & Aboud, 1971; Solomon & Winslow, 1988; Zhao & Siebert, 2006; Zhao, Seibert, & Lumpkin, 2010), others have found no significant relationship (Brockhaus, Horwitz, & Sexton, 1986; Carsrud, Olm, & Eddy, 1986). Scholars have historically challenged the ability of personality traits to predict entrepreneurial behavior. Contradictory empirical results were found early in this research, due primarily to weak research methods including the use of small sample sizes and narrative descriptions as data. Additionally, some scholars held the perspective that the heterogeneous nature of entrepreneurs prevents their adequate categorization into generalizable and individual characteristic measures (Gartner, 1988). However, interest in the impact of individual characteristics, namely the Big Five personality traits, now is being revived with the integration of more rigorous methodological approaches to the entrepreneurship literature. For example, meta-analyses have found significant relationships between personality traits and entrepreneurial behavior when comparing the Big Five personality traits of entrepreneurs and managers (Zhao & Siebert, 2006).

The people side of the entrepreneurial engine remains a fertile ground for theoretical and empirical exploration. The entrepreneurial venture is driven by the individual who makes the decision to act entrepreneurially, chooses this career path, and takes the necessary action to generate and sustain Entrepreneurial Performance. In the entrepreneurship literature, the integration of the individual's psychological perspective with the new venture process is summarized by Shaver & Scott (1991, 39) "...we need a person, in whose mind all of the possibilities come together, who believes that innovation is possible, and who has the motivation to persist until the job is done".

The entrepreneur's personal characteristics or traits have implications for the business that may outweigh other firm performance measures (e.g. sales, growth, profitability or survival). The importance of individual characteristics may also exceed that of the actual business idea or industry setting (Shepherd, 1999; Shepherd, Douglas & Shanley, 2000; Baum, Frese, & Baron, 2007). The popular press and academic scholars herald entrepreneurs as "heroes of free enterprise", "champions", and "agents of change" (Kuratko, 2009). Empirical evidence supports the thesis that entrepreneurs, by whatever name they are called, have different mindsets and individual characteristics than non-entrepreneurs. Studies have reported differences in: emotions and psychology (Collins & Moore, 1964; Eden, 1975; Shapero, 1975); innovation propensity (Stewart, et al., 1998); risk acumen (Stewart & Roth, 2001; Stewart et al., 1998); skill propensity (Herron, 1990; Herron & Robinson, 1993); mind mapping, cognitions, and perspectives (Mitchell et al., 2002); achievement motivations (Collins, Hanges, & Locke, 2004;

McClelland, 1965; Stewart et al., 1998); and self efficacy and overconfidence (Busenitz & Barney, 1997; Simon, Houghton, & Aquino, 2000; Chen, Greene & Crick, 1998).

Earlier research in personality and entrepreneurial outcomes was limited by research methods: restricted sample sizes, inconsistent definitions across studies, and narrative descriptions. Baum et al. (2007) emphasized the critical role that more rigorous methods such as meta-analysis contributed to the revival of interest in the personality construct in the entrepreneurship literature. Meta-analyses research on the relationship between personality and entrepreneurship has intensified over the last two decades (Brandstatter, 2010) including investigation of: entrepreneurs versus non-entrepreneurs (Zhao & Siebert, 2006); the achievement motivation of entrepreneurs versus non-entrepreneurs (Zhao & Siebert, 2006; risk propensity of entrepreneurs versus managers (Stewart & Roth, 2001); personality traits predicting business creation and success (Rauch & Frese, 2007); and the relationship of personality to Entrepreneurial Intention and Performance (Zhao et al., 2010).

### **Purpose of the Research**

This dissertation seeks to better understand the entrepreneurial founder, owner-manager by examining the characteristics most associated with them. Specifically, the research focuses on one of the most fundamental and yet highly debated variables in the entrepreneurial literature, the influence of personality on the founder, owner-manager's actions. The dissertation is designed to address the research question: "what impact does personality have on predicting the Intention to become an entrepreneur and Entrepreneurial Performance?" Personality and its relationship to entrepreneurial



outcomes has been debated for decades and yet, the questions raised remain very relevant. In this dissertation, personality is operationalized according to Costa & McCrae's (1988) Big Five personality traits as Openness to Experience, Conscientiousness, Extraversion, Agreeableness, and Emotional Stability/Neuroticism.

Why is this important? Several theoretical perspectives have emerged specifically evaluating the Big Five personality traits and their relationship to entrepreneurial outcomes. However, the examinations have resulted in inconclusive findings. Some argue that the Big Five traits predict Entrepreneurial Performance indirectly and only when mediated by the intention to become an entrepreneur. Others argue that the intention to accept the role and identity of an entrepreneur is an evolving process and can be a consequence of performance that occurs after the individual has acted entrepreneurially for a while. Additional theories propose that personality traits can directly predict Entrepreneur Performance and Entrepreneur Intention without any mediating factors.

This debate has been in the literature for over 30 years and has been examined by many different moderators and mediators. It is the intention of this dissertation process to examine three competing models of the relationship between the Big Five personality traits and entrepreneurial outcomes, specifically Entrepreneurial Intention (desire to become an entrepreneur) and Entrepreneurial Performance (firm survival). For the purposes of this dissertation, the criterion variable, Entrepreneurial Performance, is defined as "firm survival", which is consistent with the secondary data used for the analysis.

I apply a rigorous research methods approach involving the path analysis of meta-analytically derived correlations, an approach that has been used effectively in the organizational behavior sciences. I identify relevant meta-analysis that examine these relationships and provide correlation tables for inter-correlations of all variables. Arranged into models to represent each theory, the correlations from these meta-analyses are then used to test and compare each of the three models against each other using meta-analytic path analysis with structural equation modeling. This technique provides a broader evaluation of the relationships (Colquitt, LePine, & Noe, 2000). In applying this method to the entrepreneurial literature that already exists, I anticipated that the increased statistical power, sample size, and the reduced error would result in the synthesis of these three competing models and provide a clearer perspective concerning the relationship of Big Five personality traits and entrepreneurial outcomes, specifically Entrepreneurial Intention and Entrepreneurial Performance.

This method provides a comprehensive framework and a statistical technique aimed at deriving the strongest model for portraying the relationship between the independent and criterion variables or the “the best fit” for the data. With this model identified, we will have a new opportunity to reconcile the debate about the relationship of personality to entrepreneurial outcomes. This “theory pruning” approach (Bergh et al., 2010; Leavitt, Mitchell & Peterson, 2009) will inform the debate regarding competing theories and eliminates weaker models. As a result, researchers and practitioners will be able to consider directing future research efforts and resources to the model with the strongest variable relationship or best fit of the data.

This dissertation further utilizes and applies methods traditionally used in the organizational behavior sciences to the entrepreneurial literature, resulting in a more rigorous examination of the relationship of personality to entrepreneurial outcomes. Specifically, this dissertation seeks the optimal model that best represents the relationship of the Big Five personality traits with Entrepreneurial Intention and Entrepreneurial Performance. For consistency and clarity, I utilized definitions for the variables based on the most recent meta-analysis study performed by Zhao et al. (2010). An “entrepreneur” is defined as the founder and owner-manager of for-profit small businesses with fewer than 500 employees. This definition excludes corporate entrepreneurs or intrapreneurs engaged in entrepreneurial activities within large firms as well as patent holders and those participating in social entrepreneurial ventures or, non-profits. As founders and owner-managers, entrepreneurs’ impact on new venture creation and success is far-reaching (Schein, 1987; Van Gelderen, Frese, & Thurik, 2000). They are viewed as critical to a venture’s success by researchers, bankers and investors, government and non-government agencies, practitioners (Mitchell et al., 2000; Shane & Venkataraman, 2000), and by themselves (Sexton, 2001). In other words, as Chapman (2000) put it, “When the entrepreneur sneezes, the organization catches a cold.”

I recognize that the model with the strongest variable relationship or best fit does not represent the only possible picture of personality and entrepreneurship or a panacea for all the difficult questions about this relations. All three models have a justifiable rationale for their historical role in the conversation whether or not they stand as the best-fitting model. However, thanks to this method, the model indicated

by this research will utilize comprehensive and current data from meta-analyses incorporating over 159,000 individuals and 273 independent studies. This contribution creates a rational approach that can guide future research to examine additional moderating factors that further explain variance within or apparent departures from the strongest model.

The opportunity to learn more about the individual characteristics of a given entrepreneur and his or her venture builds both theoretical and practical capacity to make better decisions about who should choose entrepreneurship as a career. From the theoretical standpoint, I expect that the combined power of the methodological process will identify a model that most strongly confirms existing empirical findings as well as offers alternative hypotheses for relationships between the Big Five personality traits and Entrepreneurial Intention and Entrepreneurial Performance. From the practical standpoint, the findings will offer insights into how personality impacts the decision to act entrepreneurially and venture survival. This opens the door for future research into personality's influence in the training and development of entrepreneurs. Such research could assist with the design of training and experiential entrepreneurial educational programs to motivate current and future entrepreneurs (Aguinis & Kraiger, 2009; Baldwin, Magjuka, & Loher, 2006) in a way that best fits their personalities and maximizes their individual potential.

In summary, I draw upon current organizational behavior and entrepreneurial theory, supported by psychology, sociology and career theories to construct and evaluate three prevailing and competing views of the relationship between Big Five

personality traits and Entrepreneurial Intention (desire to become an entrepreneur) and Entrepreneurial Performance (firm survival). The research agenda is to reconcile the debate on personality's relationship with Entrepreneurial Intention and Entrepreneurial Performance. By pitting these competing models against each other, the empirical contribution will be to provide direction for future research by identifying which model best represents the relationship between the variables or best fits the data. This will lay the groundwork for further exploration of moderators and other relationships.

I expect this dissertation to contribute to the organizational behavior, human resource management, and entrepreneurship disciplines in three distinct ways. First, based on the literature reviews, to my knowledge, this is the first introduction of the integration of meta-analysis and structural equation modeling process to the entrepreneurship literature.

Second, this paper applies the concepts of theory pruning (Bergh et al., 2010; Leavitt, Mitchell & Peterson, 2009) and strong inference to eliminate weaker models (Aguinis & Adams, 1998) to a historically controversial debate.

Third, it proposes that the aggregated relationship between variables produced by this methodology will be best explained by theories grounded in Ajzen's (1991) Theory of Planned Behavior and Shapero's Entrepreneurial Event Model (Shapero & Sokol, 1982), and in Carsrud & Johnson's (1989) Theory of Social Interaction, which provides an explanation of the individual characteristics and social interactions impacting this relationship.

In addition to making these contributions to the theoretical dialogue, I hope that this research will also benefit practitioners through furthering understanding of the role that personality plays in the decision to act entrepreneurially and suggesting some implications for consideration. Just as the development of assessment tools to evaluate the level of corporate innovation (Kuratko, 2009) has profited corporate business, so human resource managers, corporate leaders, and entrepreneurial founder/owner/managers would benefit from having access to personnel assessment tools that measure the role personality plays on predicting entrepreneurial behavior.

Prior to applying these methodological techniques to the proposed models, it is important to understand the current status of the constructs and arguments to be compared. This discussion is followed by the presentation of three competing models and their implications. Lastly, I present the methods, data-analytical techniques, results, discussion, limitations, and implications.

## CHAPTER 2

### LITERATURE REVIEW AND HYPOTHESES

#### Personality Domain

Psychologists have explained the phenomenon of personality as being a state as opposed to a trait and described it in various terms that include: stable patterns of experiences and action (Allport, 1937), global tendencies (Funder, 1991), biological mechanisms (Eysenck, 1990), or personality types that distinguish one person from another (McCrae & Costa, 1987; John, Pals, & Westener, 1998). In the organizational sciences, personality has long been measured for its ability to predict outcomes, particularly job performance (Judge & Ilies, 2002; Ozer & Benet-Martinez, 2006; Tett, Steele, & Beauregard, 2003; Barrick & Mount, 1991).

McCrae & Costa (1987) contributed a personality theory that can serve as a theoretical foundation for personality psychology. Their Five Factor Theory proposes that personality dimensions or dispositional tendencies can be analyzed in terms of five constructs. These constructs or factors are labeled “the Big Five personality traits, and they are: Openness to Experience, Conscientiousness, Extraversion, Agreeableness, and Emotional Stability/Neuroticism. McCrae & Costa (1987) supported this theory through the development of a robust factor analysis and psychometric measures of individual differences including the NEO Personality Index. Researchers have substantiated the universality, generalizable nature, and individual application of this Five Factor Model through rigorous theoretical assumptions and methodological practices (Caprara, Barbaranelli, & Zimbardo, 1994; Caprara & Cervone, 2000; McCrae & Costa, 1999).

Further, this Five Factor Model has become a seminal personality theory that offers a scientific explanation for the causal factors that define the individual's potential and direction (McCrae & Costa, 1999).

### **Definitions of Big Five Personality Traits**

In the current literature, the "Big Five" personality traits or Five Factor Model (FFM) represent the most widely accepted constructs of personality traits. Despite a chaotic history in the personality psychology field of introducing numerous other personality trait constructs and challengers to the Five Factor Model (McAdams, 1992; McCrae & Costa, 1999), the Big Five personality traits continue to have wide recognition and acceptance as stable theoretical ground.

Studies have demonstrated that these measures of personality are parsimonious yet robust (Judge et al., 1999) based on the following properties: virtually all personality measures can be categorized into the Big Five personality dimensions (Goldberg, 1990; Judge et al, 1999); they generalize across cultural boundaries (McCrae & Costa, 1987); and they offer stability (Costa & McCrae, 1992). Viswesvaran & Ones (2000) studied measurement error in the Big Five factors and tested their generalization reliability across studies and measures. Their findings indicated that the five factors were stable traits with internal consistency coefficients higher than .70.

The following represents a summary of the descriptions of each of the Big Five personality traits (McCrae & Costa, 1985), and their subsequent influence on social relationships, their "propensity to act", and to the vocational choice as an entrepreneur (Holland, 1985, 1959).



*Openness to Experience* (key descriptors: imaginative, independent-minded, intellectual, artistically sensitive). A person who demonstrates this trait has been described as tending to be creative with the ability to adapt to change (George & Zhou, 2001; LePine, Colquitt, & Erez, 2000); to contribute more to innovation at work; and to be artistically sensitive, intellectually curious, polished, original and independent. While adaptable, this person's desire for newness may be an obstacle to the perseverance necessary for Entrepreneurial Performance and the level of commitment required for long-term, effective social interaction.

*Conscientiousness* (key descriptors: dependable, orderly, responsible). A person with high Conscientiousness may be characterized as being stable, organized, persistent, and seeking high achievement. In contrast, a person with low Conscientiousness exhibits tendencies toward being careless, irresponsible, lazy, impulsive, and low-achieving. From an entrepreneurial perspective, Conscientiousness has been the most consistent predictor of individual performance (Hurtz & Donovan, 2000; Salgado, 1997). Therefore, we would expect, on the one hand, a person would focus on commitment and engagement in the task (Barry & Stewart, 1997) and on cooperation (Molleman, Nauta, & Jehn, 2004) when this personality trait is strong; and on the other hand, a person would lack cohesion when the trait is not strong.

*Extraversion* (key descriptors: assertive, energetic, talkative, sociable). A person with a high degree of Extraversion is described as a gregarious individual who generally likes other people, seeks interaction, and can easily navigate between being ambitious to socially expressive. These personality traits relate most strongly to job performance

in occupations where a significant portion of the job involves interacting with others, influencing others, or obtaining status and power (Barrick & Mount, 1991). With enhanced social skills, a person with this personality type would be expected to be more successful in social interactions, and thus have more unique peers and relationships (Barrett & Pietromonaco, 1998 ; Asendorpf & Wilpers, 1998; Pietromonaco & Barrett, 1997). On the other hand, this same quality can be perceived as negative for developing deep relationships and can cause a person to be judged superficial by strangers within a relatively short time (Carney, Colvin, & Hall, 2007; Gifford, 1994). This personality type is linked to the social and motivational contexts in which a team operates and encourages self expression (Barry & Stewart, 1997). In contrast, this personality type may have a tendency to be dominant and less accepting, which can have an adverse effect on the social relationships necessary for Entrepreneurial Performance.

*Agreeableness* (key descriptors: cooperative, good-natured, trusting) is a personality trait compatible with working cooperatively and being helpful (Hogan & Holland, 2003; LePine & VanDyne, 2001). This trait would likely influence the degree of trust that strangers are willing to apply to social interactions (Liden & Maslyn, 1998; Carney, Colvin, & Hall, 2007; Gifford, 1994).

Someone with a high level of Agreeableness is more likely to accept traditionally allocated roles, which may increase the quality of their relationships with others. Additionally, this trait is expected to be positively related to team effectiveness, and to generate interpersonal attraction (Neumann & Hull, 1995), cooperation (Barrick & Mount, 1991; Taggar, 2002), and open communication (Neuman & Hull, 1995), which

are all important in an organization. However, the Agreeable personality trait is unlikely to be effective for the leadership roles required of an entrepreneur. When low in this trait, a person may be resistant to adapting to the social relationships necessary for Entrepreneurial Performance due to an argumentative, inflexible, uncooperative, uncaring, intolerant, disagreeable, tentative and inconsistent nature (Barrick & Mount, 2005). A personality with low Agreeableness is unlikely to support effective teamwork and encourages more counterproductive behaviors. Thus, the effect of this trait on entrepreneurship, at face value, appears somewhat ambivalent.

*Emotional Stability* (key descriptors: calm, unemotional, confident, effective, secure). The opposite of a high degree of this trait is Neuroticism, so the trait may sometimes be referred to as Emotional Stability/Neuroticism. An Emotionally Stable personality tends to foster cooperation and coordination of work behaviors (Barrick & Ryan, 2003) and social cohesion (Van Vianen & DeDreu, 2001). By contrast, a person with low Emotional Stability (also described as high Neuroticism) is easily upset, maladjusted, not confident, hostile, anxious, personally insecure, stressed, and depressed. This has a negative impact on social relationships and performance.

### **Traditional Models of Big Five Personality Traits**

Historically, difficulty has existed in linking entrepreneurship to personality (Singh & DeNoble, 2003) due to philosophical debates over whether personalities are inherent in genetics (Eysenck & Eysenck, 1985) or the products of personal development (Douglas & Shepherd, 2002). The search for demonstrable links between personality and entrepreneurial behavior has been made more challenging by the measuring errors

that occur when concepts are defined inconsistently and are measured differently across individual studies. Additionally, the debate over the influence of personality and other individual characteristics on entrepreneurial behavior continues. For example: Shaver & Scott (1991) questioned the strength of individual characteristics as the sole determinant of performance outcomes and theorized that social cognitive processes interacted with individual characteristics to influence entrepreneurial success. They empirically demonstrated that entrepreneurial success was motivated by how a person viewed the situation or 'ones belief in their own entrepreneurial abilities or tendencies'. In contrast, the relationship between personality and entrepreneurial outcomes were found to be more direct by Douglas & Shepherd (2002). Their research found individuals who decided to become entrepreneurs tended to be high in Conscientiousness or low in Openness to Experience.

Ciavarella et al., (2004) presented additional contrasting study results, supporting the further exploration of these relationships in this dissertation. They examined the relationship of the Big Five personality traits on long-term firm survival. The stages of entrepreneurial survival were affected differently by the different personality traits. The Ciavarella et al., (2004) study found Extraversion, Emotional Stability, and Agreeableness to be unrelated to firm survival when measured over a period of eight years or more. Openness to Experience was negatively correlated with an entrepreneur's ability to lead their new venture to long-term survival. Conscientiousness positively predicted survival, supporting Hertz & Donovan's (2000) report that this trait correlates positively with job performance.

Defined as highly stable dispositions which exhibit a certain response across various situations (Caprara & Cervone, 2000; Roccas et al., 2002), personality traits are conceptualized as 'propensities to act' according to McCrae & Costa (1999). Different propensities (e.g. personality traits) can promote or prevent business owners' actions and behaviors (Rauch & Frese, 2007). The distinction between trait and state is based on an abundance of evidence verifying that states are influenced by external factors, situations and conditions whereas traits remain relatively stable (Zuckerman, 1983). The long-standing debate over the trait-versus-state nature of personality was declared resolved in the 2001 Psychology Annual Review (Funder, 2001). It was noted that there were enough consistencies in individuals' behavior, described as personality trait constructs, to successfully empirically test and recognize them as broad enough to be meaningful.

Studies that evaluated the individual psychological characteristics and personalities of entrepreneurs have presented conflicting results. McClelland's (1961) seminal early work demonstrated that business owners have a higher need for achievement motivation than managers do, but his study met with wide criticism. Entrepreneurs were found to be higher in innovativeness, competitive aggressiveness, and autonomy than managers (Utsch et al., 1999); and higher in intrinsic work motivation than managers (Green, Dent, & Tyshkovsky, 1996). Business founders were found to be higher in risk taking than non-founders (Begley & Boyd, 1987). Entrepreneurial attitude scales were developed to measure achievement, self esteem,

locus of control, and innovation (Robinson et al., 1991) as well as specific task motivation levels (Miner, Smith, & Bracker, 1989).

### **Entrepreneurship as a Domain of Psychology**

While studies over the years have shown that there are organizational and environmental determinants of successful new venture creation (Rauch & Frese, 2000; Baum, Locke, & Smith, 2001) and that competitive strategic advantages are derived from entrepreneurial orientation (Covin, Green, & Slevin, 2006), entrepreneurship has proven to be much more complex and multi-dimensional than the early economic and firm-based theories can explain (Low & MacMillan, 1988; Rumelt, 1987; Schumpeter, 1934). Rooted in economics, research on entrepreneurship was initially focused at the firm level, until economists began to investigate the agents who are focal points of change for the organization and society. They posited that individual personalities influenced the economic outcomes as entrepreneurs took risks under uncertainty; exhibited personality factors of innovativeness, achievement orientation, dominance (Schumpeter, 1934; Taussig, 1915); and translated their inventions into businesses and eventual wealth (Baum, Frese, & Baron, 2007).

Historically, the door for this research was first opened by Schumpeter's (1912) "Great Man" approach to study of the individual entrepreneur. He first articulated this theory through the Research Center for Entrepreneurial History at Harvard which was further institutionalized in the publication of *Explorations in Entrepreneurial History* (Aitken, 1949; Baum, Frese, & Baron, 2007). Focusing on studies measuring the role of achievement motivation as a personality factor for entrepreneurs, McClelland (1961)

added rigor and theoretical depth in entrepreneur training and education with his seminal work, *The Achieving Society*. After a period of building foundations in psychology and the economics of business and wage structures, entrepreneurial personality research returned to mainstream psychology (Shapero, 1975). Numerous key events seemed to define the 1970s and 1980s as the “entrepreneurial decade” in the north America (Baum et al., 2007). Researchers’ interests were revived as Ronald Reagan and Margaret Thatcher declared this entrepreneurial priority and focus in the political arenas. The release of the book, *American Made* (Livesay, 1979), a pivotal work, turned the attention on entrepreneurship back to a focus on firm strategy, industry and economics. Research interests in the psychological perspective and individual characteristics of the entrepreneur continued to provide a platform for exploration of his or her emotions, motivations and psychological differences from the salaried manager (Collins & Moore, 1964; Eden, 1975; Shapero, 1975).

A variety of relationships were empirically found between personality and entrepreneurial behaviors. Factors studied included: Litzinger’s (1965) entrepreneur performance and risk preferences/independence; achievement motivation (McClelland, 1965); and intelligence, creativity, energy and tolerance of uncertainty in entrepreneurs versus managers (Hornaday & Aboud, 1971). Eventually research expanded to the importance of social networks and their value to the entrepreneurship process (Aldrich, 1999; Aldrich, Reese, & Dubini, 1989; Aldrich, Rosen, & Woodward, 1987; Aldrich & Zimmer, 1986).

(Carsrud & Johnson, 1989) proposed the theoretical framework that entrepreneurship is a social psychological process based on relationships and social interactions that yield a variety of weak or strong network ties (Aldrich & Zimmer, 1986; Aldrich, Reese, & Dubini, 1989). The new venture entrepreneur or business owner sits at the center of this dynamic, relational process as he or she engages with team members, bankers and investors, stakeholders, vendors, customers, and community. Effective people management can make or break an organization. Individual characteristics such as personality traits (reflecting a person's core disposition and propensity to act) will affect an entrepreneur's capacity to act effectively in the various socialization interactions required by successful new ventures.

Despite the potential evolutionary organizational shift to entrepreneurial teams or key employees later in the venture development process (Savage, 1979), the entrepreneur's fundamental influence on the visionary direction, decisions, strategies, management, human resources, and infrastructure of the new venture from conception to succession has stimulated the need to understand the founding entrepreneur and the role of their personal characteristics (individual differences) on the new venture. This inquiry has stimulated research interest that blends traditional I/O psychology theory with the study of, organizational behavior and entrepreneurship (Schein, 1987), leading to the exploration of the impact of individual characteristics of personality, specifically the Big Five personality traits, on entrepreneurial behavior.

This question of "Who is the entrepreneur?", along with the further questions it raises about links between personality and behavior, has sparked a long-standing



debate, and controversy in fields of psychology, organizational behavior (OB), and human resources (HR). As a further complication, the literature evaluates two aspects of the importance of the internalized role of the entrepreneur: the “generalized entrepreneurial role” where the role of creating an organization and owning it is accepted by those who define themselves as ‘entrepreneurs’; and the ‘specialized entrepreneurial role’ where the individual learns how to accept and adopt various entrepreneurial roles (Dyer, 1994). The Big Five personality traits have been one of the most rigorously evaluated set of individual characteristic concepts related to performance, but the findings remain inconclusive (Brockhaus, Horwitz, & Sexton, 1986; Carland, Hoy, & Carland, 1988; Gartner, 1988).

Gartner (1988) asserted that evaluating the traits and personality characteristics of the entrepreneur was the wrong approach. He asserted that due to the heterogeneous nature of entrepreneurs, it was not possible to produce generalizable empirical results from psychological studies. This controversy curtailed scholastic research in the psychology direction and shifted it to focus on new venture strategies and external conditions for a significant period.

The introduction of more sophisticated measurement and methodological techniques to entrepreneur research has stimulated revived interest in the relationship between personality and entrepreneurial behavior. Studies reported empirical results positing that individual characteristics are indeed related to the success of a venture and Entrepreneurial Intentions and Performance (Zhao & Siebert, 2006; Rauch & Frese, 2007; Zhao, Seibert, & Lumpkin, 2010). These methodological techniques, such as meta-

analysis, synthesize findings from multiple individual studies; thus, increasing power, broadening evaluation options and reducing sampling error. Because they represent an opportunity for further theoretical and empirical research exploration, these techniques have allowed researchers to move away from the narrative descriptions, small sample sizes, and large measuring errors that limited past research studies.

### **Definitions of Entrepreneurial Intention**

Entrepreneurial Intention is defined as the commitment to perform the behavior that is necessary to launch the business venture (Kruger & Carsrud, 1993; Kruger, Reilly, & Carsrud, 1995). Having a mindset focused on an “intention to become” is perceived as the first step toward actually engaging in or performing an activity (Ajzen, 1991). The intention to act is a consistent and reliable predictor of actual behavior (Krueger, Reilly, & Carsrud, 2000; Krueger, Reilly, & Carsrud, 1995; Ajzen, 1991).

Baum, Frese, & Baron (2007) describe entrepreneurship as a “process” with three phases: *pre-launch* involves activities prior to the launch of a new venture; *launch or startup* includes activities related to the actual new venture launch and the initial operation period; and, *post-launch* involves activities after the startup period ranging 18 to 24 months of operation. The entrepreneurial process is entered into by either the act of planning or choosing “to become” an entrepreneur or by a triggering event that pushes one into the choice or action (Shapero & Sokol, 1982; Kruger, Reilly, & Carsrud, 1995).

Examining the “intention to become” self-employed as an initial stage of the career decision offers interesting insight in two areas: 1) the impact on one’s

performance or success in the chosen career; and, 2) the role of personality and personal identity in the entrepreneurial process (Katz, 1994; Kosine & Lewis, 2008).

Essential to the decision to start a firm is the decision to start. Learned (1992) describes the process with four dimensions: propensity to found, intention to found, sense making, and decision to found. Ajzen's (1991) Theory of Planned Behavior would posit that attitudes predict behavior intention. Shapero's Model of the Entrepreneurial Event (Shapero & Sokol, 1982) suggests that perceived desirability, propensity to act and perceived feasibility predict Entrepreneurial Intention. Knowing how a venture is formed has implications in theory, practice and education as a framework for understanding how personal characteristics or events can be influenced.

### **Definitions of Entrepreneurial Performance**

In the organizational behavior literature, personality has been found to be important in job performance. In fact, the Barrick & Mount (1991) meta-analytic study reported that the Big Five trait Conscientiousness predicted job performance. Mount, Barrick & Stewart (1997), again using the Five Factor Model found that Conscientiousness, Agreeableness, and Emotional Stability related positively to performance in jobs involving interpersonal interactions, which suggests that the heavily interactive entrepreneurship occupation would be influenced by personality traits.

The research conducted on the relationships between personality and career outcomes such as performance and success has provided conflicting results (Judge et al., 1999; Siebert, Crant, & Kraimer, 1999). For example, Boudreau, Boswell, & Judge (2001) found a direct relationship between the Big Five personality traits and extrinsic

career success and intrinsic career success. Extrinsic career success dimensions include: remuneration, job levels, employability. Intrinsic career success refers to an individual's perception of success including these dimensions: life, job, and career satisfaction. Conscientiousness has consistently reported a positive effect with job performance in the literature. In contrast, Boudreau, Boswell, & Judge's (2001) study found that Conscientiousness had no effect on extrinsic success and related negatively to intrinsic success. Siebert & Kraimer (2001) found that the Five Factor Model of personality could be meaningfully related to career outcomes. Intrinsic career success was linked either positively or negatively to three traits, Extraversion, Neuroticism, and Agreeableness. For example, individuals high in Neuroticism evaluated their careers more negatively. Agreeableness was not related to promotions but related negatively to salary for individuals in people-oriented occupations, which has implications for the socially oriented nature of entrepreneurship. In contrast, Gelissen & DeGraaf (2005) found that personality traits contributed importantly to earnings and mobility; yet, there were minimal direct relationships between personality variables and career outcomes.

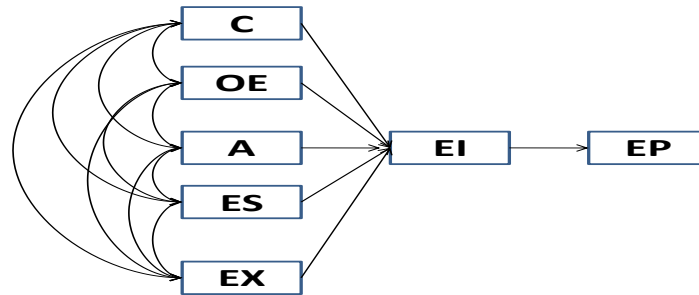
Occupational choice and performance were examined in two meta-analyses (Barrick & Mount, 2005; Larson, Rottinghaus, & Borgen, 2002) to evaluate the relationship between personality traits and occupational types. Findings report that Extraversion was related to social and enterprising occupational interests, Agreeableness to social interests, and Openness to Experience related to artistic interests, suggesting that an entrepreneurial occupation that requires social, artistic and

enterprising interests would be influenced by these personality traits (Holland, 1985, 1959).

### **Comparative Models/Proposed Hypotheses**

This dissertation compares three prevailing and competing models that evaluate the relationship between the Big Five personality traits (Openness to Experience, Conscientiousness, Extraversion, Agreeableness, Emotional Stability/Neuroticism) and the Entrepreneurial Intention (i.e., intention to become an entrepreneur) and Entrepreneurial Performance (i.e., firm survival). Personality traits have resulted in a variety of relationships. Zhao et al. (2010) found that all traits except Agreeableness related positively to Entrepreneur Intention and Performance, with both Openness to Experience and Conscientiousness ranking highest. Based on considerations of the influence of personality traits on social interactions and the individual's capacity for social adaption, social interaction theory may help to explain how the outcomes of relationships may differ from literature findings to date.

**Figure 1**  
**Model 1: Big Five Personality Predicts Entrepreneurial Performance, Intention Mediator**



**Note.** C: Conscientiousness, OE: Openness to Experience, A: Agreeableness, ES: Emotional Stability, EX: Extraversion, EI: Entrepreneurial Intention, EP: Entrepreneurial Performance

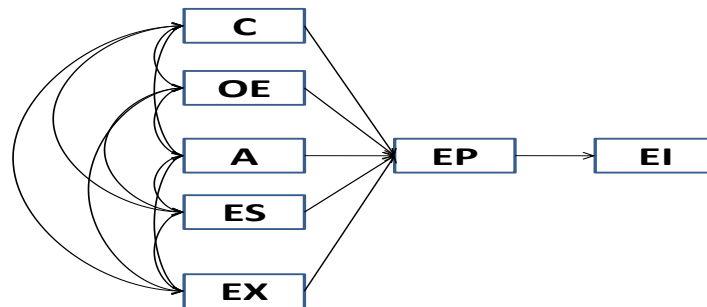
This model (Figure 1, Model 1) proposes a path of the Big Five personality traits relationship with Entrepreneurial Performance as mediated by Entrepreneurial Intention. Ajzen's Theory of Planned Behavior (Ajzen, 1988) states that 'intentional behavior' predicts actual behavior and is considered the most immediate antecedent of a given behavior. Based on this theory, Entrepreneurial Intention would be expected to predict Entrepreneurial Performance. While personality is not the only determinant of Entrepreneurial Intention and Performance, theory and empirical research have suggested that personality constructs influence both the intention to become an entrepreneur and the subsequent performance. The entrepreneurship literature has recognized that the intention to found and manage one's own business is a critical first step in the entrepreneurship process (Bird, 1988; Krueger, Reilly, & Carsrud, 2000; Krueger & Carsrud, 1993).

The relationship between personality and intention (to become) is also explored in the career theory literature (Holland, 1985). Choosing to “become an entrepreneur” is similar to making a career choice to engage in entrepreneurial activities. We expect individuals to be attracted to careers that match their own personality traits. The entrepreneurship literature has demonstrated differences in personality dimensions between entrepreneurs and non-entrepreneurs (Zhao & Siebert, 2006); therefore, we further would expect that people who score higher on personality traits related to behaviors associated with the entrepreneurial role will tend to choose entrepreneurship as a career option. For the purposes of this research, I accept Ajzen’s claim that behavior or performing entrepreneurial actions can be influenced by controlled and rational reasoning processes that are present when intention is strong and conscious (Ajzen, 1988, 1991). Actually starting the business is very much an individual decision and requires a “willingness to act”.

It is reasonable to project that persons with personality dimensions reflecting strong Conscientiousness (self-control, work motivation), Openness to Experience (imagination, creativity, opportunity recognition), Emotional Stability (sound decisions, consistency despite uncertainty), Extraversion (tendencies to be outgoing, friendly, energetic, comfortable in social interactions) and Agreeableness (pro-social attitudes and behavior toward people) would be influenced by these aspects of their personality, both in their intention to become entrepreneurs as well as in the intrinsic motivations and capacities that lead them to convert that “intention” into a manifestation and actually business start up. However, the empirical literature on the relationship

between the Big Five and Entrepreneurial Intentions and Performance has had mixed outcomes with studies reporting different traits predicting these criterion variables as well as inconclusiveness about effect directionality. For example, the literature has evaluated performance in relation to the entrepreneur's risk preferences and independence (Litzinger, 1965); their intelligence, creativity, and tolerance of uncertainty (Hornaday & Aboud, 1971); and their achievement motivation (McClelland, 1965). And in Gartner's (1988) completely different approach, which influenced the direction of research for some time, the whole question of entrepreneurial personality was deemed too difficult to generalize from, and attention was instead placed on the influences surrounding entrepreneurs.

**Figure 2**  
**Model 2: Big Five Personality Predicts Entrepreneurial Intention,**  
**Performance Mediator**



**Note.** C: Conscientiousness, OE: Openness to Experience, A: Agreeableness, ES: Emotional Stability, EX: Extraversion, EI: Entrepreneurial Intention, EP: Entrepreneurial Performance

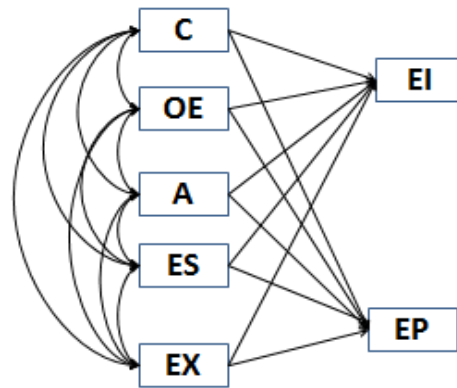


This model (Figure 2, Model 2) proposes that the relationship between The Big Five personality traits and Entrepreneurial Intention is mediated by the entrepreneur's past performance. Entrepreneurship as a career choice is not always a strategically planned option. Some people find themselves performing entrepreneurial activities either due to a necessary response to the environment, involuntary self employment after a corporate turnover, or recognition of a more sporadic opportunity for self-employment. Heckhausen & Beckmann (1990, p. 38) argue that "intents resemble plans about how to act when predetermined cues or conditions occur." Ouellette & Wood's (1998) meta-analysis research found that the effects of past behavior contribute to intention, and future behavior is guided by intentions. Past behavior can directly inform intentions for future responses through self-perception and cognitive processes (Ouellette & Wood, 1998; Sheeran & Abraham, 2003). It can affect attitudes and perceived control.

An additional theoretical consideration is that the entrepreneurship literature makes a distinction between the categories of "entrepreneur" and "small business owner". The difference is measured by the intention for growth (Stewart et al., 1999; Carland et al., 1984). It is reasonable to expect that owners or founders without a prior conscious intention to grow their business (because they are focused on other motivations, such as e.g., paying bills, community contribution, or autonomy in work experience) could adapt the experience from past performance to build knowledge, social networks, and self efficacy and thus evolve a more defined intention to become an entrepreneur with motivations to develop strategic plans for aggressive growth.

Haynie et al.,(2010) offer a theoretical framework positing that the entrepreneur is able to access a level of adaptable cognition to handle uncertainty that adds resources to their individual knowledge structures and heuristics process.

**Figure 3**  
**Model 3: Big Five Personality Direct Prediction of Entrepreneurial Intention and Entrepreneurial Performance**



**Note.** C: Conscientiousness, OE: Openness to Experience, A: Agreeableness, ES: Emotional Stability, EX: Extraversion, EI: Entrepreneurial Intention, EP: Entrepreneurial Performance

This model (Figure 3, Model 3) proposes two sets of paths: A) The Big Five personality traits can directly predict the Intention to become an entrepreneur without that Intention actually manifesting into Entrepreneurial Performance. B) The Big Five personality traits can directly predict Entrepreneurial Performance without being mediated by “the Intention to become an entrepreneur”. The establishing intentions may be defined by merely having superficial thoughts, or alternately they may reflect a

process of more extensive and systematic analysis (Eagly & Chaiken, 1993). The intention to behave in a certain manner does not necessarily result in the actual behavior. This conversion process requires a substantial internal locus of control, effort, and ability. Additionally, the process will be influenced by extrinsic forces in the environment. The economist Schumpeter (1912) proposed that opportunity for entrepreneurship is available everywhere and equally accessible to all people; however, it is only those who are “willing to act” and respond entrepreneurially that will benefit (McMullen & Shepherd, 2006).

Kirzner (1997) referred to this differentiator between those who act and those who do not as a perception or entrepreneurial alertness. Therefore, it is just not enough to have an entrepreneurial role identity (Shaver & Scott, 1991; Shaver, 1995) where self-concept is engaged in thoughts of “I am an entrepreneur”. Entrepreneurship requires action. Taking action requires a willingness to bear uncertainty (Douglas & Shepherd, 2002; McMullen & Shepherd, 2006) and the adaptive capacity to move from a self-concept or role identity as an entrepreneur to actually engaging in an entrepreneurial capacity successfully.

I propose that personality traits (the propensity to act) may influence whether the Intention remains just that... “an intention to become” or evolves into action. However, there may be another class of entrepreneurs whose process is different, those who go directly into entrepreneurial activity without having specifically defined themselves as an entrepreneur. The literature on necessity entrepreneurship presents situations where people are forced into entrepreneurial ventures to survive as they

have no perceived alternate option (Acs, 2006). The impact of involuntary self-employment as a result of corporate turnover (Parker & Parker, 2004), would also create a path where “the intention to become an entrepreneur” does not mediate the commencement of the actual entrepreneurial activity.

I hypothesize that the strongest model reflecting the relationship between personality (Big Five personality traits) and Entrepreneurial Performance will include Entrepreneurial Intention as a mediating factor.

<b>Hypothesis 1</b>	Model 1 with Entrepreneurial Intention mediating the relationship between Big Five personality traits and Entrepreneurial Performance (firm survival ) will better fit the data than Model 2
<b>Hypothesis 2</b>	Model 1 with Entrepreneurial Intention mediating the relationship between Big Five personality traits and Entrepreneurial Performance (firm survival ) will better fit the data than Model 3

Additionally, while a positive relationship has been historically demonstrated between intention and behavior in both Ajzen’s Theory of Planned Behavior and Shapero’s Model of the Entrepreneurial Event (Shapero & Sokol, 1982), I anticipate that the theories of Social Interaction (Carsrud & Johnson, 1989) may help to explain the influence of the Big Five personality traits on Entrepreneurial Intention and Entrepreneurial Performance.

## **Traditional Models of Personality, Intention and Behavior**

I have previously defined both phases (Entrepreneurial Intention and Entrepreneurial Performance) of the entrepreneurial process. They have been described as being action-oriented and requiring that the potential entrepreneur has a “propensity to act” (Shapero & Sokol, 1982; Krueger, Reilly, & Carsrud, 2000) in order to move from an attitude to an intention and subsequently from an intention to a behavior. How do the individual characteristics of the Big Five personality dimensions influence one to take action or not? Will the very nature of these personality traits promote or prevent this “propensity to act”?

Personality traits’ predictive nature and plausible relational links with job performance have proven stable over time in the management, leadership, psychology and medical literatures. This dissertation incorporates the definition of personality as “enduring emotional, interpersonal, experiential, attitudinal and motivational styles that explain behavior in different situations” (McCrae & Costa, 1987). Further, it integrates both individual and organizational units of analysis: the independent variables of the Big Five personality traits and individual Entrepreneurial Intention, and the organizational variable of firm survival or Entrepreneurial Performance as the criterion variable.

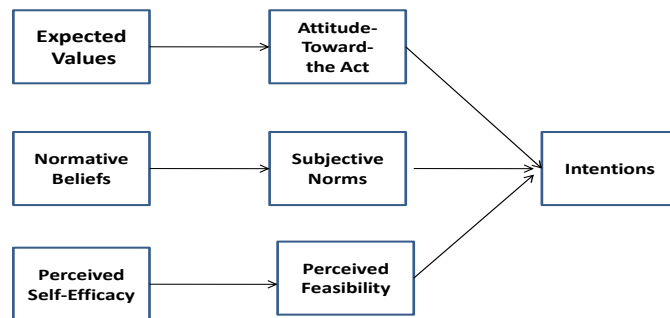
In order to evaluate the relationship between Big Five personality traits, Entrepreneurial Intentions and Entrepreneurial Performance, it becomes important to understand the relationship between intention and behavior. According to Fishbein & Ajzen (1975), behaviors represent a specific set of observable actions. “Intentions are

assumed to capture the motivational factors that influence a behavior; they are indications of how hard people are willing to try, of how much of an effort they are planning exert, in order to perform a behavior” (Ajzen, 1991, p. 181; Sheeran & Abraham, 2003).

### **Ajzen (1991) Theory of Planned Behavior**

The seminal Theory of Planned Behavior model or TPB (Ajzen, 1988, 1991), along with its predecessor, the Theory of Reasoned Action (Fishbein & Ajzen, 1975), provide a parsimonious, well-grounded, and robust model asserting that attitudes are the antecedents of intention and intention predicts subsequent behavior or performance.

**Figure 4**  
**Ajzen (1991) Theory of Planned Behavior**



Researchers using TPB expect a robust explanation of variance in behavior when examining the relationship between intention and behavior (Krueger & Carsrud, 1993; Brice, 2004); however, it is important to note that Ajzen (1991) stressed in the theory that intention stability is a precondition of a causal relationship between intention and

behavior. Therefore, while intentions may be good predictors of behavior, the direct relationship may be affected by other considerations including past experience, perceived desire and perceived feasibility of entrepreneurship as an employment career choice, and propensity to act (Kolvereid, 1997; Shapero & Sokol, 1982).

According to the TPB model (Figure 4), intentions toward the behavior would predict the behavior and mediate the relationship between it and attitudes or, as defined here, personality (Krueger & Carsrud, 1993). The model proposed that activities under the individual's control including entrepreneurial behavior are considered as "planned behavior" (Ajzen & Fishbein, 1980). Learned (1992) took an alternate approach and developed a model of the new venture startup that suggested that four dimensions were necessary: 1) propensity to found a business; 2) Entrepreneurial Intention; c) sense making and 4) the decision to found (entrepreneurial behavior). He further posited that it is the combination of these situations with individual characteristics that form intentions. Therefore, he hypothesized that it is not the inner motivator exclusively that drives one into entrepreneurship.

### **Shapero's Model of the Entrepreneurial Event (1982)**

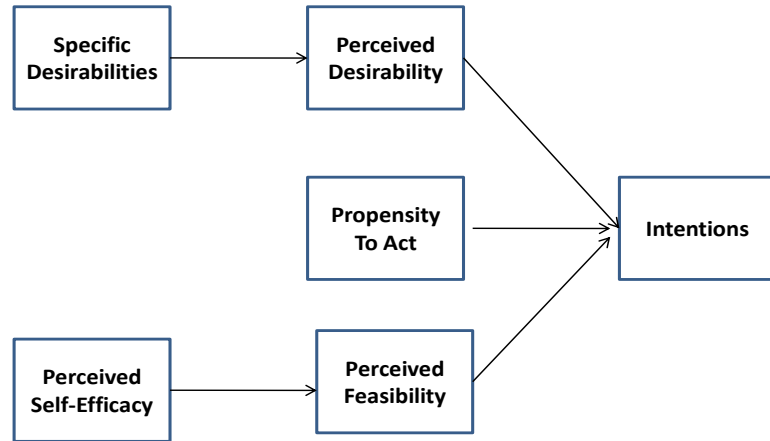
The Shapero Model of the Entrepreneurial Event (Shapero & Sokol, 1982) adapts the TPB causal relationships to the entrepreneurial context (Krueger, Reilly, & Carsrud, 2000). Antecedents to Entrepreneurial Intention are "perceived desirability", "propensity to act", and "perceived feasibility". An entrepreneur can perceive an opportunity as desirable and feasible; however, if he or she does not "act" there will be no results. Therefore, this dissertation is particularly interested in evaluating the

personality traits that influence a propensity to action or inaction. It evaluates their influence on the decision to choose entrepreneurship as a career path and then to subsequently take the necessary action steps toward performance.

Applying the TPB theory to the entrepreneurial event (Figure 5), Shapero & Sokol (1982) identified the path of the relationship between attitudes, intentions and entrepreneurial behavior. He proposed that the intentions of the entrepreneurial founder may change during various phases of the entrepreneurial process. Krueger, Reilly, & Carsrud (2000) further modified the model to increase application to entrepreneurs. The impact of the founder's intentions may also change over the life cycle of the venture as the founder's role potentially changes with the growth of the company (Bird, 1988). The model requires that the founder perceives entrepreneurship as a credible career alternative in order to move from "intention to become an entrepreneur" into action. Further, it introduces the moderators of "perceived feasibility", "perceived desirability" and "propensity to act" that serve as antecedents to Entrepreneurial Intention. A more comprehensive model was developed by Naffziger, Hornsby, & Kuratko (1994) incorporating both psychological and non-psychological behaviors necessary for venture creation and sustained performance. Furthering this understanding, Kuratko, Hornsby & Naffziger (1997) investigated the study of goals and their impact on motivation to sustain entrepreneurial action.



**Figure 5**  
**Shapero's Model of the Entrepreneurial Event (Shapero & Sokol, 1982)**



#### **Giessen-Amsterdam Model (Rauch & Frese, 2000)**

This model of the entrepreneur's personality characteristics and success describes how general personality traits (Big Five) have small-to-moderate relationships with the business outcomes of creation and success by directly impacting traits more specific to entrepreneurship such as need for achievement, risk taking, autonomy, locus of control, self efficacy, and innovativeness, all of which affect dynamic personal goal setting and developing strategies.

### **Theory of Social Interaction (Carsrud and Johnson, 1989)**

This dissertation employs (Carsrud & Johnson's, 1989) theoretical framework. In this view, entrepreneurship is a social psychological process based on relationships and social interactions that yield a variety of weak or strong network ties (Aldrich & Zimmer, 1986; Aldrich, Reese, & Dubini, 1989). I theorize that an entrepreneur's ability to adapt (Buss, 1996) influences their capacity for building strong social interactions and networks. The strength of these relationships in turn influence the strength of the individual's self-concept in their role of entrepreneur (Shaver & Scott, 1991). Personality has been tied to the development of the social relationship (Wu, Foo, & Turban, 2008; Higgins & Kram, 2001; Kram, 1985); career performance (Wu, Foo, & Turban, 2008); job performance in jobs involving interpersonal interaction (Mount, Barrick, & Stewart, 1998); and individual adaptability to solve problems and to change (Buss, 1996). The strength of social relationships and the perception of self in an entrepreneurial role influences the motivation and effort taken in both Entrepreneurial Intention (the choice of entrepreneurship as a career) and Entrepreneur Performance.

Whether the business is a solo or team-initiated start up, the nature of the entrepreneurship career requires the on-going personal interaction with multiple levels of social network actors: employees or partners (often family or friends), bankers and investors, customers, competitors, vendors/suppliers, and community stakeholders. It is in this aggregate form over time that the individual personality has influence on the organization. If an entrepreneur cannot connect and successfully interact and engage in these various levels of relationships, both he or she and the business will suffer.

Furthermore, I propose that it is the social interaction, its quality and influence on the individual that underlies the “propensity to act” which is the key ingredient in the move from “intention” to “survival”.

Organizational and social science research theories in social exchange, social networking, and attachment relate the broad personality traits (Big Five) with social interaction strength. It is rational that an entrepreneur with a neurotic (emotional unstable, irritable) personality would be presented with challenges when interacting with people as necessary for business engagement. Furthermore, it is rational to assume that the choice to “act” toward becoming an entrepreneur and adapting to the entrepreneur role identity implies that the individual is working within an environment that fits their personality and that they are able to navigate social interactions in an effective manner. For example, it is unlikely that a neurotically oriented individual would choose to undertake an entrepreneurship career that requires the constant management of uncertainty and highly rigorous environments. Additionally, research on personality and team performance (Peeters et al., 2006) where personality characteristics are projected to promote or prevent social engagement and team cohesion, and thus directly impacting performance, also demonstrates this personality to outcome relationship.

### **Summary of Debate Concerning Entrepreneurial Personality, Intention and Behavior**

While it is clear that individual entrepreneurs drive new business ventures, scholars have come up with a range of inconclusive empirical results and variant theoretical understandings of the role of personality traits in two critical dimensions of

the entrepreneurship process, a) the decision to become an entrepreneur (Entrepreneurial Intention) and b) firm survival (Entrepreneurial Performance).

The personality approach has been one of the most controversial and challenged concepts in the entrepreneurship literature since economist Schumpeter's (1912) introduction of the Great Man theory with its heroic descriptions of this "powerful, creative, impulsive and fully resourceful" man, the entrepreneur. Further distinctions between entrepreneurs and the average man were made in McClelland's (1965) seminal empirical study which designated entrepreneurs as having high achievement motivation. Busenitz & Barney (1997) differentiated entrepreneurs from managers based on the heuristics used in their strategic decision process. With these additions to research, the conversation was transferred from economists and psychologists to the arena of business in the university and small business management environments.

Personality advocates assumed a linear relationship between personality traits and performance; thus, researchers continued efforts to find significant individual differences between entrepreneurs and others in creativity and tolerance of uncertainty (Hornaday & Aboud, 1971); emotional and psychological differences (Collins, Hanges, & Locke, 2004); and how social networks differ (Aldrich, 1999; Aldrich, Reese, & Dubini, 1989; Aldrich, Rosen, & Woodward, 1987). The role of personality or propensities to act, specifically the Big Five personality traits (Costa & McCrae, 1992)—Conscientiousness, Openness to Experience, Agreeableness, Extraversion, Emotional Stability/Neuroticism, has generated an enigma of diverse findings.

Arguments about the lack of generalizability of empirical findings due to the heterogeneous nature of the entrepreneurship population (Gartner, 1988) and the lack of rigor in the narrative descriptive studies (Low & McMillan, 1988) led to the assertion that personality traits in entrepreneurship were not an empirically sound pursuit (Aldrich, 1999). The industrial/organizational psychology field also questioned personality as a reliable predictor of performance and leadership (Guion & Gottier, 1965; Mischel & Shoda, 1998). Scholars shifted from an approach focused on individual characteristic, particularly personality traits and moved toward a research agenda directed to firm, ecological and environmental factors.

### **Personality and Entrepreneur Behavior Research Stream Revival**

The literature experienced a revived interest in personality traits and performance research (Baum, Frese, & Baron, 2007) as methodology strengthened and empirically tested arguments gained momentum. Examples include: validating personality variables for organization behavior (Barrick & Mount, 1991) and leadership (Judge et al., 2002); investigating interactions of personality and various situational contexts (Magnusson & Endler, 1977); measuring the influence of personality and cognitive abilities on sales success (Vinchur, Schippman, Switzer, & Roth, 1998); evaluating the influence of distal and proximal variables (Baum & Locke, 2004; Rauch & Frese, 2000); examining behaviors influenced by individual characteristics: encoding, goals, values, beliefs (Mischel & Shoda, 1998); and predicting the influence of cognitive ability on performance (Hunter & Hunter, 1984).

Shaver & Scott (1991) reported how entrepreneurship represented a psychological perspective of new venture creation with a proposed focus on the person, process and choice to be an entrepreneur. Simultaneously, the integration of stronger methodological tools in the field including meta-analyses (Dalton & Dalton, 2005, 2008), more complex models, and concepts evaluating proximal versus distal relationships helped to correct for some of the prior issues in methodological rigor such as lack of consistent definitions for constructs, sampling error and reduced power from individual studies (Baron, 1998; Baum, Locke, & Smith, 2001; Busenitz & Barney, 1997; Mitchell et al., 2000; Colquitt, LePine, & Noe, 2000; Aguinis et al., 2009).

Psychologists continue to challenge the design and methodological limitations of published research pointing to deficient constructs, the need for longitudinal comparisons, lack of reverse directional testing of variable causal flow, and the challenge of combining mixed units of analysis for predictor and criterion variables (Hirsrich & Langan-Fox, 2007).

Meta-analysis techniques have been used as a statistical approach to synthesize the results from multiple empirical studies in order to strengthen the rigor of our evaluations of the relationships between personality and entrepreneurial outcomes. For example, Zhao & Siebert (2006) used meta-analysis to evaluate Big Five personality dimensions when comparing entrepreneurs to non-entrepreneurs; Rausch & Frese (2007) explored specific personality traits and the decision to create a business and maintain it successfully; Ciavarella et al. (2004) linked the Big Five and venture survival; and Zhao, Siebert, & Lumpkin (2010) evaluated personality Big Five and risk propensity

and related it to the outcomes of Entrepreneurial Intention, Performance (firm survival), growth and profit .

This dissertation continues the rigorous empirical and theoretical exploration of personality traits, specifically the Big Five model, and their predictive relationship with Entrepreneurial Intention and Entrepreneurial Performance. It engages the next level of methodological rigor to examine this relationship by integrating both meta-analytical and path analysis methods. Given the debates in the field concerning these competing models and variables, it was particularly important to ensure that the variable constructs and definitions across the secondary data used in this dissertation were consistent.

Based on the descriptions and relationships previously described, the traits of Openness to Experience, Conscientiousness, Emotional Stability, and Extraversion have been identified as assets to the entrepreneur, who must be creative, opportunity-seeking, resilient and persevering. Thus, these personality traits are predicted to have a positive relationship with both Entrepreneurial Intention and Entrepreneurial Performance. While the personality trait of Agreeableness will seek harmony and will likely assist with venture team dynamics and trust, which are essential to entrepreneurial success, it is unlikely that this personality trait will be able to take on the leadership role and to make the tough decisions required by the founder, owner-manager.

I hypothesize the following Big Five personality trait relationships with Entrepreneurial Intention and Entrepreneurial Performance.

<b>Hypothesis 3a, b, c, d</b>	Personality traits a)Openness to Experience, b)Conscientiousness, c)Emotional Stability, and d)Extraversion will each have a positive relationship with Entrepreneurial Intention
<b>Hypothesis 4a, b, c, d</b>	Personality traits a)Openness to Experience, b)Conscientiousness, c)Emotional Stability, and d)Extraversion will each have a positive relationship with Entrepreneurial Performance
<b>Hypothesis 5</b>	Personality trait Agreeableness will have a negative relationship with Entrepreneurial Intention
<b>Hypothesis 6</b>	Personality trait Agreeableness will have a negative relationship with Entrepreneurial Performance



## CHAPTER 3:

### METHODS

In the previous chapter, I described the three prevailing models to be tested in order to evaluate the relationships between the Big Five personality traits of Openness to Experience, Conscientiousness, Extraversion, Agreeableness, Emotional Stability/Neuroticism, and the outcomes of Entrepreneurial Intention (decision to choose entrepreneurship as a career) and Entrepreneurial Performance (firm survival). In this chapter, I describe the science of model testing and strong inference, and the secondary meta-analysis and data sets used in this dissertation.

#### **The Science of Model Testing and Strong Inference Description**

This dissertation applies two methods currently underrepresented in the entrepreneurship literature to compare the three theoretical models: the meta-analysis methodology (Hunter & Schmidt, 2004) and the increasingly prevalent method of theory pitting (strong inference testing). Consistent with Leavitt, Mitchell, & Peterson's (2009) theory pitting and theory pruning criteria, this dissertation is designed to avoid the traditional goal of creating or expanding existing theory or adding mediators or moderators. It focuses on an alternative objective to eliminate or prune the weaker theories (Aguinis & Adams, 1998; Davis, 2006). In strong inference research design, opposing falsifiable hypotheses about a phenomenon are stated, an experiment is designed to carefully and objectively contest the merits of each, and the pitting and comparison process continues against another set of testable claims and alternate hypotheses (Platt, 1964, p. 349; Leavitt, Mitchell, & Peterson, 2009) thus disproving

some theoretical statements and eliminating weak theoretical candidates. Applying this technique to organizational science has been encouraged (Mackenzie & House, 1978; Aguinis et al., 2009). To my knowledge, this is the first application of this process to the entrepreneurship literature.

### **Data-analytic Technique: Meta-analysis**

As previously described, the personality and entrepreneur behavior relationship has had a history of controversial empirical findings. The narrative nature, small sample size of individual studies, and inconsistency in terminology and definitions, were identified as key contributors to these conflicting results. The traditional methodological assessment of significance testing utilizing the null hypothesis has been challenged for its ability to produce false conclusions (Schmidt, & Hunter, 1998) about research literature. For example, failure to reject the null hypothesis is not the same thing as accepting the null hypothesis; a true null hypothesis can be incorrectly rejected (type I error); and a false null hypothesis can fail to be rejected (type II error). Scholars discuss “a quiet methodological revolution” (Rodgers, 2010) in which more rigorous tools such as meta-analysis and other powerful analytic methods are increasing in implementation.

As a contemporary scientific method, meta-analysis is a statistical and quantitative procedure that synthesizes the results from multiple independent empirical studies to produce an estimate of the overall magnitude of a relationship or impact of an intervention and determines the best estimate of the population effect size (Borenstein et al., 2009). Meta-analysis allows researchers the ability to address

challenges introduced when there are multiple and inconsistent answers to one question and to arrive at results that are more clear and credible than those offered by a single study. It requires a detailed level of thoroughness in terms of researchers' literature search and careful review of cumulative data, and a clear research question.

In meta-analysis, variables of interest are integrated into correlation matrices which can be assembled even though no single study has included every one of the variables (Viswesvaran & Ones, 1995). The meta-analysis technique allows the aggregation of individual study results while correcting for various artifacts that can bias relationship estimates (Colquitt, LePine, & Noe, 2000). The requirements of systematic data collection by researchers mandates that a clear set of procedural steps are taken to locate, appraise and then synthesize the data from a large number of sources. (Borenstein et al, 2009). The goal is to understand the results of any study in the context of all the studies. The cumulative power of aggregating studies brings a credibility and strength to the resultant findings. When the treatment effect size is consistent across studies, the researcher is able to report a robust effect across a variety of sampled populations and also able to estimate the magnitude of the effect across the series of studies.

Based on sampling error theory, meta-analysis takes into account that each individual study represents a sample from a given and differing population. Because the meta-analysis combines the results from many different studies and the sampling error across the studies tends to cancel out, the meta-analysis methodology allows the

research to move beyond the limitations of the subjectivity of the narrative process as weights are specifically assigned based on mathematical criteria.

Since the 1990's, meta-analysis has garnered support by researchers and has had impact on a variety of industries including medicine, pharmaceutical, psychology, criminology and business. While the nature of the data collection and assembly provides a more comprehensive assessment than individual studies (Rosenthal & DiMatteo, 2001), researchers must recognize the additive, not the substitution value of this methodological process (Aguinis et al., 2010).

In meta-analysis, effect sizes and variances are computed for each study and then compared with weighted means. This process works directly with the effect size from each study instead of from the  $\rho$  value. Summary effects are computed and tested allowing for assessing dispersion of effects. Challenges for the meta-analysis methodology include biases of judgment when selecting articles for inclusion as well the exclusion of articles due to lack of necessary statistical data (Hunter & Schmidt, 2004).

Path analysis, a powerful tool in reducing the number of theories, works with structural equation modeling to test of causal theories (Hunter & Schmidt, 2004). The integration of meta-analysis with structural equation modeling (SEM) for path analysis, is optimal for the research question in this study where controversy exists concerning relationships between entrepreneurial personality and entrepreneurial behavior.

## **Meta-analytic Path Analysis**

By merging a series of meta-analyses (Aguinis & Adams, 1998) and integrating the meta-analysis and structural equation modeling path, this methodology offers the benefits of summarizing relationships with greater confidence and power; reducing the impact of deviant findings in studies using small samples; evaluating a series of meta-analyses instead of individual studies; and creating the opportunity to make a valuable contribution (Schmidt, 1992; Leavitt, Mitchell, & Peterson, 2009; Dalton & Dalton, 2005, 2008; Aguinis et al., 2009).

This dissertation follows a two-step theory-testing approach described by Viswesvaran & Ones (1995). First, a meta-analysis is used to build a correlation matrix that is descriptive of the size of relationships found among all constructs of interest in prior empirical research. Second, a theory is tested using the correlation matrix as input into a structural equation model. With this methodology, I am able to examine an entire body of empirical literature (Crook et al., in press; Bergh et al., 2010).

This dissertation evaluates three competing models of the Big Five personality dimensions and their capacity to predict both Entrepreneurial Intention (decision to become an entrepreneur) and Entrepreneurial Performance (firm survival). Data was collected at pre-launch stage from individuals who have not yet started a venture and after launch from founders and owners, excluding corporate entrepreneurs, social entrepreneurs, and patent holders. The dissertation incorporates the Theory of Planned Behavior (Ajzen, 1991) which is applicable to entrepreneurship (Krueger & Carsrud,

1993), social interaction theory (Triandis, 1980), adaptation theory (Buss, 1996), and the entrepreneur role identity theory (Shaver & Scott, 1991).

Meta-analytically derived correlation tables can be integrated with structural equation modeling to assess and compare competing models' indices of relative fit and suggest directional plausibility, not causality (Aguinis et al., 2010; Bergh et al., 2010; Colquitt, LePine, & Noe, 2000; Viswesvaran & Ones, 1995). As an alternative to a model hypothesis based on the null significance testing method, this systematic process allows the direct comparison of the alternate causal sequences and rigorous testing for each modeled hypothesis (Aguinis et al., 2010; Rodgers, 2010). The results can provide a probable theoretical and empirically based explanation for prior inconsistent findings (Gonzalez-Benito et al., in press).

The widely recognized and used statistical method of structural equation modeling (SEM) provides researchers with a comprehensive method for the quantification and testing of substantive theories. Contributing greatly to the methodological rigor, SEM allows investigation of theoretical or hypothetical constructs that are not directly measureable or well defined (such as personality). It takes into account potential errors of measurement in all observed variables. Parameters are estimated with the goodness to fit tests (variance of the error terms). In addition, correlation matrices are developed as the interrelationships are modeled to fit between all pairs of observed variables (Raykov, 2000).

In the case of this study of the Big Five personality trait, Entrepreneurial Intention and Performance behavior constructs, SEM will be used to quantify and test the plausibility and measurement of hypothetical assertions about potential interrelationships involving these constructs. The SEM software allows the performance of the complex mathematical computations.

The use of the SEM framework allows the integration of Path analysis models and the examination of the predictive power of the variables. In this dissertation, I examine the predictive power of the Big Five personality traits as independent variables. They relate to Entrepreneurial Intention (intention to become an entrepreneur or act entrepreneurially) and Entrepreneur Performance (firm survival or sustainability as an entrepreneur). These constructs are examined in alternate models as both mediators and criterion variables.

I use the meta-analytically derived correlations from three sources of secondary data including existing meta-analyses (Colquitt, LePine, & Noe, 2000). More conservatively, I use the harmonic mean rather than the arithmetic mean because it gives less weight to substantially large individual study sample sizes (Viswesvaran & Ones, 1995; Bergh et al., 2010). Using Amos 16 to test the fit of each model, I report chi square statistics, comparative fit index (CFI), normed fit index (NFI), and the root mean square error of approximation (RMSEA) indicators to assess the overall fit of the models and evaluate individual path coefficients for the analysis.

The path analysis model is an approach to modeling explanatory relationships between observed variables which are assumed to have no (or negligible) measurement

error. Path analysis models do not contain latent variables (theoretically important constructs without observed realizations in a sample from a targeted population) but the dependent variable may contain an error of measurement which is the residual term of the model equation, partly left unexplained by exploratory variables (Colquitt, LePine, & Noe, 2000).

### **Advantages of Combining Meta-analysis with Structural Equation Modeling**

The use of the meta-analysis methodology, particularly where controversial and inconclusive findings for theoretical models exist, has several benefits including: the larger research domain can be seen; several individual studies are integrated; predictability power increases; and sampling errors are eliminated. Additionally, this process keeps statistical significance in perspective, minimizes wasted data, focuses on specific research questions, and identifies moderator variables (Rosenthal & Dimatteo, 2001).

Incremental benefits are gained methodologically by combining the psychometric meta-analysis technique with structural equation modeling (SEM) in theory testing. It has allowed researchers to address complex and comprehensive research questions with broader relationship patterns and a larger variety of research designs. The estimated true score correlations between constructs of interest are established through the application of meta-analysis (Hunter & Schmidt, 1990) and then SEM is applied to that matrix of true score correlations. With this theory treatment, measures that assess different constructs from one theoretical perspective may assess the same construct from the perspective of another theory (Viswesvaran & Ones, 1995;



Hunter & Schmidt, 1990). Additionally, this combined technique allows the following: finding the minimum number of correlations and sample sizes needed for robust meta-analyses; investigating acceptable variance in sample size per correlation; and conducting a variety of simulation studies (Viswesvaran & Ones, 1995; Bergh et al., 2010).

### **Literature Search: Identifying Relevant Meta-analyses and Studies**

Given the importance of a systematic approach, I followed the prescribed systematic review process when theory testing and combining psychometric meta-analysis and structural equation modeling methodology are used (Viswesvaran & Ones, 1995; Colquitt, LePine, & Noe, 2000). First, I identified the different constructs to be included in the theory being tested. The strategic intention was to explore the interaction of cross-disciplinary variables that have informed the scholarship in both the organizational behavior and entrepreneurship literatures.

In this study, the constructs of interest are the Big Five personality traits, specifically related to Entrepreneurial Intention and Entrepreneurial Performance. Therefore, the nomological net search included the literature domains of Big Five traits related to intention, entrepreneurial career decision, job performance, turnover, and firm survival. Then I identified the different operationalizations used in the literature for each construct to ensure that they were consistent with the definitions. Given the diverse definitions of the entrepreneur, entrepreneurship and performance, I set some parameters for this study based on the objective of ensuring consistency of definitions.

Third, I located all relevant meta-analyses in the entrepreneurship, management, and psychology literatures through inclusive keywords and combined keyword searches for “entrepreneur or small business or new venture or innovation”; “Big Five or Five Factor Model or personality”; “entrepreneur intention or business creation”; “entrepreneur performance, survival, growth, profitability, sales, business success”. The search criteria required that the meta-analyses matrix contained inter-correlations for all participating variables. The initial search spanned 1995-2010. An updated electronic and manual search was conducted for each of the following publications: *Journal of Applied Psychology*, *Academy of Management Journal*, *Academy of Management Review*, *Journal of Applied Behavioral Science*, *Journal of Management*, *Journal of Organizational Behavior*, *Personnel Psychology*, *Personnel, Training and Development Journal*. A number of entrepreneurship related publications were also evaluated including *Entrepreneurship Theory and Practice*, *Frontiers and Entrepreneurship Research*, *Journal of Business Venturing*, *Journal of Small Business Management*. Additionally, comprehensive key word searches were conducted through Proquest, PsychInfo, EBSCO and dissertation/thesis databases. Finally, reference lists of all articles were reviewed for relevant content.

Initially, I identified 31 meta-analyses related to entrepreneurship or innovation in the management literature. However, only two provided the necessary correlation tables to test the three competing models described earlier. One of the meta-analyses was eliminated as the limited-two study sample was deemed inadequate. The remaining meta-analysis (Zhao, Siebert, & Lumpkin, 2010) was viable as it provided clear

construct definitions and included a correlation table for the Big Five variables relationship with both Entrepreneurial Intention and Entrepreneurial Performance. The latter variable was measured as growth, profitability and firm survival. Only “firm survival” had data for all five personality traits; therefore, it is the definition used for this dissertation. Published in the *Journal of Management*, March 2010 issue, it represented the most recent meta-analysis work on these specific variables. The authors were contacted to clarify questions concerning the dependent variable.

The second meta-analysis identified with correlation tables and measuring the inter-correlation of Big Five personality traits was Van der Linden, Nijenhuis, & Bakker (2010) published in *Journal of Research in Personality*. The lack of correlations available in the entrepreneurship literature for Entrepreneurial Intention and Performance, particularly as defined as survival by Zhao et al. (2010), required that I include results from a single study’s correlation. Finally, the search for a study that matched the definitions of the constructs and featured correlation tables between Entrepreneurial Intention (pre-launch of business) and Entrepreneurial Performance (post-launch and defined as firm survival) identified the Schmitt-Rodermund (2004) study as a candidate for inclusion.

Upon confirmation of the use of a main correlation table, an expanded systematic review of the same literature path proceeded to identify additional inter-correlations of the Big Five personality traits as well as inter-correlations between “Entrepreneurial Intention” and “Entrepreneurial Performance”. The apparent long-term controversy present in the literature involving the role of personality in predicting

entrepreneurial behavior had recently been addressed by Zhao et al. (2010). The contribution of this dissertation is to utilize more rigorous methods to examine three alternate models, conceptualizations, and theoretical paradigms.

### **Secondary Data Sets: Big Five Personality and Entrepreneurial Behavior Meta-analysis**

To help address the challenges the entrepreneurship literature has hitherto faced in developing critical mass of findings in many dimensions, I created a correlation matrix using data from two meta-analyses and one independent study. The incorporation of existing meta-analyses studies builds a large sample size of the targeted population. This method helps to eliminate error and increase statistical power, which would not happen if I used single studies exclusively. Taking this broad approach to obtain data on the predictor and criterion variables from different sources helps to remedy “common method bias” in this area of entrepreneurship research (Podsakoff et al., 2003).

Study number 1: Zhao, Siebert, & Lumpkin’s (2010) meta-analysis of the relationship between the Big Five personality dimensions plus risk propensity and Entrepreneurial Intention and Entrepreneurial Performance represented the most recently published study examining these combined variables. A summary of their construct definitions, methods, and findings follows as they served as guidelines for the methodology in this dissertation.

Zhao et al. (2010) defined the entrepreneur as the founder, owner, and manager of a for-profit small business with less than 500 employees. This definition excludes corporate entrepreneurs or intrapreneurs engaged in entrepreneurial activities within

large firms as well as those participating in social or not-for-profit entrepreneurial ventures. Entrepreneurial Intention is an “intention to become an entrepreneur” by someone not currently an entrepreneur and who recognizes this intention as a critical first step in the process of becoming one (Zhao et al., 2010; Bird, 1988; Krueger, Reilly, & Carsrud, 2000). It is measured by expressed desires. Entrepreneurial Performance (overall firm survival) is considered to underlie the individual’s ability to continue as an entrepreneur.

Entrepreneurial Performance in the Zhao et al., (2010) study is examined with indicators including: sales, growth, profitability, and firm survival (general performance). This understanding of Entrepreneurial Performance is based on a reference to Venkataraman’s (1997) and Baron’s (2007) work, where the relevant performance measure was not absolute sales or comparison to competition’s levels but how sales contribute to sustainability, which implies profit (revenue over costs) as a measure of survival. Therefore, gross sales as a performance measure was not compatible. Growth and profitability were also captured in the study; however, Agreeableness and Extraversion personality traits correlations were excluded (Zhao et al., 2010).

For the purposes of this dissertation, I used Zhao et al.’s (2010) measure of general performance described as firm survival. It is the only variable where data is available for all five of the Big Five personality traits. Zhao et al. (2010) did find that personality dimensions, including risk taking, were related to both dependent variables of Entrepreneurial Intention and Performance. They reported that the Big Five personality dimensions were important in determining Entrepreneurial Intention and

subsequent Entrepreneurial Performance and were associated with both dependent variables, with the exception of Agreeableness which failed to be associated with either.

In their study, the data was provided for each of the Big Five personality traits relationship with this criterion variable, which was a requirement for the methods process in my dissertation. There was no specific reference to the length of time a firm had to be in business to be categorized as “having survived”. In the entrepreneurship literature, the definition of venture survival has been based on periods of three years (Brockhaus, 1980); five years (Hornaday & Aboud, 1971); and eight years (Ciaverella, et al., 2004). Research results indicated that internal locus of control was significantly different for successful and unsuccessful entrepreneurs (Brockhaus, 1980); yet, no significant differences were found between entrepreneurs and the general population in terms of personality dimensions such as need for achievement, autonomy, independence, and aggression (Hornaday & Aboud, 1971). However, Ciavarella et al., (2004) did find that personality influenced the length of firm survival.

For consistency and clarity, I utilized Zhao et al.’s (2010) definitions for all variables in my dissertation: Big Five personality traits, Entrepreneurial Intention, Entrepreneurial Performance. They served as a guideline for ensuring a compatible and consistent match with the other two sources of data. See Tables 1 (Big Five Personality Traits Definitions Comparison, p. 68); Table 2 (Entrepreneur Definitions Comparison, p. 69); Table 3 (Entrepreneurial Intention Definitions Comparison, p. 70); and Table 4 (Entrepreneurial Performance Definitions Comparison, p. 72).

Zhao et al. (2010) conducted an electronic database literature search that included PsychInfo, ABI-Inform, Academic Search Elite, Business Source Elite, Wilson Business, and Dissertation Abstracts International, *Entrepreneurship Theory and Practice* (1979-2006); *Journal of Business Venturing* (1985-2006); and *Journal of Small Business Management* (1980-2006) as well as narrative reviews and meta-analysis (Zhao et al., 2010). I mirrored their keyword search in my literature review process in three areas: a) for personality: personality, trait motivation, need, psychology, individual difference cognition, attitude; b) for Entrepreneurial Intention: intention, aspiration, orientation, inclination; and c) for Entrepreneurial Performance: performance, success, growth, failure, and firm survival.

In this dissertation, the emphasis is exclusively on the Big Five personality dimensions and excludes the risk propensity variable examined by Zhao et al., (2010). Sixty primary studies with 15,423 individuals and 66 independent samples were selected for the meta-analysis which included three key criteria components: a) measurement of a personality trait that can be categorized in terms of the Five Factor Model or risk propensity constructs, consistently matched to the single dimension with no multiple dimensions; b) include a dependent variable classified as a measure of either Entrepreneurial Intention or Performance, excluding start-up activities or current status as a proxy; and c) appropriate sample for the dependent variable examined. The sources of the Entrepreneurial Intention data were individuals who had not yet started a venture including college students. Data for Entrepreneurial Performance were collected after the launch stage from individuals who personally founded and managed

their own business, excluding corporate entrepreneurs, social entrepreneurs, and patent holders who were not founders of a for-profit venture (Zhao et al., 2010).

The coding was guided by published empirical correlations for the Five Factor Model based on observed correlations and trait correlation with a specific single dimension. The analytical techniques included: entering fully replicated studies if they were from independent group samples; using averaged measures for effect size if multiple indicators existed for the same construct; correcting each primary correlation due to measurement error in predictor and criterion; calculating sample weighted means as the estimated population correlation; using the mean of reliabilities if not reported in tables; correcting firm performance measures only if multi-item construct with reliability reported; and reporting 90% confidence based on uncorrected standard error of mean effect size and 80% credibility intervals based on corrected standard deviation providing an estimate of variability of individual effect size (Zhao et al., 2010; Hunter & Schmidt, 1990; Dalton & Dalton (2005).

Individuals who decide to become entrepreneurs and possess high Conscientiousness and/or low Openness to Experience demonstrate potentially more commitment to the venture in startup, which relates positively to survival. Individuals with Openness to Experience personality traits were less likely to have long term venture survival (Ciavarella et al., 2004). It is logical to project that an entrepreneur with an Openness to Experience personality would be fascinated with a new initiative; however their proclivity to seek new experiences might lead them to frame the venture as monotonous and not offering new experiences once it moves into the routine of daily



activities for business sustainability. The perception of a lack of novelty in these more routine experiences could be viewed as a liability; and thus, interfere with this personality type's ability to retain interest and the level of commitment required for sustainable entrepreneurship.

Conscientiousness consistently is a predictor of managerial performance in the organizational behavior sciences (Barrick & Mount, 1991; Hertz & Donovan, 2000; Ciavarella et al., 2004). While traditionally the construct of firm performance can be represented by many different measures, I ensure that other studies used in the dissertation match the definitions used in the Zhao et al. (2010) study for the concepts of entrepreneur, Entrepreneurial Intention, and Entrepreneurial Performance.

Entrepreneur was defined as the founder, owner-manager of a small business, excluding both corporate entrepreneurs and social entrepreneurs. They used Hunter & Schmidt's (1990) regression program for the Five Factor Model effect sizes and meta-analytic inter-correlations from Ones, Viswesvaran, and Reiss (1996), explaining variance for Entrepreneurial Intention (13%) and Entrepreneurial Performance (10%). These variances suggest that moderators are probable.

Findings from the Zhao et al. (2010) study revealed that some of the Big Five traits including, Openness to Experience, Emotional Stability, (as well as risk propensity), were positively related to Entrepreneurial Intentions. Extraversion and Conscientiousness were also positively related to Entrepreneurial Intentions. In terms of Entrepreneurial Performance, the traits of Openness to Experience, Conscientiousness, Emotional Stability, and Extraversion all had demonstrated positive

relationships. Results suggested that moderators were operating. When evaluating firm performance type as a moderator, data was not available for Extraversion and Agreeableness. Conscientiousness and Openness to Experience were positively related to firm growth, but there was a possible null effect for profitability/operations. Emotional Stability was positively related to growth and profitability/operations. Zhao et al. (2010) reports that Conscientiousness relates with Entrepreneurial Intention (.18) and Entrepreneurial Performance (.19), indicating that if a person with high degrees of these traits chooses entrepreneurship as a career, they are likely to succeed. Agreeableness related to Entrepreneurial Intention (-.09) and Entrepreneurial Performance (-.06) implying that entrepreneurs were less agreeable than non-entrepreneurs which is consistent with Zhao & Siebert's (2006) study comparing entrepreneurs and non-entrepreneurs.

Zhao et al. (2010) found that the strongest predictor of Entrepreneurial Performance was Openness to Experience. By contrast the variables of Conscientiousness, Emotional Stability, and Extraversion, in that order, best predicted job performance among traditional managers in a study by (Hurtz & Donovan, 2000). One key contribution made by Zhao et al. (2010) was that the predictive power of these Five Factor Models regarding Entrepreneurial Intention and Performance varied over time and the stage of entrepreneurship development.

## Big Five Personality Traits Inter-correlations Meta-analysis

For the relationship measuring inter-correlations of Big Five personality dimensions, I incorporated the most currently available meta-analysis from Van der Linden, Nijenhuis, & Bakker (2010), which provides an inter-correlation table for each of the Big Five personality dimensions. This study examined whether the personality traits could be compiled into a higher order personality dimension called “General Personality Factor or GPF”. This study had  $k = 212$  samples with total participants ( $n = 144,117$ ). Van der Linden et al. (2010) conducted two studies to evaluate the inter-correlation of the Big Five personality traits. They concluded that the five factors were overlapping and loaded to the General Personality Factor (GPF) as well as on two meta-factors named Stability and Plasticity which both load onto the General Personality Factor. The Van der Linden et al. (2010) meta-analytic procedure corrected for sample size, unreliability, and restriction of range and then conducted separate meta-analysis and factor analysis for the subgroups.

Participants in study group one represented a very extensive cross-section of the population, including children or young adolescents, undergraduate college students, employees from several occupations, unemployed adults, and participants considered candidates for neurotic personalities (psychiatric patients). There was no specific screening for entrepreneurs in this group; however, the meta-analysis methodology and the large sample size suggest that it is representative of the general population. The study required three criteria for inclusion in the meta-analysis: a) all personality measures were based on the Five Factor Model (FFM); b) the study’s table had to report

the ten first-order Pearson correlations between the factors; c) correlation matrices had to be based on independent samples. Findings of the meta-analysis confirm that the Big Five personality traits contributed to the generalized factor of personality. The literature indicates that combining personality traits yields reliable measures for selection and assessment.

In study two, the participants (n=144) came from a cross-section of industries. Twenty-three supervisors responded to a survey rating the performance of one or more employees and to a self-report personality questionnaire, both of which were returned to the researcher.

Van der Linden et al. (2010) conducted an electronic database search including Scencedirect, PsychInfo, EricLit and Pub-med. It also included a search in *Applied Psychology: An International Review*, *European Journal of Personality*, *International Journal of Selection and Assessment*, *Journal of Applied Psychology*, *Journal of Personality*, *Journal of Personality and Social Psychology*, *Journal of Research in Personality*, *Personality and Individual Differences*, and *Personnel Psychology*; as well as reviewed articles' reference lists.

## **Entrepreneurial Intention and Performance Study**

For the relationship measuring the inter-correlation of Entrepreneurial Intention (pre-start up-prior to actualizing entrepreneurial career) and Entrepreneurial Performance (firm survival), the search for meta-analyses within the entrepreneurship literature did not identify a robust quantity of relevant studies Borenstein (2009) suggests that in the case of missing data, an estimation based on a single study clearly meeting the specifications of the variables can be used. I was careful to search for definitions that matched those of Zhao et al. (2010) for both Entrepreneurial Intention and Performance based on the 'survival ' definition rather than on sales or profitability. Ciaverrella et al., (2004) identified a link between the Big Five personality traits and venture survival that varied as a result of the length of time the business was in operation. Different studies have used different minimum periods to define survival and based on the data available in the study used for this dissertation, it is conceivable that results would vary with the specific definition used.

The Schmitt-Rodermund (2004) study also measures the relationships between entrepreneurial behavior and personality using the Big Five personality traits for assessment. Conducted in two parts with youth and business owners in a newly unified Germany, it uses a definition of Entrepreneurial Intention specific to the historical era; the "idea of self-employment before 1990". This study thus identifies the business founder/ owner/manager's intention to become an entrepreneur during a time it was legally forbidden to participate in entrepreneurship (pre-1990) due to the socialist system in place in the country. After the unification of the Germany and the societal

and economic change from socialistic to a capitalistic system in 1990, the business start ups were tracked from 1990 to 1996. Entrepreneurial Performance based on firm survival is measured as “years in business since 1990,” with the initial measurements of survival taken in 1997. The data was gathered through surveys (n=139) issued in 1997, with a follow-up in 2001.

The data clearly compares the “intentions” of a number of individuals to become entrepreneurs prior to 1990 and their actual actions to become entrepreneurs after 1990 and at the time of 1997. For purposes of this dissertation, I consider Entrepreneurial Performance to be based upon a) action to become an entrepreneur after 1990 and b) their viability of the resultant business as of the initial survey in 1997. The Schmitt-Rodermund (2004) study goes on to measure additional benchmarks of survival between 1997-2001, but I have not included this supplementary data in my meta-analysis, because it is reasonable to measure survival on the basis of the original data, which defines survival as survival for 1 to 7 years, compatible with Zhao et al.’s (2006) definition.

I selected this study because it specifically matched the parameters laid out by Zhao et al. (2010) for the entrepreneur as the business founder, owner-manager, for Entrepreneurial Intention, and for Entrepreneurial Performance (measured as firm survival).

This historical demarcation of the emergence of entrepreneurship in a society provides a valid case to study for evaluating Entrepreneurial Intentions versus Performance. The reported correlation of .52 is consistent with Ajzen’s (1991) seminal

Theory of Planned Behavior where intention is reported to be the clearest indicator of performance. Orser, Hogarth-Scott & Riding's (2000) meta-analysis has demonstrated that intentions (e.g. owner's growth willingness or intention) can successfully predict a wide variety of behaviors (e.g. firm performance or actual growth). Additionally, Sheeran (2002) conducted a meta-analysis of 10 meta-analyses (n=82,107) of the intention-behavior relation and 422 hypotheses reported a sample-weighted average correlation of .53. This is consistent with this correlation in the organizational sciences and psychology literatures.

### **Measures**

It is important to identify the measures used in the three secondary data studies incorporated into this dissertation. As previously discussed, one of the challenges with the entrepreneurial literature methods has been the incorporation of studies with variables that vary in their operationalization as well as the low sample sizes that often accompany individual studies. This dissertation has addressed both of these challenges. See Tables 1 (Big Five Personality Definitions Comparison, p. 68), Table 2 (Entrepreneur Definitions Comparison, p. 69), Table 3 (Entrepreneurial Intention Definitions Comparison, p. 70), and Table 4 (Entrepreneurial Performance Definitions Comparison, p. 72). Additionally, the inclusion of over 159, 000 individuals and 273 independent studies have addressed the prior methods limitations involving low sample sizes and high error.

**Measure: Big Five personality traits inter-correlations.** Van der Linden, Nijenhuis, & Bakker (2010) measured the Big Five personality factors by using established personality

questionnaires including NEO Five Factor Inventory, NEO Personality Inventory, the Big Five Inventory, Big Five Observer, the Personal Characteristic Inventory, the Hamburg Personality Inventory, the Five Dimensional Temperament Inventory, the Trait Descriptive Adjective Scale, the Ten Item Personality Inventory and the Personal Style Inventory. The instruments varied by languages and country. Supervisors used personality questionnaires measured with the Dutch version of the Five Factor personality inventory in the second study. Van der Linden et al. (2010) used correlations in the meta-analysis that were taken directly from the matrices reported in the original articles, with the exception of 12 of the 14 correlation matrices reported by Digman (1997). The Big Five traits were consistently defined across all three studies (Table 1).

**Table 1**  
**Big Five Personality Traits Definitions Comparison**

<i>Zhao, Siebert, &amp; Lumpkin (2010)</i>	<i>Schmitt-Rodermund (2004)</i>	<i>Van der Linden, Nijenhuis, &amp; Bakker (2010)</i>
<i>n=15,423; k=60</i>	<i>n=139</i>	<i>n=144,117; k=212</i>
<i>Published empirical correlations were used to guide the assignment of personality scales to Five Factor Model dimensions (p. 391)</i>	<i>The so-called "Big-Five" personality traits were assessed for both students and founders using a set of 45 items. Responses were along a six point Likert scale (0-5)...All Five factors were scored separately. Then the five scores were averaged. (p. 506)</i>	<i>Used the Big Five or Five Factor model of personality operationalized as Openness to Experience, Extraversion, Agreeableness, Conscientiousness, and Emotional Stability/Neuroticism (pp. 316, 317)</i>

**Note:** n=total sample size; k=number of studies; page number reference identifies location of comparison information



**Measure: Big Five personality traits and Entrepreneurial Intention and Performance.**

First, I ensured that the definition of Entrepreneur in the secondary studies used was compatible. It was particularly important that Zhao, Siebert, & Lumpkin's (2010) definition of Entrepreneur matched the target participant of the Schmitt-Rodermund (2004) study. The Entrepreneur Definitions Comparison (Table 2) confirms that the population of both studies is small business founders.

**Table 2**  
**Entrepreneur Definitions Comparison**

<b>Zhao, Siebert, &amp; Lumpkin (2010)</b>	<b>Schmitt-Rodermund (2004)</b>	<b>Van der Linden, Nijenhuis, &amp; Bakker (2010)</b>
n=15,423; k=60	n=139	n=144, 117; k=212
...a sample of individuals who have founded and personally managed their own businesses (e.g. entrepreneur) (p. 390)	Small business founders from East Germany (p. 499)	N/A
We define an entrepreneur as the founder, owner and manager of a small business (p. 383)	<b>Subject: Small Business founders</b> In 1997, 139 East German <b>business founders</b> were interviewed using a semi-structured questionnaire. (p. 502)	
Corporate entrepreneurs, social entrepreneurs, or patent holders who are not founders of for-profit enterprises do not fit our definition, and are thus excluded. (p. 391)		

**Note:** n=total sample size; k=total number of studies; page number reference identifies location of comparison information

Second, the definition of Entrepreneurial Intention had to be compatible for both the Zhao et al. (2010) and the Schmitt-Rodermund (2004) studies as demonstrated in the Entrepreneurial Intention Definitions Comparison (Table 3).

Zhao et al. (2010) acknowledged that their analytical technique involved assigning a trait to one of the FFM dimensions only when consistent empirical evidence was available and not strongly correlated with any other dimension. They used experts to assign scales to the Big Five constructs in the original meta-analysis data and published empirical correlations to guide the assignment of personality scales to FFM dimensions (Zhao et al., 2010).

**Table 3**  
**Entrepreneurial Intention Definitions Comparison**

<b>Zhao, Siebert, &amp; Lumpkin (2010)</b>	<b>Schmitt-Rodermund (2004)</b>
N=15,423; k=60	N=139
We define Entrepreneurial Intentions as the expressed behavioral intention to become an entrepreneur. (Bird, 1988) ( p. 384)	The founders reported the age at which they had first thought about self-employment as a career option (p. 507). German unification in 1990 came with a shift from a socialist planned economy to a free market, and, thus marked a huge difference in the possibilities for self employment. Small business founders self-report refers to the pre-launch status of venture.
There are two intermediate outcomes that enable the attainment of entrepreneurial status: The intention to become an entrepreneur is discussed as one of them (Baron, 2007; Venkataraman, 1997) . (p.. 382)	Small business founders from East Germany (p. 499).
Intention: includes only individuals who have not yet started a venture (p. 390).	
The intention to find and manage one's own business is widely recognized as the first critical step in the process of becoming an entrepreneur (Bird, 1988; Krueger, Reilly & Carsrud, 2000). (p. 382)	
The behavioral intention construct derives from the theory of reasoned action (Fishbein & Ajzen, 1975); considered to be the most immediate antecedent of a given behavior (p. 384).	

**Note: N=total sample size; k=number of studies; page number reference identifies location of comparison information**

**Measure: Entrepreneurial Intention and Performance.** This was the most challenging correlation to identify as I did not locate any meta-analysis in the entrepreneurship literature that measured the relationship between Entrepreneurial Intention and Entrepreneurial Performance. Additionally, it was essential that the definitions of both intention and performance matched the Zhao et al. (2010) constructs.

The Schmitt-Rodermund (2004) study provided the missing correlation between Entrepreneurial Intention and Performance. The definitions were reviewed to ensure compatibility with Zhao et al (2010) as listed in Table 4 (p. 72). The measure for Entrepreneurial Intention was identified as a question in the research surveys asking whether the founders had an “Idea of self-employment before 1990”. The founders reported the age at which they had first “thought” about self employment as a career option. Thanks to the documented point in time that self-employment became legally possible for this study population, the study provides an interesting research database with a clear way to identify pre-launch (pre-1990) and post-launch (after 1990).

This dissertation required that each variable definition or concept was consistent across the studies used. Table 4 (p.72) demonstrates how Zhao et al. (2010) defined Entrepreneurial Performance as ‘survival’. Schmitt-Rodermund’s (2004) parameters are consistent with that definition, because they tracked founders of small business who had a history of business survival. When the initial questionnaire was issued in 1997, 71% of the small business participants had survived in business for anywhere from 3 to 7 years. The .52 correlation is consistent with results in the literature measuring the impact of intention on performance.

**Table 4**  
**Entrepreneurial Performance Definitions Comparison**

<b>Zhao, Siebert, &amp; Lumpkin (2010)</b>	<b>Schmitt-Rodermund (2004)</b>								
n=15,423; k=60	n=139								
Following Baron (2007), we define firm performance in terms of indicators of firm <b>survival</b> , growth, and profitability. (p. 384)	<b>Measure: <i>Years in business since 1990</i></b> The number of <i>years in business</i> was assessed by a self-report item. Nevertheless, 1990 was assumed to have been the first year in business, as the conditions during the socialist regime and its centrally planned economy certainly were different to the situation after 1990, when the capitalist system took over with a free market economy. The number of years completed up to the interview in 1997 was used as a measure. (p.508)								
Methods: Entrepreneurial Performance data should be collected after the launch stage from a sample of individuals who have founded and personally managed their own business (e.g. entrepreneur). (p.390)	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>Year of start-up</u></th> <th style="text-align: left;"><u>Number of business founders</u></th> </tr> </thead> <tbody> <tr> <td><b>1990-1991</b></td> <td style="text-align: center;"><b>59</b></td> </tr> <tr> <td><b>1992-1994</b></td> <td style="text-align: center;"><b>40</b></td> </tr> <tr> <td><b>1994-1996</b></td> <td style="text-align: center;"><b>35</b></td> </tr> </tbody> </table>	<u>Year of start-up</u>	<u>Number of business founders</u>	<b>1990-1991</b>	<b>59</b>	<b>1992-1994</b>	<b>40</b>	<b>1994-1996</b>	<b>35</b>
<u>Year of start-up</u>	<u>Number of business founders</u>								
<b>1990-1991</b>	<b>59</b>								
<b>1992-1994</b>	<b>40</b>								
<b>1994-1996</b>	<b>35</b>								
The second outcome, Entrepreneurial Performance (firm survival), underlies the individual's ability to continue as an entrepreneur. (p. 382)									

**Note: N=total sample size; k=number of studies; page number reference identifies location of comparison information**

Schmitt-Rodermund (2004) measured the German small business founders' "years in business" (1990 to 1996). This measure indicates firm survival and is correlated with "intention or thought to become an entrepreneur," which was clearly measured for pre-1990's period. The context of this data makes this definition a strong match as entrepreneurship was not a reality prior to 1990. Therefore, it was a positive opportunity to capture a clear delineation between Entrepreneurial Intention (intentions to become an entrepreneur) from the Entrepreneurial Performance (firm survival).

## Data Analysis Strategy

The model driven meta-analyses process engaged in this study provides the analytic tools to address how sets of predictors, in this case the Big Five personality traits, relate to an outcome of interest. This meta-analytic methodology process allows examination of partial relations as well as indirect relations and mediator effects. I began with the development of a correlation matrix across the secondary studies used in the analysis; these secondary studies consisted of two recently published meta-analyses by Zhao et al. (2010) and Van der Linden et al. (2010). Additionally, the single study by Schmitt-Rodermund (2004) was used to provide an estimate for the missing correlation between Entrepreneurial Intention and Performance ensuring that constructs definitions were compatible.

The methods used in this process of synthesizing correlation matrices required that I have variances and covariances for the correlations summarized (Becker & Schram, 1994). The sample of size ( $n$ ), the correlation vector ( $r_i$ ), and the number of studies ( $k$ ) were loaded into the matrices for each of the studies. The statistical power is increased by including published meta-analysis for these variables ( $n=15,423$ ;  $k=60$ ); study 2 ( $n=144,117$ ;  $k=212$ ); and study 3 ( $n=139$ ).

When compared to the more popular Baron & Kenny (1986) approach of null hypothesis significance and mediation testing, structural equation modeling (SEM) has proven to be methodologically rigorous (Gonzalez-Benito et al, in press; LeBreton, Wu, & Bing, 2009; MacKinnon, 2007). The former is more appropriate for simple models but

not those requiring more statistically rigorous empirical designs where moderators and mediators impact the relationship. (Gonzalez-Benito et al., in press).

Amos 16.0 was used to test the hypothesized effects of the three prevailing models. The process eventually interfaced meta-analyses with structural equation modeling methodology. For analysis purposes, implementing a general approach to data analysis using Amos offered an analysis of covariance structures, linear structural relations, structural equation modeling, simultaneous-equations modeling, and causal modeling. Standard errors for all estimates were computed including beta weights, factor scores weights and total effects (Becker, 2001). Maximum likelihood estimates were selected as criteria. Path coefficients were examined by the process of computing the difference in fit between the models.

## CHAPTER 4

### RESULTS

In reviewing the results of the analysis, Table 5 provides a description of the correlation tables' total population (n) and the number of studies (k) for the three secondary data sources used in this study: a) Van der Linden, Nijenhuis,& Bakker (2010) provided Big Five inter-correlation data; b) Zhao, Seibert,& Lumpkin (2010) provided the correlation between the Big Five and Entrepreneurial Intention (desire to become an entrepreneur, measuring intention before implementation) and to Entrepreneurial Performance (as defined by firm survival); c) Schmitt-Rodermund (2004) provided the correlation for Entrepreneurial Intention and Entrepreneurial Performance defined consistently with the Zhao et al. (2010) definitions.

This study examines three competing paths. It evaluates the Big Five personality traits as predictor variables including: Openness to Experience, Conscientiousness, Extraversion, Agreeableness, Emotional Stability/Neuroticism. As shown in the models for the three paths, criterion variables that were tested in the competing models included: Entrepreneurial Intention and Entrepreneurial Performance. In subsequent models Intention and Performance are tested as mediators. Definitions for Entrepreneur, Entrepreneurial Intention, Entrepreneurial Performance, and Big Five personality traits are provided in Chapter 3. Estimates of the correlations of the Big Five personality traits to entrepreneurial outcomes show mixed results of the relationships (Table 5, p. 76). Additionally, the correlation matrix for the relationships (Table 6, p.77) required that all variables be inter-correlated with each other.

**Table 5**  
**Secondary Data Correlations**

Trait	k	N	$\hat{\rho}$	SOURCE
Conscientiousness-Emotional Stability/Neuroticism	212	144117	0.43	A
Conscientiousness-Extraversion	212	144117	0.29	A
Conscientiousness-Agreeableness	212	144117	0.43	A
Conscientiousness -Entrepreneurial Intention	12	3804	0.19	B
Conscientiousness- Entrepreneurial Performance	24	3193	0.19	B
Openness to Experience- Conscientiousness	212	144117	0.2	A
Openness to Experience- Emotional Stability/Neuroticism	212	144117	0.17	A
Openness to Experience –Extraversion	212	144117	0.43	A
Openness to Experience-Agreeableness	212	144117	0.21	A
Openness to Experience -Entrepreneurial Intention	11	3017	0.24	B
Openness to Experience-Entrepreneurial Performance	15	2461	0.21	B
Emotional Stability/Neuroticism- Entrepreneurial Intention	12	3938	0.22	B
Emotional Stability/Neuroticism- Entrepreneurial Performance	29	4446	0.18	B
Extraversion-Emotional Stability/Neuroticism	212	144117	0.36	A
Extraversion-Agreeableness	212	144117	0.26	A
Extraversion-Entrepreneurial Intention	7	2020	0.16	B
Extraversion- Entrepreneurial Performance	9	1476	0.09	B
Agreeableness-Emotional Stability/Neuroticism	212	144117	0.36	A
Agreeableness-Entrepreneurial Intention	6	1889	0.04	B
Agreeableness -Entrepreneurial Performance	4	931	0.05	B
Entrepreneurial Intention-Entrepreneurial Performance		139	0.52	C

**Note. A: Van der Linden, et al. (2010), B: Zhao et al. (2010), C: Schmitt-Rodermund (2004);  $\hat{\rho}$ =estimated population effect size, after correcting for measurement error in both the predictor and the criterion; n= total sample size; k=number of studies**



**Table 6**  
**Variable Correlations**

	1	2	3	4	5	6	7
<b>1 Conscientiousness</b>							
<b>2 Openness to Experience</b>	0.2						
<b>3 Emotional Stability</b>	0.43	0.17					
<b>4 Extraversion</b>	0.29	0.43	0.36				
<b>5 Agreeableness</b>	0.43	0.21	0.36	0.26			
<b>6 Intention</b>	0.19	0.24	0.22	0.16	0.04		
<b>7 Performance</b>	0.19	0.21	0.18	0.09	0.05	0.52	

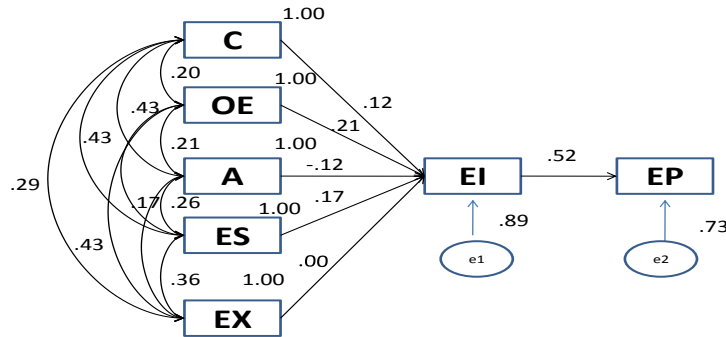
**Table 7**  
**Competing Models Fit Indices**

	MODEL 1	MODEL 2	MODEL 3
Chi Square (df)	*47.131 (5) <i>p&lt;.000</i>	91.199 (5) <i>p&lt;.000</i>	448.208 (1) <i>p&lt;.000</i>
GFI	.993	.986	.940
CFI	.982	.963	.806
NFI	.980	.961	.807
RMR	.027	.044	.081
RMSEA	.069	.099	.502

\*Model that best fits the data and represents the optimal relationship with the variables.

Note: P: p-value, GFI: general fit index, CFI: comparative fit index, NFI: normed fit index, RMR: root square residual, RMSEA: root mean square error of approximation.

**Figure 6**  
**Model 1 Results: Big Five Personality Predicts Entrepreneurial Performance,**  
**Intention Mediator**



**Note.** C: Conscientiousness, OE: Openness to Experience, A: Agreeableness, ES: Emotional Stability, EX: Extraversion, EI: Entrepreneurial Intention, EP: Entrepreneurial Performance

The seven (7) factor model (Figure 6, Model 1) includes Big Five personality traits (5 items) and entrepreneurial behavior at two phases of the process: Entrepreneurial Intention (pre-launch) and Entrepreneurial Performance (firm survival, post-launch). Table 7 (p.77) reports the Competing Model Fit Indices. For the Big Five personality traits and Entrepreneurial Performance, mediated by Intention, the model demonstrated good fit to the data. When comparing the three prevailing models, Figure 6, Model 1 represented the best fitting model to the data and represented the strongest relationship between the variables. It featured an indirect relationship of the Big Five personality traits with Entrepreneurial Performance as mediated by Entrepreneur Intention: chi square (47.131); df=5; root mean square error of approximation (RMSEA)=.069; GFI=.993 ; CFI=.982; NFI=.980; RMR=.027. The goodness

to fit indices are listed but are not indicators of statistical significance. Despite the large sample sizes provided by the meta-analysis, the chi square is viewed to be informative (Aguinis & Harden, 2009), as it “provides information regarding the fit between the observed covariance matrix in relation to the covariance matrix in the population underlying the hypothesized mode” (Aguinis & Harden, 2009).

Tables 8a (p. 80) and 8b (p. 80) present the results of testing Figure 6, Model 1. The information listed in these tables show the effects of variables listed in the columns on variables listed in the rows. Model 1 was compared to two other competing models. The Big Five personality traits have inter-related and direct relationships with performance. Four paths from the Big Five personality traits to Entrepreneurial Intention are statistically significant (Figure 8b): Conscientiousness ( $\beta=.125$ ,  $\rho<.000$ ), Openness to Experience ( $\beta=.210$ ,  $\rho<.000$ ), Agreeableness ( $\beta=-.121$ ,  $\rho<.000$ ), and Emotional Stability ( $\beta=.173$ ,  $\rho<.000$ ). The path from Extraversion to Intention is not significant ( $\beta=.003$ ,  $\rho=.921$ ). Similarly, the path from Entrepreneurial Intention to Entrepreneurial Performance is statistically significant ( $\beta=.520$ ,  $\rho<.000$ ). These coefficients are interpreted as standardized values. When Openness to Experience increases by 1 standard deviation unit, Intention increases by .21 standard deviation units. Overall, the strongest path coefficients to Entrepreneurial Performance is identified as Openness to Experience ( $\beta=.21$ ), Emotional Stability ( $\beta=.173$ ), and then Conscientiousness ( $\beta=.125$ ), in that order. These findings suggest that the Big Five personality traits have a stronger relationship to Entrepreneurial Intention than to Entrepreneurial Performance.

**Table 8a**  
**Model 1 Total Effects**

	EX	ES	A	OE	C	EI
EI	.003	.173	-.121	.210	.125	.000
EP	.001	.090	-.063	.109	.065	.520

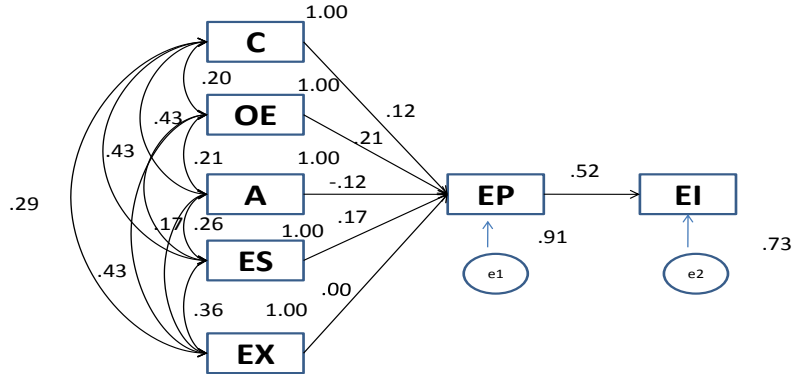
**Note.** C: Conscientiousness, OE: Openness to Experience, A: Agreeableness, ES: Emotional Stability, EX: extraversion, EI: Entrepreneurial Intention, EP: Entrepreneurial Performance

**Table 8b**  
**Model 1 Results: Maximum Likelihood Estimates**

		Estimate	s.e.	p
Intention	<--- Conscientiousness	.125	.027	***
Intention	<--- Openness to Experience	.210	.025	***
Intention	<--- Agreeableness	-.121	.026	***
Intention	<--- Emotional Stability	.173	.026	***
Intention	<--- Extraversion	.003	.026	.921
Performance	<--- Intention	.520	.020	***

**Note:** s.e.=standard error; Estimate=effect size; p=statistical significance level

**Figure 7**  
**Model 2: Big Five Personality Predicts Entrepreneurial Intention, Performance Mediator**



**Note.** C: Conscientiousness, OE: Openness to Experience, A: Agreeableness, ES: Emotional Stability, EX: Extraversion, EI: Entrepreneurial Intention, EP: Entrepreneurial Performance

I considered the possibility that alternative models might fit the data (Aguinis & Adams, 1998; Boyd, Bergh, & Ketchum, 2010; Rodgers, 2010). I compared a model identical to the one in Figure 6, Model 1 but in which causal relationship between Entrepreneurial Intention and Entrepreneurial Performance was reversed in Figure 7, Model 2. This model resulted in less satisfactory goodness-of-fit indexes: chi square (91.199); df=5 (p<.000); root mean square error of approximation (RMSEA)=.099; GFI=.986; CFT=.963; NFI=.961; RMR=.044. Table 9a (p. 82) and Table 9b (p. 82) show the models' total effects and path results. The information listed in these tables show the effects of variables listed in the columns on variables listed in the rows.

**Table 9 a**  
**Model 2 Total Effects**

	EX	ES	A	OE	C	EP
EP	-.067	.138	-.088	.205	.147	.000
EI	-.035	.072	-.046	.106	.077	.520

**Note: Maximum Likelihood Estimates; Standardized Regression Weights**

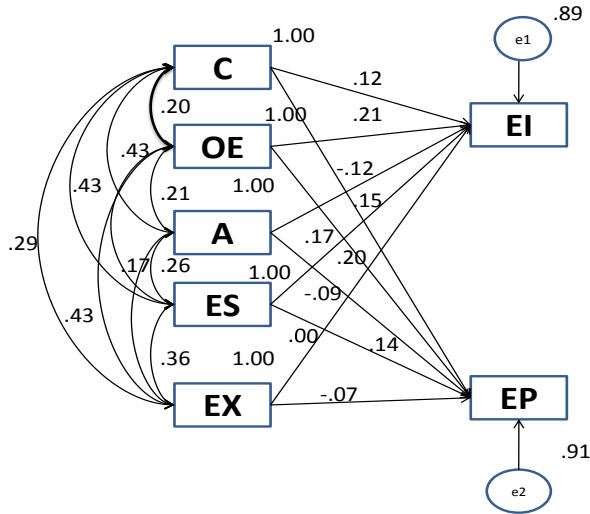
**C: Conscientiousness, OE: Openness to Experience, A: Agreeableness, ES: Emotional Stability, EX: Extraversion, EI: Entrepreneurial Intention, EP: Entrepreneurial Performance**

**Table 9 b**  
**Model 2 Results**

			Estimate	s.e.	P
Intention	<---	Conscientiousness	.125	.027	***
Intention	<---	Openness to Experience	.210	.025	***
Intention	<---	Agreeableness	-.121	.026	***
Intention	<---	Emotional Stability	.173	.026	***
Intention	<---	Extraversion	.003	.026	.921
Performance	<---	Conscientiousness	.147	.027	***
Performance	<---	Openness to Experience	.205	.025	***
Performance	<---	Agreeableness	-.088	.026	***
Performance	<---	Emotional Stability	.138	.027	***
Performance	<---	Extraversion	-.067	.027	.012

**Note: s.e.=standard error; Estimate=effect size; p=statistical significance level**

**Figure 8**  
**Model 3: Big Five Personality Direct Prediction of**  
**Entrepreneurial Intention and Entrepreneurial Performance**



**Note.** C: Conscientiousness, OE: Openness to Experience, A: Agreeableness, ES: Emotional Stability, EX: Extraversion, EI: Entrepreneurial Intention, EP: Entrepreneurial Performance

Lastly, I tested a modified model in Figure 8, Model 3 that evaluated the Big Five personality traits direct relationship with both the dependent variables Entrepreneurial Intention and Entrepreneurial Performance. This represented the least likely chosen model with chi square (448,208);  $df=1$  ( $p<.000$ ) ; root mean square error of approximation (RMSEA)=.502; GFI=.940; CFI=.806; NFI=.807; RMR=.081. The overall model fit indices was fair; however, the model represented the least best fitting of the three options and differed in chi square from the best-fitting model by 401,177. Table 10 (p. 84) shows the path analysis of this less desirable model.

**Table 10**  
**Model 3 Results**

			Estimate	s.e.	ρ
Intention	<---	Conscientiousness	.125	.027	***
Intention	<---	Openness to Experience	.210	.025	***
Intention	<---	Agreeableness	-.121	.026	***
Intention	<---	Emotional Stability	.173	.026	***
Intention	<---	Extraversion	.003	.026	.921
Performance	<---	Conscientiousness	.147	.027	***
Performance	<---	Openness to Experience	.205	.025	***
Performance	<---	Agreeableness	-.088	.026	***
Performance	<---	Emotional Stability	.138	.027	***

**Note: s.e.=standard error; Estimate=effect size; ρ=statistical significance level**

In addition to implementing a more rigorous methodology to examine the personality-behavior relationship and theory pruning toward a better fitting model, this study's findings offer additional insights on the relationships of the Big Five traits on both dependent variables. Zhao et al. (2010) found that Openness to Experience and Conscientiousness were the strongest in relationship to Entrepreneurial Intention and Entrepreneurial Performance. While this study confirmed Openness to Experience as the most dominant predictive trait for Entrepreneurial Intention (.210) and Performance (.109), the personality trait of Emotional Stability came in second with Intention (.173) and Performance (.090). While it departs from the conclusions of prior research, this finding is understandable as those with high Emotional Stability would more likely be able to handle the uncertainty in the environment, business conditions and social relationships experienced by both the career choice and the entrepreneurial experience itself.



As in the Zhao study, the trait Agreeableness was negatively related to Intention and Performance. While Conscientiousness is considered the most significant personality trait in OB/HR and job performance literatures, it rated third in significance in relation to Entrepreneurial Intention (.125) and Entrepreneurial Performance (.065) in the findings of this dissertation. And while it would appear that an outgoing personality such as Extraversion would be an asset to an entrepreneur, this variable also has almost no effect at all on both Entrepreneurial Intention (.003) and Entrepreneurial Performance (.001).

A summary of the findings are found in Table 11 (p. 86). The hypothesis that Model 1 would best fit the data was supported, as it was stronger than both Model 2 and Model 3. The implications are that Entrepreneurial Intention (desire to become an entrepreneur) mediates the relationship between the Big Five personality traits and Entrepreneurial Performance as defined by venture survival. Ajzen's (1991) Theory of Planned Behavior supports this finding. Comparative Big Five personality relationships are shown in Table 12 (p. 86).

**Table 11**  
**Results Summary**

<b>Hypothesis</b>	<b>Description</b>	<b>Results</b>
1	Model 1 better fit than Model 2	Supported
2	Model 1 better fit than Model 3	Supported
3a, b, c, d	OE, C, ES, EX positive to EI	Partially, Extraversion not supported
4a, b, c, d	OE, C, ES, EX positive to EP	Partially, Extraversion not supported
5	Agreeableness (A) Negative to EI	Supported
6	Agreeableness (A) Negative to EP	Supported

**Note:** OE: Openness to Experience; C: Conscientiousness; ES: Emotional Stability; EX: Extraversion; A: Agreeableness; EI: Entrepreneurial Intention; EP: Entrepreneurial Performance

**Table 12**  
**Big Five Personality Trait Results**

<b>OB/HR Big Five to Job Performance</b>	<b>Big Five to Entrepreneurial Intention and Performance</b>	<b>Big Five to Entrepreneurial Intention and Performance</b>
Barrick & Mount (1991)	Zhao et al. (2010)	Williams dissertation (2011)
<b>Most Significant Trait:</b> Conscientiousness	<b>Most Significant Trait:</b> +Openness to Experience +Conscientiousness	<b>Most Significant Trait:</b> +Openness to Experience +Emotional Stability  Extraversion-non-significant

## CHAPTER 5

### DISCUSSION

#### Discussion of Major Findings

The inquiry at the core of this dissertation is: “what impact does the Big Five personality traits play in predicting Entrepreneurial Intention (decision to become an entrepreneur) and Entrepreneurial Performance (firm survival)? My results support Zhao et al.’s (2010) findings that the Big Five personality traits are related to both Entrepreneurial Intention (decision to be an entrepreneur) and Entrepreneurial Performance (measured by firm survival). These dissertation results also provided evidence that Entrepreneurial Intention plays a key role in mediating the relationship between Big Five personality dimensions and Entrepreneurial Performance. In fact, despite a strong correlation between Entrepreneurial Intention and Entrepreneurial Performance which is consistent with the correlations of intention and behavior or job performance in the organizational sciences, I found that Big Five traits, particularly Openness to Experience, Emotional Stability, and Conscientiousness had a stronger relationship with Intention than Performance.

However, the methodological approach of interfacing meta-analysis with SEM path analysis did offer new considerations for the individual relationships of these predictors with the dependent variable and opportunities for richer exploration and explanation of the individual characteristics of the entrepreneur. In the organizational sciences, Conscientiousness has historically been considered the strongest predictor of job performance (Hurtz & Donovan, 2000; Barrick & Mount, 1991). These dissertation

results supported Zhao et al.'s, (2010) findings that Openness to Experience (.210) was the strongest predictor of Entrepreneurial Intention and Performance. This phenomenon is understandable because this personality trait incorporates creativity and an attitude of openness that serves as an asset for entrepreneurs in their unique need to face uncertainty and stimulate opportunity recognition. However, these dissertation results also identified Emotional Stability as more strongly related to Entrepreneurial Intention and Performance than Conscientiousness. This can be explained by the need for balance and discernment if an entrepreneur is handle all of the internal and external uncertainty, social interactions, and decision-making required of an independent owner.

Counter-intuitively, personalities high in Extraversion did not predict Entrepreneurial Intention or Performance. Often perceived as outgoing and able to push themselves into situations requiring boldness and initiative, these confident people may seem at first glance to be candidates for an entrepreneurial mindset and the level of perseverance necessary for self-employment, but the findings do not support a correlation. My results are consistent with the literature in showing that the Agreeableness personality trait is negatively related to both Entrepreneurial Intention and Performance. The explanation may be that many of the activities required of an entrepreneur, such as taking a stand, making decisions and forcing oneself into situations would unlikely be comfortable activities for this personality type.

There is lack of consensus regarding how researchers define and measure constructs in entrepreneurship literature which has contributed to the inconclusive

findings, particularly related to the role that personality plays in entrepreneurial behaviors. This dissertation's main contribution is that it helps reconcile the debate over which theoretical model of the relationship of the predictive and dependent variables shows the most promise as a basis from which to build future theories about moderators influencing these relationships. Viewing entrepreneurship as an organic social process which engages the entrepreneur differently at varying stages of their entrepreneurial career development, the significant role of Entrepreneurial Intention as a mediator in the best fitting model invites future exploration of theories that address these more intrinsic and personal considerations.

To summarize the models' primary differences, in the first model, "Big Five personality traits lead to Entrepreneurial Performance, mediated by Intention". In model two, Big Five personality traits lead to Entrepreneurial Intention, mediated by Performance". And in the final model, Big Five personality traits lead directly to Entrepreneurial Intention and to Entrepreneurial Performance". For example: In the "Intention Mediated" model (Model 1), if a person named Sara was the subject, the predominant traits in her personality would predict her propensity to choose to act entrepreneurially and to become an entrepreneur. If Sara possesses an Openness to Experience trait, this model would expect that her imaginative, creative, and exploratory nature would predict that she would have a higher tendency to consider entrepreneurially and form the intention to be an entrepreneur. Since an Openness to Experience trait would likely find Sara engaging positively with others in her environment. Sara's experiences could motivate her to explore this diverse career track

and present her with confidence that she would be supported. Given Ajzen's (1991) Theory of Planned Behavior model where intention is a strong predictor of performance, it is reasonable on face value that Sara would continue this positive social interaction and move from "thinking" about entrepreneurship to acting on that intention.

Characteristics of Openness to Experience such as creativity and adaptability would suggest that once Sara decided to act, she would tend to have positive social interactions with vendors, venture team, investors and other stakeholders that would be compatible with entrepreneurship. Therefore, I expect a positive relationship between personality and performance, mediated by intention. The challenge with Sara is that the tendencies of her Openness to Experience nature are not always compatible with the perseverance and focus required to perform effectively as an entrepreneur. The dark-side of openness in relationships is that people with this personality type can be perceived as less likely to commit as they are "chasing the dream". This dissertation hypothesizes that of the three models proposed, this "Intention Mediated" version will best represent the relationship of the variables and best fit the data; however, the direct relationship with Openness to Experience and Performance will be a low positive.

If Sara's dominant personality trait is Extraversion, the nature of this assertive personality would suggest on face value to be helpful for a career like entrepreneurship that is very externally driven, achievement oriented, and intrinsically and extrinsically success motivated (Carter, Gartner, & Reynolds, 1996). However, the results of this dissertation showed no relationship of Extraversion to either Entrepreneurial Intention or Entrepreneurial Performance. I would explain this by considering the dynamics of

social interaction. It is rational to foresee that an Extraversion personality type would not significantly impact either Entrepreneurial Intention or Performance as these persons are unlikely to be the most effective in sustainable interpersonal relationships. The ability to work with others effectively, build teams, motivate others, and establish trust are critical to the entrepreneurship process at both the pre-launch and post-launch phases. An Agreeable nature held by Sara would likely find her much too compliant to exercise the more assertive and resilient characteristics demanded by entrepreneurship and its leadership roles. I expected no relationship between this personality trait and Entrepreneurial Intention or Performance. The Emotionally Stable personality trait would promote an attractive social interaction and adaptability for Sara. I expected it to have one of the strongest influences on Entrepreneurial Intention, encouraging Sara to consider entrepreneurship.

People with Emotional Stability and Conscientiousness portray confidence to others and a capacity to handle stress effectively. If Sara had these traits, her relationships with others would reinforce her self-concept as an entrepreneur and encourage her to take the career step. However, while these traits may encourage Sara's decision to become an entrepreneur, they will likely not have such a strong positive effect on her continued performance as an entrepreneur. Of the two, though, Emotional Stability relates more to Performance than Conscientiousness. This consideration offers a different potential outcome than the traditionally reported relationship where conscientiousness is the most dominant personality trait related to entrepreneurial behavior.

Prior research has established that personality traits are stable. Hence, further understanding of the impact of individual characteristics on entrepreneurs is important, for these personality-outcome relationships have implications for entrepreneur career selection, and the training of entrepreneurs.

### **Limitations**

This dissertation utilizes the statistical power and methodological rigor offered by interfacing of meta-analysis and path analysis processes to provide researchers with directional information about the best fitting model for the highly controversial conversations exploring the relationships of Big Five personality dimensions and Entrepreneurial Intention and Performance. Like any study, however, this one has limitations to note.

Meta-analysis methodology and the application of path modeling offers researchers the opportunity to synthesize research in a systematic review, discover new knowledge not available through individual empirical studies, and eliminate sampling error impact as well as offering more statistical power. However, the process is not without its challenges. Using secondary data, I was restricted to the primary researcher's data collection process, and hence by the validity and reliability of their designs, and the range of research questions that they were asking which may have limited my access to additional variables of interest. There is a risk of method bias from the selection of the primary studies included in the meta-analysis (Aguinis et al., 2010).

Another area of debate and opportunity for further exploration is the comparability of units across studies and across multiple units of analysis. This study



uses individual characteristics of personality to predict entrepreneurial firm performance as designated by survival. Particularly given the influence of the new venture founder over the operations and vision of the organization, the argument for this relationship is rational. However, Low & MacMillan (1988) encouraged multiple levels of analysis to complement each other, and as a complex phenomenon, performance would be a good candidate for additional analysis.

Entrepreneurial researchers have enthusiastically explored a variety of variables and relationships. However, until a critical mass of studies have been produced where diligence has been taken to ensure consistency in operationalizations, definitions for constructs, and scale usage in the individual surveys, we will be restricted to the examination of a limited number of meta-analyses that incorporate variables of interest for this more comprehensive methodological process. In terms of the aggregate sample for this dissertation, the cross-section of organizations, students and various professionals used as participants in the meta-analyses support the generalizability of the findings. The limited variance explained (10-13%) by the Big Five personality traits suggests the impact of moderators that would potentially impact the relationships explored in this study.

Lastly, the inter-correlation used for the Entrepreneurial Intention and Entrepreneurial Performance relationship of ( $\beta=.52$ ) was from a single study, as meta-analytic information was not available for this relationship in the entrepreneurship literature. I examined the definitions to ensure similar applications. The study I used was based on German entrepreneurs (founders, owner/managers) and a limited sample

size (n=139) which could reduce its generalizability. However, by collecting data at a time in this country's history where entrepreneurship had been restricted prior to the data collection point, the measurement of Entrepreneurial Intention and "years in the business" or firm survival can be clearly identified and actually may represent an accurate indicator of the relationship.

### **Suggestions for Future Research**

The promising results of this study indicate that the best fitting model, when evaluating the relationship between the Big Five personality traits and Entrepreneurial Performance, is one where Entrepreneurial Intention is incorporated into the model. This dissertation presents an explanation for these relationships based on existing theories; however, useful extensions of this work would include further exploration at the individual level of entrepreneurial career progression theories and the role of social interaction at various stages of the entrepreneur's life cycle.

As the entrepreneurship literature continues to develop with consistent definitions and constructs, additional meta-analyses will further provide opportunities to explore variables and relationships that are not available from individual studies. Further integration of the psychology and career theory literature may offer fertile ground to new theories concerning the impact of additional antecedents that influence how some individuals become differentiated from others as entrepreneurs and non-entrepreneurs. Exploring the implications of positive organizational psychology, and intrinsic motivations such as passion and resilience, as well as the roles of creativity and coping with uncertainty may reveal additional moderators explaining entrepreneurship

as a career choice and sustainable behavior. Empirical exploration of women entrepreneurs, minority entrepreneurs, and entrepreneurs of younger generation would provide incremental information to better understand this entrepreneurial career development research stream. Lastly, further cross-unit research exploring the relationship of micro level individual entrepreneur influence on the firm at various stages of its development and sustainability would continue to evolve the knowledge of the people side of the entrepreneurial enterprise.

### **Implications for Theory and Practice**

The increasing national and global commitment to innovation and entrepreneurship demands a continued focus in the research, education and practitioner realms. On a practical level, entrepreneurship development and investment are mainstream including: President Obama's recent establishment of a department committed to entrepreneurship, with particular focus on women and youth entrepreneurs; increased funding internationally for micro-enterprise and innovative initiatives; and proposed tax cuts and stimulus funding to support small business growth. In the entrepreneurship literature, the return to research focused on the individual characteristics of entrepreneurs and relevant moderators represents an opportunity for further exploration. There has been a re-emergence of interest in the personality factors, particularly the Big Five personality traits, and their relationship with entrepreneurial outcomes throughout the Entrepreneurial Intention and Entrepreneurial Performance stages of the entrepreneurship process.

This dissertation's methodological approach to theory pruning results in a statistically powerful macro-assessment of these prevailing arguments and finds that an Entrepreneur's Intention or self-conceptualized acceptance of their role as an entrepreneur does support more sustainable activities once the business is launched. In other words, it is implied that the intrinsic affirmation taken by an active career choice to self-employment influences subsequent decisions to act.

For entrepreneurship and strategy scholars, research on the individual has been focused more recently in the cognition arena. However, this dissertation joins other recent meta-analytic work in suggesting the value offered by further exploration of the role of personality in the entrepreneurial process. Additionally, the evaluation of how personality traits influence the development of self-identity or role adaptability would further help us understand the entrepreneur. With current economic challenges and market conditions, many people are being forced to creative options and necessity entrepreneurship even though they are not focused on growing their business or making a planned commitment to the "role of entrepreneurship". In this case, research opportunities for increased knowledge about what moderates those career decisions and performances will inform our larger quest to identify how to continue to build sustainable innovative organizations and to cultivate entrepreneurial development.

The psychology literature empirically supports the viability and generalizability of the Big Five personality traits. This dissertation found that the strongest fit of the data and optimal relationship exists between the Big Five personality traits and Entrepreneurial Performance, when mediated by Entrepreneurial Intention. Given the

significant statistical power available through this methodological approach, researchers should seriously consider directing their efforts toward the model it has indicated. Additionally, the findings validated some previous findings concerning specific Big Five personality traits while providing new results in some areas.

Traditionally in the organizational sciences literature, Conscientiousness has been the primary predictor of job performance. Zhao et al.'s (2010) study reported that Openness to Experience followed by Conscientiousness were the personality traits that most adequately predicted Entrepreneurial Intention and Entrepreneurial Performance. In this dissertation, I confirmed this finding about Openness to Experience. This is understandable given the creative nature and opportunity recognition skill required by entrepreneurs. However, I found that the personality trait of Emotional Stability was even more important for entrepreneurs than Conscientiousness. And counter-intuitively, persons with out-going personalities and more extraverted traits were not significantly more likely to exhibit Entrepreneurial Intention or Entrepreneurial Performance. These findings open the door to consideration of the value of more contemplative, internally driven characteristics of entrepreneurs, with implications for the selection and entrepreneurial training processes. Further exploration of moderators to the personality and entrepreneurial outcome relationship that evaluate the impact of coping skills and the ability for innate skills to manage high degrees of environmental uncertainty would be an interesting area of empirical pursuit.

Further, the historical application of personality testing by human resource managers in corporations demonstrates the critical role that these personnel instruments play in evaluating, selecting, and managing the human capital within an organization. Decisions are made daily based on personality profiles as research consistently supports the idea that personality influences job performance; job satisfaction; and occupational career choices. It is logical, therefore, to consider the integration of more rigorous personality assessment tools in the entrepreneurial environment. Kuratko, Montago, & Hornsby (1990) contributed the development of an intrapreneurial assessment instrument for corporate entrepreneurial environments. This research further supports the value of such instruments for entrepreneurs and human resource managers. The development of personnel assessment tools for individuals that incorporate personality, intention and entrepreneurship proclivity scales and measurements could be valuable for founders, owner-managers, educators, and bankers in evaluating the entrepreneurial nature of individuals.

Further practical application is in the entrepreneurship education process in the university system. Growing extensively over the last twenty years, college curriculums nationwide and globally have been modified to integrate experiential entrepreneurial training for future entrepreneurs as well as corporate leaders who benefit from cultivating the entrepreneurial mindset (Kuratko, 2005). The development and introduction of an assessment instrument to evaluate the individual characteristics that measures a student's potential for entrepreneurial behavior would be an asset to the educational institution.

While other factors, such as situational considerations and social networks, have been shown to interact with personality, the search for further understanding of the individual characteristics of entrepreneurs continues to be a pursuit of importance to individuals, corporations, communities, and global societies.

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