

THE EFFECT OF GRIT AND ORIENTATIONS TO
HAPPINESS ON ENTREPRENEURIAL
PERFORMANCE AMONG VENTURE FOUNDERS

By

ALEXANDER C. LAWRENCE

Bachelor of Science in Management
University of Utah
Salt Lake City, Utah
1998

Master of Business Administration
Weber State University
Ogden, Utah
2005

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Dissertation Approved:

Matthew Rutherford, PhD

Dissertation Adviser

Dave Noack, PhD

Rathin Sarathy, PhD

Dr. Norris Krueger, PhD

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Name: ALEXANDER C. LAWRENCE

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Abstract: To date, research on which factors contribute to entrepreneurial performance falls short of a comprehensive explanation. Grit, although not as thoroughly researched as other personality traits, has been found to be a significant contributor to achievement in many fields, including entrepreneurship. To better understand how it contributes to entrepreneurial performance, a better definition and analysis of grit is needed. This includes a closer look at how we measure entrepreneurial performance. When we allow for a more subjective measurement of performance from the perspective of the entrepreneur, we gain a better understanding of how grit is related to other performance motivations, such as the entrepreneur's happiness orientation. This analysis reveals that differing orientations are more or less associated with grit: Individuals who pursue happiness through pleasure tend to have different levels of grit than those who pursue happiness through meaning and engagement. However, when performance is considered, further analysis of entrepreneurial measurements of performance leads to better clarification of the role grit plays in the prediction of entrepreneurial performance.

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CHAPTER I

INTRODUCTION

The desire to succeed and achieve is ingrained in humankind. Throughout the ages, scholars and laymen have tried to pinpoint the ever-changing and elusive recipe for performance, adding and removing incremental ingredients as they went. Overall, the basic human instinct to improve one's situation imbues the individual with a motivation for all action that takes place; and while everyone strives to succeed, performance is measured very differently among individuals.

The Big Five model, while widely accepted as the “go-to” model for predicting performance in an entrepreneurial setting, is lacking in its ability provide a complete understanding of an individual's potential. Meta-analysis of research conducted on the relationship between personality and achievement has concluded that none of the traits described by the Big Five model would account for more than 2% of the variability of achievement (Duckworth, Peterson, Matthews, & Kelly, 2007). Due to this limited predictive power, any improvement would be of great importance and provide increased understanding for the field.

Though many constructs have been examined in relation to the prediction of performance, one that Duckworth found particularly noteworthy was grit. Previously conducted studies have shown an association between an individual's grit and different measures of

achievement. As early as 1892, Sir Francis Galton discussed the concepts of zeal and capacity for hard labor. These qualities are closely related to those of passion and perseverance, which Duckworth has called the two parts of grit (Duckworth & Gross, 2014). Michael Howe also has discussed the importance of perseverance for high achievement (Howe, 1999). Through these and other studies that will be examined, it can be seen that by adding grit to an equation, more of the variability of achievement can be explained, allowing for more accurate predictions and understanding.

Grit embodies a wide range of potential definitions, but is largely regarded as a positive trait. Because the construct is not very well understood, increased knowledge of grit and its impacts on performance serves to benefit not only the entrepreneurs and their peers on whom this study is focused, but also all business fields, where grit and similar attributes are an asset. Therefore, a closer examination of grit has the potential to change the way we think about business performance in general.

To examine the impact of grit on entrepreneurial performance, this study will include three parts. First, I will clarify the vague definitions of entrepreneur and grit in existing literature. Within these definitions, I will draw comparisons to well-accepted constructs and models. In particular, I will explore the Big Five model and discuss how it could be improved through the addition of grit. I also will compare grit to similar constructs with which it is commonly confused. This examination will clarify both how we define grit, as well the ways in which a better understanding of grit can contribute to the prediction of performance.

Next, I will discuss the relationship between grit and other attributes that are directly related to performance. In particular, I will focus on the motivation of orientation to happiness. Since this attribute has been directly linked to performance (Peterson, Park, & Seligman, 2005), and grit is closely associated to it (Von Culin, Tsukayama, & Duckworth, 2014; Suzuki, Tamesue, Asahi, &

Ishikawa, 2015), it is logical that this comparison can lend insight into the relationship between grit and performance. Based on this review, I will propose several hypotheses to further explore and test grit's relationship to performance.

The final part of this study will include an analysis and discussion of data collected from various entrepreneurs with regard to performance. This data includes samples from different founders of business ventures. The results of this data will be discussed within the context of grit in order to further explore what particular qualities of grit are most relevant to the prediction and explanation of performance. This examination will allow for a unique perspective of the relationship between grit and performance, shedding new light onto performance in the world of entrepreneurship.

Need for the Study

The search for characteristics that lead to increased performance can be more elusive than the activity itself. Trying to determine the ingredients that lead to increased performance has been the focus of study for many generations (Tett, Jackson, & Rothstein, 1991). With regard to entrepreneurs—whether it is for better training purposes or to know what kind of individuals produce greater returns on investments—knowing any predictor of performance is beneficial.

It has been established that entrepreneurs play an important role in any society through their contributions to economic growth, which drives innovation and technical change (Schumpeter, 1934). New knowledge is converted into products and services, which help balance supply and demand. As such, entrepreneurship is an important pursuit that has a role in the development of both human and intellectual capital (Zahra & Dess, 2001). With these thoughts in mind, it is easy to see that new insights into performance with regard to entrepreneurs will be beneficial to the study and search for improvement within entrepreneurial processes and outcomes.

Within commerce, grit and related characteristics have been studied, and their influence on an individual's performance has been noted. Concepts such as resilience, courage, commitment,

persistence, focus, problem-solving skills, and others all are logically tied to performance (Becker et al., 1996; Howe, 1999). These same attributes either have been or easily can be associated with grit. Overall, the research into grit is unfortunately lacking, and further research has great potential to increase our knowledge of high-performing individuals.

Grit, like many other constructs related to performance, is associated with other items that may be highly correlated with performance. As such, further research into other aspects of performance and their association directly to grit is a worthwhile pursuit. In particular, I seek to analyze the relationship between grit and orientation to happiness (OtH). Though not well defined, the connotations of grit meaning hard work and perseverance allow a simple comparison to high performance through hard work, indicating that higher levels of grit will be associated with different orientations to happiness. As such, we expect to see an association with performance that can be mediated or at least accompanied by this characteristic.

Further, the analysis of results from surveys given to business venture founders allows for a more in-depth look into aspects of grit, education, personality, and other attributes that may help to explain differences in founder venture performance. As performance can be measured both objectively and subjectively, this study will explore the correlations among the different founders' subjective measurements of performance and the other objective attributes of the entrepreneurs questioned. Differences between perceived and actual performance may be explained by a large number of items, and by analyzing these differences, I strive to help determine the roles that these attributes play in the overall performance of an entrepreneur.

Theoretical Framework

Existing models and studies largely lack reliability in determining performance. As mentioned previously, the five traits that comprise the Big Five model do not account for more than 2% of the variability of achievement (Duckworth et al., 2007), which indicates that this model is far

from a comprehensive explanation of performance. Additionally, a study by Neisser et al. (1996) found that upward of 30% of variability in performance can be explained by intelligence. While this is indeed a higher percentage than other studies previously determined, it also reveals that the vast majority of knowledge on this subject is still unknown.

The examination of grit as a missing piece to the explanation of high performance among entrepreneurs is logical in part due to the fact that it is a personality trait. This is important because many scholars (Degman, 1989; Jang, Livesley, & Vernon, 1996) argue that there is no such thing as a new personality trait, as traits are encoded in our genetic and psychological makeups. For example, in their 2007 paper, Duckworth et al. refer to grit as an inborn quality, rather than one that can be learned or acquired. As such, grit has always been present in the world of study, and people demonstrating grit are highly valued. However, unlike intelligence, grit has been only recently defined as such, and has therefore traditionally been omitted from the research as a viable trait to examine. As a result, there is confusion as to what grit truly is and how it is distinct from other constructs.

Further confusion about grit results from its similarity to other constructs. Some examples include: entrepreneurial effort, intensity, Protestant work ethic, perseverance, tenacity, passion, self-control, and persistence. Though grit does share characteristics with several of these constructs, or could even be considered the compilation of some, it can add a unique perspective into variability in achievement. Thus, a comparison between grit and these constructs serves to create a base understanding of what grit is and is not, providing clarity for analysis and discussion.

It should be noted that, while a beneficial contributor to models regarding performance and achievement, grit should not necessarily be considered an independent predictor of performance or achievement; rather, it is associated with other attributes or characteristics that have been proven to directly influence performance. Therefore, an examination of grit's relation to attributes that are

directly related to performance is needed to further understand its indirect, but relevant, relationship to performance.

Many scholars (Shane, Locke, & Collins, 2003; McClelland, 1961; Collins, Locke, & Hanges, 2000; Fry, 1993) have studied the relationship of different entrepreneurial motivations to performance. In particular, they have focused on the need for achievement, locus of control, desire for independence, passion, and drive as possible factors that predict one's level of performance. However, these motivations tell us more about the pursuit of entrepreneurship rather than performance and are not always positively correlated to high achievement; instead, they have varying levels of correlation with the desire and likelihood to pursue entrepreneurial opportunities. Since it is expected that these different motivations will lead to different outcomes, we cannot rely on any one of them as a sole predictor of performance.

The pursuit of happiness is a more general and universal motivation that is directly related to performance. As Waterman, Schwartz, and Conti note in their 2008 study on happiness, "Within ethical philosophy, happiness has long been proposed as the ultimate goal of human functioning" (p. 42). The centrality of happiness as the universal motivation of humankind is evident in the histories of both philosophy and psychology. This motivation is of particular significance to the field of entrepreneurship because entrepreneurial pursuits revolve around the question of life satisfaction (Peterson et al., 2005). Without taking too many scholarly liberties, we can say that the pursuit of life satisfaction is just another way to indicate the pursuit of well-being and happiness.

The examination of the relationship between orientation to happiness and entrepreneurial performance will be explored through Fisher, Maritz, and Lobo's 2014 model. These researchers take a practitioner-centered approach through the perspective of the entrepreneur. Through surveys with various entrepreneurs, they identified four factors that lead to satisfaction, or happiness. I argue that these factors used to describe entrepreneurial performance are a contextual description of what would

make the entrepreneur happy. This argument is consistent with the telic theories in psychology that “propose that well-being or happiness is achieved when goals are reached or needs are fulfilled” (Lambert, Passmore, & Holder, 2015, p. 315).

It is important to note, however, that not all avenues to happiness are the same. For example, while the utilitarian philosophical tradition focuses on the greatest happiness for the greatest number of people (Brulde & Bykvist, 2010), the virtue philosophical tradition argues that individual character strengths should be utilized in the development and maintenance of happiness because they enable pleasure and other positive experiences (McMahon, 2006; Peterson, Ruch, Beerman, Park, & Seligman, 2007). Two other philosophical traditions include eudemonia and hedonia. The basic difference between the two is that hedonia is defined as the pursuit of well-being through pleasure (Huta, Park, Peterson, & Seligman, 2006), while eudemonia is defined as a way of life wherein individuals strive to be better by using talent and making meaning (Huta et al., 2006; Waterman, 2007). Put more simply, hedonia refers to feeling good, while eudemonia refers to functioning well (Keyes & Annas, 2009). In order to understand what particular happiness is most motivating to entrepreneurial pursuits, further exploration of how these various avenues to happiness is needed.

Of course, to understand how this all relates to the inclusion of grit in the prediction of performance, we must also explore the relationship between orientation to happiness and grit. Grit may influence an individual’s orientation to happiness by way of leading toward certain activities that require differing levels of passion and perseverance. Sometimes happiness is achieved only after a period of trial and failure; an individual with grit will be able to lean on that quality and continue the quest without becoming discouraged and giving up, ultimately leading to greater happiness. It may also be that grit is influenced by the individual’s orientation to happiness, as those who seek happiness in different ways may develop different levels of grit. Regardless of the association, a better understanding the relationship between grit and orientation to happiness also will lend insight into the connection between grit and performance.

Purpose of the Study

The purpose of this study is to clarify a common definition of grit and to evaluate its contribution to the prediction of entrepreneurial performance. To this end, a review of the existing literature will provide a comprehensive view of the study of grit to date. This will allow for a more in-depth understanding of the definition of grit and its relationship to other similar constructs, as well as identify motivating attributes that are closely related to grit. I also will apply scholarly measurements of grit and performance as developed by Duckworth et al., Fisher et al., and Peterson, to examine the differing levels of grit and their effect on performance.

Additionally, since current research on grit is relatively sparse, this study contributes to the field of entrepreneurship by offering new data gathered from founders and cofounders of different business ventures. In particular, analysis of this data will allow for comparisons between a pair of cofounders, while the level of performance is held constant due to the co-founding nature of the entrepreneurs questioned. In addition, a more in-depth analysis of performance, especially subjective performance, will be possible. When the true measure of performance remains the same, comparisons between levels of grit and differing perceptions of performance may yield additional understanding of how grit affects performance.

Research Questions and Hypotheses

Though grit has gained more attention as a subject of research in recent years, more research is required to truly determine its impact on the entrepreneurial world. More work is needed to confirm findings and hypotheses from these earlier studies, while also allowing further exploration into more detailed reasons for the conclusions that have already been found. As such, the main research question is as follows:

What role does grit play in the prediction of entrepreneurial performance?

In order to study this hypothesis, however, one needs to understand what entrepreneurial performance is and how it is measured. What constitutes entrepreneurial success (and by extension, entrepreneurial failure) is hard to state specifically, as there is no firm consensus. This will be analyzed as well, to create a sound starting point for understanding the results that are found.

Also, since grit is not a sole predictor of performance, we will need to discuss it in relation to a common motivation: orientation to happiness. This will be examined through Peterson's (2005) approach, which focuses on three orientations to happiness: through meaning, through pleasure, and through engagement. Using these approaches, several subsequent research questions become: 1) How is grit associated with entrepreneurial performance, and more generally with performance? 2) What is the relationship between orientation to happiness and grit? And 3) How are specific orientations to happiness associated with grit and performance? While attempting to answer these questions, measures of human capital such as education and age will be accounted for in order to better understand the true associations without the influence of human capital.

Research Design and Model Overview

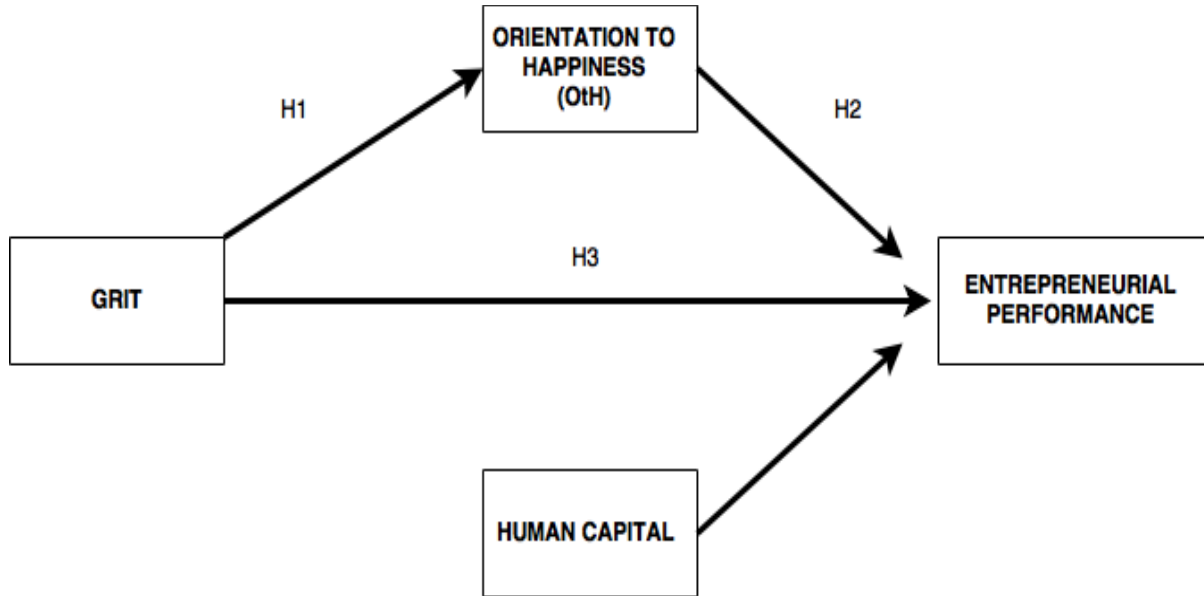
The research design for this study is comprised of a single study. The data will be collected through a survey with questions designed to determine an individual's level of grit, his or her orientation to happiness, and objective and subjective measurements of performance, as well as any necessary follow-up. Questions regarding grit will be based on the work of Duckworth et al. (2007, p. 1090). Through the use of a scale developed and validated to measure grit, Duckworth was able to identify grit, measure it in a population, and correlate it with performance levels in different circumstances. The scale, while designed to measure grit in general, also determines the measures of grit through consistency and perseverance.

In addition to grit, the performance of the entrepreneur will be measured. As there is no widely accepted methodology for doing so, the questions in the survey will attempt to measure

performance through both objective and subjective measures. The objective measures will deal with numerical values determined by the entrepreneur's venture, such as cash flow, net income, and market share. Subjective measures will be answered by the entrepreneurs in relation to their expectations, asking for their opinions on the current state of their ventures in areas such as sales, profit, and growth. This approach should allow for a better consideration of the relationship between grit and performance, both perceived and actual. Though the psychological implications will not be heavily examined in this study, it could provide evidence to influence future study of the subject.

As mentioned, Peterson's scale measures and scores three potential orientations: meaning, engagement, and pleasure. It is expected that differing levels of grit will be associated with higher or lower scores within these different categories. This study also will look at the full relationship between how grit may affect an individual's orientation toward happiness, and how that (while controlling for human capital) influences entrepreneurial performance (Figure 1).

**Figure 1: Condensed Model for the Path from Grit to Entrepreneurial Performance
Accounting for Orientation to Happiness and Human Capital**



Through the use of this model, I will analyze the relationships that exist between grit and performance directly. By modeling different measures of performance by grit, I seek to better determine the strength and direction of the relationship between grit and objective measurements of performance (entrepreneurial performance), as well as subjective measurements of performance (venture performance). In addition to this, I will model the satisfaction of the entrepreneur with grit to determine the existing relationship. Using the cofounder responses in the study, individual responses as well as the average and difference of the cofounder responses will be used to determine not only the direct relationship, but also the effects of differing levels of grit within a cofounder pair.

Furthermore, the effect of an entrepreneur's orientation to happiness will be considered in the relationship between grit and performance. Having responses from venture founders will allow for a

look into the effects of different orientations to happiness in general, as well as into the potential compounding or counteracting effects of similar or differing orientations to happiness.

In addition, the effect of human capital will be accounted for. Human capital recognizes that not all persons in a venture are equal. Some ventures and entrepreneurs invest in human capital in an attempt to improve that capital. Here, focusing on founders will allow for a model that controls for the effect of human capital on grit and performance, allowing for firmer conclusions about grit's relationship to performance. The differences in human capital between the varying founders will be accounted for in order to better understand the differences among varying levels of grit.

Significance of the Study

Few studies have been conducted on the impact of grit on entrepreneurial performance. At the time of this study and to the best of my knowledge, none have been conducted with the same rigor and additional comparisons between founders. This analysis will allow for better understanding of the impact of grit on performance, as well as its association with orientation to happiness. They also will allow for as-yet-undetermined examinations of the differences in satisfaction or subjective measurements of performance that are evident between individuals of differing levels of grit or orientations to happiness.

It is my hope that this study will establish the groundwork necessary for future examinations of the characteristics and behaviors that are positively associated with performance. Though performance is influenced by many different attributes and characteristics, any advancement in understanding and predicting performance holds great potential to not only increase knowledge within the entrepreneurial field, but also to improve the overall performance of those in the field. By not only analyzing the effect of grit on performance, but also determining its relationship to other characteristics and attributes, I seek to improve the knowledge and understanding of performance of the entrepreneur. These improvements could help greatly in the field, not only in training aspiring

entrepreneurs, but also in making predictions related to entrepreneurship, such as investment in an endeavor.

CHAPTER II

REVIEW OF LITERATURE

The present study combines several theoretical constructs, some rigorously established and others relatively new, with the goal of better understanding the relationship between grit, entrepreneurial performance, entrepreneurial satisfaction, and orientation to happiness. I begin this literature review by first defining what an entrepreneur is in order to more fully understand how these different aspects relate to entrepreneurs. I will then look at the current definition and history of grit, and expand by reviewing comparable constructs to grit to determine similarities and differences. To examine the relationship between grit and entrepreneurial performance, I will first review the literature on performance and personality traits in general. Then, I will discuss objective and subjective measures of performance. Based on this discussion, I will examine the relationship between orientation to happiness and grit. Finally, I will establish the relationships among grit, orientation to happiness, and entrepreneurial performance.

What Is an Entrepreneur?

In order to more fully understand the relationship between entrepreneurs and grit, one must have a clear understanding of what an entrepreneur is. Though many have tried, it is difficult to define the entrepreneur in a comprehensive way. Many schools of thought exist on the subject, and each sees the role of the entrepreneur from a differing viewpoint. For clarity around the subject of analysis, I have applied what is believed to be the most encompassing

definition of an entrepreneur as “someone who specializes in making judgmental decisions about the coordination of scarce resources” (Casson, 2003, p. 20). This definition was chosen over others because, as Matlay (2005) explains, “this holistic definition explicitly emphasizes the responsibility of the entrepreneur as the decision maker as well as identifying him/her as the basic unit of analysis” (p. 670).

It has been well established that entrepreneurs hold an important role within any given society. They contribute to economic growth through driving innovation and technical change (Schumpeter, 1934). As stated by the Austrian School of economics,

entrepreneurial discovery is seen as gradually but systematically pushing back the boundaries of sheer ignorance, in this way increasing mutual awareness among market participants and thus, in turn, driving prices, output and input quantities and qualities, toward the values consistent with equilibrium. (Kirzner, 1997, p. 62)

The actions of entrepreneurs also convert new knowledge into products and services (Shane & Venkataraman, 2000). Zahra & Dess (2001) especially note the important role of entrepreneurship in the development of human and intellectual capital in many societies.

Though the importance of entrepreneurship is well established, we have yet to understand what makes a great entrepreneur. What is it that sets entrepreneurs apart from other leaders in business? What makes some entrepreneurs stand out in comparison to their peers? Scholars and practitioners have examined many characteristics of these leaders, but none have accounted for much of the variability in performance and achievement. This is evidenced, for example, by the aforementioned claim that none of the traits described in the Big Five model would account for more than 2% of the variability of achievement (Duckworth, Peterson, Matthews, & Kelly, 2007). Therefore, much more research is needed to fully understand what makes a great entrepreneur. The intention of this study is to explore one characteristic in particular: grit.

Defining Grit

History

The research on grit as a stand-alone construct owes the majority of its exploration and measurement to Angela D. Duckworth, Christopher Peterson, Michael D. Matthews, and Dennis R. Kelly. In their earlier work, Duckworth et al. defined grit as “perseverance and passion for long-term goals,” or “perseverance of effort and consistency of interest for long-term goals” (Duckworth et al., 2007, p. 1087). In later work, these researchers described grit as “the tendency to pursue long-term goals with sustained zeal and hard work” (Von Culin et al., 2014, p. 306). From these definitions, we can see two common themes to describe grit: that of passion and that of persistence.

Though a seemingly new pursuit, Duckworth et al. note in their more recent research that the development of a grit definition and scale has an origin and a history. However, it hasn’t always been described in these same terms. As far back as 1892, Sir Francis Galton collected and analyzed biographical data on high-performing individuals in many fields such as law, politics, science, art, and sports. Based on his research, he concluded, “ability alone did not bring about performance in any field.” Going further, Galton pointed out that high achievers are characterized by “ability combined with zeal and with capacity for hard labor” (Galton, 1869, p. 33). While accounting for different literary naming conventions, it is not difficult to see the similarities between Galton’s findings and the modern-day components of Duckworth et al.’s definition of grit.

Galton was not alone in his thinking. Other scholars, such as James McKeen Cattell (1903), Edward Webb (1915), and Catherine Cox Miles followed a similar line of research. Cattell provided significant contributions to the study of individual differences and the measurement of human capacities. Webb published a study on character and intelligence in the

British Journal of Psychology that was considered significant. Cox Miles suggested that beyond intelligence (which is measured by IQ and held constant), “persistence of motive and effort, confidence in their abilities, and a great strength or force of character,” were all traits evident in a person’s childhood and predictive of his or her lifetime achievement (1926, p. 218). Even Galton’s famous cousin and contemporary, the naturalist Charles Darwin, seems to have agreed with his findings. In a letter to Galton he states, “You have made a convert of an opponent in one sense, for I have always maintained that, excepting fools, men did not differ much in intellect, only in zeal and hard work; and I still think this is an eminently important difference” (Galton, 1908, p. 290).

More recent researchers also discuss their findings in relation to intelligence¹.

Researchers such as Michael Howe have shown that high achievement cannot be attributed solely to exceptional mental ability. Howe concluded that, “Perseverance is at least as crucial as intelligence . . . the most crucial inherent differences may be ones of temperament rather than of intellect as such” (Howe, 1999, p. 15). Thus, we can see that Howe believed that intellect was not enough to achieve high performance. We also see the use of the word “perseverance,” one of the crucial components of the definition of grit. Importantly, Duckworth and her colleagues (2014) found that grittier individuals are typically equal or inferior to their less gritty counterparts in talent, indicating that one does not necessarily need talent or intelligence to be gritty.

These researchers and their contemporaries significantly advanced the quest to identify traits that can potentially explain the variability in performance seen within individuals. It is precisely this curiosity that laid the groundwork for a better understanding of personality and

¹ It is worth noting that within the literature, intelligence and talent appear to be used as the same construct. In their seminal paper on grit, Duckworth et al. (2007), refer to intelligence and talent as the same thing. Terman and Oden (1947) also seem to use the two words to indicate the same construct. Going further back in time, Galton (1892) in a similar comparison seems to indicate that ability is equated to intelligence.

eventually led scholars to create what is now known as the Big Five model, or the Big Five personality traits.

Grit and the Big Five Model

One of the most significant attempts to explain the variability of performance in individuals is the Big Five model. This model was created by several researchers working independently, but was first well known to the academic field starting in the 1980s (John & Srivastava, 1999). The initial impetus for creating the model was to gain a better understanding of what personality traits led to high academic performance. Though these traits have shifted some over time, the most current five personality traits of the model include: openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism.

Personality traits were the focus of the model because research has shown that personality traits are based on motivation, capacities, knowledge, and opportunities. To put it differently, “how people behave, think, and feel is determined by what they want, in conjunction with what they can do, what they believe, and their situation” (Duckworth et al., 2014). It should be noted that personality traits are different from motivation traits. “Whereas personality traits such as grit describe tendencies to act, think, and feel that are relatively stable across time and situation, motivational traits describe enduring individual differences in what people want and need” (Roberts, Harms, Smith, Wood, & Webb, 2006).

While the Big Five model has proved valuable because it provided a framework by which to examine what leads to achievement and performance, it has some limitations. Meta-analysis of research conducted on the relationship between personality and achievement has concluded that none of the traits described in the Big Five model would account for more than 2% of the variability of achievement (Barrick & Mount, 1991; Tett, Jackson, & Rothstein, 1991), proving that the model does little to explain what traits lead to performance.

Though omitted in the Big Five model, grit could have been included. This omission is due in part to the fact that, though grit is now considered a personality trait, this was not always the case. Overall, it has been argued that there is no such thing as a new personality trait as they are encoded in our genetic and psychological making (Degman, 1989; Jang, Livesley, & Vernon, 1996). Had grit been thought of as a personality trait from the beginning, it might have been considered as a viable inclusion to the model, especially because of its proximity to other personality traits such as perseverance. In fact, with a slightly modified methodology or more English language synonyms, grit may have indeed been an obvious inclusion. Perhaps the lexical approach to building the Big Five model is what caused grit to be excluded, which could be considered “a serious limitation” as “the Big Five taxonomy derives from its roots in the factor analysis of adjectives. Traits for which there are fewer synonyms (or antonyms) tend to be omitted” (Duckworth et al., 2007, p. 1088-9).

This history allows for an opportunity to further explore grit as a distinct factor of performance. In order to better define grit, it is important to first discuss it in relation to other similar constructs. In the fields of entrepreneurship, organizational theory, and psychology, there are many constructs with direct or indirect bearing on performance and behaviors. Scholars have explored many of these. Of these, some that can be associated with grit include entrepreneurial effort intensity, Protestant work ethic, perseverance, persistence, tenacity, passion, self-control, and persistence. To isolate the importance of grit in this study, it is important to show how, and to what extent, it is related to or different from these various constructs.

Grit and Similar Constructs

Entrepreneurial Effort Intensity

Entrepreneurial effort intensity is unlikely to be confused with grit, but defining the differences adds clarity to this discussion. By definition, effort is “a limited-capacity resource

that can be allocated to a range of different activities” (Yeo & Neal, 2004, p. 231). Intensity is also a short-term effort that varies depending on the situation at hand—that is, different circumstances require different levels of intensity. The combination of effort and intensity is important in business because it allows the entrepreneur to decide where to focus his or her attention in any given moment: “Entrepreneurial effort intensity includes the degree of hard work on both creative and administrative tasks since entrepreneurs need to do both task types” (Uy et al., 2015, p. 377; Reynolds & White, 1997). In contrast to this “limited-capacity” resource that burns out after a decision has been made, grit includes a component of perseverance that is seemingly limitless and goes beyond making on-the-spot decisions; it is the consistent, underlying trait that carries one through these intense moments again and again. Therefore, effort intensity is distinct from construct of grit.

Protestant Work Ethic

The Protestant work ethic is a thesis that goes back to 1905, when German sociologist Max Weber published a series of essays titled “The Protestant Ethic and the Spirit of Capitalism.” The premise of the thesis is “the idea that working for the purpose of profit is a moral good in itself” (van Hoorn & Maseland, 2013). As Weber said,

one’s duty in a calling, is what is most characteristic of the social ethic of capitalistic culture, and is in a sense the fundamental basis of it. It is an obligation which the individual is supposed to feel and does feel towards the content of his professional activity, no matter in what it consists, in particular no matter whether it appears on the surface as a utilization of his personal powers, or only of his material possessions (as capital). (Weber 1930/1992, p. 19)

This is clearly a different and faith-imbued moralization of the pursuit of work and wealth from an age when that approach was highly relevant. Due to this, linking the Protestant work ethic to grit, let alone confounding the two, would be a difficult theoretical stretch.

Perseverance

Perseverance is itself a component of grit (Duckworth et al., 2014). Most researchers view perseverance as a character strength, rather than a personality trait, that is “most highly associated with work performance and most negatively associated with counterproductive work behaviors” (Littman-Ovadia & Lavy, 2016, p. 240). Character strengths are different from personality traits because they “represent durable positive individual characteristics and are expressed through thoughts, feelings, and behaviors” (Littman-Ovadia & Lavy, 2016, p. 240).

As mentioned earlier, grit is a personality trait comprising both passion and perseverance. The argument may be made that since the role of each of these constructs separately has been addressed, that further research into grit is unwarranted and unnecessary. Perseverance, however, does not necessarily imply passion. Passion is “a strong inclination toward an activity that people like, that they find important, and in which they invest time and energy” (Vallerand, 2008, p. 1). One can persevere in the pursuit of a goal for a host of reasons without any level of passion or even true interest, such as following a diet plan or a smoking cessation program. As such, we can see that grit adds a key ingredient here in that it is the application of both passion and perseverance. When brought together simultaneously, passion and perseverance generate an outcome that is different from that generated by each part separately. Thus, perseverance alone is a different construct than that of grit.

Passion

Passion is another construct that is present in almost all discourses and discussions about entrepreneurship. As with perseverance and tenacity, passion is a component of grit, and while it

is present in most discourses, it has only recently been well studied. References to passion in the academic literature of entrepreneurship were scattered, fragmented, and in many cases anecdotal as opposed to the type of formalized study that defines, operationalizes, and determines the role of the construct in the field. In addition, passion has been related to drive, tenacity, willingness to work long hours, courage, high levels of initiative, and persistence in the face of obstacles (Bierly, Kessler, & Christensen, 2000; Bird, 1989). This variety of qualities is indicative of the scattered nature of the research done on passion.

Cardon and colleagues addressed this issue in 2009. They defined entrepreneurial passion as “consciously accessible, intense positive feelings experienced by engagement in entrepreneurial activities associated with roles that are meaningful and salient to the self-identity of the entrepreneur” (Cardon, Wincent, Singh, & Drnovsek, 2009, p. 515). They further conjectured that “passion may be a critical ingredient in an entrepreneur’s performance in achieving challenging goals not simply because it mobilizes energy and enhances commitment, but also, because passion activates heuristic cognitive processing and coordinates broaden-and-build mechanisms that are especially functional” (p. 528). Again, we can see correlations between passion and grit, particularly as it pertains to the connection that the entrepreneur must feel in order to be inspired and motivated to pursue his or her work. However, grit is distinct from passion because it also captures the effort that is equally necessary to sustain one’s passion. As such, it can be seen that grit and passion are two different constructs, with the latter being a component of the former.

Persistence

Though often conflated with perseverance (one of the components of grit), persistence is a separate construct that is typically used in reference to getting through a temporary negative situation. For example, Haines and Townsend (2014) found through interviews with high-tech,

high-growth entrepreneurs that the entrepreneurs experienced uncertainty and negative feelings while establishing their ventures, but were able to manage their emotions and continue with their efforts. This, the researchers found, demonstrated a significant level of persistence. In contrast to perseverance, persistence is a personality trait that allows one to overcome a challenge by trying over and over again. As previously discussed, perseverance is a character strength that connotes a more positive sense of rising up in the face of challenge. Rather than a rote repetition of pushing through a difficult time, perseverance implies a quality of longevity that can be applied beyond one particular challenge. Further, since this perseverance is itself only one component of grit, as it does not address the passion that drives one's work, both perseverance and persistence are indeed distinct from grit.

Tenacity

Tenacity, as a construct, is the same as perseverance. As such, it is also a component of grit. In fact, Baum and Locke (2004) used the two interchangeably when they said that “tenacity, or perseverance, is a trait that involves sustaining goal-directed action and energy even when faced with obstacles” (p. 588). Scholars who have studied tenacity have shown its significance in both leadership and entrepreneurship. Multiple scholars have shown that tenacity is associated with successful leadership (Bass & Stogdill, 1990; House & Shamir, 1993; Locke, 2000), and it has been consistently identified as an archetypical entrepreneurship trait due to the business start-up process involving confrontation of formidable barriers to market entry (Gartner, Gatewood, & Shaver, 1991). Timmons (2000) was able to show that tenacity increases the chances of survival and performance of start-up ventures. Thus, we can clearly apply these findings to perseverance as the two terms are used interchangeably, indicating that tenacity is also a different construct than that of grit.

Self-Control

Next is the construct of self-control. Out of all of the constructs discussed, self-control is the closest to grit, yet it is still different. Duckworth and Gross addressed the similarities between the two. They state, “self-control and grit are sometimes used interchangeably.” However, despite overlap in key underlying psychological processes, self-control and grit are not identical.” They add that “self-control entails aligning actions with any valued goal despite momentarily more alluring alternatives; grit, in contrast, entails having and working assiduously toward a single challenging superordinate goal through thick and thin, on a timescale of years or even decades” (2014, p. 319). Through this, we conclude that while similar in many ways, self-control and grit are two distinct constructs, each with its own application and optimization.

Overall, it can be seen that most of the constructs share similarities, both with each other and with grit. It is concluded that even though there are similarities, each construct is separate from the others and especially from grit, and as such the study of each is worthy and has great potential to increase understanding in the field. However, because grit is a distinct characteristic that has only newly been discussed in relation to performance, it is important to examine this relationship more closely.

Grit, Entrepreneurial Performance, and Orientation to Happiness

Many scholars have argued persuasively that entrepreneurs have an identifiable personality, and that venture performance is more dependent upon the entrepreneur than upon any other factor (Sandberg, 1986; Herron & Robinson, 1993). They argue that venture capitalists, experienced and high-performing entrepreneurs, and prominent academic scholars are responsible for accelerating the development of entrepreneurship. Yet, in general, literature on the relationship between personality traits and job (entrepreneurial) performance is somewhat scattered, and the majority of these studies only find a weak link between traits and performance.

For example, some studies did find that some personality traits were valid predictors of certain job performance criteria. One such study was conducted by Barrick and Mount (1991) on the relationship between the Big Five personality traits and job performance. They found that:

results [indicating] that one dimension of personality, conscientiousness, showed consistent relations with all job performance criteria for all occupational groups. ... Extraversion was a valid predictor for two occupations involving social interaction, managers and sales (across criterion types). ... Openness to Experience and Extraversion were valid predictors of the training proficiency criterion (across occupations). Other personality dimensions were also found to be valid predictors of some occupations and some criterion types but the magnitude of the estimated true score correlations was small. (Barrick & Mount, 1991, p. 1)

Other research conducted specifically on the role of personality traits on entrepreneurial performance found that “conscientiousness, openness to experience, emotional stability, and extraversion are each positively related to entrepreneurial firm performance. The largest effect size is for openness ($\rho^{\wedge} = 0.21$), followed by conscientiousness ($\rho^{\wedge} = 0.19$) and emotional stability ($\rho^{\wedge} = 0.18$)” (Zhao, Seibert, & Lumpkin, 2010, p. 392). The same authors go on to state that the results of their meta-analysis of the literature on the relationship of personality to entrepreneurial intentions and performance “suggest that personality does play a role in the intention to become an entrepreneur and performance as an entrepreneur” (Zhao et al., 2010, p. 395), even with effect sizes that are on the smaller side.

With regards to research on grit and performance in particular, there have been few studies that make this direct connection. However, some indirect connections to grit are often intimated. For example, a review of literature on the determinants of high-performing entrepreneurs found that there is some evidence that tenacity and passion improve entrepreneurial

performance (Sorenson & Chang, 2006). Tenacity and passion are of course components of grit, but, without knowing exactly how these scholars define these terms, we cannot conclude a direct relationship between grit and performance.

Suzuki et al. argue that the lack of information on the relationship between grit and entrepreneurial performance is largely due to the fact that most studies have defined “performance” too narrowly. For example, in their pioneering work on grit, Duckworth et al. seem to have limited their exploration to “the association between grit and academic achievements such as educational attainment and grade point average (GPA). As for professional performance outcomes, they (only) analyzed associations between grit and retention rate in military schools or number of lifetime career changes” (Suzuki et al., 2015, p. 2). Therefore, in order to better understand grit’s relationship to performance, we must first explore how we measure performance.

Measurement of Performance

In order to better determine the relationship between grit and entrepreneurial performance², one needs to first understand what entrepreneurial performance is and how it is measured. What constitutes entrepreneurial performance (and by extension entrepreneurial failure) is hard to state specifically, as there is no consensus. As stated by Fisher et al., “Entrepreneurial success is a construct that lacks a clear definition, yet there is agreement that society benefits from successful entrepreneurship” (p. 478). The participants in the ongoing conversation on the subject seem to have views that are at least partially different depending on their perspectives. From those involved in the conversation we see such arguments as, “Entrepreneurial success is typically understood through the context in which it is found, and

² It should be noted here that in the literature, references to performance are made as “job performance” or “entrepreneurial performance” depending on the context. In this study, my main interest lies in entrepreneurial performance.

from the differing perspectives of the academic, the policy maker, the commentator and the entrepreneur” (Fisher et al., 2014, p. 487). But since “it can be argued that because society and scholarship agree entrepreneurial success exists, we should be able to capture and measure it, and therefore have a good understanding of it” (p. 479).

Extant literature on the subject of examining entrepreneurial performance contains many approaches and perspectives. Most commonly, these approaches have centered on the perspective of the venture. Three of these approaches have their roots in the literature of organization theory. The first is the *goal-based approach*, and it recommends that a venture be evaluated by the goals it sets for itself (Etzioni, 1964). The second is the *systems approach*, which considers the simultaneous achievement of multiple generic performance aspects. In doing so, the systems approach compensates for the shortcomings of the goal-based approach, which does not account for the fact that the goals of an organization might be varied and contradictory, making cross-firm comparisons difficult (Murphy, Trailer, & Hill, 1996). Finally, the *multiple constituency approach* addresses the fact that the various stakeholders of the organization might have different perspectives and expectations that are addressed by different performance measures (Thompson, 1967; Pennings & Goldman, 1977; Pfeffer & Salancik, 1978, Connolly, Conlon, & Deutsch, 1980).

Strategic management research integrated these three theoretical approaches into two performance classification categories: financial and operational (Venkataraman & Ramanujam, 1986). In other words, these two types of performance can be described together as “venture performance.” They represent what many consider an objective approach to measuring performance by focusing on the organizational level variables. Measurement in this approach is based on the objective outcomes of sales, profit, growth, and personal takeout.

But these approaches are by no means the only way to measure entrepreneurial performance; they are simply a view from the perspective of the venture. Another view makes the assessment from the perspective of the individual entrepreneur. The important difference here is that, while venture performance is measured through objective outcomes, an entrepreneur-centered approach accounts for differences in how individual entrepreneurs define entrepreneurial performance. Some scholars argue that this measurement approach is favorable to that of venture performance because it is less biased. For example, Fisher et al. (2010) posit, “understanding of the phenomenon (of entrepreneurial success) should be informed by practitioners (entrepreneurs) to avoid discrepancies between scholarly interest and entrepreneurial practice” (Fisher et al., 2010, p. 487).

In an attempt to codify an entrepreneur-centered approach to evaluating performance, Fisher et al. conducted a study, “Evaluating Entrepreneurs’ Perception of Performance: Development of a Measurement Scale.” The authors state as their purpose “to evaluate the insights of founding entrepreneurs to understand what they consider as indicators for achieving entrepreneurial performance.” (Fisher et al., 2014, p. 478). To achieve this purpose, the authors interviewed several entrepreneurs about what factors they believed contributed to their own performance. The results of these interviews indicated that there were four significant elements to their success (listed in order of importance): 1) They were personally satisfied with their life and business; 2) They do only that which they want to do in life and business; 3) They continually grow their business; and 4) They exceed the business goals they set out to achieve in founding at least one business. The results of the study suggest that an entrepreneur-centered measurement of performance reveals personal and business performance indicators, rather than only the business indicators of the venture-centered approach. In other words, this practitioner-centered approach allows for both subjective and objective measurements of performance.

Fisher et al.'s work is significant in part because it uncovers a new element in the study of performance—that of life satisfaction as a motivation to succeed. Caree and Verheul touched upon this concept in 2011, when they studied entrepreneurial satisfaction levels by measuring income, psychological well-being, and leisure time. More recent research has embraced and built upon the idea of using subjective measures, assuming an existing relationship between life satisfaction and entrepreneurial success (Przepiorka, 2016).

To better understand this motivation, a review of the literature on motivations that lead to performance as well as what constitutes life satisfaction will now be examined. Since it has been shown that grit alone is not a sole predictor of performance, a better understanding of motivations that have been proven to lead to higher performance may lend insight into which qualities account for this variability. Further, discussion of the relationship between grit and these motivations could shed some light on how grit is indirectly—though significantly—linked to performance.

Motivation and Performance

Entrepreneurship, like all other human pursuits, does not happen in a vacuum, and people do not become entrepreneurs for the sake of entrepreneurship—they are motivated to pursue the entrepreneurial path. Extant literature shows that motivation is a mediator of the relationship between traits and job performance (Herron & Robinson, 1993). Therefore, the motivations of entrepreneurs, as varied as they may be, should be considered in any serious exploration of the entrepreneurial process.

Scholars have examined many motivations in relationship to their effect on entrepreneurial performance. Common examples of these motivations include: need for achievement; tolerance for ambiguity and risk; locus of control; and desire for independence, passion, and drive. Indeed, many of these motivations are linked to the desire and likelihood to

pursue entrepreneurial employment. For example, McClelland (1961) found that individuals with a high need for achievement are more likely to pursue entrepreneurial jobs than other types of roles. Further, the motivations of need for achievement, tolerance for risk, locus of control, and independence were all found to be greater among entrepreneurs than for the general population (Collins et al., 2000; Fry, 1993; Rotter, 1996; Aldridge, 1997). Results of research on tolerance for ambiguity, however, were not as closely tied to entrepreneurial pursuits as those of other motivations (Shane et al., 2003).

While these findings do offer some clues about which motivations lead to entrepreneurial *pursuit* (i.e., whether one will choose to go into the field of entrepreneurship), they tell us little about the prediction of entrepreneurial *performance* (whether they will have success as an entrepreneur). Just because these motivations are found to be more common among entrepreneurs than the average person does not necessarily mean that they lead to entrepreneurial success. These motivations are not always positively correlated to high achievement; they have varying levels of correlation with the desire and likelihood to pursue entrepreneurial opportunities. Since it is expected that these different motivations will lead to different outcomes, we cannot rely on any one of them as a predictor of performance.

One motivation that has been found to be a universal predictor of performance both within the entrepreneurial community as well as the general population is happiness. The centrality of happiness as the universal motivation of humankind is evident in the histories of both philosophy and psychology. For example, Waterman, Schwartz, and Conti note in their 2008 study on happiness “within ethical philosophy, happiness has long been proposed as the ultimate goal of human functioning” (p. 42). In relation to performance, happiness motivation works in two ways: People perform well because they are happy, and they are happy because they perform well.

The motivation of happiness is of particular significance to this study and the field of entrepreneurship because of its relationship to life satisfaction. This is important because life satisfaction is the driver of most entrepreneurial pursuits (Peterson et al., 2005) and, as Fisher et al.'s (2014) practitioner-centered measurement of performance exemplified, life satisfaction is a leading predictor of entrepreneurial success (Fisher et al., 2014). Thus, if happiness is linked to life satisfaction, and life satisfaction is a leading predictor of entrepreneurial performance, then it stands to reason that traits that are related to happiness are also related to life satisfaction and, consequently, to performance.

Peterson, Park, and Seligman (2005) did discover a direct relationship between happiness and life satisfaction. These authors measured life satisfaction through three orientations to happiness: pleasure, engagement, and meaning. Hedonism, or the pursuit of happiness through pleasure, holds that man's fundamental moral obligation is to maximize his experience of pleasure and minimize that of pain (Huta et al., 2006). By contrast, eudemonia recognizes the pursuit of happiness through meaning. Aristotle (trans. 2000) holds that this can be achieved through identifying one's virtues, and then cultivating them and living by them. Those who pursue this route find happiness through activities that serve a higher purpose and benefit others. The final route to happiness is that of engagement. It is "the psychological state that accompanies highly engaging activities. Time passes quickly. Attention is focused on the activity. The sense of self is lost. The aftermath of the flow is invigorating" (Peterson et al., 2005, p. 27). As the authors concluded, each of these orientations to happiness predicted life satisfaction, though the avenue through which they did so differed for each orientation.

The examination of different orientations to happiness is particularly relevant to this study because, though scholars have not examined the direct relationship between grit and life satisfaction, they have discovered a relationship between grit and orientations to happiness. For example, Von Culin et al. (2014) found, using a U.S. general population sample, that the pursuit

of happiness through meaning and through engagement were positively associated with grit. They also found that the pursuit of happiness through pleasure was negatively associated with grit.

A replication of the same study conducted by Suzuki et al. (2015) in Japan found similar results. These researchers explored grit, work engagement, and orientation to happiness by partially replicating the previously referenced Duckworth et al. study using a large number of working adults. The associations between grit and the three different orientations to happiness discovered in the U.S. study also were shown in the Japanese study, thus establishing geographical generalizability. However, in contrast to the U.S. study, which found orientation to happiness through engagement had the strongest association with grit, Suzuki et al. found that people who seek happiness through engagement *and* meaning are likely to feel engaged with their work (2015).

Literature Review Summary

This literature review lays the theoretical groundwork to examine the relationships among grit, orientation to happiness, and entrepreneurial performance. It also demonstrates that current knowledge on the subject of grit, while advancing especially in recent years, still has room for improvement. Through the research that has been done, we know that relationships between grit, orientation to happiness, and entrepreneurial performance are present and measurable. However, since orientation to happiness has never been used to examine entrepreneurial performance in particular, this relationship requires further development, which indicates the need for this study.

Review of literature on measurements of performance, motivation, orientation to happiness, and life satisfaction revealed several significant findings that shed light on the main question of this study: What role does grit play in the prediction of entrepreneurial performance?

For example, a practitioner-centered measurement of entrepreneurial performance allowed for the examination of a more subjective motivation for entrepreneurial performance: life satisfaction. Though a direct correlation between grit and life satisfaction was not evident in the research, the motivation of life satisfaction did lead to a more indirect relationship between grit and performance via orientation to happiness. In other words, because of its relationship to life satisfaction (and the fact that this motivation has been directly linked to entrepreneurial performance), orientation to happiness provides an avenue by which we can better evaluate how constructs like grit are related to performance.

Based on this review, the following section will lay out several hypotheses for studying the relationship between grit and performance. To do so, I will use a four-part model that illustrates the relationships among grit, orientation to happiness, entrepreneurial performance, and human capital. These hypotheses will then be tested against an independent study of data collected from various venture founders to reveal more information about whether grit is indeed a significant factor of entrepreneurial performance.

CHAPTER III

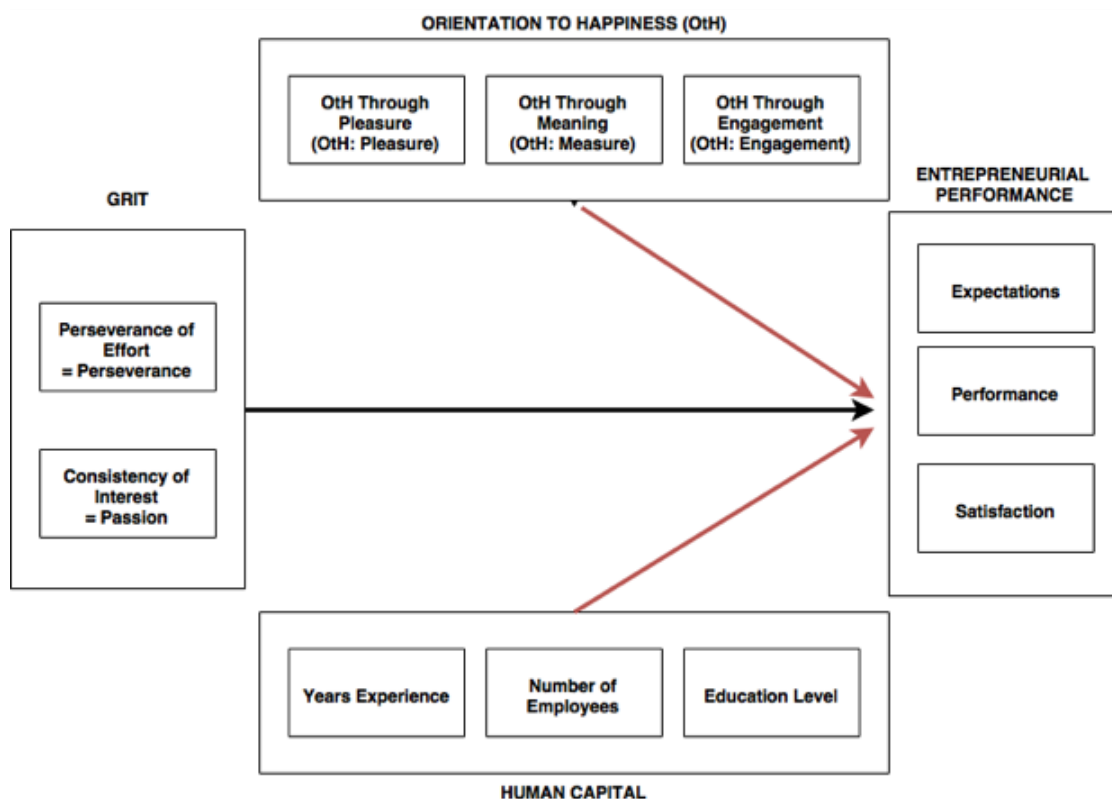
THEORETICAL INTEGRATION AND HYPOTHESES

The literature review related to grit as well as to orientation to happiness and entrepreneurial performance provides the background on the development of the existing relationships between these items and lays the foundation for specific integration of theory with the hypotheses. These hypotheses will be discussed within the framework of model shown in Figure 1 that examines the direct relationships among grit, orientation to happiness, and entrepreneurial performance, while accounting for human capital. If the results of the analysis show no evidence of a relationship between grit and orientation to happiness, or no relationship between grit and performance that is affected by orientation to happiness, then the discussion will be migrated to the model shown in Figure 2. This model is more detailed and examines which particular aspects *within* each of these measurements account for high performance among entrepreneurs. The four main measurements include: 1) orientation to happiness through pleasure, meaning, and engagement; 2) grit, as measured by passion and perseverance; 3) entrepreneurial performance, through venture performance, satisfaction, and expectations; and 4) human capital. While the first three measurements have been discussed in detail in the literature review, greater understanding of human capital and how it relates to this equation is needed.

Ability and Human Capital

It is important to examine the influence of managerial ability on organizational performance. This can be addressed within the framework of the resource-based view of the firm. Scholars have stressed the importance of managers to the resource-based view. Barney (1991) reasoned that a manager's ability to understand and effectively use firm resources is itself a valuable resource that "has the potential for generating sustained competitive advantages" for a firm (Barney, 1991, p. 117). The impact of entrepreneurs on the competitiveness of their venture is even more pronounced. Entrepreneurs' ability as a complex mixture of talent, skill, experience, ingenuity, leadership, etc., is crucial for the survival and performance of the venture.

Figure 2: Orientation to Happiness (OtH)



Maier (1965, p. 286) suggested that abilities come in two forms: the form to which he refers as “aptitudes,” which are innate, and “achievements,” which can be acquired through learning, practice, and training. He proposes the following formulation:

$$\text{Achievement} = \text{Aptitude (X) Training}$$

Other scholars talked about “skills” as a less ambiguous designation of what “abilities” refer to (Katz, 1974; Szilagyi & Schweiger, 1984). Skills are the ready abilities that entrepreneurs bring to a situation at any time (Herron & Robinson, 1993). Skills come from two sources: innate natural aptitudes like differential intelligence, and acquired training and practice.

The extant literature on the role of intelligence is vast and mostly outside the scope of this research. But it should be mentioned that beyond general intelligence (measured by traditional IQ tests), researchers have identified several other more specific types of intelligence and explored their associations with personal performance. These include emotional intelligence (Law, Wong, & Song, 2004; Mayer, DiPaolo, & Salovey, 1990), social intelligence (Baron & Markman, 2003), and successful intelligence (a composite of creative, analytical, and practical intelligence; Sternberg, 2003).

But since a complete exploration of the role of intelligence and its various forms in entrepreneurial performance is beyond the scope of the present study, I limit the inquiry to the aspects of ability that are acquired through education, training, and experience (Serneels, 2008), or what I will now refer to as human capital. Human capital is “not only the result of formal education, but includes experience and practical learning that takes place on the job, as well as non-formal education, such as specific training courses that are not a part of traditional formal educational structures” (Davidsson & Honig, 2003, p. 306). Research has established the existence of a positive overall relationship between human capital and entrepreneurial performance (Unger, Rauch, Frese, & Rosenbusch, 2011). These acquired abilities moderate the

relationship between traits and job performance. Human capital as defined above is the proxy for these abilities.

Hypotheses

As the literature review revealed, grit is likely not directly related to entrepreneurial performance, but it may have an indirect effect via other motivations that have been proven to lead to performance. Therefore, in order to examine the relationship between grit and performance, we must first find a correlation between grit and a motivation that has been directly linked to entrepreneurial performance. For the purpose of this study, the motivation of life satisfaction was chosen, particularly because it is an example of self-identified motivation among entrepreneurs (Fisher et al., 2015).

Though research on the direct relationship between grit and life satisfaction was not found, several studies (Von Culin et al., 2014; Suzuki et al., 2015) have shown that grit is associated to orientation to happiness. This is significant because, as Peterson, Park, and Seligman (2005) found, orientation to happiness leads to life satisfaction through pleasure, meaning, and engagement. Thus, in order to examine grit's relationship to performance, it must first be established that a relationship between grit and orientation to happiness exists. Herein lies my first hypothesis:

Hypothesis 1: Grit, through passion and perseverance, is associated with orientation to happiness.

However, it is expected that different motivations for happiness will lead to different performance outcomes. For instance, when considering an orientation to happiness through engagement, it is expected that those who are truly able to engage in their ventures will develop greater abilities leading to higher performance levels, whereas those who seek happiness through meaning may find high performance in different ways. Incorporating these thoughts, the

straightforward conclusion is that the three different orientations (pleasure, meaning, and engagement) would be differentially related to grit and entrepreneurial performance.

Returning to the argument that those who seek pleasure are less willing to persevere through struggles, it is expected that their overall performance will be lower due to an unwillingness to work through challenges. Those who find happiness through pleasure will be less likely to achieve high performance if they cannot persevere through difficulties that arise in entrepreneurial ventures. As mentioned previously, it is expected that individuals seeking pleasure, which is generally achieved quickly, will have lower levels of perseverance. As such, an orientation to happiness through pleasure would be negatively associated with grit. Therefore, I present the following subsequent hypothesis:

Hypothesis 1a: Grit is negatively associated with orientation to happiness through pleasure.

Next, we must consider grit's relationship to orientation to happiness through meaning. Happiness through meaning requires dedication and a willingness to improve. A desire to improve will lead to a willingness to sacrifice, but more specifically, to endure and persevere through challenges. In this circumstance, it may be that an orientation to happiness through meaning develops higher levels of grit in an individual. Further, both Von Culin et al. (2014) and Suzuki et al. (2015) found a strong correlation between grit and orientation to happiness through meaning. Therefore, the second subsequent hypothesis is assumed to be true:

Hypothesis 1b: Grit is positively associated with orientation to happiness through meaning.

As high levels of consistency and perseverance are the basis for the construct of grit, those individuals who find happiness through engagement are expected to have high levels of

grit. Further, as evidenced in Duckworth et al.'s (2015) study, orientation to happiness through engagements had the strongest association to grit. As such, I present my next hypothesis:

Hypothesis 1c: Grit is positively associated with orientation to happiness through engagement.

If Hypothesis 1 is true, and grit is associated to orientation to happiness, then the next logical step in analyzing grit's relationship to entrepreneurial performance is to prove that orientation to happiness is indeed related to entrepreneurial performance. It stands to reason that if grit is related to orientation to happiness and orientation to happiness is related to entrepreneurial performance, then grit, though indirectly, may be related to performance. Therefore, my second hypotheses is:

Hypothesis 2: Orientation to happiness is associated with entrepreneurial performance.

However, as with Hypothesis 1, the three orientations to happiness (pleasure, meaning, and engagement) may produce different outcomes as it relates to their association with the three measurements of performance (entrepreneurial satisfaction, satisfaction, and venture performance). Therefore, each of these relationships must be examined separately.

Following the same logic as Hypothesis 1, we will assume that orientation to happiness through pleasure will have a negative association with performance due to the greedy nature of pleasure. Thus:

Hypothesis 2a: Orientation to happiness through pleasure is negatively associated with entrepreneurial performance.

In order to test this negative association of orientation to happiness through pleasure on entrepreneurial performance, we must examine each of the three components of performance on their own. For Hypothesis 2a to be true, this negative association must be true for each of

measurement within entrepreneurial performance; if even one of these is not proven to have a negative association, then we cannot say definitively that orientation to happiness through pleasure is negatively associated to performance.

As Peterson, Park, and Seligman (2005) found, orientation to happiness is related to life satisfaction. However, each orientation to happiness will have a unique impact on this satisfaction. For this purpose of this study, life satisfaction is synonymous with entrepreneurial satisfaction, given that the subjects in question are themselves entrepreneurs. It stands to reason that those who are motivated to pursue entrepreneurship through pleasure will be less satisfied with their work. Therefore, the following subsequent hypothesis must hold true:

Hypothesis 2a.1: Orientation to happiness through pleasure is negatively associated with entrepreneurial satisfaction.

Though not specifically examined in this study, it stands to reason that, if happiness through pleasure has a negative effect on subjective measurements of entrepreneurial performance such as entrepreneurial satisfaction, it would also have a negative effect on more objective measurements, such as expectations and venture performance. Therefore, the following two subsequent hypotheses are proposed:

Hypothesis 2a.2: Orientation to happiness through pleasure is negatively associated with entrepreneurial expectations.

Hypothesis 2a.3: Orientation to happiness through pleasure is negatively associated with venture performance.

As opposed to being motivated by more selfish pursuits, it is expected that those who find meaning in their work are more likely to perform well. Therefore, the next assumption that needs to be examined is:

Hypothesis 2b: Orientation to happiness through meaning is positively associated with entrepreneurial performance.

As with Hypothesis 2a, Hypothesis 2b must also be examined through each measurement of performance specifically. Going back to Peterson et al.'s (2005) conclusion that life satisfaction is the driver of most entrepreneurial pursuits and Fisher et al.'s (2014) findings that life satisfaction is a leading predictor of entrepreneurial success, it is logical to posit that those who find meaning in their work will be more satisfied. This assumption is the basis for the following subsequent hypothesis:

Hypothesis 2b.1: Orientation to happiness through meaning is positively associated with entrepreneurial satisfaction.

The same logic can be applied to more objective measures of performance, such as entrepreneurial expectations and venture performance. We can expect that, when one finds meaning in their work, this meaning will translate to positive outcomes not only in their personal satisfaction, but also in the venture at large. Therefore, for the purpose of testing this theory, the following two hypotheses will be assumed to be true:

Hypothesis 2b.2: Orientation to happiness through meaning is positively associated with entrepreneurial expectations.

Hypothesis 2b.3: Orientation to happiness through meaning is positively associated with venture performance.

Finally, since work engagement is predictive of job performance (Tsuno et al., 2009), it is expected that an orientation to happiness through engagement will lead to better work performance. Herein lies the basis for my next hypothesis:

Hypothesis 2c: Orientation to happiness through engagement is positively associated with entrepreneurial performance.

Even though job performance and entrepreneurial performance are not the same, I would expect entrepreneurs to possibly show even more engagement than non-entrepreneurs due to the nature of their ventures, and that this will lead to a better entrepreneurial performance (Gorgievski, Moriano, & Bakker, 2014). In particular, I would expect that entrepreneurs who seek happiness through engagement will be more satisfied with their work. Therefore, it is assumed that:

Hypothesis 2c.1: Orientation to happiness through engagement is positively associated with entrepreneurial satisfaction.

Though not specifically examined in this study, it stands to reason that, if happiness through engagement has a positive effect on subjective measurements of entrepreneurial performance such as entrepreneurial satisfaction, it would also have a positive effect on more objective measurements, such as expectations and venture performance. Therefore, the following two subsequent hypotheses are proposed:

Hypothesis 2c.2: Orientation to happiness through engagement is positively associated with entrepreneurial expectations.

Hypothesis 2c.3: Orientation to happiness through engagement is positively associated with venture performance.

Entrepreneurial performance in nearly all cases requires passion and perseverance to achieve positive outcomes. Few things in life come easily. As shown in the literature review, tenacity and passion are positively correlated with entrepreneurial performance (Sorenson & Chang, 2006). Therefore, though existing studies have not shown a direct link between grit and

entrepreneurial performance, we know that grit is a factor of entrepreneurial performance.

Further, if Hypothesis 1 is true, and grit is related to orientation to happiness, and Hypothesis 2 holds true that orientation to happiness is related to entrepreneurial performance, then it stands to reason that grit, though indirectly, is related to performance. Herein lies the basis for the third and final hypothesis:

Hypothesis 3: Grit is positively associated with entrepreneurial performance.

Again, for this hypothesis to be truly tested, we must examine grit against the three measurements of entrepreneurial performance: entrepreneurial satisfaction, expectations, and venture performance. As identified by Fisher (2014), the most significant factors of entrepreneur satisfaction were, in order: “I am personally satisfied with my life and business,” “I do only that which I want to do in life and business,” “I continually grow my business,” and “I exceed the business goals I set out to achieve in founding at least one business.” As such, entrepreneurial satisfaction is perhaps as important as any objective measure of performance and is likely to be influenced by personality traits such as grit in similar ways. Therefore, I put forward:

Hypothesis 3a: Grit is positively associated with entrepreneurial satisfaction.

Though grit may be most closely related to entrepreneurial performance by way of the subjective measurement of satisfaction, it also is assumed to have a positive correlation to more objective measures such as entrepreneurial expectations and venture performance, as evidenced by the third and fourth factors described in Fisher et al.’s study that relate to business growth and goals. Therefore, the following two subsequent hypotheses are assumed to be true:

Hypothesis 3b: Grit is positively related to expectations.

Hypothesis 3c: Grit is positively related to venture performance.

As mentioned previously, it has been found that grit also affects many items, including educational attainment. As such, the effect of human capital must be accounted for in these models in order to better understand the true nature of the items of focus. In particular, the entrepreneurs' years of experience, number of employees, and education level will be considered.

CHAPTER IV

METHODOLOGY

To test the hypotheses laid out in the previous chapter, data from surveys given to venture founders was analyzed with the hope of adding new knowledge about the relationship between grit, orientation to happiness, and entrepreneurial performance. Surveying a sample of founders whose objective performance is the same, due to the nature of their co-venture, allowed for further determination of differences found among these leaders and sheds new light on which factors are most important to predicting variability of performance among entrepreneurs. This chapter describes the methods that were used to test the hypotheses through this survey.

Previously validated measures were used for the constructs in the study. A survey designed and hosted on an online survey platform was used to collect data from a wide variety of venture cofounders in an effort to obtain an unbiased estimate of the entrepreneurial population. Follow-up was performed in order to obtain responses from the largest possible subset of those to whom the survey was extended. Once the surveys were completed, data was aggregated and checked for missing values. Then multiple regressions were performed to analyze the data and test the hypotheses against the study's overall model.

Participants

The study sample is comprised of entrepreneurs who are currently running a business as their full-time effort and/or have started and operated a business full time in the past five years. They represent a variety of entrepreneurs from around the United States in several different industries, including software, franchising, real estate, manufacturing, consulting, and retail. Survey participants vary in education levels, income levels, gender, and age. The group consisted of 7.2% female and 92.8% male respondents. They ranged in age from under 20 to over 56. The ethnicity of the respondents was not gathered. The highest level of education completed by the respondents was as follows: 1.2% some high school, 17.3% high school, 1.2% some college, 4.8% associate's degree, 40.6% bachelor's degree, 28.1% master's degree, and 2.4% doctoral degree. All the survey respondents were cofounders of their current venture. Participants in the survey consisted of personal acquaintances as well as additional cofounder entrepreneurs obtained through anonymous survey links from Qualtrics.

The survey invitation was extended to approximately 1,400 potential respondents. The links are anonymous for every participant. This allows for separation of the data to analyze any biases or other results that might prove to be unique within the different contact contexts. The invitation to participate asked for current full-time entrepreneurs (defined as 40 hours a week or more of their time spent on their venture) and entrepreneurs that worked full time on a venture within the past five years to take the anonymous survey. The link was provided via email to direct invites to the author's personal entrepreneurial contacts as well as posted in entrepreneurship-related groups on LinkedIn (this was the group of participants unknown to the author).

Two hundred fifty-two surveys were initiated. Once a potential participant clicked on the link, the initial questions in the survey screened participants so that only venture founders were able to complete the survey. In total, 167 entrepreneurs who matched the study criteria

completed the surveys, indicating a response rate of 66.3%. This rate was lower than hoped, leading to a smaller sample size than would be optimal for significant conclusions.

Measures

The measurements in this study are grit, performance, orientation to happiness, human capital, and demographics, with grit and orientation to happiness being considered as independent variables, performance as a dependent variable, with human capital and demographics as control variables. Please see the appendices for complete scales of the measures listed in this section.

Grit

In this study, grit was measured in the survey by the scale developed by Duckworth et al. (2007) mentioned previously. This scale is divided into two subscales measuring perseverance and consistency. To gain an overall score, each of the six responses within a subscale will be averaged to get an overall subscale result. These two results will be averaged to get an overall grit score. This methodology allows for situations where some participants do not answer all six responses within each subscale by still utilizing responses that are available.

Because passion and perseverance are the two main components of grit, these, too, must be considered here. As review of the literature on passion revealed, passion is a “critical ingredient in an entrepreneur’s performance in achieving challenging goals” (Cardon et al., 2009, p. 528). The character strength of perseverance was seen to be the “most highly associated with work performance (Littman-Ovadia & Lavy, 2016, p. 240). However, when brought together simultaneously, passion and perseverance generate an outcome that is different from that generated by each part separately. Therefore, grit adds a key ingredient here in that it is the application of both passion and perseverance.

The responses to each of the 12 questions in the long-version grit scale lie on a five-option scale ranging from “Very much like me” to “Not at all like me,” where each response is given a numeric value of 1 through 5. This scale allows the participants to choose from a range of options regarding how they identify themselves in relation to the characteristics that define

grit. Because this scale is framed from the personal perspective of the practitioner, they are able to relate to the questions more intimately, which may further engage them and produce a more accurate answer. However, scales of this nature do have their shortcomings because they allow for a wider interpretation of the results and could therefore over- or underemphasize the data collected.

Orientation to Happiness

Orientation to happiness will be measured in the study by 18 questions. Six questions are used to measure each of the orientations discussed (pleasure, engagement, and meaning). As being oriented toward one does not negate the possibility of also being highly oriented toward another, the three orientations will be included and analyzed separately where appropriate. Each of the 18 questions are on a five-option scale, with responses ranging from “Very much like me” to “Not at all like me,” and each response given a value from 1 to 5. The six scores gathered for a specific orientation will then be averaged for an overall score for that specific orientation.

Performance

The measurements of success include elements such as entrepreneurial performance, venture performance, and entrepreneurial satisfaction, as well as four questions representing the four factors of self-reported entrepreneurial success developed by Fisher et al. (2014): “I am personally satisfied with my life and business”; “I do only that which I want to do in life and business”; “I continually grow my business”; and “I exceed the business goals I set out to achieve in founding at least one business.”

These questions are designed to measure performance from different angles, especially focusing on objective success as well as subjective success tied to satisfaction. Objective measurements include numeric measurements of income and market share, where both a baseline and a more current measurement are taken. These two measurements allow for variation in order to analyze the potential impact of grit on an entrepreneur’s ability to grow a venture. The subjective measurements, on the other hand, are beneficial because they allow the participant to think outside

of the box. As review of the literature revealed, it is these subjective measurements that often permit a wider definition of performance by which we are able to identify more possibilities. Therefore, both objective and subjective measures are needed to achieve the most comprehensive measurement of performance.

Control Variables

Due to potential confounding or influencing aspects of other variables on the outcomes, orientation to happiness and human capital measurements are taken and used as controls in the study. A description of how these control variables are measured follows.

Human Capital

The entrepreneur's general experience (i.e., the number of years he or she has been an entrepreneur), the entrepreneur's experience managing employees in his or her current venture (i.e., the number of years since the founding of the current venture), and the entrepreneur's highest level of education completed, called throughout by the title human capital, have been controlled for in this study.

Demographic Information

Demographic information such as age and gender has been collected largely for descriptive purposes for this study.

CHAPTER V

RESULTS

The main purpose of this survey was to test the relationship between grit and entrepreneurial performance among venture cofounders. Different measurements of performance were collected in the survey. Each of these individual measurements was modeled against grit while controlling for orientation to happiness and human capital measurements. Similar measurements of success were averaged for an overall measurement that was then analyzed in order to determine more general relationships. Table 1 presents descriptive statistics and correlations of the variables used in the study.

Construct Reliability

Cronbach's Alphas were calculated to determine the reliability of the measurements that were taken. From the measurements, it can be seen that the constructs are reliable. See Table 4 for the exact results.

Testing the Hypothesized Models

Path analysis was performed to test the relationships among grit, OtH, and performance. The first step in the path analysis was to test Model 1, which included a direct path between grit and performance without accounting for the other variables of orientation to happiness and human capital. Though no research thus far has proven to show this direct relationship, this study provided an opportunity to test the relationship once again. However, no item was significant at

the $p = 0.05$ level, though some are moderately insignificant ($P < 0.10$), which showed that no direct relationships between grit and the performance measures was seen. Therefore, Model 2 was chosen as an optimal model for this study, as the path outlined in Model 1 does not allow for an indirect relationship between grit and performance to be tested.

Once Model 2 was chosen as the optimal model for testing these relationships, multiple linear regressions were performed, modeling grit and each control factor against the different performance measures in order to determine the effect of grit after accounting for the control variables. The results, categorized by grit and expectations, grit and performance, grit and satisfaction, and control factors, are outlined below. For each, the coefficient of grit in the model, as well as an indication of significance is reported. Table 3 describes the overall results of the analysis.

Grit and Orientation to Happiness

As was discussed in the hypotheses, the first relationship that needed to be examined for testing grit's relationship to entrepreneurial performance was between grit and orientation to happiness. This is because, though no direct relationship between grit and performance has been found, orientation to happiness, particularly as it relates to life satisfaction, has been proven as a motivation to perform well. As previously discussed, grit was measured through three orientations to happiness: through pleasure, through meaning, and through engagement.

Looking at the path analysis, an association between grit and orientation to happiness was indeed found. As expected, the association between OtH through meaning (0.1759, $P < 0.05$) and OtH through engagement (0.2503, $P < 0.01$) were both positive. Also as was expected, OtH through pleasure was negatively associated with grit (-0.0486). This coefficient is rather small, and did not reach significance ($p\text{-value} > 0.10$), so it appears that while any relationship would be negative, that such a relationship is unlikely to exist. These findings confirm Hypothesis 1 (grit,

through passion and perseverance, is associated with orientation to happiness). Though not all positively correlated to happiness, each of these OtH measurements is affected by grit (whether positively or negatively), indicating that this hypothesis is indeed true in this case.

Orientation to Happiness and Entrepreneurial Performance

Following the first hypothesis, that grit is associated to orientation to happiness, analysis path analysis was continued to determine the potential relationships involving the different orientations to happiness and each of the entrepreneurial performance measures. The results of this analysis are also shown in Table 2. Nine analyses were conducted, with human capital being included as a control in the models. In particular, we examined: 1) orientation to happiness through pleasure has a negative association with entrepreneurial satisfaction, expectations and venture performance; 2) orientation to happiness through meaning has a positive association with entrepreneurial satisfaction, expectations and venture performance; and 3) orientation to happiness through engagement has a positive association with entrepreneurial satisfaction, expectations and venture performance. After it was determined that Model 1 is not sufficient, Model 2 was used. Results from both are discussed here. It should be noted that for the Model 2 results, all three OtH were included in the model, and thus relationships described are while accounting for other orientations.

No evidence of a relationship was found between any OtH and any measure of entrepreneurial performance. As a confirmatory and another approach, we look at Model 2. As was hypothesized, a positive relationship was seen between entrepreneurial performance as measured by expectations and OtH through both meaning (.054) and engagement (0.128), while a negative relationship was seen when considering OtH through pleasure (-0.069). While the sign of the coefficients was expected, these did not reach significance, and thus indicate that any relationships, while in the direction hypothesized, are unlikely to exist.

With regards to entrepreneurial performance as measured by satisfaction and performance measurements, interesting results were found. Positive coefficients were found for OtH through meaning (0.116, .177) and pleasure (.075, 0.002). The coefficient between OtH through meaning and performance was significant at the $\alpha = 0.10$ level, but no other relationship reached any level of significance. The coefficients of OtH through engagement were both negative (-0.092 and -0.043), but were non-significant. Thus, there is some evidence of Hypothesis 2 (orientation to happiness is associated with entrepreneurial performance) but perhaps not entirely as expected.

Grit and Entrepreneurial Performance

With the first two hypotheses tested, the third and final hypothesis related to the relationship between grit and performance was examined. The results of this testing are laid out within each of the three measurements of performance below.

Grit and Expectations

Expectations were measured in terms of sales and profits. Each question asked how the respective measure of performance related to the entrepreneur's expectations, with higher responses denoting a more positive outcome in regards to expectations. The two responses were averaged for an overall measurement of expectations that was then modeled by grit and the control variables.

The coefficient between grit and the combined expectation score was 0.127 (*p-value* > 0.10). The coefficient between sales expectation specifically and grit was 0.128 (*p-value* > 0.10). Similarly, the coefficient between grit and profit expectations was 0.125 (*p-value* > 0.10). Though none of these were significant, the positive value of each coefficient indicates that any potential relationship between grit and expectations would be positive.

Grit and Performance

These performance-specific measurements were measured in terms of values associated with the business, measured on different point scales, where higher values indicated more success, either through larger dollar amounts or market share values. These values were then averaged for a combined performance measure.

The coefficient between grit and the combined performance score was 0.177 (*p-value* > 0.10). The component dealing specifically with performance resulted in a coefficient of 0.209 (*p-value* > 0.10). Similarly, nearly all components resulted in a positive, but non-significant coefficient (cash flow with 0.095, market share with 0.261, sales growth with 0.302, sales amount with 0.178, net worth after the first year with 0.148 and current net worth with 0.410). Though none of these reached significance, similar to the expectation measurements, the positive coefficients indicate that any potential relationship would be expected to be positive.

Table 1: Means, Standard Deviations, and Correlations

Variable	Me an	SD	1	2	3	4	5	6	7	8	9	10
1. Years Exp.	4.9 59	1.0 43	1.00 0									
2. Employees	1.9 71	1.3 36	0.14 8 ^	1.00 0								
3. Education Level	5.8 38	1.6 4	0.15 0 ^	0.04 9	1.000							
4. OTH: Meaning	4.3 96	0.6 18	- 0.04 3	- 0.00 5	- 0.038	1.00 0						
5. OTH: Engage	3.6 58	0.5 43	- 0.10 7	0.03 8	- 0.023	0.40 0 **	1.00 0					
6. OTH: Pleasure	3.1 13	0.7 52	- 0.05 6	0.01 1	- 0.251 **	0.12 4 ^	0.22 6 **	1.0 00				
7. Grit	3.6 42	0.5 14	0.17 7 *	0.12 9 ^	0.05	0.11	0.21 7 **	- 0.0 50	1.00 0			
8. Expectatio ns	1.8 74	0.6 79	0.16 8 *	0.22 2 **	0.006	0.09	0.11	- 0.0 56	0.17 5 *	1.00 0		
9. Performan ce	3.9 23	1.3 92	0.16 3 *	0.60 6 **	- 0.039	0.11	0.08 6	0.0 2	0.15 4 *	0.51 7 **	1.00 0	
10. Satisfaction	3.3 22	0.9 02	0.18 5 *	0.33 **	0.068	0.06 3	0.00 6	0.0 39	0.11 3	0.68 9 **	0.58 9 **	1.0 00

† p < 0.10

* p < 0.05

** p < 0.01

Profit growth, however, resulted in a coefficient of only 0.035, which was the smallest of all the positive measured relationships. Though non-significant as well, this being noticeably smaller than any other result would suggest that a relationship between profit growth and grit is unlikely to exist.

Interestingly, the regression with yearly profits resulted in a coefficient for grit of -0.208. Again, this did not reach significance, but the negative value of the coefficient suggests that if any relationship exists between yearly profits and grit, it would be negative. This seems a bit odd based on the other results and will be looked into further.

Table 2: Results of Hypotheses Testing Using Path Analysis

OtH Measurement	Grit and OtH	Entrepreneurial Performance	Grit and Performance	Indirect	Direct	Total
Engagement	0.2503 **	Satisfaction	0.1077	-0.0046	0.1077	0.1030
		Expectations	0.1383	0.0327	0.1383	0.1710 †
		Performance	0.1953	0.0182	0.1953	0.2135
Meaning	0.1759 *	Satisfaction	0.0841	0.0168	0.0841	0.1008
		Expectations	0.1576	0.0152	0.1576	0.1729 †
		Performance	0.1674	0.0436	0.1674	0.2110
Pleasure	- 0.0486	Satisfaction	0.1047	-0.0034	0.1047	0.1012
		Expectations	0.1731 †	0.0022	0.1731 †	0.1753 †
		Performance	0.2159	-0.0008	0.2159	0.2151

Grit and Satisfaction

Satisfaction was measured by scaled responses from the entrepreneurs in regards to their satisfaction toward their ventures' performance in several measurements. In addition, the question as to whether an entrepreneur would do the venture all over again, or if changes would be made, also was asked. Together, these measurements were averaged for an overall satisfaction score.

The coefficient between grit and the combined satisfaction was 0.108 (*p-value* > 0.10). Similarly, willingness to redo the venture (0.156), yearly earnings (0.118), and net worth (0.202) all were positive relationships that did not reach significant (*p-value* > 0.10). Though these did not

reach significance, the positive value of the coefficients indicates that any potential relationship between these satisfaction measurements and grit would be positive.

Noticeably, the coefficients for both cash flow (0.033) and market share (0.030) were positive, but of a much smaller magnitude than the other satisfaction measurements. With the small magnitude of the coefficient and the non-significant result, it seems unlikely that any relationship between these measurements of entrepreneurial satisfaction and grit exists.

Other Control Factors

Within each model, measurements of human capital were included to control for additional variability that may be related to grit, but is not directly associated with it. These values include total years of experience, the number of employees, and their education level. These measurements were included in the models, and thus the overall impact with and without grit can be seen. In order to understand their impact on the model, the correlations between these measurements and grit were measured (Table 1).

It was found that the correlation between grit and experience measured 0.177. This was found to be significant ($p\text{-value} < 0.05$). Thus, it can be seen that grit and years of experience are positively associated. Those with more grit are more likely to stick with their companies, which leads to more experience. The number of employees was positively correlated with grit (0.129), but this relationship was found to be marginally non-significant ($p\text{-value} < 0.10$). We would expect this relationship to be significant with a larger sample size. Finally, education was found to have a positive (0.050), yet non-significant ($p\text{-value} > 0.10$) correlation with grit. Thus, it appears to be the best variable for controlling for unaccounted variance in the model.

Analysis of Results

The results of this study illuminate several significant findings in the relationship between grit and entrepreneurial performance. Following the path of the full model (Model 1), it was shown that no item was significant, indicating that a direct relationship between grit and

performance is not evident. Thus, Model 2 was chosen as an optimal path to test the relationship between grit and performance because it allowed for a more in-depth analysis.

The results of the first hypothesis related to the relationship between grit and OtH showed that orientation to happiness reveals very different results for the three measurements of happiness at hand: meaning, engagement, and pleasure. While we do not see any association between the relationship between grit and OtH through pleasure, we see a positive and statistically significant correlation between grit and OtH through engagement (R^2 and adjusted R^2 values are high on performance measures), and a positive association between grit and OtH through meaning.

The results of the second hypothesis related to the relationship between OtH and performance showed a little evidence of an association between OtH and performance, but not entirely in the ways expected. Only OtH through meaning reached any level of significance with entrepreneurial performance. All other associations were non-significant, and of varying orientations as to discourage any conclusions in regards to this hypothesis.

The results of the two previous relationships directed testing of the relationship between grit and performance through the measurements of satisfaction, expectations, and venture performance as described in Model 2.

For example, as it pertains to grit and expectations, the coefficients of sales, profit, and combined expectations proved not to be statistically significant, but all were positive. From this, we can determine that, while grit may not have a direct impact on these aspects of performance (or vice versa), the relationship between them is also not negative. Therefore, we cannot say for certain that grit does not have an impact on these factors.

With regards to venture performance, the results show that there appeared to be no association between grit and cash flow, sales amount, yearly profits, net worth (after the first year),

profit growth, and combined performance. However, aspects of overall performance, market share, sales growth, and net worth appeared to be positive, though not statistically significant.

When analyzed within the context of Hypothesis 3, that grit is positively related to entrepreneurial and venture performance, we can see that, overall, we cannot make this conclusion. Interestingly, the results on the relationship between grit and satisfaction did not show any association with the related measurement. However, it could just be that grit is indeed not related to satisfaction. Therefore, we see that Hypothesis 3b: Grit is positively related to entrepreneurial satisfaction, does not hold to be true.

The most positive correlation indicated by the study was that of the relationship between grit and the control factors, orientation to happiness (OtH) and human capital. With regard to human capital, we see a positive correlation between experience and grit. No correlation between education and grit was found.

Additionally, though not statistically significant, we also see a positive relationship between measurements around experience and employees. In fact, number of employees seems to be very important to all of the models, and is positive in all cases.

Sensitivity Analysis

To check the accuracy of the analysis that was performed, three additional path analyses were also conducted. These analyses repeated the original path analysis by adding Industry of the Entrepreneur as a control, and also by looking at the two components (passion and perseverance) of grit separately. The results can be seen in tables 5a-5c.

Table 3: Results of Hypotheses Testing Using Regression Analysis

	Expectations	Performance	Satisfaction
<i>Control Variables</i>			
Years Experience	0.085	0.086	0.104
Number of Employees	0.095 †	0.65 †	0.218 †
Education Level	-0.017	-0.065	0.027
<i>Predictor Variables</i>			
Grit	0.127	0.177	0.108
OtH: Meaning	0.054	0.261 †	0.116
OtH: Engagement	0.128	-0.043	-0.092
OtH: Pleasure	-0.069	0.002	0.075

N = 167

† p < 0.10

* p < 0.05

** p < 0.01

Table 4: Reliability of the Scales

Measurement	Cronbach's Alpha
Grit	0.7934
OTH: Meaning	0.8274
OTH: Engagement	0.6107
OTH: Pleasure	0.8209

Within the analysis including industry, no differences were noticed. Due to the high number of industries included in the study, it was determined that industry could be omitted from the control factors to reduce the complexity of the model.

Looking at the two components of grit separately, the most noticeable result is that the relationships between the different Orientations to Happiness can be explained by the Passion component, and the relationships between the performance measures appears to be largely due to the Perseverance component. That being said, we do notice that the combined grit measurement does find all separate relationships, as well as potential additional relationships showing that the combined score does provide additional information that is not available from the two components individually.

Table 5a: Path Analysis Results with Industry

OtH Measurment	Grit and OtH	Entrepreneurial Performance	Grit and Performance	Indirect	Direct	Total
Engagement	0.2503 **	Satisfaction	0.1126	-0.0042	0.1126	0.1084
		Expectations	0.1357	0.0325	0.1357	0.1682
		Performance	0.2090	0.0194	0.2090	0.2283
Meaning	0.1759 *	Satisfaction	0.0895	0.0165	0.0895	0.1059
		Expectations	0.1538	0.0155	0.1538	0.1693
		Performance	0.1821	0.0427	0.1821	0.2248
Pleasure	- 0.0486	Satisfaction	0.1104	-0.0035	0.1104	0.1069
		Expectations	0.1697	0.0022	0.1697 †	0.1719 †
		Performance	0.2309	-0.0010	0.2309	0.2298

Table 5b: Path Analysis Results With Passion

OtH Measurment	Grit and OtH	Entrepreneurial Performance	Grit and Performance	Indirect	Direct	Total
Engagement	0.5369**	Satisfaction	0.0532	-0.0080	0.0532	0.0452
		Expectations	0.0259	0.0826	0.0259	0.1085
		Performance	0.2599	0.0047	0.2599	0.2646
Meaning	0.4957**	Satisfaction	-0.0133	0.0548	-0.0133	0.0415
		Expectations	0.0683	0.0431	0.0683	0.1114
		Performance	0.1466	0.1117	0.1466	0.2584
Pleasure	0.1855	Satisfaction	0.0314	0.0123	0.0314	0.0437
		Expectations	0.1254	-0.0107	0.1254	0.1147
		Performance	0.2665	-0.0015	0.2665	0.2650

† p < 0.10

* p < 0.05

** p < 0.01

Table 5c: Path Analysis Results with Perseverance

OtH Measurment	Grit and OtH	Entrepreneurial Performance	Grit and Performance	Indirect	Direct	Total
Engagement	0.0225	Satisfaction	0.0751	0.0001	0.0751	0.0751
		Expectations	0.1085	0.0036	0.1085	0.1121
		Performance	0.0896	0.0026	0.0896	0.0922
Meaning	-0.0295	Satisfaction	0.0778	-0.0032	0.0778	0.0746
		Expectations	0.1163	-0.0033	0.1163†	0.1130
		Performance	0.0999	-0.0081	0.0999	0.0918
Pleasure	-0.1155	Satisfaction	0.0832	-0.0090	0.0832	0.0741
		Expectations	0.1100	0.0040	0.1100	0.1140
		Performance	0.0958	-0.0028	0.0958	0.0930

CHAPTER VI

DISCUSSION AND CONCLUSION

The search for a career that is personally satisfying has become more common than ever before. For better or for worse, gone are the days when a traditional nine-to-five job was the only route to earning a living. As more and more people continue to choose a career based on their passion, the role of an entrepreneur is becoming more appealing. The ability to own one's own business, set their own hours, and work in an environment that meets their creative needs allows for more flexibility around areas such as personal growth and raising a family. Beyond personal satisfaction, it has been established that entrepreneurs play an instrumental role in the economic growth and creativity of society (Schumpeter, 1934). Through their contributions as innovators, they drive technical change and inspire others to think outside of the box.

These personal and societal benefits of entrepreneurship have driven scholars and practitioners alike to discover what, exactly, makes an entrepreneur great. In particular, they have focused on what factors contribute to entrepreneurial performance. However, most of this research has fallen short of a comprehensive explanation. As early as the late 1800s, we see that while scholars haven't quite put their finger on what leads to high performance, they do know that it is not intelligence and talent alone. Neisser also touched on this in his more recent study, when he found that intelligence explained only 30% of the variability of achievement (Neisser et al., 1996), showing that much of this variability has yet to be discovered.

Though this research helped uncover a void in the search for characteristics that predict performance (i.e., that it is not intelligence alone), current research on these other factors also has fallen short of a full explanation. As mentioned previously, analysis of the Big Five model, which is commonly known as one of the only models for predicting performance, revealed that the traits described in the model only account for 2% of the variability in achievement (Duckworth et al., 2007). This research, too, points to the need for more exploration of the traits that define and predict performance. To address these gaps, this essay aimed to explore one trait—grit—to see how and if it contributes to this explanation.

It is argued throughout this essay that part of the reason that grit has not been included as a viable addition to the explanation of performance is that it has only recently been defined as a personality trait. Though there could be several explanations for this, Duckworth et al. note that it is likely because grit has not been well defined until recently, and, had it been defined in better terms, it probably would have been examined earlier. This is significant because, as it relates to performance among entrepreneurs in particular, much of the research is centered on the examination of different personality traits and their effect on performance. Though some researchers find no connection between personality traits and performance, many others (Sandberg, 1986; Herron & Robinson, 1993; Barrick & Mount, 1991) argue that there are significant correlations.

A review of the literature on grit and entrepreneurial performance led to several significant findings, not the least of which was that grit does indeed add a unique perspective into the variability of achievement. Comparing grit to other similar constructs such as persistence, perseverance, passion, and effort discovered this. Through these comparisons, we saw that, while grit shares characteristics with these constructs, it does have some differences. This examination also led to the conclusion that, because grit is so closely related to these other constructs, and can even be considered a compilation of some, grit on its own should not necessarily be considered an

independent predictor of performance or achievement. Rather, it is associated with other attributes that have been proven to directly influence performance. These findings called for examination of attributes and motivations that are directly correlated to performance.

However, in order to conduct a more holistic examination of what motivations lead to entrepreneurial performance, the measurement of performance itself had to be taken into consideration. As review of the literature on the measurement of performance revealed, the majority of the research on entrepreneurial performance has focused on measurement from the perspective of the venture. This is seen, for example, in the *goal-based approach*, which recommends a venture be evaluated by the goals it sets for itself (Etzioni, 1964); the *systems approach*, which considers the simultaneous achievement of multiple, generic performance aspects; and the *multiple constituency approach*, which addresses the perspectives of various stakeholders of the organization (Thompson, 1967; Pennings & Goldman, 1977; Pfeffer & Salancik, 1978; Connolly, Conlon, & Deutsch, 1980). These measurements were referred to as “venture performance” for the purpose of this essay. As one can imagine, this approach is useful to organizations because of the objective data it can provide.

On the other hand, examination of literature that discusses measurement of performance through the lens of the *practitioner*, rather than the venture, allowed for a different measurement altogether. Though not as commonly examined as venture approaches, Fisher et al.’s (2014) study “Evaluating Entrepreneurs’ Perception of Performance: Development of a Measurement Scale” offered a new perspective into the subjective measures of performance. In particular, this study added the element of *life satisfaction* as a significant contributor to job performance among entrepreneurs. Thus, by allowing for an opportunity for entrepreneurs to define the measurement of their performance on their own, we are able to widen the measures of performance altogether to include subjective, or perceived, factors like satisfaction and happiness.

Of course these findings reveal what we already inherently know about entrepreneurship—that the pursuit of being an entrepreneur largely revolves around the fact that it brings one more life satisfaction or happiness. And it stands to reason that the more satisfied one is with their job, the better they will do at that job. In other words, we can say satisfaction or happiness is directly related to performance. Therefore, it was concluded that a person's orientation to happiness is a significant motivation to performance that must be taken into consideration when examining the characteristics that explain variability of achievement—and grit is no exception. Thus, review of the relationship between grit and orientation to happiness was examined. However, since there can be different avenues by which people seek happiness (i.e., through meaning, through engagement, and through pleasure), each of these different avenues calls for a separate examination.

Data collected from a survey of various entrepreneurs revealed several insights into these stated hypotheses. With regard to Hypothesis 3, the results showed that no *direct* connection to grit and performance existed (though it is positively correlated). The reason for this could be that the survey yielded too small of a sample size. While the coefficients to most show positive a relationship, more surveys from a broader and more diverse group of founders may be needed to gain a more accurate understanding. Tested against Hypothesis 3b, we see that there was also no *direct* connection between grit and satisfaction (though this, too, is positively correlated). This could also be attributed to a small sample size, but, because there is less positive correlation, it could also mean that grit may not be associated with satisfaction measurements.

Findings of the path analysis, coupled with the results from Model 2, show that Hypothesis 2—orientation to happiness is associated with entrepreneurial performance—does not seem to hold true. Though some results of this survey are exactly concurrent with the subsequent hypotheses in Hypothesis 2: that grit is positively associated with happiness through engagement and meaning, and negatively associated with happiness through pleasure when looking entirely at

correlations (Table 1), little evidence while controlling for other variables is found. Some of these findings are also concurrent with Von Culin et al.'s (2014) U.S. general population study, which found that the pursuit of happiness through engagement was most positively associated with grit, as well as Suzuki et al.'s 2015 study, which found the strongest correlation between meaning *and* engagement (though these were not tested together for the purpose of this study). The findings presented in this survey thus strengthen these other researchers' studies, and further imply that these may be universal truths.

Further, since a strong correlation between grit and orientation to happiness exists across these studies, this may imply an indirect connection between grit and performance, though no evidence was found. It is expected that orientation to happiness is directly related to performance, and grit is so closely correlated with every aspect of orientation to happiness, it could be that grit is thus related to performance by way of orientation to happiness and that this relationship could be found with a larger sample. This potential connection is in accordance with Suzuki et al.'s research that found that grit is a strong predictor for work performance as well as academic performance. However, because this study only focused on the relationship to orientation to happiness and no other motivations to performance, we could not find this result. This could, however, be a model for measuring other motivations against grit in future studies.

Other periphery—though interesting—findings of the survey were those around the relationships among the control factors of education and experience. For example, no correlation between education and grit was found, implying that grittier individuals do not necessarily require high education levels. Additionally, though not statistically significant, we also see a positive relationship between measurements around experience and employees, indicating that these factors may be somewhat related to grit. In fact, number of employees seems to be very important to all of the models, and is positive in all cases, which is a strong indication that ventures could benefit by hiring more employees.

Limitations

These findings contribute some knowledge to the field of entrepreneurial performance, particularly as they relate to their similarity to other previous studies. However, overall, this study was not powered well enough to determine anything but strong associations that may have been discovered long ago. Some findings indicate that grit is a factor in performance, and it could be worthwhile to study further, but it is not significant enough on its own to predict performance.

Future Research

These findings do indicate that a trend may exist and that future work would be worthwhile to see if a more powerful survey (with a much larger sample) might be able to find a significant relationship between grit and performance, especially by way of other motivating factors such as orientation to happiness.

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APPENDICES

APPENDIX A: ADDITIONAL TABLES

Table 5a: Detailed Path Analysis Results of the Effect of Grit to Performance by OtH: Engagement

	Estimate	Standard Error	Lower 95% CI	Upper 95% CI	Z Score	p-value
Model 1a: OtH through Engagement and Entrepreneurial Satisfaction						
Satisfaction	0.1077	0.1441	-0.1561	0.4007	0.7473	0.4549
OtH: Engagement	0.2503	0.0894	0.0754	0.4251	2.8008	0.0051
Indirect	-0.0046	0.0316	-0.0806	0.0570	-0.1466	0.8834
Direct	0.1077	0.1441	-0.1561	0.4007	0.7469	0.4551
Total	0.1030	0.1389	-0.1487	0.3861	0.7417	0.4582
Model 1b: OtH through Engagement and Entrepreneurial Expectations						
Expectations	0.1383	0.1037	-0.0814	0.3335	1.3337	0.1823
OtH: Engagement	0.2503	0.0919	0.0676	0.4313	2.7239	0.0065
Indirect	0.0327	0.0276	-0.0106	0.0937	1.1856	0.2358
Direct	0.1383	0.1038	-0.0814	0.3335	1.3331	0.1825
Total	0.1710	0.0996	-0.0274	0.3460	1.7170	0.0860
Model 1c: OtH through Engagement and Entrepreneurial Performance						
Performance	0.1953	0.1954	-0.2186	0.5897	0.9994	0.3176
OtH: Engagement	0.2503	0.0862	0.0858	0.4246	2.9049	0.0037
Indirect	0.0182	0.0399	-0.0586	0.0998	0.4559	0.6485
Direct	0.1953	0.1955	-0.2186	0.5897	0.9989	0.3178
Total	0.2135	0.1851	-0.1768	0.5836	1.1538	0.2486

Table 5b: Detailed Path Analysis Results of the Effect of Grit to Performance by OtH: Meaning

	Estimate	Standard Error	Lower 95% CI	Upper 95% CI	Z Score	p-value
Model 2a: OtH through Meaning and Entrepreneurial Satisfaction						
Satisfaction	0.0841	0.1356	-0.1829	0.3565	0.6201	0.5352
OtH: Meaning	0.1759	0.0920	0.0065	0.3703	1.9114	0.0560
Indirect	0.0168	0.0237	-0.0204	0.0763	0.7067	0.4797
Direct	0.0841	0.1356	-0.1829	0.3565	0.6198	0.5354
Total	0.1008	0.1345	-0.1683	0.3589	0.7498	0.4534
Model 2b: OtH through Meaning and Entrepreneurial Expectations						
Expectations	0.1576	0.1027	-0.0605	0.3447	1.5342	0.1250
OtH: Meaning	0.1759	0.0887	0.0122	0.3528	1.9840	0.0473
Indirect	0.0152	0.0176	-0.0146	0.0571	0.8654	0.3868
Direct	0.1576	0.1028	-0.0605	0.3447	1.5334	0.1252
Total	0.1729	0.1007	-0.0398	0.3621	1.7163	0.0861
Model 2c: OtH through Meaning and Entrepreneurial Performance						
Performance	0.1674	0.1882	-0.2124	0.5457	0.8894	0.3738
OtH: Meaning	0.1759	0.0913	0.0002	0.3611	1.9265	0.0540
Indirect	0.0436	0.0376	-0.0096	0.1377	1.1587	0.2466
Direct	0.1674	0.1883	-0.2124	0.5457	0.8890	0.3740
Total	0.2110	0.1828	-0.1670	0.5751	1.1544	0.2484

Table 5c: Detailed Path Analysis Results of the Effect of Grit to Performance by OtH: Pleasure

	Estimate	Standard Error	Lower 95% CI	Upper 95% CI	Z Score	p-value
Model 3a: OtH through Pleasure and Entrepreneurial Satisfaction						
Satisfaction	0.1047	0.1319	-0.1421	0.3666	0.7933	0.4276
OtH: Pleasure	-0.0486	0.1269	-0.2918	0.1890	-0.3833	0.7015
Indirect	-0.0034	0.0161	-0.0473	0.0207	-0.2129	0.8314
Direct	0.1047	0.1320	-0.1421	0.3666	0.7929	0.4278
Total	0.1012	0.1309	-0.1490	0.3584	0.7731	0.4395
Model 3b: OtH through Pleasure and Entrepreneurial Expectations						
Expectations	0.1731	0.1003	-0.0319	0.3728	1.7255	0.0844
OtH: Pleasure	-0.0486	0.1275	-0.3024	0.1965	-0.3814	0.7029
Indirect	0.0022	0.0102	-0.0190	0.0251	0.2125	0.8317
Direct	0.1731	0.1004	-0.0319	0.3728	1.7246	0.0846
Total	0.1753	0.1006	-0.0303	0.3696	1.7425	0.0814
Model 3c: OtH through Pleasure and Entrepreneurial Performance						
Performance	0.2159	0.1798	-0.1529	0.5346	1.2006	0.2299
OtH: Pleasure	-0.0486	0.1289	-0.3098	0.1917	-0.3773	0.7059
Indirect	-0.0008	0.0168	-0.0470	0.0301	-0.0493	0.9607
Direct	0.2159	0.1799	-0.1529	0.5346	1.2000	0.2301
Total	0.2151	0.1791	-0.1555	0.5329	1.2009	0.2298

APPENDIX B: ANALYSIS CODE (R)

```
controlVar = c(25, 19, 39, 5:7)
analVar = c(45, 46, 44, 21, 22, 23, 24, 26:32, 33:37)
grit = 4
sumVar = c(45, 46, 44)

#### Means, SD, and Correlations
library(Hmisc)
myMeans = round(apply(a1[, c(controlVar, grit, analVar)], MARGIN = 2, FUN = mean,
  na.rm = TRUE), 3)
mySD = round(apply(a1[, c(controlVar, grit, analVar)], MARGIN = 2, FUN = sd, na.rm
  = TRUE), 3)
myCor2 = rcorr(as.matrix(a1[, c(controlVar, grit, analVar)]), type = "pearson")
myCor = round(myCor2$r, 3)

tempP = myCor2$P
tempP[is.na(myCor2$P)] = 1

myCor[tempP < 0.10] = paste(round(myCor2$r[tempP < 0.10], 3), "^")
myCor[tempP < 0.05] = paste(round(myCor2$r[tempP < 0.05], 3), "**")
myCor[tempP < 0.01] = paste(round(myCor2$r[tempP < 0.01], 3), "**")

myCor[upper.tri(myCor)] = NA

t1 = cbind(myMeans, mySD, myCor)

#####
#### Path Analysis
#####
library(lavaan)

#####
### Engagement
#####
### Satisfaction
eng.sat.model = 'Satisfy ~ c*Grit + TotExp + Employees + Education
                HappyEng ~ a*Grit
                Satisfy ~ b*HappyEng

                indirect := a*b
                direct   := c
                total    := c + (a*b)'

eng.sat.fit = sem(eng.sat.model, data = a1, se = "boot")
```



```

### Expectations
eng.expect.model = 'Expect ~ c*Grit + TotExp + Employees + Education
                  HappyEng ~ a*Grit
                  Expect ~ b*HappyEng

                  indirect := a*b
                  direct  := c
                  total    := c + (a*b)'

eng.expect.fit = sem(eng.expect.model, data = a1, se = "boot")

### Performance
eng.perform.model = 'PerformAll ~ c*Grit + TotExp + Employees + Education
                   HappyEng ~ a*Grit
                   PerformAll ~ b*HappyEng

                   indirect := a*b
                   direct  := c
                   total    := c + (a*b)'

eng.perform.fit = sem(eng.perform.model, data = a1, se = "boot")

#####
### Meaning
#####
### Satisfaction
mean.sat.model = 'Satisfy ~ c*Grit + TotExp + Employees + Education
                 HappyMean ~ a*Grit
                 Satisfy ~ b*HappyMean

                 indirect := a*b
                 direct  := c
                 total    := c + (a*b)'

mean.sat.fit = sem(mean.sat.model, data = a1, se = "boot")

### Expectations
mean.expect.model = 'Expect ~ c*Grit + TotExp + Employees + Education
                   HappyMean ~ a*Grit
                   Expect ~ b*HappyMean

                   indirect := a*b
                   direct  := c
                   total    := c + (a*b)'

```

```

mean.expect.fit = sem(mean.expect.model, data = a1, se = "boot")

#### Performance
mean.perform.model = 'PerformAll ~ c*Grit + TotExp + Employees + Education
HappyMean ~ a*Grit
PerformAll ~ b*HappyMean

indirect := a*b
direct   := c
total    := c + (a*b)'

mean.perform.fit = sem(mean.perform.model, data = a1, se = "boot")

#####
#### Pleasure
#####
#### Satisfaction
ple.sat.model = 'Satisfy ~ c*Grit + TotExp + Employees + Education
HappyPle ~ a*Grit
Satisfy ~ b*HappyPle

indirect := a*b
direct   := c
total    := c + (a*b)'

ple.sat.fit = sem(ple.sat.model, data = a1, se = "boot")

#### Expectations
ple.expect.model = 'Expect ~ c*Grit + TotExp + Employees + Education
HappyPle ~ a*Grit
Expect ~ b*HappyPle

indirect := a*b
direct   := c
total    := c + (a*b)'

ple.expect.fit = sem(ple.expect.model, data = a1, se = "boot")

#### Performance
ple.perform.model = 'PerformAll ~ c*Grit + TotExp + Employees + Education
HappyPle ~ a*Grit
PerformAll ~ b*HappyPle

indirect := a*b
direct   := c
total    := c + (a*b)'

```

```

ple.perform.fit = sem(ple.perform.model, data = a1, se = "boot")

#####
#### Results Tables
#####
### Main responses

coef = pval = R2 = adjR2 = myN = SE =
  R2b = adjR2b = R2diff = adjR2diff = rep(0, length(analVar))

coef1 = pval1 = matrix(0, length(controlVar), length(analVar))
coef2 = pval2 = matrix(0, length(controlVar) + 1, length(analVar))
r2.1 = adjr2.1 = r2D = adjr2D = r2.2 = adjr2.2 = myN.1 = myN.2 = rep(0,
  length(analVar))

for(myI in 1:length(analVar)){
  tempData = a1[, c(analVar[myI], controlVar, 4)]
  tempData2 = a1[, c(analVar[myI], controlVar)]
  temp = lm(tempData[, 1] ~ ., data = tempData[, -1])
  tempSum = summary(temp)

  temp2 = lm(tempData2[, 1] ~ ., data = tempData2[, -1])
  tempSum2 = summary(temp2)

  coef1[, myI] = round(tempSum2$coefficients[-1, 1], 3)
  coef2[, myI] = round(tempSum$coefficients[-1, 1], 3)
  pval1[, myI] = tempSum2$coefficients[-1, 4]
  pval2[, myI] = tempSum$coefficients[-1, 4]

  r2.1[myI] = tempSum2$r.squared
  adjr2.1[myI] = tempSum2$adj.r.squared
  myN.1[myI] = length(temp2$residuals)

  r2.2[myI] = tempSum$r.squared
  adjr2.2[myI] = tempSum$adj.r.squared
  myN.2[myI] = length(temp$residuals)

}

r2D = r2.2 - r2.1
adjr2D = adjr2.2 - adjr2.1

names(r2D) = names(adjr2D) = names(r2.1) = names(r2.2) = names(adjr2.1) =
  names(adjr2.2) = colnames(coef1) = colnames(coef2) =
  colnames(pval1) = colnames(pval2) = colnames(a1)[analVar]

```

```

coef1 = rbind(coef1, NA)
pval1 = rbind(pval1, 1)

rownames(coef1) = rownames(pval1) = rownames(coef2) = rownames(pval2) =
  c(colnames(a1)[controlVar], "Grit")

##### Demographic Information
summary(a1[, controlVar])
table(a1$Gender)
table(a1$Education)

#### Chronbachs Alpha
library(psych)

gritAlpha = alpha(as.matrix(ca.grit))
meanAlpha = alpha(as.matrix(ca.mean))
engAlpha = alpha(as.matrix(ca.eng))
pleAlpha = alpha(as.matrix(ca.ple))

```

VITA

Alexander C. Lawrence

Candidate for the Degree of

Doctor of Philosophy

Thesis: THE EFFECT OF GRIT AND ORIENTATIONS TO HAPPINESS ON
ENTREPRENEURIAL PERFORMANCE AMONG VENTURE FOUNDERS

Major Field: Business Administration

Biographical:

Education:

Completed the requirements for the Doctor of Philosophy in Business Administration at Oklahoma State University, Stillwater, Oklahoma, in December 2016.

Completed the requirements for the Master of Business Administration at Weber State University, Ogden, Utah, in 2005.

Completed the requirements for the Bachelor of Science in Management at University of Utah, City, Salt Lake City, Utah, in 1998.

Experience:

Vice Provost at Weber State University

Visiting Professor, Goddard School of Business & Economics, Weber State University

CEO and Founder of Lawrence Capital Management, LLC

Partner at Lendio, Inc.

President of Five Star Franchising, Inc.