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Staying the course: grit, academic success, and non-traditional doctoral students

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STAYING THE COURSE:

GRIT, ACADEMIC SUCCESS, AND NON-TRADITIONAL DOCTORAL STUDENTS

A dissertation submitted in partial satisfaction

of the requirements for the degree of

Doctor of Education in Organizational Leadership

by

Theodore Martin Cross

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Ronald Stephens Ed.D. – Dissertation Chair Person

This dissertation, written by

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under the guidance of a Faculty Committee and approved by its members, has been submitted to and accepted by the Graduate Faculty in partial fulfillment of the requirements for the degree of

DOCTOR OF EDUCATION

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DEDICATION

I dedicate this dissertation first to God and second to my wife Stefanie. Thank you
Stefanie for being my constant support, love, and friend. I could never have done this
without you. I am lucky to have someone in my life that understands, challenges, and
loves me unconditionally. Our journey is not always easy, but great lives well lived rarely
are. I hope to be more like you every day. You give me life.

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ABSTRACT

As higher education changes to reach larger numbers of students via online modalities, both at the undergraduate and graduate levels, the issue of student attrition and other measures of student success become increasingly important. While research has focused largely on undergraduate online students, less has been done in the area of online non-traditional doctoral student success, particularly from the student trait perspective. On the trait level, the concept of grit has been identified as an important element of the successful attainment of long-term goals. Earning a doctorate can be classified as a long-term goal; therefore the purpose of this study was to examine the influence of doctoral student grit scores on student success. Success was measured in three ways: (a) in terms of persistence as measured by longevity in the program (the number of courses a student had successfully completed), (b) by examining current student GPA, and (c) by studying whether or not students have reached the critical milestone of successfully defending their dissertation proposal. The results of the study found no significant differences in mean grit scores for first, second, or third year students, nor found differences in mean grit scores for students that had or had not successfully defended their dissertation proposals. However, significant relationships were found between grit and current student GPA, grit and the average number of hours students spent of their program of study weekly, and grit and age. The results of this research are important for informing how doctoral education is structured, which characteristics may help students succeed, as well as providing areas for future research.

Keywords: Higher education, grit, doctoral education, non-traditional students, online education, academic success, attrition

Chapter 1: The Problem

Background

Higher education in America is experiencing new opportunities and challenges in relation to increased numbers of students and demands for new delivery modes. In general, enrollments have increased at American Colleges and Universities at the undergraduate level and demand for graduate education continues to remain high (Council of Graduate Schools in the United States, 2008; Walton, 2011). Further, even at the highest levels of the academy, doctoral education, traditional programs are experiencing moderate growth (Council of Graduate Schools in the United States, 2008). In reaction to this growth, institutions of higher learning have begun offering non-traditional classes and degree programs, often utilizing online technologies (Allen, Seaman, & Babson Group, 2011).

While the growth in online and other forms of non-traditional education are often cited at the undergraduate level, graduate and doctoral programs are also embracing these new modalities (Allen & Seaman, 2005; Council of Graduate Schools in the United States, 2009; Pappas & Jerman, 2011). However, these same modalities that can reach greater audiences tend to intensify the alarm surrounding student retention as reports of online student attrition at the undergraduate level is commonly noted to be higher than traditional ground students (Carr, 2000; Chyung, 2001). If this logic holds true, then, non-traditional graduate programs, including doctoral programs, may have higher student attrition than their traditional counterparts (Carr, 2000)

Taken together, the demand for higher education, including doctoral education, seems to be rising along with a growth in non-traditional programs and their associated

higher levels of student attrition (Carr, 2000; Chyung, 2001; Council of Graduate Schools in the United States, 2007; Walton, 2011). Within the realm of student retention and attrition, non-traditional programs at the doctoral level become of particular interest when one takes into consideration that traditional programs report program completion rates of about 40-60 % (Council of Graduate Schools in the United States, 2008; Golde & Walker, 2006).

Recent History

      Growth of higher education in America. The growth in higher education may be in response to the notion that in recent American history the attainment of a college degree seems to be more and more important for economic success (Kazis, 2006). For example, the Bureau of Labor Statistics (2012) estimated that college graduates have higher weekly median earnings and lower unemployment rates than non-college graduates. In line with this reasoning greater numbers of students are enrolling in programs of higher education in America. From 1989 to 1999 enrollments in degree granting institutions increased by 9%. Amazingly, enrollments over the next 10 years from 1999 to 2009 increased by 38% (Walton, 2011). This increase in enrollments may indicate the importance Americans place on higher education (Kazis, 2006). It may also signify an upward pressure for Americans to gain more education as the economy changes

      This upward pressure may be partly explained as a response to the earning potential of graduate and professional degrees. Again, the Bureau of Labor Statistics (2012) reported that individuals who hold master's degrees have higher median earnings and lower unemployment rates than those with undergraduate degrees. The same is true

of doctoral degree holders in comparison to those that hold master's degrees (Bureau of Labor Statistics, 2012). In short, according to the Bureau of Labor Statistics, holders of professional and doctoral degrees earn more and are less likely to be unemployed than those who did not pursue more education past the undergraduate or master's degree. The report appears to illustrate a positive relationship between increasing education and higher median earnings.

In light of the data reported by the Bureau of Labor Statistics (2012) it would seem logical that the growth of advanced degrees might be similar to that of undergraduate education. However, recent research reflects a more complicated scenario. Though undergraduate education appears to be growing rapidly, there are some interesting trends in the area of graduate studies. One recent report noted that while applications to graduate programs increased from 2010 to 2011, total enrollments decreased over the same time period (Council of Graduate Schools in the United States, 2008). This report highlights the notion that many graduate schools are turning away students; and that perhaps some of these students may be qualified but not admitted because of funding or other issues (Council of Graduate Schools in the United States, 2008). Thus, carrying capacity at the graduate level seems to be problematic.

Interestingly, one level of graduate education added to its total enrollment, that of doctoral studies. "Between fall 2010 and fall 2011, total enrollment increased by 2.1% at the doctoral level, but decreased by 1.8% at the master's degree and graduate certificate level, according to institutions responding to the survey" (Allum, Bell, & Sowell, 2012, p. ix). This may indicate that doctoral education is becoming more popular even in the traditional programs examined in the study above.

Changing modalities. In general, the increasing demand for higher education in America has led colleges and universities to expand their offerings to larger numbers students. These offerings come in the form of traditional ground courses as well as online distance courses. However, it appears that distance courses are growing in importance and popularity (Allen et al., 2011). For instance, The National Center for Educational Statistics reports that, "From 2000 to 2008, the percentage of undergraduates enrolled in at least one distance education class expanded from 8 % to 20 %, and the percentage enrolled in a distance education degree program increased from 2 % to 4 %" (Walton, 2011, p. 3). While the majority of college students are not engaged in online learning, the jump in participation in online learning may underscore its rising importance (Allen et al., 2011).

In 2010, for example, one report notes that over 19 million students were enrolled in online degree granting programs, this was up from 16 million in 2002 (Allen et al., 2011). The rising importance and popularity of online education certainly comes as no surprise. Often online education is able to reach students who would not easily be served by traditional ground courses. For example, Walton (2011) notes that older undergraduates were more likely to enroll in distance education courses than their younger counterparts. "Fifteen percent of undergraduates age 23 or younger participated in a distance education course, compared with 26 % of those between ages 24 and 29 and 30 % of those age 30 or older" (Walton, 2011, p. 10). Some scholars argue that older students participate more often in online education because of the responsibilities associated with their station in life (Carr, 2000; Lim, 2001). Furthermore, Walton found that, "Students who had a dependent or were married also participated in distance

education classes or degree programs more often than other students" (p. 12). In this way, online education may be able to reach and serve non-traditional students in ways that traditional ground courses cannot (Lim, 2001). This could be one of the reasons online education is increasing in popularity.

Graduate education is also experiencing shifts in the way it offers courses. For example, a study conducted by Allen and Seaman (2005) found that, of institutions surveyed that offered traditional master's degrees, 44% also offered online master's degrees. Further, Allen and Seaman noted: "The figure is even more impressive among specific subgroups of institutions. The penetration rate for master's programs rises to 56% in public institutions and to 78% in private, for-profit institutions. Doctoral institutions also have a relatively high penetration rate (66%), for master's programs" (p. 6). Thus, overall online education is beginning to penetrate at the graduate level and has potential to grow in the future.

Much like shifts at the undergraduate education and master's levels from traditional programs to non-traditional, doctoral programs are changing to meet the needs of a new group of learners. In this area of higher education one report found that of institutions offering traditional doctoral programs, 12% also offered online doctoral programs (Allen & Seaman, 2005). While this is not as robust as adoption of online modalities at the bachelor or even master's level, it is interesting to note that even in the traditionally selective area of doctoral studies, online modalities are beginning to gain traction. This budding growth has led some researchers to take note. For example, Kot and Hendel (2012) described the rise in non-traditional doctoral education in these words, "The proliferation of professional doctorates has been remarkable in the USA, UK, and

Australia, and, in the last decade, it has begun to attract the attention of higher education scholars and researchers" (p. 346). Although, doctoral education in the online or non-traditional modality has not penetrated as much as undergraduate and master's programs, demand for non-traditional doctoral programs does appear to be on the rise (Archbald, 2011).

The burgeoning growth of non-traditional doctoral programs can be seen in the context of a new knowledge economy, where there is a perceived mounting demand for workers skilled in applied research and analytical skills most often associated with doctoral level education (Servage, 2009). In fact a new report by Wendler et al. (2012) reported that "Between 2010 and 2020, about 2.6 million new and replacement jobs are expected to require an advanced degree, with a projected increase of about 22% for jobs requiring a master's degree and about 20% for jobs requiring a doctorate or professional degree" (p. 1). In reaction to the current and expected need for workers trained above and beyond undergraduate and typical master level graduate programs, the professional or non-traditional doctorate has emerged as one solution to supplying highly trained workers to industry and other settings (Servage, 2009).

Online education and student attrition. While online education becomes progressively more important for institutions of higher education to reach more students (Allen et al., 2011; Carr, 2000), it is not without its problems. One of these problems is the purported higher attrition rate of online students (Carr, 2000; Chyung, 2001). Thus, some point to the notion that students in online courses and programs tend to drop out more than their traditional brick and mortar counterparts (Carr, 2000; Chyung, 2001). These assertions, while not substantiated in exhaustive studies because of the nascent

nature of online education, have still led some researchers to note that "...high turnover in enrollment has been a continuous problem in distance education" (Chyung, 2001, p. 3). Whether, this problem is perceived or real is of little consequence when traditional ground institutions of higher education have been questioned in terms of their ability to retain students (Tinto, 1987; Tinto & Cullen, 1973).

Even at the doctoral level, programs are not immune from the problems of student attrition and extended times for completion. Overall, the time to complete a doctoral degree seems to be lengthening. Thurgood, Clarke, and National Research Council (U.S.) (1995) point out that the median time spent in graduate school between the years of 1983 and 1993 grew from 6.6 years to 7.1 years. During the same period the lapse between obtaining a bachelor's degree and a doctorate degree increased from 9.8 years to 10.5 years (Thurgood et al., 1995). Similarly, dropout rates of doctoral students are equally alarming. Bowen and Rudenstine (1992) for example, estimate that between 40% and 50% of students who start a traditional doctoral program do not finish. Similarly, Golde and Walker (2006) agree with the previous estimates of a 50% completion rate but add, "Too many departments have inaccurate records and are unable to discern rates or patterns of attrition" (p. 5). More precisely, in a ten-year longitudinal study, The Council of Graduate Schools in the United States (2008) found that 57% of doctoral participants completed their program of study.

Further, because distance programs often have higher dropout rates, this may imply that students enrolled in distanced-based doctoral programs may have even higher rates of attrition (Carr, 2000; Rovai, 2002). Thus, a large measure of success in doctoral studies is determined by the mere completion of the degree within a reasonable time.

While traditional ground programs have been extensively studied the emergence of new non-traditional doctoral programs and their students may deserve further attention.

In reaction to the perceived or real student retention problems, online higher education is being increasingly scrutinized (Stover, 2005). Thus, Stover (2005) writes, "Retention is gaining in importance, as is reflected by the number of federal and state agencies requesting the reporting of retention data, and it is used as an indicator of academic quality in U.S. News & World Report's annual college rankings" (p. 1). Thus, the problem of student retention in higher education in general, and in online education in particular, is becoming more and more recognized and is fast becoming an area in need of remedy.

While there are many proposals to solve the retention problem in online higher education (Chyung, 2001) this research seeks to examine internal student factors that may influence student course completion at the doctoral level. As has been found in previous research, amongst undergraduates, students with high levels of perseverance are more likely to do well in their courses (Duckworth, Peterson, Matthews, & Kelly, 2007). However, Duckworth et al. (2007) added to the construct of perseverance by complementing it with passion. Duckworth et al. argue that the construct of grit, which combines perseverance and passion for long-term goals, may be the antecedent of perseverance itself. Thus, by examining the grittiness of an individual one might be able to predict successful attainment of long-term goals. This is exactly what Duckworth et al., have found in several studies, all of which involved educational pursuits in one form or another. In this way, because Duckworth et al. have demonstrated that grit predicts longevity in programs at West Point and in the Scripts Spelling Bee it may be important

to study grit at the doctoral level. While largely untested at the doctoral level, it may be that this construct can help shed light on student success as measured by how far a student has made it in his or her program of study and what is his or her current grade point average.

Statement of the Problem

An increase in student enrollments in American institutions of higher education has corresponded with an increase in online educational offerings (Walton, 2011). In turn, larger numbers of students are pursuing non-traditional doctoral degrees (Archbald, 2011). As institutions embrace online education as a means to reach and educate more students, problems of effectiveness must be addressed. The problem is that of the low retention of online students in general and its implications for non-traditional doctoral students in particular (Carr, 2000; Chyung, 2001; Stover, 2005). In comparing ground versus online programs in general, Stover (2005) asserts, "Everyone agrees that retention rates for distance education programs are lower than traditional on-campus programs" (p. 1). If this is the case, then it is important to examine factors that contribute or impact student success in online programs, not only to help students be successful but to add credibility to online programs (Stover, 2005). Further, if online attrition rates for online or non-traditional undergraduates are worse than those of their traditional counter-parts, and traditional doctoral attrition rates are near 50-60%, then non-traditional doctoral student attrition may be worse (Carr, 2000; Council of Graduate Schools in the United States, 2008; Stover, 2005).

Student retention is seen as an indicator of the effectiveness of a program or institution of higher education, it is important to understand the basic reasoning

underlying its importance (Stover, 2005). Traditionally, even in brick and mortar institutions of higher education student retention has been one important indicator of student success (Murtaugh, Burns, & Schuster, 1999). In the online world, this is no different. Hence, the logic of the importance of student retention is that students who stay in school are the only students who will be able to graduate. Therefore, student retention is the steppingstone to graduation and the manifestation of successfully moving students through an educational program. In this way, student retention becomes an important gauge of whether or not an institution or program of higher learning has achieved its goal to help students complete their education.

In light of the recent development of online higher education and its associated problems of retention, many are looking for solutions to help students be more successful in the virtual classroom (Dupin-Bryant, 2004). Dupin-Bryant (2004) writes:

> As online distance education becomes prevalent in higher education institutions, identifying variables that help to distinguish between individuals who complete online courses from those who do not will help instructors and administrators develop and refine systems that serve at-risk students. (p. 205)

In this case, the author points out that by identifying what separates successful online students from non-successful online students, it may be possible to build systems to help struggling students.

Research has identified several variables that contribute to better online student retention (Dupin-Bryant, 2004; Lim, 2001; Osborn, 2001). First, some have focused on prior preparation of students before entering online programs (Dupin-Bryant, 2004; Lim, 2001; Osborn, 2001). In this vein, Lim (2001) found that computer self-efficacy

significantly correlated with positive course perceptions and willingness to take other online courses. Conversely, Dupin-Bryant (2004) found that years of computer experience did not project student success, but rather Internet experience played an important factor. Also, Osborn (2001) found that at risk students in online programs had less stable study environments, lower levels of motivation, and less confidence in using computers. Taken together these findings suggest that prior student experience and environmental factors are important in understanding student retention in online courses.

While much of the research centers on these two areas of prior experience and environmental factors, new research is suggesting that internal individual student traits may also contribute to student success. One particular construct is grit (Duckworth et al., 2007). Although grit has mostly been studied in the context of traditional ground students or other non-virtual learning environments, it may also be a good predictor of online student success and may be applicable at the doctoral level. In this way, by taking an individualistic approach, it may be possible that an internal trait like grit is predictive of student success amongst non-traditional doctoral students.

Statement of the Purpose

The purpose of this study is to examine the impact of doctoral student grit scores on student success. Success will be measured in three ways: (a) persistence as measured by longevity in the program (the number of courses a student has completed); (b) current student GPA; and (c) successful defense of the dissertation proposal. Thus, the purpose of this research experiment falls into three general categories centered on student success.

This study examined whether or not average student grit scores as measured by the 8-item grit survey impact student longevity in their doctoral program of study. In this

way, the study attempted to understand how a student level characteristic or trait, perseverance and passion for long-term goals (grit), influences how far students are in their programs of study. Simply put, this study is concerned with uncovering if grit scores impact student persistence by examining if there are differences in mean grit scores for first, second, and third year non-traditional doctoral students.

Additionally, this research examined the relationship between student grit scores and current student GPA. In this area, the study was interested in examining if there was a predictive relationship between how gritty a student was and how well he or she was doing in his or her course work as measured by his or her grade point average.

Moreover, students who are in the third year of their doctoral program are engaged in preparation and writing of their dissertations. Within the course sequences for these particular doctoral programs is a course centered on writing the dissertation proposal. In this case the proposal consists of the first three chapters of the whole dissertation and marks the beginning of serious work on the dissertation itself. In most doctoral programs, students may not submit to the Institutional Review Board before they have successfully completed and defended their proposal. As such this study sought to understand if there were differences in grit scores for students who have completed their proposal writing class and the next class and have or have not successfully defended their proposals. In this way the design of the study, in this phase, is centered on comparing grit scores for those that have successfully defended their dissertation proposals and those that have not.

The purpose of this study was to understand (a) the differences between mean grit scores of first, second, and third year doctoral students; (b) if there is a relationship

between student grit scores and current GPA; and (c) to examine any differences, if at all, between third year mean student grit scores of those who have or have not successfully defended their dissertation proposal. Thus the following table conceptualizes the study:

Table 1

Conceptualized Variables of the Experiment

Independent Variables	Controlling Variables	Dependent Variables
Mean student grit scores (1st, 2nd, 3rd Year Student Groups)	Student Characteristics (Demographics)	Number of Courses Successfully Completed (1st, 2nd, 3rd Year Student Group)
Student grit scores	Student Characteristics (Demographics)	Current GPA
Mean student grit scores (3rd Year Student Group Only)	Student Characteristics (Demographics)	Successful Completion or Non-completion of Proposal Defense

Research Questions

As this study is concerned with examining: (a) the differences between mean grit scores of first, second, and third year doctoral students; (b) if there is a relationship between student grit scores and current GPA; and (c) if there are any differences between mean third year student grit scores of those who have or have not successfully defended their dissertation proposal, the following research questions frame the research project:

1. Is there a difference between mean grit scores for first year, second year, and third year doctoral students?

2. After controlling for student characteristics, is there a difference between mean grit scores for first year, second year, and third year doctoral students?

3. Is there a relationship between student grit scores and current student GPA?

4. After controlling for student characteristics, is there a relationship between student grit scores and current student GPA?

5. Is there a difference between mean grit scores of third year doctoral students who have successfully defended their dissertation proposal and those who have not?

6. After controlling for student characteristics, is there a difference between mean grit scores of third year doctoral students who have successfully defended their dissertation proposal and those who have not?

Hypotheses

1. A. There will be a significant difference between mean grit scores for first year, second year, and third year doctoral students.

1. B. Specifically there will be a significant difference between mean grit scores for first and third year students.

2. A. After controlling for student characteristics there will be a significant difference between mean grit scores for first year, second year, and third year doctoral students.

2. B. After controlling for student characteristics, specifically there will be a significant difference between mean grit scores for first and third year students.

3. There will be a significant relationship between student grit scores and current student GPA.

4. After controlling for student characteristics there will be a significant relationship between student grit scores and current student GPA.

5. There will be a significant difference between mean grit scores of third year

doctoral students who have defended their dissertation proposal and those who have not.

6. After controlling for student characteristics there will be a significant difference between mean grit scores of third year doctoral students who have defended their dissertation proposal and those who have not. (see Appendix A)

Significance of the Study

The demand for higher education is increasing, as noted by members in the higher educational community, "In survey after survey, more than 90 % of young people say they want to go to college" (Kazis, 2006, p. 13). With this increase in demand new modalities of delivery are being explored. Among these modalities is online education. However, even though online education does create increased opportunities for access to higher education it is associated with higher rates of student attrition (Stover, 2005).

Similarly, the highest level of university education, doctoral education, is beginning to adopt online modalities as evidence in the appearance of non-traditional doctoral programs (Archbald, 2011; Pappas & Jerman, 2011). As has been noted at the undergraduate level for online courses, attrition rates appear to be higher than in traditional classroom settings (Carr, 2000, Chyung, 2001, Rovai, 2002). This, along with the notion that completion times and attrition in traditional doctoral programs are problematic, it may also be important to understand measures of student success and longevity in non-traditional doctoral programs (Bowen & Rudenstine, 1992; Golde & Walker, 2006; Thurgood et al., 1995). Further, as Kot and Hendel (2012) point out, "Professional doctorates, therefore, remain an under-investigated area" (p. 346). Hence, not only is it important to add more knowledge to this understudied area, but also to

examine the idea of student success within doctoral education. Therefore, it is important to understand if internal student characteristics can impact measures of success amongst non-traditional doctoral students. By so doing, it may be possible to not only create space for more students to attend courses through online education, but also for more students to be successful in passing their courses (Berg, 2005).

Further, because internal characteristics of students may be an important part of student success in online courses, it is important to study which characteristics contribute to student retention. In this study, the construct of grit will be examined to determine its importance in the role of student perseverance and passion for long-term goals, namely longevity in a non-traditional doctoral program as a steppingstone toward degree attainment (Duckworth & Quinn, 2009).

Key Definitions

In this study there are several key terms that will be used frequently. These terms are defined as follows in this research project.

- *Grit* refers to the Duckworth et al. (2007) conception of passion and persistence for long-term goals as well as in reference to the 12 and 8 item grit instruments.

- *Non-traditional doctoral student* broadly refers to students enrolled in doctoral programs that involve distance learning of one type or another, are not traditional residency programs that require fulltime residency, and are often populated by working adults (Offerman, 2011). More specifically, in terms of this study, non-traditional doctoral students will denote students enrolled in one of several distance doctoral programs that

at the most require two in-person residencies consisting of 1 week each.

- *Online education* refers to higher education courses offered solely online.

- *Student longevity* denotes how far a student has made it into his or her program as measured by the number of courses successfully taken. Thus, longevity is a form of student persistence.

- *Student success* measures the longevity of a student in the program by using the number of courses completed, the current GPA of a student, and for third year students, whether or not they have successfully defended their dissertation proposal.

Key Assumptions and Bias

Even though this study was carefully designed to consider assumptions and bias, it must acknowledge several underlying assumptions and biases. It acknowledged the presupposition that studying non-traditional doctoral student success and persistence was important. While the growth and rise of online education seemed to point to this, it was nevertheless essential to realize that this assumption underlay the entire study. Next, because this study sought to connect doctoral student GPA, longevity, and defense of the proposal with grit, the study assumed that internal traits were related to the aforementioned. This assumption was rooted in the literature but must be acknowledged.

Further, this study made the assumption that several measurement tools were accurate and appropriate. These items include: the 8-item grit survey, student self reports of the number of courses they have completed, student self reports of their current GPA, and student self-reports of demographic information (Duckworth & Quinn, 2009). Also, the manner of collecting data for this study had potential for bias. First, the survey

instrument collected self-reported data. These data relied on the accuracy of participant answers. Next, because the survey instrument was sent out under the name of the provost of the university some participants could be biased in their answers or participation. Also, the opportunity to participate in a raffle could create a halo type effect that biasedly incentivized students to participate. These procedures are discussed more in Chapter 3.

In short, this study assumed that this research was worthwhile, that grit and student success measures might be related, that the measurement tools used were accurate and appropriate, and that the presence of the raffle and the provost's name on recruitment materials would not unduly compromise the integrity of the study.

Limitations of the Study

This study, while carefully designed and appropriate to understand the research questions, did have several limitations. To start, because this study was limited in scope it is not meant to be generalizable. This study only sought to understand the experience of a particular sample of non-traditional doctoral students at a mid-sized private Christian university in the southwestern United States. Also, the selection of the sample was not truly random. Each participant self-selected into the study by responding to a link either that has been e-mailed to him or here or that was posted on a virtual password protected doctoral student website. In this case, the sample was convenient and did not attempt to represent either the entire population of doctoral students at the sample site university or doctoral students in general (Creswell, 2009; Devlin, 2006).

Further, because of the limited resources available to conduct this study the student sample size was limited as was the duration of the study itself. The study lasted for approximately three weeks and data were collected only during that time. Because of

the limited time, the study was constrained in its potential to predict long-term or longitudinal results. Also, the lack of resources made the incentives for students to participate in the study imperfect. In this way, it might be that only interested, and perhaps, positively biased persons participated in the study.

Concluding, the sample for this study was only drawn from one particular university and from one particular population, non-traditional doctoral students. However, the students in this study represented many different types of doctoral programs. Thus, the findings of this study might be generalizable to other non-traditional doctoral populations, but might be limited by the sample size, make up, and available resources.

Summary

In summary, higher education in America is becoming increasingly more demanded and scrutinized (Council of Graduate Schools in the United States, 2008; Walton, 2011). As mentioned the increased demand for higher education has resulted in colleges and universities offering more online courses (Allen et al., 2011; Walton, 2011). Also, these new offerings are making it possible for more and more students to take courses and for non-traditional students to have access to higher education (Allen et al., 2011; Allum et al., 2012). Similarly, doctoral programs are embracing these changing modalities (Archbald, 2011; Kot & Hendel, 2012). In line with the growth of undergraduates and graduate distance education, non-traditional doctoral programs have emerged to reach students who cannot, or prefer not to enter traditional residency based doctoral programs (Archbald, 2011; Kot & Hendel, 2012). These non-traditional doctoral students were the focus of this study.

In general, the increase in online courses while providing tremendous access to

higher education is being examined for quality. One aspect of quality is the notion of student attrition. Some scholars have noted that retention of online students is less than that of their brick and mortar peers (Carr, 2000; Chyung, 2001; Stover, 2005). Building upon these data, this study aimed at examining the longevity and success of non-traditional doctoral students in light of attrition problems in traditional doctoral programs along with the evidence of worse attrition amongst online students. Thus, even though online education is benefiting large numbers of students it may be important to examine the success and longevity of non-traditional doctoral students in order to understand more about low completion rates in doctoral programs in general (Bowen & Rudenstine, 1992; Council of Graduate Schools in the United States, 2008; Thurgood et al., 1995).

Consequently, this study sought to understand some key characteristics of students who do continue on in a non-traditional setting and who may also perform better than their peers. While some studies have focused on student attributes such as: prior computer preparedness, stability of home life, as well as other environmental or prior educational influencers, there is much to be learned through studying the grit of online students as an internal characteristic (Duckworth & Quinn, 2009; Dupin-Bryant, 2004; Lim, 2001; Osborn, 2001). In addition, because non-traditional doctoral students have not been studied as much in the areas of persistence and success measures, this study represents an exploratory attempt at understanding grit, persistence, and academic success in non-traditional doctoral students. In short, this study sought to understand how, if at all, grit impacted several success measures of non-traditional doctoral students.

Chapter 2: Literature Review

It is no surprise that institutions of higher learning are quickly focusing on ways to improve student retention online and in traditional classrooms. With the rising cost of obtaining a degree, colleges are facing increased scrutiny and, as such, they are searching for ways to remain relevant both in terms of learning outcomes and in the ways they add value for the money they charge (Aragon & Johnson, 2008; Christensen & Eyring, 2011; Kazis, 2006). There are many factors that contribute to student longevity and persistence in a program of study. Broadly these factors can be conceptualized into two basic categories internal and external influences (Aragon & Johnson, 2008; Bernard, Brauer, Abrami, & Surkes, 2004; Moore & Fetzner, 2009; Nagel, Blignaut, & Cronjé, 2009; Tinto & Cullen, 1973). While there is much to be learned from studying external influences and their relationship to student retention, it is the purpose of this literature review to engage in examining factors that are internal to students. In this way, one goal of this literature review is to examine the internal characteristics of students that may lead to academic success and in particular how studying the notion of grit in the framework of non-traditional doctoral programs may be of value to the pressing problems of student attrition and program completion (Duckworth et al., 2007; Duckworth & Quinn, 2009; Pauley, Cunningham, & Toth, 1999; Rockinson-Szapkiw, 2011).

Further, another goal of this literature review is to situate this study of grit in relation to non-traditional doctoral success and longevity, by examining several related issues. First, is to understand the history of higher education in America and the development of the doctoral degree (Altbach, Gumport, & Johnstone, 2001; Ruch, 2001; Walker, Shulman, & Carnegie Foundation for the Advancement of Teaching, 2008).

Second, is the aim to understand research centered on attrition in higher education, first from the traditional context of brick and mortar ground education, and second from the perspective of online and non-traditional programs (Aragon & Johnson, 2008; Carr, 2000; Pauley et al., 1999; Rockinson-Szapkiw, 2011; Tinto & Cullen, 1973; Tough, 2013). The problem of attrition will also be examined at the level of doctoral education both from the traditional programs perspective and the non-traditional programs perspective (Aragon & Johnson, 2008; Bowen & Rudenstine, 1992: Council of Graduate Schools in the United States, 2008; Damrosch, 2006; Golde & Walker, 2006; King, 2008a; Pauley et al., 1999; Rockinson-Szapkiw, 2011). Later the developments of the character strength grit will be followed from its inception in positive psychology, character strengths classification, grit scale development and validation, and the testing of grit in several situations (Ben-Shahar, 2007; Buckingham & Clifton, 2001; Butler-Bowden, 2007; Duckworth et al., 2007; Duckworth & Quinn, 2009; Martin, 2007; Peterson, Park, & Seligman , 2005; Seligman & Csikszentmihalyi, 2000). Last, the concluding section summarizes the review's findings and points towards their synthesis and application to this research project in general.

History of Higher Education in America

In order to build a context for higher education in America currently, it may be useful to situate recent educational developments within the larger scope of American Higher Educational history. Higher education in America has a long and rich history. Emerging from the European tradition, America's oldest colleges, Harvard and Yale, were patterned after Oxford and Cambridge (Altbach et al., 2001). These colleges were established mainly to educate Protestant ministers in early colonial America. As Altbach

et al. (2001) notes, "The early American colleges were religiously oriented for the most part and aimed at training a small elite" (p. 13). Thus, the origin of higher education in America was narrow in scope and religiously colored. However, while early colleges in America were formed to educate a select number of persons, higher education in America would move from strict religious education to teaching the practical arts to a wider audience.

The growth of American colleges and universities from a handful of elite colleges to dozens of liberal arts colleges scattered throughout the eastern United States and the Midwest is a product of local religious entities (Altbach et al., 2001). Together with this growth came increased access to higher education. Thus, Altbach et al. (2001) writes, "No longer was higher education a preserve of the urban elite; the middle classes in the new towns and in rural areas gained access to a college education" (p. 13). Consequently, more and more colleges were established across the country basing their curriculum on Harvard and Yale's, but aiming to reach wider audiences. However, many of these institutions of higher learning were still religiously affiliated with Protestant or Catholic traditions.

Even though most colleges and universities were religiously affiliated, the increase in the number of colleges and universities in America provided an expansion in the types of curriculum offered. Much of early higher education in America was focused on religious education, but new notions of what should be taught in addition to this were beginning to emerge. For example, Benjamin Franklin was an early advocate of expanding the curriculum beyond the traditional scope. Along these lines Ruch (2001) argues, "Benjamin Franklin's influence on the development of early American education

was significant in legitimizing the value of practical instruction in the business of living"
(p. 53). Taken together, not only were new colleges emerging across the country and
providing access to larger numbers of people, but the curriculum of these colleges was
also broadening.

In addition, with increased access and curricular changes, higher education in
America during the 20th century introduced research as an important component of the
purpose of universities (Altbach et al., 2001). Because early colleges were interested in
educating rather than knowledge production, research as a focus was a novel idea. In fact,
several of the traditional colleges including Harvard did not become research-based
institutions until after seeing other colleges successfully adopt a research model. "Only
when the power of the new academic ideas had proven their worth did the established
institutions adopt them" (Altbach et al., 2001, p. 15). Thus, through slow evolution,
American colleges and universities became the traditional research-based institutions we
know today.

This change from teaching based to research-based institutions seemed to have
solidified the basic structure of the American university, as we know it. Along these lines
Altbach et al. (2001) summarize,

> By 1910, the basic structure of the research-oriented American university was
> well entrenched. While it is true that the large universities underwent their most
> dramatic expansion between 1950 and 1970, their orientation and structure date
> from the early years of the twentieth century. (p. 15)

In this way, it is easy to see that although institutions of higher learning in America underwent major changes during the 20th century the overall structure of the University was well established and thus hard to change.

Doctoral Education

Within the larger history of higher education in America is the rise of doctoral education, and as recent as the development of higher education in America is in contrast to its European counterparts, doctoral education is even more nascent. For instance, Walker et al. (2008) note "The United States is a newcomer on the doctoral education scene, relative to its European forebears, but its rise to international prominence has been meteoric" (p. 29). The first doctorate awarded in America was in 1861, but it had its roots in the German universities. During the 1800s Americans who wished to earn a doctoral degree had to study in Europe and many studied in Germany. Thus, as doctoral education began to take hold in the U.S., it was often modeled on the German system (Walker et al., 2008). Most prominently, two characteristics transferred to American doctoral education from the German system were the notions of "scientific inquiry" and the "…the expectation that faculty members would carry out research" (p. 30). Rudolph (1962) argues that after Yale conferred the first three Ph.D.s in the U.S. in 1863, that it was really Johns Hopkins University that pushed the growth of Ph.D.s as they minted programs focused on research and helped students through providing fellowships.

However, over-all the story of doctoral education in America has followed four stages (Walker et al., 2008). First, was the establishment of doctoral education as a hybrid of the English system of the college with the German conception of the graduate college. In this system student graduated from their undergraduate programs and entered into

scholarly work, if admitted, that consisted of graduate seminars and other more personalized learning arrangements. Study also generally included examinations in foreign languages and a comprehensive exam. Student prepared and submitted a thesis as their final demonstration of having acquired the necessary knowledge to be awarded the Ph.D. (Walker et al., 2008).

Later, during the 1940s through the 1960s as undergraduate education grew so too did doctoral education. During this period federal funding for research became available and doctoral education began to be intimately connected to research (Walker et al., 2008). Here Walker et al. (2008) note that during this time "The strong link between federal research dollars, faculty research agendas, and graduate student research efforts was forged" (p. 32). In no small way, the structure of doctoral education, in its modern form, was shaped by the availability of federal research monies. Hence, universities and faculty vied for research grants, as doctoral students aligned their research interests with faculty agendas in order to obtain fellowships.

After the rapid growth of higher education and the subsequent rise of doctoral education there came a slowing in growth brought on by the economic constraints of the 1970s (Walker et al., 2008). These challenging times created space for debate centered on the purpose of graduate education, and the role and structure of doctoral education. While the conditions and forces for change in doctoral education at this time were strong, doctoral education and structure as a whole did not change much from the patterns cemented during the 1940s through the 1960s.

Doctoral education during the 1980s and 1990s changed dramatically in terms of the demographics of the doctoral student population. For the first time at the doctoral

level, large numbers of women and international students began graduating (Walker et al., 2008). Further, the types of doctoral degrees offered also increased, creating new fields of study or new specializations in previously established fields. This diversification and growth in doctoral education was partly spurred by the predicted retirement of many faculty members. In reality, this mass exodus of academics did not occur and, in its absence and in efforts to rein in costs, colleges and universities began using adjunct faculty. Also, the absence of academic appointments led some institutions to establish postdoctoral fellowships, but even so, many doctoral graduates entered non-academic positions. In this way, the last part of the 20th century marked the diversification and fragmentation of doctoral education punctuated with new demographics of learners, program types, and eventual career paths.

History of Online Education

Distance education is the birthplace of online education. Yet, distance education is varied in type and format. Some argue that it is founded in more recent history, "Education has been offered at a distance for over one hundred years, initially with the exchange of study material via postal service" (Cross, 2008, p. 19). For many years higher education has remained somewhat static in its delivery methods. Though education has become more and more accessible to many people the traditional model prevailed. Students would come to class at large brick-and-mortar universities and to classrooms with teachers mostly lecturing. This is certainly still the case today with much of American higher education, however over the last few years things have begun to change. No longer were classes required, in the case of correspondence and other distance learning modes, and with the advent of the Internet came online learning.

Since the 1970s educators have adopted different modes of computer-aided communication. Educators in turn used these new media to change the way that they interacted with students and the curriculum itself (Harrison & Stephen, 1996). However, even though distance education existed in many forms from correspondence classes to other media, for many years, there was no systematic form of computer-aided distance learning until more recently. Indeed as Duncan (2005) writes "the history of distance education is really a long history and goes back to correspondence courses, audio and video, and educational television" (p. 404). It is this history that led to the birth of what we know as online education today.

Interestingly, some of the roots of online education can be traced to the U.S. military. Early on the military started experimenting with systematic ways to train soldiers, and as Duncan (2005) notes,

> By the late 1980s, military training planners had already adopted the view that it would be cheaper to send instruction to people who could study in their own home than it would be to pay per diem and travel to bring these personnel to a central location. (p. 398).

Thus, with the simple desire to save money, the military began to develop new ways to train soldiers. Among these was the idea of Advanced Distributed Learning that later would be a starting point for online educational models.

In the 1990s, with the introduction of computer networking, new advances and educational applications to distance learning were created. Writing almost 20 years ago Harrison and Stephen (1996) note, "In less than two decades, educational opportunities

and futures have been dramatically reconfigured with the advent of computer networking" (p. 203). Along with this ability to network computers came "... the possibility of offering learning on a scale more far-reaching than previously imagined" (Maeroff, 2004, p. 2). In essence computers were being slowly changed for classroom seats (Maeroff, 2004). Later, these technological advances were put together to create the first large scale online classes, as introduced at Open University in the United Kingdom in 1999 (Mason, 2000).

In short, online education has evolved from the general concept of distance education, which some estimate has been around for over 100 years; to a specific kind of distance education that specifically uses networked computers (Cross, 2008). The shifts and delivery of educational products have provided new levels of access to students, new modalities and pedagogy's of learning, as well as have presented some interesting challenges.

Recent Growth and Value Higher Education

Through the 1990s the United States had the highest college graduation rate of any country in the world (Tough, 2013). At the undergraduate level enrollments continue to grow and at the graduate level demand seems to remain at high levels (Allum et al., 2012; Walton, 2011). This growth in graduates, enrollments, and demand may be a reflection of the fact that it is estimated that "An American with a BA can now expect to earn 83 percent more than an American with only a high-school diploma" (Tough, 2013, p. 149). Moreover, those individuals that hold master's or professional degrees are predicted to earn even more over their careers than those that only hold bachelor degrees (Bureau of Labor Statistics, 2012).

Interestingly, even while demand remains high for graduate education as evidenced by increasing applications, the carrying capacity of these programs has caused a slight dip in the total numbers of graduate enrollments recently (Council of Graduate Schools in the United States, 2008). This in turn may be the cause for further expansion of non-traditional programs at the graduate level, as institutions try to find ways to serve more students, but at a lower cost (Allen & Seaman, 2005). However, one area of graduate studies did indeed add more enrollments despite the over-all reduction in graduate level enrollments that of doctoral studies (Council of Graduate Schools in the United States, 2008). While the growth in enrollments was modest, 2.1% according to the institutions reporting in the study, it is in contrast to dropping enrollments at the master's' level in general (Council of Graduate Schools in the United States, 2008).

Not surprisingly much of the growth in higher education in general may be in part a result of increasing access to colleges and universities. Certainly, many factors contribute to the over- all growth of higher education in America, but one important aspect could be the increased popularity of online programs (Allen et al., 2011). At the undergraduate level, recent studies indicate that, enrollment in non-traditional online programs have grown 10 percentage points from 2000 to 2008 (Walton, 2011). This is in contrast to the 1% growth of higher education as a whole (Allen et al., 2011). This increase in online enrollment is steep in comparison to traditional enrollment growth and perhaps marks a shift in higher education delivery or demographic patterns.

In addition, Allen et al. (2011) report that while the rate of growth in online education is slowing it still outpaces the growth of traditional higher education. The authors note that, "Over 6.1 million students were taking at least one online course during

the fall 2010 term; an increase of 560,000 students over the number reported the previous year" (p. 4). This number also means that over 30% of all students enrolled in institutions of higher education are taking at least one online course (Allen et al., 2011). These findings support the notion that online education is being adopted and continues to grow, albeit at slower rates.

Perhaps the growth in non-traditional online programs is evidence that students desire more flexible programs, especially if students are working full-time (Berg, 2005, Lewis, Smith, & Massey, 2001). Maeroff (2004) notes that as early as 2001 online education was not a passing fad and was set to continue to grow. While Maeroff largely felt that online education would take hold at the post graduate level, he did however note that the development of online education created conditions for educational choice and for free market forces to work. These conditions set the stage for institutions of higher education to be flexible enough to reach previously untapped groups of students.

This idea is reflected in the fact that online students are often older (Walton, 2011). One study indicates that as age increased so did the percentage of students who participated in distance education courses. Further, other scholars report that many online or distance students choose the modality because of life responsibilities whether those include caring for children, working, both, or other responsibilities (Carr, 2000; Lim, 2001). This flexibility that non-traditional education affords could also be one reason why graduate education is experiencing growth in the realm of non-traditional courses and programs.

In a report on the state of online education in the U.S., Allen and Seaman (2005) found that, in institutions classified as doctoral/research universities, 78.9% of those

institutions offered online courses at the master's level. Further, the same study noted that

65.8% of institutions classified as master's institution offered online course at the

graduate level. Taken together the mid-sized institutions "… offering graduate and

undergraduate face-to-face courses, 80% are also offering undergraduate courses online

and 70% are offering graduate courses online" (p. 5). These numbers point to a relatively

robust adoption of non-traditional course offerings at the graduate level and contradict the

notion that online growth may be attributed to professional or continuing study courses.

"Survey responses also refute the notion that *non-core* continuing education courses

account for the bulk of the growth in online learning" (p. 6). Thus, it can be seen that

online growth, in terms of course offerings, is indeed a result of much more than a rise in

adult continuing educations courses.

On a broader scale, not only are institutions offering non-traditional online

courses but also, entire programs. Allen and Seaman (2005) note:

> Forty-four percent of schools offering face-to-face master's programs also offer
>
> master's programs online, the highest penetration rate for any program type. The
>
> figure is even more impressive among specific subgroups of institutions. The
>
> penetration rate for master's programs rises to 56% in Public institutions and to
>
> 78% in private, for-profit institutions. Doctoral institutions also have a relatively
>
> high penetration rate (66%) for master's programs. (p. 6)

In this way, many types of institutions are offering entire online programs at the graduate

level. This growth in online graduate education is online with a recent report by the

Council of Graduate Schools in the United States (2009) that expressed that there is no

reason to believe that technology will not be an important influencing force in graduate

education in the future. Thus, not only is graduate education growing currently, but is also predicted by some, that technology will continue to be integral to graduate studies (Allen & Seaman, 2005; Council of Graduate Schools in the United States, 2009).

Beyond the master's level, traditional doctoral education is growing (Council of Graduate Schools in the United States, 2008). However, so is the growth of non-traditional programs in various forms. To begin, non-traditional doctoral programs have their roots in America as early as 1921 at Harvard University. In 1921 Harvard introduced the first non-traditional doctoral program in the United States-- the doctorate of education (Kot & Hendel, 2012; Servage, 2009). From that time, until today, non-traditional doctoral programs have generally been characterized as programs that differ from traditional doctoral education in their applied nature and alignment with industry needs (Kot & Hendel, 2012; Servage, 2009). These programs in their various forms have grown in number and kind. For instance, Kot and Hendel (2012) write, "The proliferation of professional doctorates has been remarkable in the USA, UK, and Australia, and, in the last decade, it has begun to attract the attention of higher education scholars and researchers" (p. 346). These scholars note that non-traditional programs have experienced rapid growth across many countries.

Further, these programs are experiencing innovations in discipline, purpose, and format. "An even more significant trend in a number of countries has also consisted in creating new forms of doctoral degree programs, referred to as professional doctorates, applied doctorates, practitioner doctorates, or clinical doctorates in various disciplines" (Kot & Hendel, 2012, p. 346). The growth of non-traditional doctorates is not only

evidenced in the sheer numbers of programs, but rather in the diversity of programs, as well as the formats in which they are offered.

Interestingly, this shift is enabled by, and perhaps catalyzed by the demands for knowledge workers coupled with the rise of online educational modalities.

Various factors have been linked with the emergence and growth of professional doctorates internationally, including: employability of doctoral degree holders and the critique of the research-oriented Ph.D., the growth of the knowledge economy and the changing role of higher education, and governmental involvement and public policy. (Kot & Hendel, 2012, p. 349).

In this way, the new non-traditional doctoral program is not only aligned with industry and contains elements of an applied researcher model, but also is offered in diverse modalities including hybrid and online versions.

This change, perhaps, is in response to the recognition that traditional models of doctoral education cannot serve current students or conditions well. Even in works written on traditional doctoral students, there is a growing recognition that the old model has many flaws. For example, Golde and Walker (2006) note that,

Disciplines continue to change, as do universities, the job market, the character of professional work, and the student population. Over time, changing conditions may mean that doctoral programs no longer effectively meet their purposes, as some practices are rendered obsolete. (p. 4)

As these authors point out, there are many challenges and changes facing doctoral education. These include: lengthening times to completion of programs, complexities surrounding financial support for doctoral students, the erasure of research boundaries

across disciplines and physical space, reports that doctorally prepared workers do not function well in the workplace, the underrepresentation of minorities and women in doctoral education, and an accepted consensus that "…doctoral student attrition in many departments approaches or even exceeds 50%" (Golde & Walker, 2006, p. 5). Thus, doctoral education has begun to embrace, or at least examine new ways of programmatic design and course delivery.

This in many ways represents a third generation of doctoral education. The first being traditional doctoral education that is grounded in a research focus and full-time study, the second focusing on researcher practitioner models and alignment with industry needs, and the last embracing the practitioner researcher model and alignment with industry needs, but also delivering courses at a distance either solely or in hybrid situations. This change can be read as a reflection of current doctoral student needs. For example, Pappas and Jerman (2011) write that, "In the last decade, many institutions have stepped forward with an array of non-traditional doctoral programs to meet the needs of these adult learners" (p. 1). Thus the non-traditional doctorate in its many forms, but especially in online and hybrid modalities has emerged in reflection of new needs both from students and more broadly from society.

This new direction emerges within a space of changing internal and external forces. Hence, doctoral education is beginning to embrace non-traditional programmatic designs to reach new populations of students. As Kot and Hendel (2012) write, "…since the first half of the twentieth century, the Ph.D. tradition has been challenged and doctoral education has taken a new direction" (p. 346). Some scholars argue that, in part, some of the pressure for change is embedded, not only in the notions of a changing

student base, but also in the context of the role of the university in modern society.

"Couched within broader attention to the role of universities in so-called *knowledge economies* is growing interest in the reform of doctoral education" (Servage, 2009, p. 765). The demand for knowledge workers can be seen as a major force at work in driving up the demand for non-traditional doctoral education (Servage, 2009). Speaking further on the conditions that have created a rise in non-traditional doctoral education, Servage (2009) writes, "A relatively low demand for academics, coupled with a perceived increasing demand for high-level research skills in non-academic settings, may offer a partial explanation for growing interest in a body of reforms and innovations to doctoral-level studies" (p. 765). These conditions may be in part responsible for the willingness of program administrators to consider online and hybrid methods as a means to delivering doctoral education, as levels of demand for faculty decrease and demand for non-academic doctoral prepared workers increase.

Thus, even at the apex of academia, modality of course delivery is changing. This may be surprising when one considers that traditional doctoral education has been conducted in a similar fashion for many years. Along these lines Archbald (2011) argues:

> We associate the traditional doctorate with young adult, full-time students enrolled at the brick and mortar campus, some toiling in full-time study and destined for a profession for which the doctor is an entry requirement. Now there is a new non-traditional population created by the enormous expansion of adult continuing education, information technology revolution, and the rise of new online universities. (p. 12)

In short, Archbald (2011) is pointing out that there is a fundamental shift happening within doctoral education and that it involves, in a large way, delivery methods. In addition Archbald notes that these new non-traditional programs employ technology as a means of delivery "Online study in just a few decades has become a major part of doctoral education" (p. 13). As a result of changing student demographics and other forces doctoral education is increasingly being offered in non-traditional settings, particularly online.

This shift from residency based doctoral programs to non-traditional online programs marks a change towards student accommodation. This idea of non-traditional doctoral programs being student centric can be seen in the following: "Students can enter doctoral study without residency requirements, without facing hundreds of hours of annual commuting, and without quitting their jobs or relocating" (Archbald, 2011, p. 13). The flexibility that non-traditional online doctoral programs afford allows for a more diverse student population (Offerman, 2011). Thus, online modalities of doctoral education make non-traditional programs accessible to more students, and remove the ground campus and faculty centricity of traditional programs.

In short, higher education in general continues to grow. While undergraduate enrollments continue to increase, graduate enrollments have somewhat leveled off (Council of Graduate Schools in the United States, 2008). However, traditional doctoral programs have modestly increased their enrollments. Simultaneously, both undergraduate and graduate programs have begun to adopt online delivery modalities (Allen & Seaman, 2005). Similarly, doctoral education has evolved from traditional ground based programs to non-traditional ground based programs, and more recently to non-traditional online

programs. This growth at the undergraduate and graduate levels both in brick and mortar programs and online create enormous opportunities and complexities. These obstacles, of which there are many, are also evident in non-traditional doctoral programs.

Attrition in Higher and Online Education

Attrition in higher education has been a concern for many years, but the definition of what attrition is has been nuanced and murky (Tinto & Cullen, 1973). By some measures attrition is measured by whether or not a student completes his or her course of study at a specific institution. On the other hand, one definition of persistence is that of the college dropout, those people who never complete a college degree at any institution. Either way both definitions represent the failure of an individual student to obtain a college degree, by persisting in a program of study.

Interestingly, while scrutiny of student attrition mostly is aimed at online education, even in traditional brick and mortar institutions some scholars note that while access to higher education in America has increased "…the percentage of college students actually completing a two- or four-year degree has not increased significantly in more than 30 years" (Kazis, 2006, p. 13). In this unsettling pattern more and more students are entering college but less of them are completing college. Similarly, Tough (2013) notes that in the United States the problem of access to college has now shifted to a problem of "… unequal college completion" (p. 149). When compared to completion rates of other countries the U.S. rates second to last behind Italy. Again Tough writes "… over the past few years, it has become clear that the United States does not so much have a problem of limited in unequal college access; it has a problem of limited and unequal college completion" (p. 149). In a short period of time the United States has gone from

leading the world in producing college graduates to having a problem helping people graduate at all, "…not long ago, the United States led the world in producing college graduates; now leads the world producing college dropouts" (p. 149). As Tough notes, the problem of student attrition in higher education is not a shrinking but an increasing problem. In this way, student retention is not just an issue for online courses and programs, but for higher educational institutions in general.

While most research has focused on the problem of student retention and attrition at the undergraduate level, there is rising concern about attrition at the highest levels of the Academy, particularly, within traditional doctoral programs. Walker et al. (2008) write, "... about half of today's doctoral students are lost to attrition–and in some programs the numbers are higher yet" (p. 197). Further, Denecke, Slimowitz, Lorden, and Stewart (2004) add, "Conventional wisdom holds that 40% to 50 % of students who begin Ph.D. programs in the United States actually complete their degree" (p. 3). These types of reports lead Lovitts (2001) to call doctoral attrition the *invisible problem* because not even program administrators are often aware of the persistence rates in their own programs. While this may seem curious, Lovitts points out that many doctoral programs are measured on enrollments rather than completion, and as such are not incentivized or held accountable for tracking nor remediating attrition problems.

In addition, to the departmental reporting structures that may allow doctoral attrition to go unnoticed, others point to faculty complicity. Damrosch (2006) writes:

> Even dysfunctions of the current system have their silver linings-- not for the
> students but or the faculty. Ph.D. programs can live for decades at a time with
> attrition rates of 50% or more, for example, in part because a high level of

attrition is doubly beneficial to the faculty, giving us a plentiful supply of

beginners to teach (and to do our grading), while sparing us a corresponding

overload of dissertation advising at the other end of the program. No faculty

member would make a direct calculation of such a cost benefit ratio, but we are so

used to the system that we can readily avoid facing its problems… (p. 35-36)

Thus, doctoral student attrition can be seen through the lens of self-interested faculty

turning a blind eye to the problem in order to keep from being crushed by too many

committee or chair appointments. Certainly faculty, as Damrosch (2006), rightly states

by-and-large do not have dubious plans or intentions for students, but rather are

incentivized to make sure that they only allow the most independent students to the last

stages of doctoral education.

Within the context of structural barriers and other problems that contribute to

doctoral attrition, national completion rates for doctoral students sit around 40-50%

(Bowen & Rudenstine, 1992). Similarly, other researchers note that the time to complete

just a doctoral degree or the completion of a bachelor's degree to the completion of a

doctoral degree; are both lengthy (Thurgood et al., 1995). In a longitudinal study

spanning 10 years one team of researchers found that 57% of doctoral students that

started a program finished (Council of Graduate Schools in the United States , 2008).

Thus, the attrition rate amongst doctoral students is somewhere near 50% (Bowen &

Rudenstine, 1992; Council of Graduate Schools in the United States, 2008; Golde &

Walker, 2006). While the exact causes of these high attrition rates and low completion

rates are debatable some scholars note that the nature of the degree itself complicates

matters. For example, Denecke et al. (2004) write,

Ph.D. students bear a greater responsibility for defining the scope of their

educational experience… Further, the degree requires initiative and creativity, and

the award of the degree depends upon the individual performance of a student in

completing original research in the area of study. (p. 3).

In this way, doctoral students face a hurdle that other degree seekers do not: the implicit

expectation of independent, creative, and persistent work.

While the causes of high attrition and low completion rates among doctoral

students are varied and many, some studies shed light on the subject. In one broad study

that surveyed 12,135 traditional Ph.D. students across 58 disciplines, it was found that

under half (45.5%) of the students who enrolled in a doctoral program completed their

degree after 7 years of study. Further, the same study showed that the completion

percentage only modestly increased after 10 years of study to 56.6% (King, 2008a).

Inside of this broad cross-section of disciplines, both science, engineering, and math

(SEM) and social science and humanities (SSH) had differing completion rates, with the

SEM programs beating out the SSH programs (King, 2008a). This data confirms several

ideas. First, that in accordance with other studies, that the completion rate of these

students was near or under the 50% mark (Bowen & Rudenstine, 1992; Council of

Graduate Schools in the United States, 2008; Golde & Walker, 2006). Also, that extended

amounts of time, 10 years even, in program length duration only yielded modest

increases in student completion. Last, that completion rates vary by program, but that the

sciences tend to do better in comparison to social science and humanities in terms of

completions rates.

Similarly this same reported revealed differences in completion in contrast to

attrition rates. While it may seem that completion and attrition rates are just two sides of the same coin they do tell us different things. For example, by looking at completion it is possible to understand when students have completed their degree within a certain timeframe, but it does not reveal data on those who have left the program. In this way, studying attrition allows the investigation of why students desisted and dropped out of a program (King, 2008a).

In looking at attrition in the sample of 12,135 traditional Ph.D. students, King (2008b) notes that most students left their doctoral program early in their programs with attrition rates growing from year one to year four and then stabilizing.

> Cumulative attrition rates for the first 4 years increased very quickly in the SEM fields but thereafter slow through year 10. In SSH fields, the average cumulative attrition rate increases more gradually during the first 4 years and thereafter increases at a faster rate than in the SEM fields. (King, 2008a, p. 38).

Thus, in the SEM programs students drop out more and more up to year four and then attrition levels off. However, in the SSH fields attrition is slower up to until year four and then upticks thereafter. Overall, attrition rates of SEM programs are higher than the SSH programs, with SEM attrition rates at above 30% and SSH attrition rates below 30% (King, 2008a).

The notion of students dropping out within the first couple of years is bolstered by Denecke et al. (2004) who report that it is common that students leave in the first 2 to 3 years of course work. However, as Denecke et al. further point out, "…it is not uncommon for students in some fields to spend six to eight years in a doctoral program and then withdraw without completing a degree" (p. 4). In this pattern, students either

drop out early on or desist in the later portions of the degree program of study.

In another report for the Council of Graduate Schools in the United States, King (2008a) reported on the differences in completion rates for traditional Ph.D. students in terms of demographics. King reports that, "… 58% of males, 55% of females, 67% of international students, and 54% of domestic students completed their Ph.D. programs in 10 years" (p. 48). However, King (2008b) later notes that some comparisons of different groups yielded significant differences while others did not:

> The higher cumulative 10 year completion rates for men than women, for international students than domestic students, and for Whites than Asian Americans and African Americans are statistically significant. However, White students' higher cumulative 10-year completion rate is not statistically significant when compared to Hispanic Americans. (p. 48)

Interestingly, in some ways being part of certain groups was predictive of completion while others, even though different, were not different enough to be statistically significant. In this way, men are more likely to complete than women, Whites more likely to complete than Asian or African Americans. However, even though differences exist between White student cumulative ten-year completions rates in comparison to that of Hispanic Americans, the difference is not large enough to be significant.

Programmatically, demographics also reveal important differences. For example, in SSH programs, women have a statistically significant higher completion rate than men. Conversely, in the SEM fields men have higher completion rates than women at a statistically significant level (King, 2008a). In addition, in both SEM and SSH fields international students complete at higher rates than domestic students. In short,

completion and attrition rates differ by years in the program, type of program, and demographic factors. However, the data over-all confirms that traditional Ph.D. completion to be somewhere around the 50% mark.

In an effort to understand what helps students complete the traditional Ph.D., one study surveyed those that successfully completed their degree and asked them which factors most contributed to their success (Sowell, 2009). The survey consisted of 1,856 doctoral students, of which 76% had completed their program of study, 3% had dropped out, and 16% that were still in the program, and 5% that were missing key information so as to make their data ineligible. The survey revealed that three self-reported main categories encompassed the factors that most contributed to Ph.D. completion. 80% of students surveyed noted that financial support was the most important factor in their completion. Next, 65% reported that mentoring in one shape or form was important to their program completion. Last, 57% of those that completed their Ph.D. indicated that nonfinancial family support was very important.

In this way two of the top three factors cited as contributing to successful degree completion were centered on relationship dimensions. Both the notions of familial and mentor support are relational in nature and have interesting implications. Number one on the list was financial support, which may show the importance of creating doctoral programs that address the comprehensive needs of a student, such as meeting necessary financial costs associated with pursuing doctoral education.

The next three reasons, important to completing their programs, according to the completing students, were social environment/peer support group, program quality, and professional/ career guidance (Sowell, 2009). The bottom ranking factors that students

rated as important for their completion of the degree were: program requirements, personal circumstances, and other. It is only in the bottom six that program quality and program requirements make their appearance while the other factors can be categorized into relationships, career guidance, and personal circumstances. Here, it seems clear that nonacademic factors were crucial in degree completion.

Other studies have focused on programmatic interventions aimed at effectively reducing doctoral attrition. For example, in a study that examined the effectiveness of the Andrew W. Mellon foundation's Graduate Education Initiative that was aimed at reducing doctoral attrition (GEI) the authors write, "…our findings suggest that the GEI reduced attrition rates and improved graduation rates primarily through the routes of improving clarity of expectations and encouraging students to finish their dissertations as quickly as possible" (Ehrenberg, Jakubson, Groen, So, & Price, 2007, p. 145). These results point to the importance of clarity of expectations within the program of study, as well as the importance of the expectation of quickly finishing the dissertation. However, within this context is important to note that expectations and encouragement require relational components between students and faculty. Further, that creating clear expectations and encouraging students to finish their dissertations quickly hinge upon the students ability to be responsive to encouragement and persistence in being self-motivated to complete the degree.

In a separate study both academic and nonacademic factors were examined in relation to student degree completion. The study examined data for 168 doctoral students that enrolled in an Ed.D. program for Educational Administration from 1986-2000, Malone, Nelson, and van Nelson, (2004) found several interesting predictors of doctoral

success. The study was conducted in two phases. First, independent variables were examined in relation to degree completion and non-completion. These factors were classified as academic factors and consisted of: (a) GRE scores, (b) undergraduate GPA, (c) graduate GPA, (d) demographic information, (e) completion of the Ed.S. degree, (f) Carnegie Classification of undergraduate and graduate degrees earned, (g) majors of undergraduate and graduate degrees, and (h) final GPA. These factors were examined in relation to the completion or non-completion of the degree using regression analysis to find out which, if any, factors or combination of factors were predictive of student degree completion.

After examining the academic factors the authors noted that the completion of the Ed.S. degree, Carnegie classification of the master's degree, and master's' degree GPA "… were useful in predicting doctoral degree completion" (Malone et al., 2004, p. 51). Further the authors note that the undergraduate GPA should also be a consideration when admitting doctoral students as descriptive data showed that students with lower than normal admissions standard GPAs may struggle. However, the authors note that: "The model, therefore, was only 48% accurate in predicting the non-completion of the degree" (p. 43). Conversely, the model was 80% predictive of who would complete the degree. Taken together the authors conclude, "This indicates that factors other than academic ones are influencing whether or not a student completes the doctorate" (p. 43). Thus, academic factors were not strongly predictive of degree completion or non-completion, but the completion of the Ed.S. degree was most predictive.

In the second phase of the study the authors surveyed 144 students, of which 92 responded. The results of the survey were framed as affective factors. The survey

questions fell into seven categories aimed at asking students what they believed

contributed to their success or lack of success in completing the degree. These categories

were as follows: (a) competencies gained, (b) quality and strength of coursework,

(c) involvement of students beyond the classroom, (d) academic learning opportunities,

(e) cognate courses, (f) departmental participation, and (g) gathering information (Malone

et al., 2004). In analyzing the variance of differences between those who completed and

those who did not complete their degrees, three factors emerged as significant:

"…Competencies Gained, Academic Learning Opportunities and Departmental

Participation" (p. 50). This led the authors to report the following:

> This suggests that in addition to a quality academic experience, a residency
>
> requirement or some other highly intensive experience may be needed to foster
>
> student participation beyond the classroom. This may lead to greater retention in
>
> the program and an increase in the graduation rate. (p. 50)

Thus, the study found that experiences beyond the classroom might be important to

increasing the graduation rate among this particular group of Ed.D. students. Overall, the

study revealed that only scant academic factors were predictive of degree completion, the

strongest of which was the prior completion of the Ed.S. degree. Also, the study

emphasized the notion that nonacademic factors could play an important part and degree

completion, especially in the areas of student interaction with colleagues, faculty, and

each other outside of the classroom.

In short, studies of traditional Ph.D. programs reveal that somewhere between 40

to 50% of students complete their degrees (Bowen & Rudenstine, 1992; Council of

Graduate Schools in the United States, 2008; Golde & Walker, 2006). Also, because the

Ph.D. is somewhat self-directed and a highly independent enterprise, the degree itself

may lend itself to higher attrition rates (Denecke et al., 2004). However, some authors

have noted that certain demographic factors are predictive of degree completion (King,

2008a, 2008b). Among these is the overall idea that white males are more likely to

complete their degrees, but that in social science programs women are more likely to

complete their degrees (King, 2008b). Further, international students, through all types of

Ph.D. programs, are more likely to complete their degrees. In terms of non-demographic

factors, other authors found that completing students reported that financial aid,

mentoring, and family support were important to their degree completion (Sowell, 2009).

Also, programmatic changes in clarifying expectations and encouraging quick completion

of the dissertation have showed some success (Ehrenberg et al., 2007). Last, one study

noted that several academic factors were predictive of Ed.D. completion (Malone et al.,

2004). However, these factors: (a) completing the Ed.S. degree, (b) Carnegie

classification of the master's degree, and (c) master's degree GPA were not strong

predictors. Conversely, the same study reported that several affective factors were self-

reported as important for degree completion. These were competencies gained, academic

learning opportunities, and departmental participation. The authors concluded that this set

of factors pointed to the need for student integration beyond the classroom.

Online Education and Attrition

While we have seen that attrition in higher education is not a problem discrete to

either ground or online modalities, some point out that online education is lagging behind

traditional forms of education in terms of student retention (Aragon & Johnson, 2008;

Carr, 2000). Thus, as new modalities of higher education have emerged, such as online

education, so too have its critics. From questions of quality to questions about learning

outcomes, online education, because of its nascent nature is often viewed through a

critical lens. At the forefront of this criticism is the notion that student completion rates in

online courses differ greatly from those in traditional ground courses. Some estimate this

difference to be somewhere between 10 and 20 percentage points (Aragon & Johnson,

2008; Carr, 2000). In this way, online education courses are widely believed to have

lower student retention rates per course than traditional brick-and-mortar courses.

    While there is not wide agreement on exactly how far behind online classes are in

terms of retention compared to traditional courses there are reports indicating lower

retention in online courses that are significant. For example, Aragon and Johnson (2008)

note that some community colleges are reporting dropout rates 20% higher in their online

courses then in their traditional courses. "Some community colleges are reporting dropout

rates 20% higher than in face-to-face class- rooms"(p. 3). Also, Stover (2005) argues that

in general most academics agree that distance education courses have lower completion

rates. Chyung (2001) seems to agree with this assessment, "However, a high turnover in

enrollment has been a continuous problem in distance education" (p. 3). Further, Carr

(2000) argues that completion rates in online education are lower than in traditional

courses reinforcing the 20% difference between distance courses and traditional courses.

In reality, these indications warrant investigation to attrition causes and possible solutions.

    The causes of attrition in higher education are diverse and many. To begin, early

research on the subject has revealed that social status is one factor in student persistence

(Tinto & Cullen, 1973). Along these lines both income and educational level of parents of

college students were found predictive of college drop out. However, educational level of

parents of college student seems to be even more predictive of student persistence. While these studies centered on traditional ground students some of their findings are reflected in studies specifically conducted in the realm of online education.

For example, Aragon and Johnson (2008) found in their study of completion and non-completion of online community college students several surprising things. On the one hand they concluded that students that were enrolled in more online course hours tended to complete their courses more than those with fewer hours: "The mean online hours of completers was 4.32 and 1.48 for non-completers" (p. 9). Also, these same authors noted:

> The study found previous GPA, as measured at entry at the beginning of the semester of data collection, to be significantly different for completers and non-completers in online courses. The students completing their online courses had a mean GPA of 2.47 and students not completing their courses had a GPA of 1.66. (p. 10)

This may indicate that entry GPA is a predictor of student online retention while seemingly obvious notions such as heavier course loads equals less persistence may not.

Further, on self-reports Aragon and Johnson (2008) found that students did not complete their course for the following reasons: (a) personal reasons (34%), (b) course design and communication (28%), (c) technology and web issues (18%), (d) institutional mistakes or procedures (11%), and (e) because the class did not fit their learning styles (9%).

While this study is not exhaustive nor longitudinal and only represents a small sample at one community college it add much to the discussion of the causes of online

attrition. Simply put, this study reinforces the notion that GPA seems to predict

persistence, but also that, as noted in the self-reported data, that environmental and

interpersonal problems may be an important piece to understanding the reasons students

do not persist in online course. Further, because the self-reported data in this study coded

personal reasons as the number one reason students desisted in their work, it may indicate

that trait level characteristics that combat personal crises may be helpful for online

student retention.

   Further investigating student behaviors that may contribute to successful

completion of online courses, Nagel et al., (2009) found that online participation is an

important indicator in student success. Participation becomes the base of creating a

community online that leads to better student retention. In short, those students that

participated and did so in a quality way were more likely to pass the course. However, the

authors note:

   We present evidence that in a predominantly participative class the number of

   times students access the course, the number of contributions to discussions, the

   ratio of replies to others' posts, and integration into the learning community

   all significantly relate to successful course completion. These metrics, however,

   have poor individual predictive value because the great diversity of students in

   the cohort included numerous exceptions. (pp. 48-49)

Thus, each aspect of participation did not independently have significance; rather the

authors suggest an interdependent system of participatory practices. In short, Nagel et al.

(2009) argue that while each of the above factors in isolation are not predictive of student

online persistence and completion they are together a formation of an influential

combination of factors that work in a interdependent manner to help student be more successful in completing an online course.

Further in the attempts to create an instrument that can predict achievement in online courses Bernard et al. (2004) defined success as passing the course and as such looked at 167 students who were taking an online course. They found that their instrument that looked at the following areas: (a) general beliefs about distance education, (b) confidence in prerequisite skills, (c) self-direction and initiative, and (d) desire for interaction, was predictive on a small scale, but was not as predictive as cumulative grade point average. However, the study reveals an interesting finding. Of the four factors that the survey tested self-direction and initiative along with beliefs about distance education were the most predictive. "Two of the four factors significantly predict achievement (Course Grade): (a) beliefs about DE is a positive predictor and (b) self-direction and initiative" (pp. 43-44). This is interesting to note because both are internal student characteristics.

However, other scholars point out that some institutions are able to achieve high course completion rates. While these authors are not arguing that all or even on average, that online courses have high completion rates, they do suggest that there are certain best practices that can contribute to student success (Moore & Fetzner, 2009). Moore and Fetzner (2009) note that while online courses completion rates are often thought to be lower than traditional courses, there are some institutions that tend to have better success with retaining students. Based on several case studies Moore and Fetzner identify several possible institutional practices that may contribute to better online course completion; these are:

- *Access*: Create ways to make sure that students have access to online course, understand what is required, and have necessary support.

- *Faculty satisfaction*: Make sure faculty understand the demand of online teaching as well as its benefits, involve faculty in curriculum development, support faculty with training and technical support, and recognize great teaching.

- *Learning effectiveness*: Show that online learning is as good as traditional venues, encourage student teacher interactivity, use cohort and learning teams, encourage prompt feedback from faculty to students, use assessment tools to evaluate learning.

- *Scale*: Create a sustainable model that fits with the institutions mission.

- *Student satisfaction*: Create an online community for students, have tech and other tutoring support services, create flexible scheduling practices and conduct student satisfaction surveys.

These best practices, while not exhaustive, may be a starting point for institutions to take into consideration as the try and create ways to better serve students in online classrooms.

Attrition in Non-Traditional Doctoral Programs

As most research at the doctorate level has focused on traditional Ph.D. and Ed.D. programs, not as much is known about attrition and completion rates amongst non-traditional doctoral students (Pauley et al., 1999). However, what does exist, points to the notion that attrition in non-traditional doctoral programs also seems problematic. Rockinson-Szapkiw (2011) writes, "Doctoral attrition, especially in the distance education environment, is of concern on many levels" (p. 1162). This concern may be

warranted if non-traditional doctoral programs follow the same trend as their

undergraduate online counterparts that tend to have higher attrition rates than traditional

ground programs.

> This seems to be the same connection that Rockinson-Szapkiw (2011) makes,
>
> In the online environment, attrition rates are higher than in traditional programs.
>
> Thus, a need exists to identify interventions and mediums that can be used to
>
> facilitate feelings of connectedness and to increase levels of satisfaction of online
>
> doctoral candidates in the dissertation process. (p. 1166).

While the statement is proposing some solutions to doctoral attrition, it also highlights

that, if online attrition is higher, then non-traditional doctoral attrition will be higher than

that of traditional doctoral programs. Thus, some scholars have begun studying non-

traditional doctoral programs in relation to student degree completion and persistence

(Pauley et al., 1999; Rockinson-Szapkiw, 2011).

In their study Pauley et al. (1999) noted that, even in the sample site for their data

collection, where students were only admitted after careful screening, that faculty

members were concerned that highly qualified students were not completing the

degree. The study aimed to investigate which factors contributed to successful

completion of the non-traditional Ed.D. program. After surveying some 226 students of

which 103 had completed their degree and 123 had not, the authors found several

interesting things. First, the data revealed that there was not a significant correlation

between student marital status and completion of the degree, nor links between gender

and completion. Next, that there was a statistical correlation between the level of

financial support and degree completion. Also, neither the number of children a student

had nor their age was related to degree completion. However, levels of significance were found between degree completion and familial support, support from faculty members other than the chairperson, and peer support. In addition, the study showed that there was not a strong correlation between standardized test score nor undergraduate GPA and degree completion, but that there was a relationship between the students perceived level of support from their dissertation chair. Finally, the authors found that the strongest predictor of student degree completion was student motivation (Pauley et al., 1999).

In general the study highlights the importance of various sources of external support to help student complete their program of study. This support ranges from family, chair, faculty peer, and financial sources. With this in mind it is also important to note that internal student motivation is of paramount for students to complete their degrees. As Pauley et al. (1999) conclude:

> Student self-reported levels of motivation as a predictor of degree success is an elusive fact for programs to address. Perhaps, the supreme benefit institutions of higher education could offer the aspiring doctoral recipient would be an orientation program that would advise the student of the significance of the motivation factor identified by this study. A clear articulation of the expectations and sacrifices demanded by doctoral-level study would perhaps be in the best interest of both student and institution. (p. 234)

In this way, the internal characteristic of self-motivation or the like becomes an important factor in doctoral student persistence. Indeed, according to this study student self-motivation after conducting multiple regression to control for outside variables showed to be the "... strongest predictor of completion" (p. 232). Thus, it may be that

self-motivation or other internal student characteristics like self-motivation may be important amongst other populations of doctoral students in relation to student success and longevity in their program of study.

Simply put, there are several factors attributed to the successful completion of the non-traditional doctoral program. These factors could be categorized as an academic. "Clearly, factors that influence attrition in distance education doctoral programs are not only academic, but social and emotional in nature" (Rockinson-Szapkiw, 2011, p. 1162). In this way, social and relational components, along with internal characteristics may be predictive of successful non-traditional doctoral completion. For instance, Pauley et al. (1999) found that factors such as financial support, nonfinancial familial support, non-chair faculty support, peer support, chair support and self-motivation were all important factors in completing a non-traditional doctoral program. This matches well with one study that examined traditional Ph.D. degree completers who noted that financial aid, mentoring, and familial support were important in their degree completion (Sowell, 2009). Interestingly, Pauley et al. reported that self-motivation was the strongest predictor of degree completion in their study of non-traditional doctoral program completion. Thus, it is important to note that relational and internal student characteristics may be important predictors of non-traditional doctoral degree completion.

Positive Psychology

Interestingly, one way to approach the idea of non-traditional doctoral persistence may be centered in the newly founded field of positive psychology. In many ways positive psychology represents a radical departure from traditional ideas contained in much of the mainstream tradition of psychology. In general, positive psychology is the

study of the good life, or what makes life worth living and what makes people great. This is deeply in contrast to the natural order of psychology that often focuses on the depravity of humanity. As Buckingham and Clifton (2001) put it, "Guided by the belief that good is the opposite of bad, mankind has for centuries pursued its fixation with fault and failure.... Faults and failing deserve study, but they reveal little about strengths... " (p. 3). Thus, positive psychology in many ways is an outgrowth of humanistic psychology, which emphasizes that human beings are generally good and that we should focus on the good rather than the bad in people (Butler-Bowdon, 2007). Some of the most noteworthy psychologists in this area are Abraham Maslow and Carl Rogers. These psychologists gave us the iconic ideas of self-actualization and self-concept. These two ideas helped explain how individuals form identity and can reach their full potential.

In contrast to the humanistic approach, much of modern psychology has become centered on what is wrong with individuals and society. In the words of the fathers of positive psychology, Seligman and Csikszentmihalyi (2000),

> Whatever the personal origins of our conviction that the time has arrived for a positive psychology, our message is to remind our field that psychology is not just the study of pathology, weakness, and damage; it is also the study of strength and virtue. (p. 7).

Further, Seligman and Csikszentmihalyi (2000) write,

> This almost exclusive attention to pathology neglects the fulfilled individual and the thriving community. The aim of positive psychology is to begin to catalyze a change in the focus of psychology from preoccupation only with repairing the worst things in life to also building positive qualities. (p. 5).

Along these same lines, Martin (2007) writes:

> As a movement, positive psychology is still in its infancy... The movement
> emerged as a reaction against the over-emphasis in psychology and psychiatry on
> "the negative"—on mental disorders, destructive tendencies, self-centered
> motivation, and persons as isolated entities rather than participants in
> communities. (p. 89)

In other words, much of modern psychology has devoted itself to studying the worst in humanity and finding ways to help us heal. This is useful and good, but has left a lot of room for studying the positive aspects of the human experience.

More specifically, Seligman and Csikszentmihalyi (2000) describe positive psychology being comprised of three distinct domains: (a) the general or abstract, which refers to the overarching ideas of the discipline that is centered on positive subjective experience, (b) more specifically, "At the individual level, it is about positive individual traits: the capacity for love and vocation, courage, interpersonal skill, aesthetic sensibility, perseverance, forgiveness, originality" (p. 5), and (c) at the organizational level, it is about positive organizations, workplaces, governments, and other groups. Within this framework the study of individual character becomes an interesting field, as positive psychology seeks to understand the best traits of successful, happy, and fulfilled individuals. Overall, positive psychology is not pop-psychology, but instead an attempt to scientifically study and qualify the best parts of the human experience (Ben-Shahar, 2007) on the individual and group level; including the constructs of happiness, virtue, meaning, and engagement.

Inside the three overarching areas of positive psychology is the distinction

between happiness from the hedonic perspective and happiness from the eudaimonia

perspective. Both of these ideas are rooted in ancient philosophy, "The place of happiness

in the Good Life has been a central concern for thinkers from Aristotle to the present day"

(Kashdan, Biswas-Diener, & King, 2008, p. 219). The central theme of happiness was

delineated into two distinct areas: "In Nicomachean ethics, Aristotle famously

distinguished hedonism (the life occupied by the search for pleasure) and eudaimonia

(happiness that arises from good works)" (p. 219). Thus, positive psychology, rooted in

Aristotelean ideas, and in essence, has adopted this bifurcation of hedonics and the

pursuit of pleasure on the one hand, and on the other, the pursuit of meaning and virtue.

Much of positive psychology is aimed at understanding how these two big ideas interact

and can be broken down further.

Early on Seligman (1991) followed this pattern fairly closely in delineating

the central tenets of happiness as the pursuit of pleasure and the pursuit of meaning.

Quickly though, the notion expanded, as another facet of happiness, the full life was

added. This stands in contrast to the sharp dichotomy of the hedonic notions of happiness

on the one hand and strict adherence to eudaimonia on the other (Peterson et al., 2005).

Peterson et al. (2005) describe the conceptualization of the full-life as the combination of

pleasure, meaning, and engagement, "We extend this line of work by simultaneously

examining the pursuit of pleasure and the pursuit of meaning as different routes to

happiness. The unique contribution of our research is to consider a third orientation to

happiness: the pursuit of engagement" (p. 2). Still, the idea of the full-life was still

incomplete in that Seligman (2011) needed to account for other motivations for human

action beyond, pleasure, meaning, or engagement.

In many ways, Seligman (2011) summed up the compatibility of hedonism, eudaimonia, and engagement in his latest expression of happiness and welling being that he describes in his book *Flourish*. As Seligman notes the original model of happiness was based on positive emotion, engagement, and meaning. In this way, the aim of positive psychology, according to Seligman, is not happiness and life satisfaction as originally posited, but rather well-being. Positive psychology is inclusive of the notions that lead to happiness and life satisfaction, that Seligman argues are tied to affective mood, but goes beyond that to incorporate the ideas of meaning and achievement. Seligman sums it up in his PERMA model, "The five elements are positive emotion, engagement, meaning, positive relationships, and accomplishment" (p. 15). This most recent incarnation of the aims of positive psychology is more holistic and inclusive.

Inside this model, in the areas of engagement, meaning, and accomplishment is the study of individual virtue and character strengths. In many ways, character strengths become the building blocks of the larger message of positive psychology, in that at the micro-level the study of individual character strengths may lead to a better understanding of what makes some people truly successful, or as Gladwell (2008) puts it, *outliers*. Again, virtue and character find their grounding in philosophical thought, "As for 'virtue,' Aristotle meant morally good features of character, that is, objectively justified dispositions to act, feel, and judge in morally desirable ways. In contrast, psychologists who study virtue typically mean 'what is considered virtue,' either by societies or individuals" (Martin, 2007, p. 91). However, the character that Peterson et al. (2005) are advocating is not a politically couched notion rooted in the ideas of secular or religiously conservative ideologies, but rather an attempt to find commonalities across

cultures. Thus, character, in this case, refers to traits that many cultures and people find admirable.

Hence, in a study conducted via online surveys, Peterson et al. (2005) gathered data from 117,676 individuals across all 50 U.S. states and 54 nations in reference to which character traits were viewed as most important. The study revealed 24 major character strengths that the authors categorized into six major categories: wisdom and knowledge, courage, humanity, justice, temperance, transcendence. Within each of these categories are even more specific subsets that will be examined later. However, at this point it is important to note that character strengths, according to Seligman (2002), are not the same as talents. Talents are often innate and are not highly mutable. Seligman uses the idea of the talent of having perfect pitch to show that, while you can improve upon talent, you must have a talent for pitch in the first place. Character strengths, on the other hand, entail those things that we choose to do. For example, Seligman cites the idea that when we do something like correct the cashier at a store for giving us too much change that we are making a conscious choice to be honest, in contrast to exercising some inborn talent.

The critical foundation for the construct of character strengths is the idea that traits like humanity and temperance can be learned and changed over time. This idea is where positive psychology truly began to gain a foothold in the world of traditional psychology. For decades, and in various flavors, human behavior was explained either as a consequence of outside environmental influences or by internal desires and appetites. The behaviorists had dominated the discipline with their philosophy that you could only assess what you could observe and that all human behavior was based on the

reinforcement of outside forces. From the Freudian perspective, the roots of behavior and, in particular behavioral problems, were rooted deep in the individual through childhood experiences (Seligman, 1991).

While, ethologists believed that behavior was largely driven by our genetic makeup (Robinson, 1995; Seligman, 1991). Sometime in the 1960s things started to change with the rise of cognitive psychology. Building on the rigor of approaching psychology as a science, as did the behaviorists, cognitive psychologists explained human behavior as originating in the mind, as the individual made choices, some conscious, others not, in reaction to the outside environment (Butler-Bowdon, 2007).

This line of reasoning is what led Seligman (1991), even as a graduate student, to investigate and then confirm the concept of learned helplessness. In experimenting with dogs and electric shocks Seligman found that dogs that had no way to escape the shocks learned to be helpless. Dogs were assigned to three conditions: (a) dogs in shuttle boxes that could leave the shuttle when shocked in order to avoid further shocks, (b) dogs that could not escape shocks at all, and (c) dogs assigned to a no shock condition. In other words, the dogs assigned to the inescapable shock scenario, even when put in situations where they could escape, eventually stopped trying to escape as they learned that nothing they did changed their situation. In essence, the dogs learned from previous experience that they could not escape the shocks, so, even when they were in situations where they could, they did not try (Seligman, 1991). Later, Seligman worked on this notion to show that not only can helplessness be learned but unlearned.

As Seligman's (1991) argument goes, if dogs can learn helplessness then people can learn optimism. This idea grounds the notion that traits can be changed not just from bad to better, but perhaps from good to best. In total, these ideas emerging from the cognitive school of thought created a furtive seedbed for positive psychology to emerge. Hence one author notes that, "Positive psychology was foreshadowed by humanistic psychologists like Maslow and Rogers" (Butler-Bowdon, 2007, p. 3). Thus, from behaviorism, to humanistic, and cognitive psychology the ideas of positive psychology and it underlying thesis of the mutability of character traits was formed.

Grit

Building on the theories of positive psychology and more specifically within the character classification of temperance is the notion of grit (Duckworth et al., 2007; Duckworth & Quinn, 2009; Park, Peterson, & Seligman, 2006). Grit as defined by Duckworth et al. (2007) is passion and persistence for long-term goals. This notion is rooted in the ideas of self-control and even more broadly conscientiousness. Conscientiousness, one of the Big 5 personality traits, describes a person's aptitude to be organized, have follow-through, and be self-reflective (Wiggins, 1996). Further, some authors note a connection between higher levels of conscientiousness and higher measures of self-control (Ameriks, Caplin, Leahy, & Tyler, 2004). Thus, it appears there may be a link between the broad category of conscientiousness and self-control.

Even more, beyond self-control is the idea of persistence. Persistence describes the ability to continually overcome obstacles within one's life path. This is often associated with the idea of being able to pursue a goal and achieve it. From the combination of persistence, self-control, and more broadly conscientious, emerges the

concept of grit (Duckworth et al., 2007; Duckworth & Quinn, 2009).

As noted, much of psychology has not only been focused on remediating mental illness but also on understanding intelligence (Buckingham & Clifton, 2001; Duckworth et al., 2007). However, not as much attention has been paid to how people employ their intelligence, or in other words "Why do some individuals accomplish more than others of equal intelligence?" (Duckworth et al., 2007, p. 1087). In answer to the question of why some people achieve more, while others do not, even when all things are equal Duckworth et al. (2007) argue that there are some characteristics that are common amongst all successful people and that one of these characteristics is grit.

For years IQ was used as the main predictor of success and with some accuracy (Gottfredson, 1997; Hartigan & Wigdor, 1989). However as Terman, Oden, and Bayley (1947) note in their seminal study of gifted children, something more than IQ was at play for predicting life success. These authors concluded that non-cognitive abilities were more important than IQ for success. Though Terman et al. noted the importance of non-cognitive abilities, much of modern psychology surrounding success is still based on what Tough (2013) calls the *cognitive hypothesis*. This is the idea that success, today, as once predicted by Terman et al. depends mostly on IQ. The allure of the cognitive hypothesis may, in part, lie in the ease with which IQ can be measured and moreover how promising things like improving standardized test scores amongst students have been (Tough, 2013).

However, there is evidence, as Terman et al. (1947) suggested, that non-cognitive or particular personality traits may be more important than IQ (Tough, 2013). Thus, Duckworth et al. (2007) argue that non-cognitive factors like grit are more important to

success than IQ. In fact these authors argue that grit is a common characteristic to all successful individuals. This conclusion that grit is a common antecedent to success across fields was a result of numerous interviews with top performing professionals. From these observations the authors state, "We define grit as perseverance and passion for long-term goals" (p. 1087). And in characterizing grit, they note that, "The gritty individual approaches achievement as a marathon; his or her advantage is stamina" (p. 1088). Thus, grit is a non-cognitive measure of one's ability to persevere in pursuit of a long-term goal without desisting or changing interests along the way.

Related to grit is the notion of conscientiousness (Goldberg, 1990). Conscientiousness, one of the Big 5 personality traits has been linked more to better job performance than any of the other traits in the Big 5 (Barrick & Mount, 1991). Thus, conscientious individuals are "…thorough, careful, reliable, organize, industrious, and self-control" (Duckworth et al., 2007, p. 1089). Thus, in many ways conscientious individuals are highly achievement oriented. However, while these characteristics likely contribute to achievement, Duckworth et al. (2007) argue that conscientiousness as a character trait has its limitations in that the above-mentioned characteristics alone are not enough to result in distinctively high achievement (Galton, 1869).

In essence grit is more than the combined self-control traits that make up conscientiousness. "Grit overlaps with achievement aspects of conscientiousness but differs in its emphasis on long-term stamina rather than short- term intensity" (Duckworth et al., 2007, p. 1089). In this way, people who possess grit not only finish current goals but, are able to continually seek after long-term goals. Grit enables a person not only to be self-controlled enough to fight off current temptation, but also to keep

continually fixed on long-term goals. "The gritty individual not only finishes his tasks at hand, but pursues a given aim over years" (p. 1089). Also, grittier people tend to exhibit a differentiated self-control from that is explained in conscientiousness as having a "...specification of consistent goals and interests" (p. 1089). It is this differentiation that places grit over and beyond conscientiousness and its associated self-control and achievement orientation. Duckworth et al. (2007) write, "an individual high in self-control but moderate in grit may, for example, effectively control his or her temper, stick to his or her diet, and resist the urge to surf the Internet at work–yet switch careers annually" (p. 1089). Similarly, grit differs from achievement orientation or need for achievement, in that, rather than seeking goals with positive feedback loops that are relatively short, gritty individuals seek long-term goals and "...do not swerve from them–even in the absence of positive feedback" (p. 1089). Further, grit requires a cognitive decision to pursue a long-term destination rather than an incessant subconscious drive for achievement (Duckworth et al., 2007; McClelland, Koestner, & Weinberger, 1989). Grit is the combination of the self-control aspects of conscientiousness coupled with a long-term and narrowed focus on achieving intrinsic or extrinsic goals (Duckworth et al., 2007).

In the absence of a previously created and validated instrument that would test the characteristics of grit through a self-reported survey instrument, Duckworth et al. (2007) created and validated a 12-item questionnaire intended to measure grit. To begin, the authors generated a pool of 27 items intended to narrow in on the construct of grit. These items were based on the authors' previous " ... exploratory interviews with lawyers, business people, academics and other professionals" that were "high achieving" (p. 1090).

Next, through factor analysis of the 17 common results the authors by, "… conducting

exploratory factor analysis…" narrowed down the items to 12 (p. 1090). The remaining

12 items split evenly into two factors: consistency of interests and perseverance of effort.

"The resulting 12 item grit scale demonstrated high internal consistency (α = .85) for the

overall scale and for each factor (Consistency of Interests, α = .84; Perseverance of Effort,

α = .78)" (p.1091). Later, the authors concluded that the factors together were more

predictive than either one in isolation. In this way, the grit scale was developed using

factor analysis that eventually centered on two factors, consisting of six items each.

The survey was later tested in several studies and has shown to be predictive of

success in several areas. In two initial studies grit was found to be associated with

education level, with higher grit scores being associated with higher levels of education.

Also, grit was noted to be higher on average in older participants then in younger study

participants (Duckworth et al., 2007). Further, in a third study that examined "…139

undergraduate students... majoring in psychology at the University Pennsylvania"

(p. 1093), it was noted that gritty students had higher GPAs than their less

gritty counterparts with a relationship that was a stronger predictor than traditional SAT

scores in relation to GPA. However, the study also revealed that the grit score was

inversely correlated to the SAT score. As such, the authors note, "…that

among elite undergraduates, smarter students may be slightly less gritty than their

peers" (p. 1093). Thus far, grit had been shown to be predictive of undergraduate GPA,

as well as related to educational attainment and age, with grittier individuals having

higher levels of education as well as being older, and to be inversely related to SAT score.

Next, Duckworth et al. (2007) tested the grit construct's ability to predict retention

of West Point cadets more than the typically used *Whole Candidate Score* and other

measures such as self-control. The whole candidate score is "… a weighted average of

SAT scores, class ranking, demonstrated leadership ability, and physical aptitude,"

despite these and other extremely competitive and scrupulous admissions criteria and

processes "...about 1 in 20 cadets drops out during the first summer training" (p. 1094). In

the end, grit was not correlated to the whole candidate score, but was related to self-

control. Conversely, "...grit predicted completion of the rigorous summer training

program better than any other predictor" (p. 1095). However, grit was not a good

predictor of first-year GPA. Duckworth et al. explained that this difference should be

expected as first-year GPA is more of a short-term goal that requires day to day self-

regulation, whereas persisting through the first summer training requires "...a different

sort of fortitude" that allows an individual to persevere through a training designed "...to

test the very limits of cadets' physical, emotional, and mental capacities" (p. 1095). Thus,

grit was predictive of who would complete the summer training regimen for West Point

cadets.

Next, Duckworth et al. (2007) tested the construct of grit among 273 finalists who

competed in the 2005 Scripps National Spelling Bee. Of the recruited participants 175 of

the children elected to participate. The study examined grit in the context of how many

hours participants studied and later how far they made it in the Spelling Bee. In other

words, the study was seeking to find out if grittier children would perform better, and

thus make it further into the Spelling Bee rounds. In reporting their findings the authors

conclude, " study 6 suggest that gritty children work harder and longer than their less

gritty peers and, as consequence, perform better" (p. 1098). Because this section of the

study was semi-longitudinal in nature it points to a more robust explanation that grit

" …is driving the observed correlations with success outcomes rather than the other way

around" (p. 1098).

After establishing the grit scale as a feasible measure of passion and persistence

for long-term goals, Duckworth and Quinn (2009) further honed the grit scale from a 12-

item survey instrument to an 8-item instrument. Through another set of factor analysis the

authors removed four items but still retained the two-factor structure of the previous 12-

item grit scale. After confirming the reliability and validity of the scale through six

studies the authors concluded that the short grit scale, named the Grit-S was "… a more

efficient measure of trait level perseverance and passion for long-term goals" (p. 172). In

this way, the original 12-item grit scale was refined to an eight-item Grit-S instrument.

This instrument was tested and re-tested and shown to have "… predictive validity,

consensual validity and test–retest stability" (p. 172).

In addition, through development of the Grit-S with its associated studies

designed to test the validity and reliability of instrument, several new things about grit

were revealed. In one study grit was predictive of which adults "…progress further in the

education" and even controlling for conscientiousness made less career changes than

their less gritty counterparts" (Duckworth & Quinn, 2009, p. 172). In another study,

family report, peer report, and self-reports of the Grit- S were compared and were related,

in that the data indicated that grit could be assessed by outside informants. Adolescents

with higher grit scores were shown to have higher GPAs in school and to have watched

less television at home overall. Further, when re-testing West Point cadets, the Grit-S

was predictive of who would complete the strenuous summer training. Last, grittier

Spelling Bee participants were more likely to advance further in the Spelling Bee. Taken together, this data indicate that the Grit-S is a more efficient, but reliable measure of perseverance and passion for long-term goals (Duckworth & Quinn, 2009).

In short, grit is a trait level measure of perseverance and passion for long-term goals (Duckworth et al., 2007). While, grit as a construct shares commonalities with self-control measures and the Big 5 notion of conscientiousness, it differs in several ways. Self-control and other measures such as perseverance have been studied extensively as outcomes rather than predictors, grit is considered to be predictive in nature for the perseverance in the pursuit of the accomplishment of difficult tasks and/or goals. In addition, grit is different than conscientiousness in the traditional Big 5 sense in that grit centers on stamina. Or in other words "grit entails the capacity to sustain both effort and interest in projects that take months or even longer to complete" (Duckworth & Quinn, 2009, p. 166). This last notion of sustaining interests over long periods of time is one defining aspect of what makes grit different from other self-control or conscientiousness measures. Grit, requires a centrality or unity of interest focused on long-term goals. Grit also differs from achievement measures in that grit does not require short feedback loops to complete attainment of goals. Rather, the gritty individual persists even when feedback loops are spread out over months or years (Duckworth & Quinn, 2009). Grit has been shown to be predictive of several aspects of success ranging from retention in the West Point cadet-training program, higher GPAs amongst undergraduates, higher education attainment among adults, and further progress in the Scripps Spelling Bee (Duckworth et al., 2007; Duckworth & Quinn, 2009).

Conclusion

The literature review presented context for this study centered on examining grit and academic success amongst non-traditional doctoral students. The review started with a brief history of higher education in America with the associated development of the doctoral degree and its migration from Europe to the states (Altbach et al., 2001; Ruch, 2001; Walker et al., 2008). Next, the review situated non-traditional doctoral education in the modalities of distance education through a brief history of online education (Cross, 2008; Duncan, 2005; Harrison & Stephen, 1996; Maeroff, 2004; Mason, 2000). The recent growth and value of higher education along with the rapid change in modalities from strictly ground centered classes and programs to online and non-traditional programs; both at the undergraduate and graduate levels including doctoral education was summarized (Allen et al., 2011; Allum et al., 2012; Bureau of Labor Statistics, 2012; Tough, 2013; Walton, 2011). In reviewing this literature, it was noted that undergraduate, graduate, and doctoral education continues to grow either in demand or enrollments. Also the literature revealed that undergraduate, graduate, and more recently doctoral programs are rapidly being offered in online non-traditional formats in response to new student demographics as well as outside forces (Berg, 2005; Lewis et al., 2001; Walton, 2011).

The review focused on attrition in higher education both within traditional and online modalities. In traditional modalities undergraduate attrition remains a concern (Tinto & Cullen, 1973; Tough, 2013). However, studies on doctoral attrition reveal that somewhere between 40 and 50% of doctoral students in traditional settings finish their degrees (Bowen & Rudenstine, 1992; Council of Graduate Schools in the United States, 2008; Damrosch, 2006; Golde & Walker, 2006; King, 2008a). Similarly, online programs

both at the undergraduate and doctoral level are experiencing problems with student retention and attrition (Aragon & Johnson, 2008; Carr, 2000; Pauley et al., 1999; Rockinson-Szapkiw, 2011). And by some estimates online programs have higher attrition rates then their ground counterparts (Carr, 2000). Thus, if traditional ground doctoral programs have completion rates somewhere between 40% and 50%, it may be that non-traditional doctoral programs have higher attrition rates.

The review also examined the roots of the character level trait of grit. Starting with the shift from traditional psychology to positive psychology and its associated focus on the positive aspects of humanity, to cognitive theory, and later the classification of character strengths (Ben-Shahar, 2007; Buckingham & Clifton, 2001; Butler-Bowden, 2007; Martin, 2007; Peterson et al., 2005; Seligman & Csikszentmihalyi, 2000). Within this context emerged the notion of grit (Duckworth et al., 2007; Duckworth & Quinn, 2009). Grit is a trait level characteristic of perseverance and passion for long-term goals. Further, via the review of the studies done on grit, grit was shown to be predictive of several measures of success. In adults grit was predictive of educational attainment. Among undergraduates at an Ivy League institution grit was predictive of GPA over and beyond SAT scores. In another study grit was shown to better predict whether or not cadets at West Point would persist through the summer training program known as "beast barracks." Also, grit was shown to be predictive of longevity in the Scripps Spelling Bee, with grittier students making it further in the contest. In short, as grit has been predictive of success in many instances, GPA, education attainment, longevity in a spelling bee, and persistence through cadet training, it may be important to examine how or whether or not grit influences longevity in a non-traditional doctoral program (Duckworth et al., 2007;

Duckworth & Quinn, 2009).

Chapter 3: Methodology

Higher education, in general, and online education, in particular, are becoming increasingly popular (Allen et al., 2011; Walton, 2011). Similarly, graduate and even doctoral programs are adopting online modalities (Allen & Seaman, 2005; Council of Graduate Schools in the United States, 2009; Pappas & Jerman, 2011). As such, the importance of student retention and achievement is a key aspect of the conversation concerning the efficacy and quality of online or otherwise characterized non-traditional programs. This study built on research conducted at the undergraduate and graduate level to examine student persistence and success at the doctoral level. In order to do so, this study l analyzed grit as a possible impacting construct on student persistence and longevity.

While some researchers (Duckworth et al., 2007) have found that grit predicts better performance in traditional higher educational settings, less is known about the predictive validity of the grit construct in an online setting, and even less is known about its applicability at the doctoral level. Further, it is unclear whether or not grit impacts student longevity and success amongst non-traditional doctoral students.

Therefore, this study sought to understand how one particular student trait, grit, might impact student longevity in an online non-traditional doctoral program, whether or not grit and current GPA were related, and whether or not grit impacted the successful completion of dissertation proposals (Duckworth et al., 2007). Simply put, this study examined the impact of grit on success among non-traditional doctoral students.

Research Questions

This study examined the impact of grit on: (a) student longevity in a non-

traditional doctoral program (number of classes successfully completed); (b) current student GPA; and (c) successful completion and defense of the dissertation. Thus, the following research questions framed the study:

1. Is there a difference between mean grit scores for first year, second year, and third year doctoral students?

2. After controlling for student characteristics is there a difference between mean grit scores for first year, second year, and third year doctoral students?

3. Is there a relationship between student grit scores and current student GPA?

4. After controlling for student characteristics, is there a relationship between student grit scores and current student GPA?

5. Is there a difference between mean grit scores of third year doctoral students who have successfully defended their dissertation proposal and those who have not?

6. After controlling for student characteristics, is there a difference between mean grit scores of third year doctoral students who have successfully defended their dissertation proposal and those who have not?

Hypotheses

In relation to the research questions, the following hypotheses were proposed:

1. A. There will be a significant difference between mean grit scores for first year, second year, and third year doctoral students.

1. B. Specifically there will be a significant difference between mean grit scores for first and third year students.

2. A. After controlling for student characteristics there will be a significant

difference between mean grit scores for first year, second year, and third year doctoral students.

2. B. After controlling for student characteristics, specifically there will be a significant difference between mean grit scores for first and third year students.

3. There will be a significant relationship between student grit scores and current student GPAs.

4. After controlling for student characteristics there will be a significant relationship between student grit scores and current student GPA.

5. There will be a significant difference between mean grit scores of third year doctoral students who have defended their dissertation proposal and those who have not.

6. After controlling for student characteristics there will be a significant difference between mean grit scores of third year doctoral students who have defended their dissertation proposal and those who have not.

Description of the Research Methodology

This research experiment was based in a post-positivist worldview and was designed from a quantitative research perspective (Creswell, 2009; Devlin, 2006). The study was largely explorative in nature as it sought to understand factors of success amongst a narrow population of non-traditional doctoral students and was also passive in its design as there was no intent to manipulate variables (Denscombe, 2009; Devlin, 2006). Also this project utilized a between groups comparison design along by employing a simple correlation in one section to analyze the relationship between student grit and current student GPA (Bechhofer & Paterson, 2000; Cone & Foster, 1993; Denscombe,

2009; Devlin, 2006). This design aimed at testing the impact of grit on several measures of student success: (a) the differences between mean student grit scores of first, second, and third year doctoral students as a measure of student longevity in their program of study (number of courses successfully completed), (b) the relationship between student grit scores and current student GPA, and (c) the differences in mean grit scores for third year students who have successfully defended their dissertation proposal and those who have not.

Thus, the independent variables in this design were mean student grit scores (first, second, third year student groups) and student grit total scores. The dependent variables were likewise the number of courses completed by the students in their program (first, second, third year student groups), current student GPA, and successful or non-successful defense of the dissertation proposal. Last, the controlling variables consisted of the student demographic or characteristic information collected. These variables were conceptualized in Table 1. Hence, the study was designed to examine the impact, difference, and relationships between the above-mentioned variables and their possible interactions with each other. To begin, the study sought to understand if the independent variable of mean grit scores of first, second, and third year students influenced the dependent variable of student longevity in the program as measured by the number of classes a student had successfully completed. For example, this line of reasoning was concerned with whether or not mean grit scores increased, decreased, or remained unchanged for first, second, and third year students. In this way, the study examined whether or not grittier students made it further into the program by comparing mean grit scores of each group. Thus, if for example, first year students on average had lower grit

scores than third year students it might indicate that only grittier students progress through the program of study. Further, the independent variable of mean grit scores was studied when controlling for student characteristics.

In addition, the study sought to understand if the independent variable of student total grit score was related to the dependent variable of current student GPA. As opposed to the above scenario of looking at the mean or average grit scores for different student groups, this portion of the study aimed at examining each student grit score in relation to current student GPA. To put it simply, this part of the study sought to determine if there was a relationship between student grit scores and current student GPA. This relationship also was examined when controlling for student demographics or characteristics.

Also, this study sought to understand the differences between mean student grit scores for third year students who have or have not successfully defended their dissertation proposal. It is important to note that only third year students who have completed two key classes made up this part of the sample. These classes consisted of one class focused on writing the proposal itself and the second was the first class aimed at working solely on the dissertation in consultation with the dissertation chair. Because versions of both of these classes exist in the same sequence across all of the doctoral programs at the study site university, it was possible to use the completion of these two classes as a starting point from which to measure whether students had or had not completed and successfully defended their proposals. In this way the completion of these two classes by third year student marked the passage of at least 16 weeks of work on the dissertation proposal and created a space to equally evaluate, at least from a time standpoint, those students who had and those students who had not successfully defended

their dissertation proposals.

All in all the study was designed to explore any possible impact that student grit scores, both mean across groups and total, might have on student success. Student success in this case was measured in three distinct ways, (a) by student longevity in the program as a measure of persistence (as denoted by the number of courses successfully taken in first, second, and third year student groups), (b) by current student GPA, and (c) by whether or not third year students have or have not successfully defended their dissertation proposals.

Next, it was important to understand how this experiment would work logistically. To begin, students were solicited to participate in the study in two ways: first a link to the electronic version of the survey (Deutskens, De Ruyter, Wetzels, & Oosterveld, 2004) that contained both the grit survey and demographic questions was e-mailed to all current students within the doctoral programs. This e-mail was sent to their school affiliated e-mail address under the name of the provost of the university. The survey link was also be posted, under the name of the provost of the university, inside a password protected website that houses materials to support doctoral students at the sample site university. The link when activated opened a fluidsurvey.com survey that contained an electronic version of the informed consent information and a field for acknowledgment, an electronic version of the 8-item grit survey, and fields to gather nominal data from the students such as age, sex, hours per week spent on studies, courses successfully completed and so forth. The survey ended with two open ended questions that asked the three things that have helped or have been obstacles to student success thus far in the program.

The links to the survey remained open until an appropriate number of responses were gathered, four days (Isaac & Michael, 1995). While the survey was live, fluidsurvey.com served as a repository for the data gathered. After the data was gathered via fluidsurvey.com, the researcher downloaded and stored the survey data to both his laptop and a secure Cloud storage service.

In short, students were solicited to participate in the survey via their school affiliated e-mail and by posting an announcement inside the website designed to support these particular doctoral students at the sample site university. The survey contained informed consent information, questions to gather demographic information, and an electronic version of the 8-item grit survey instruments (Duckworth & Quinn, 2009). The survey data was gathered and stored via fluidsurvey.com and was later downloaded, backed up, and stored as a further precaution and for analysis purposes.

Population, Sample, and Unit of Analysis

Population. The population for this particular study was non-traditional doctoral students in the United States. This population is growing in demand, and if growing undergraduate and graduate non-traditional modalities are an indicator, this group is also growing in size (Allen & Seaman, 2005, Allen et al., 2011; Council of Graduate Schools in the United States, 2009; Pappas & Jerman, 2011). Further, the definition of non-traditional or contemporary doctoral students encompasses several key characteristics that contrast strongly with that of traditional doctoral students. Offerman (2011) describes this distinction thus:

> Rather than a single white male, studying full time, on campus, and working in the department to help fund his education, the contemporary doctoral student is

more likely to be a married woman with children and a career who is studying

part time, often at a distance, and is funding her own education either through her

current income or by borrowing. (p. 29)

Thus, non-traditional doctoral students are very different than traditional doctoral

students both in demographics and in learning modalities and work responsibilities.

Sample. The sample for this study was made up of doctoral students from a mid-

sized private university situated in the southwestern United States of America, however

because the students are largely online, non-traditional students they came from all across

the country. In addition, the students were all doctoral students in various stages within

their programs of study. The students are enrolled in a variety of doctoral programs

ranging from business, education, and psychology; DBA, Ed.D., and Ph.D., respectively.

Within each of these programs are several emphasis areas. These range from

management, to organizational leadership, to industrial organizational psychology. In

addition, the students came from diverse ethnic, social, and educational backgrounds.

Also, every admitted applicant to any of these doctoral programs had an earned Master's

degree from an accredited degree granting institution. Further, as these doctoral students

were all enrolled in non-traditional programs that require little to no in-person class time,

working adults generally populate the programs. In this way the sample was a sample of

convenience because it focused on the target population (Creswell, 2009; Devlin, 2006).

The appropriate number of responses for this study to be generalizable to this doctoral

population at this university was approximately 350, based on a general population of

3,200 non-traditional doctoral students at the sample site university (Isaac & Michael,

1995).

Programmatically, these students experienced a similar course sequences. For instance, all students had programs of study that were set and followed a similar progression across disciplines. In this way, students did not choose their classes from a course catalog, but rather followed a predesigned program of study. In addition, students took only one course at a time and each course lasted 8 weeks. This class progression is followed year round in order to complete the course work within 2 years from initiation, with a third and if needed fourth year and beyond for dissertation work. Thus, in general the sample was made up of non-traditional doctoral students in several programs at one mid-sized private university in the southwestern United States. Because of the non-traditional nature of the program, students came from various parts of the country and from diverse backgrounds; however, these student shared commonalities, such as the requirement to hold a master's degree and follow similar courses of study. Last, these students, by and large, were working adults with limited time for schoolwork.

Unit of analysis. The definition of the unit of analysis for this experiment was two-fold. In the cases where mean grit scores were compared to first, second, and third year student groups or to groups of students that did or did not successfully defend their dissertations proposals, the unit of analysis was the groups in question. Next, when total grit sores were compared to current student GPAs the unit of analysis was the individual student.

Data Gathering Instruments

There were several ways that data were gathered in this experiment. First, all data were gathered via an electronic survey (Deutskens et al., 2004) instrument created in fluid survey by the principal researcher. This instrument was sent as a link to the sample

population's school affiliated e-mail addresses, under the name of the provost of the university. The link to the survey was also be posted along with an announcement in the website designed to support doctoral students in these particular programs, under the name of the provost of the university. Also, there were specific instruments that were used to gather data contained within the general construct of the online electronic survey. In this case the 8-item grit survey was employed to assess and gather data on the students' passion and persistence for long-term goals (Duckworth & Quinn, 2009). This short survey was preceded by a series of questions aimed at collecting demographic data. In both these cases, fluidsurvey.com was used as a means of collecting survey answers and storing the data.

Validity, and Reliability of Data Gathering Instruments

For this study there were several data-gathering instruments. First, nominal data gathered on student demographics were collected via the electronic survey that l housed both the demographic and grit survey questions. Because the demographic data were self-reported, the reliability of the demographic information was dependent on the accurate self-appraisal of the student completing the survey.

Validity and reliability. Next, in the same way demographic data were gathered, the results from the grit survey were gathered using an online survey system, fluidsurvey.com. The data collected in this repository was accessible to the researcher and his assistants. Because survey fluidsurvey.com is a mere repository, its reliability and validity were not in question.

The 8-question grit survey was designed to assess an individual's persistence and passion for long-term goals (Duckworth & Quinn, 2009). This instrument differs sharply

from other measures of perseverance or conscientiousness in that it is predictive in nature. This led Duckworth and Quinn (2009) to write, "Perseverance is more often studied as an outcome than as a predictor" (p. 166). The questionnaire is focused on trait level "grit as a compound trait comprising stamina in dimensions of interest and effort" (p. 166). Thus, grit can be conceptualized as being comprised of two distinct parts: stamina. The development of the 8-item grit scale began with the creating and testing of the 12-item grit scale.

As there was not a previously created and validated instrument that tested for grit, Duckworth et al. (2007) created and validated the 12-item grit questionnaire. Starting with a series of open-ended interviews the authors came up with 27 items that emerged across the interview process. Later, through factor analysis, the authors narrowed down the items to 17 and then to 12. The remaining 12-items fit into two factors: perseverance of effort and consistency of interests. Through statistical testing the authors found that the 12-item grit scale had high internal consistency of $\alpha = .85$ overall, and separately, consistency of interest was $\alpha = .84$ and perseverance of effort was $\alpha = .78$. Through more testing the authors found that the two factors together were more predictive than either one alone. The 12-item grit scale was then tested in studies and shown to be predictive of educational level, age, undergraduate GPA, lower SAT scores amongst undergraduates, which candidates at West Point would make it through summer training, and which students would make it further in the Scripps Spelling Bee. While the 12- item grit survey proved valid and reliable, the researchers determined that they could improve upon and shorten the instrument (Duckworth & Quinn, 2009). Thus, they revised the 12-item survey to an 8- item survey. The authors did this by conducting

another set of factor analysis and removed 4 items leaving 8. However these 8 items still fell within the 2-factor structure that was previously established in the 12-item grit scale. This shorter version of the grit scale was tested and re-tested and was shown to have strong predictive validity, test and retest stability, and consensual validity. The authors concluded that the 8-item grit survey (Grit-S) is more efficient "and psycho-metrically stronger than the 12-item Grit–O" (p. 175). Thus, Duckworth and Quinn (2009) summed it up by stating, "…we recommend the Grit–S as an economical measure of perseverance and passion for long-term goals" (p. 175). In this way, the 8-item grit survey is both reliable and valid.

Data gathering procedures. Data for this experiment were gathered via the 8-item grit survey as well as through responses provided for the demographic questions (Duckworth & Quinn, 2009). The demographic questions were included after the informed consent section and after the grit survey. Also, the 8-item grit survey was converted to an electronic survey within fluidsurvey.com. Also, only fully completed surveys were analyzed and participants were not be able to skip questions, but rather could choose to quit the survey at any time (see Appendix B).

The link for this survey that included the informed consent, the demographic questions, and the short grit survey was e-mailed directly to the students' e-mails and was posted in the online doctoral support website in announcement form under the name of the provost of the university. This allowed students to take the survey and give informed consent within the same survey and in a convenient format.

The link to the survey both in e-mail and announcement forms remained active until an appropriate number of responses were gathered. This constituted the data

collection period of four days.

In attempts to garner more participation in the study a small incentive program was advertised along with the e-mails and posting of the survey link (Deutskens et al., 2004). Participants who chose to participate had a one-time chance to enter a private and separate raffle for either an IPad Mini or a Kindle Fire. The names of all individuals were kept anonymous in the reporting of the study's data; however those who entered the raffle did so via a separate survey that asked for name and contact information. Winners of the raffle were identified and notified directly by the principal investigator via e-mail or phone number provided. The names of the winners of the raffle were not disclosed. The procedures for keeping the survey and raffle separate, as well as keeping participants' identities anonymous are described in the IRB section.

In sum, the data for this study were gathered via an electronic survey hosted on fluid surveys.com. The survey contained informed consent information with a place for participants to acknowledge consent, the short grit survey instrument to ascertain the students' grit score, and questions to collect demographic information.

Data Analysis Processes and Statistical Procedures

As this is a quantitative study examining the impact of student grit scores on doctoral student success, it was necessary to analyze data in a number of different ways. The first research question was concerned with the mean grit scores of students in relation to which student group they belong. In this case the mean grit scores of first, second, and third year doctoral students were compared for any differences. Because the design was one of between groups comparison, and because there were more than two groups, data were analyzed using a one-way ANOVA (Cone & Foster, 1993; Devlin,

2006). This statistical test examined the differences in mean grit scores between the groups first, second, and third year students. Follow-up comparisons of the ANOVA were conducted using a Tukey or Sidak post hoc analysis as needed (Bausell & Li, 2002; Devlin, 2006). In this way, the method compared all possible pairs of means, and in this case, helped determine significance of differences in means between all possible combinations of the groups' first, second, and third year students.

The second research question was concerned with comparing the mean grit scores of first, second, and third year students, but did so while taking into account or rather controlling for student demographic information as gathered in the survey instrument. In this case, to compare mean grit scores across student groups while holding student demographics constant an ANCOVA statistical test was used (Cone & Foster, 1993). As before a Tukey or Sidak post hoc analysis was performed as needed (depending on sample make up) to study the significance of difference between mean grit scores across all possible paired comparisons of student groups (Bausell & Li, 2002; Devlin, 2006).

Questions 3 and 4 were aimed at understanding any possible relationships between student total grit scores and current student GPAs. In this way the data was examined using a Pearson correlation. This analysis determined the strength of the relationship between student grit score and current student GPAs (Cone & Foster, 1993). Similarly, this correlation was examined while controlling for student demographics by using a series of Pearson correlations and multiple regression.

Research questions 5 and 6 were centered on whether or not there were differences in mean grit scores for third-year students who have or have not successfully defended their dissertation proposals. In this case, a comparison between-groups design

analyzed the data using ANOVA and ANCOVA (Cone & Foster, 1993).

Human Subjects Considerations

Anonymity. The students who participated in this study remained anonymous (Devlin, 2006). Student names were not collected on the surveys. Further, the students' identities were not published in the study findings. To help ensure anonymity the following procedures were followed. Students who completed the survey were not asked to provide their names and any other collected information that could possibly be linked to participants was de-identified by the principal investigator before reporting. Also, all collected data was examined only by the researcher and his assistants. The collected data was also be stored in the password-protected database of fluidsurvey.com, the password protected computer of the principal researcher, as well as backed up in two secure Cloud servers to be stored for five years.

Willingness to participate. Students were provided with informed consent via electronic survey (Devlin, 2006). As such, students were not required to participate in the study and did not receive monetary compensation. However, the opportunity to participate in a private raffle for an IPad Mini or a Kindle Fire was made available to all participants. Students were provided informed consent information that described the aims of the study, the approximate duration of the survey, the potential risks and benefits of participation, as well as specific fields to acknowledge their consent and proceed in participating in the study. Students were able to discontinue their participation in the study at any time without consequences to their standing in the doctoral program or otherwise. Further, participants could discontinue their participation even after they had started. However, only fully completed surveys were analyzed and participants were not

able to skip questions, but rather could choose to quit the survey at any time.

Risk. Participation in this study did pose minimal risk to the participants. The survey itself, both in reference to the demographic questions as well as the grit questionnaire posed minimal psychological risk to the student. Last, the entire survey instrument that consists of the demographic questions and the short grit survey consisting of eight questions, and should only take 5-10 minutes to complete and only presented risk to the participants in terms of time lost. The survey over-all is self-reflective in nature and did not pose undo risk to the student. Once the study was completed, the thumb drive, computer, and secure Cloud server containing the data was secured and will be held for 5 years. After 5 years the data will be deleted according to the ethical considerations of Belmont Report and the university.

Summary

This study was conducted from a post-positivist world–view and utilized a between-groups comparison design (Cone & Foster, 1993; Creswell, 2009; Devlin, 2006). It employed a correlational design to analyze the relationship between student grit and GPA (Cone & Foster, 1993; Devlin, 2006). The study sought to understand if, or how, grit impacts measures of non-traditional doctoral student success (Duckworth et al., 2007). Differences in mean grit scores amongst first, second, and third year doctoral students were compared as were total grit scores and current GPAs. Also, third year student mean grit scores for students that had and had not successfully defended their dissertation proposals were examined. Simply put, this study examined the impact of grit on student success in non-traditional doctoral students.

Chapter 4: Results

This chapter reports the results of the data gathered from an online survey responded to by 669 non-traditional doctoral students. The results were analyzed using the statistical modeling software SPSS. The data were analyzed in relation to the research questions and hypotheses by using the following statistical tests: ANOVA, ANCOVA, Pearson correlation, and multiple regressions.

Recruitment of Participants

Participants for this study were recruited at a mid-sized private university in the southwestern United States. The university has approximately 7,000 traditional brick and mortar students and approximately 45,000 online non-traditional students. The students for this study were selected from one of three non-traditional doctoral programs largely facilitated online. The total number of students enrolled in these doctoral programs is approximately 3,200. All 3,200 students were recruited to participate in the study, but only 730 students completed the survey. The students were solicited to participate in this study in two ways. Students received an e-mail invitation to their school e-mail address asking them to participate in a short questionnaire. The link to the questionnaire was included in the body of the text. This questionnaire was sent out under the auspices of the provost of the university with the principal investigator's information also included. In addition, an announcement was posted in an online private community dedicated to supporting this population of doctoral students. The link to the questionnaire was included in the body of the text in this announcement as well. Later, one follow up e-mail was sent to remind students who did not participate in the study that they could still do so. As described in Chapter 3 this e-mail, as well as the announcement posted in the online

private student network, included a link to a private raffle for a chance to win either an

IPad Mini or a Kindle Fire by way of incentive for completing the study survey. The link

to the raffle was included in the body of the text but was separate and distinct from the

link to the survey. Students could choose to participate in the survey and not participate

in the raffle, as the two were not connected. Also, students who participated in the study,

self-selected to do so and could discontinue at anytime.

Selection of Participants

The target population was comprised of approximately 3,200 non-traditional

doctoral students enrolled in 11 emphasis areas across three types of degree programs:

(a) Doctor of Business Administration (D.B.A), (b) Doctor of Education (Ed.D), and

(c) Doctor of Philosophy (Ph.D). The initial data set consisted of 730 completed

responses, but was *cleaned* to delete incomplete answers, responses where the age listed

was less than 18 years and greater than 100 years, responses where the reported GPA was

greater than 4.0 and responses that indicated that the respondent had yet to complete one

entire class (this was necessary to make sure that all analyzed response had a true GPA).

After cleaning the data, 669 responses remained.

Participant Characteristics

The sample consisted of 247 male respondents and 422 female respondents. These

respondents ranged in age from 18 years to 74 years. Further, the mean age was 45.48

years . The mean GPA was 3.73. The mean number of classes taken was 7.42. The mean

number of hours worked each week as reported by the respondents was 43.20 hours. The

mean number of hours spent on working on their program of study was 17.56 hours. This

information is further broken down by gender in Table 2.

Table 2

Participant Characteristics by Gender

Item	Male	Female	Total
N	247	422	669
Mean Age	46.21	45.05	45.48
Mean GPA	3.76	3.71	3.73
Mean Hours Worked per Week	45.96	41.58	43.2
Mean Hours on Program of Study per Week	17.85	17.39	17.56
Mean Number of Classes Taken	6.6	7.91	7.42

Note. N = total number of participants.

Table 3

Participant Characteristics by Year of Study and Gender

	1st Year			2nd Year			3rd Year			Total
	Male	Female	Total	Male	Female	Total	Male	Female	Total	
N	160	235	395	56	123	179	31	64	95	669
Mean Age	45.31	44.30	44.70	47.46	45.76	46.2	48.70	46.6	47.30	45.48
MGPA	3.80	3.69	3.72	3.76	3.74	3.74	3.79	3.73	3.75	3.73
MHW/wk	45.45	41.28	43	46.20	41.74	43.13	48.19	42.34	44.25	43.20
MHPS/wk	18.90	17.60	18.12	16.93	16.90	16.90	14.23	17.63	16.52	17.56

Note. N = total number of participants; MGPA = mean GPA; MHW/wk = mean hours worked per week; MHPS = mean hours of program study per week.

The sample was made up of 395 first-year students, 179 second-year students, and 95 third year students. In the case of the first year students, 160 were males and 235 were females. The mean age of first year students was 44.7 years. In the case of the second-year students 56 were males and 123 were females. The mean age of second-year students was 46.2 years. The third-year student consisted of 31 males and 64 females.

The third-year students ranged in age from 27 years to 67 years. The mean age of third year students was 47.3 years. This information is summarized in Table 3.

The sample was spread across 11 different degree emphasis areas. Forty-three students were enrolled in the doctor of business administration program with an emphasis in management. Forty students were enrolled in the doctor of education program in organizational leadership with an emphasis in behavioral health. Sixteen students were enrolled in the doctor of education program in organizational leadership with an emphasis in Christian ministry. One hundred and thirteen students were in enrolled in the doctor of education program in organizational leadership with emphasis in higher education leadership. Ninety-nine students were enrolled in the doctor of education program in organizational leadership with an emphasis in K-12 leadership. One hundred and eighty nine students were enrolled in the doctor of education program in organizational leadership with an emphasis in organizational development. Nine students were enrolled in the doctor of education program in organizational leadership with an emphasis in special education. Eighty-three students were enrolled in the doctor of philosophy program in psychology with an emphasis in cognition and instruction. Sixty-two students were enrolled in the doctor philosophy program in psychology with an emphasis in industrial organizational psychology. Four students were enrolled and the doctor of philosophy program in psychology with an emphasis in integrating technology, learning, and psychology. Eleven students were enrolled in the doctor philosophy program in psychology with an emphasis in performance psychology. Table 4 summarizes this information.

Table 4

Number of Students by Degree Program, Year of Study, and Gender

Degree Program	1st Year			2nd Year			3rd Year			Total
	Male	Female	Total	Male	Female	Total	Male	Female	Total	
Management	23	9	32	4	5	9	2	0	2	43
Behavioral Health	4	16	20	3	10	13	2	5	7	40
Christian Ministry	9	7	16	0	0	0	0	0	0	16
Higher Education Leadership	20	31	51	8	29	37	9	16	25	113
K-12 Leadership	20	40	61	8	21	29	2	7	9	99
Organizational Development	38	46	84	14	41	55	14	36	50	18
Special Education	0	8	8	0	0	0	1	0	1	9
Industrial Organizational Psychology	23	25	48	8	6	14	0	0	0	62
Integrating Technology, Learning, and Psychology	1	2	3	0	1	1	0	0	0	4
Performance Psychology	5	5	10	1	0	1	0	0	0	11
Total	160	235	395	56	123	179	31	64	95	669

Summary of Participant Characteristics

In summary, the participants in this study were more likely to be female than male, were more likely to be first year students, had a mean age of 45.48 years, had a mean GPA of 3.73, worked 43.20 mean hours per week, worked on their program of study 17.56 mean hours per week, and were more likely to be in an Ed.D. program than a

D.B.A or a Ph.D. program. Further breakdowns by year of study, gender, and degree emphasis are shown in Table 3 and Table 4.

Qualifications and Limitations

As is the nature of self-reported data, this study assumed that the information provided by the participating respondents was accurate. This might or might not be the case. Further, while the sample size was sufficient to generalize the results to this particular population of non-traditional doctoral students it was not meant to be generalizable to all non-traditional doctoral students. Also, the sample was a convenient one and as such had built in self-selection bias as the students who participated might only represent those with the pre-disposition to do so in the first place. Because the recruitment materials for the study were sent out under the sponsorship of the provost of the university, participants might have been more or less inclined to participate. Similarly, the incentive of offering a private optional raffle to those who participated in the study with a chance to win a prize might or might not have influenced different types of respondents to participate or not to participate in the study. In addition the design of the study was such that only actively enrolled students were contacted and recruited for participation; this fact might or might not have affected the results of the study.

Data Analysis by Research Questions and Hypotheses

This research project was centered on examining grit scores in relation to success measures amongst non-traditional online doctoral students. As such, the research questions fitted within this framework, as did the related hypotheses, research methods, data gathering procedures, and data analyses. In this section each research question is

presented with its associated hypothesis and results. All analyses were performed using the IBM statistical modeling software SPSS.

Research Question One

Research question 1 asked: Is there a difference between mean grit scores for first year, second year, and third year doctoral students?

The related hypotheses for research question 1 are: Hypothesis1A: There will be a significant difference between mean grit scores for first year, second year, and third year doctoral students and Hypothesis 1B: Specifically there will be a significant difference between mean grit scores for first and third year students.

The mean grit scores and standard deviations for first, second, and third year student groups are shown in Table 5.

Table 5

Mean Grit Scores by Year of Study

	1st Year	2nd Year	3rd Year	Overall
N	395	179	95	669
Mean Grit	4.01	3.96	4.02	4.00
Standard Deviation	.47	.49	.48	.48

Note. N = number of participants.

To compare the mean grit scores of first year, second year, and third year doctoral students a between-groups analysis of variance (one-way ANOVA) was performed. There were no significant differences in mean grit scores for first year, second year, and third year students, $F(2,666) = .708$, $p = .493$. These results did not support Hypothesis 1A. As such, further post hoc testing was not needed and Hypothesis 1B was also not supported. The results of the ANOVA are shown in Table 6.

Table 6

Results of ANOVA of 1ˢᵗ, 2ⁿᵈ, and 3ʳᵈ Year Student Groups

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	.325	2	.163	.708	.493
Within Groups	152.820	666	.229		
Total	153.145	668			

Research Question Two

Research question 2 asked: After controlling for student characteristics is there a difference between mean grit scores for first year, second year, and third year doctoral students?

The related hypotheses for research question 2 are: Hypothesis 2A: After controlling for student characteristics there will be a significant difference between mean grit scores for first year, second year, and third year doctoral students and Hypothesis 2B: After controlling for student characteristics, specifically there will be a significant difference between mean grit scores for first and third year students. The results of the between-subjects factors for this research question are shown in Table 5.

In order to compare the mean grit scores of first year, second year, and third year students while controlling for student characteristics an analysis of covariance (ANCOVA) was performed. There were no significant differences in mean grit scores for first year, second year, and third year students after controlling for student characteristics. While there were significant main effect for age $F(1, 664) = 10.08$, $p = .002$, there was not for sex $F(1, 664) = 5.70$, $p = .107$, after controlling for age and sex there were no significant differences between mean grit scores for first, second, and third year students.

These results did not support Hypothesis 2A. As such, further post hoc testing was not

needed and hypothesis 2B was also not supported. The results of the ANCOVA are

shown in Table 7.

Table 7

Results of ANCOVA of 1ˢᵗ, 2ⁿᵈ, and 3ʳᵈ Year Student Groups with Covariates Age and Sex

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Age	2.237	1	2.274	10.083	.002*
Sex	.922	1	1.423	5.697	.107
1ˢᵗ, 2ⁿᵈ, 3ʳᵈ Year	.545	2	.273	1.074	.481

Note. * = differences were significant at the $p < .05$ level.

Taken together, the results of the ANOVA show that there were no significant

differences in mean grit scores for first, second, and third year students as noted in Table

6. Also, the results of the ANCOVA showed that, while controlling for the covariates of

age and sex, there was no significant difference in mean grit scores between the first,

second, and third year student groups. However, the ANCOVA did show that there were

significant differences in mean grit scores by age, but not by sex as shown in Table 7.

Research Question Three

Research question 3 asked: Is there a relationship between student grit scores and

current student GPA?

The related hypothesis for research question 3 is: There will be a significant

relationship between student grit scores and current student GPA. The descriptive

statistics with the mean grit scores, GPA, standard deviations, and sample size are shown

in Table 8.

Table 8

Mean Grit Scores, Mean GPA, Standard Deviations, and Participants

	Mean	Std. Deviation	N
Grit Score	4	.479	669
GPA	3.729	.282	669

Note. N = total number of participants.

A Pearson correlation was performed in order to see if there was a significant relationship between grit score and GPA. The analysis revealed a positive significant correlation between grit and GPA, $r(667)= .093$, $p < .016$. The results of the Pearson correlation are shown in Table 9.

Table 9

Pearson Correlation of Grit and GPA

		Grit Score	GPA
Grit Score	Pearson Correlation	1	.093
	Sig. (2-tailed)		.016*
	N	669	669

Note. * = correlation is significant at the $p < .05$ level (2-tailed); N = total number of participants.

Research Question Four

Research question 4 asked: After controlling for student characteristics, is there a relationship between student grit scores and current student GPA?

The related hypothesis for research question 4 is: After controlling for student characteristics there will be a significant relationship between student grit scores and current student GPA. This hypothesis was tested by first performing separate Pearson

correlations for grit and GPA by gender. First the Pearson correlation for grit and GPA

(males) was performed, revealing no significant relationship, $r(245)= .103\ p < .107$. Next

the Pearson correlation for grit and GPA (females) was performed, revealing a significant

relationship, $r(420)= .1, p < .041$. The results of these Pearson correlations are shown in

Table 10.

Table 10

Pearson Correlations of Grit and GPA by Gender

Gender			Grit Score	GPA
Male	Grit Score	Pearson Correlation	1	.103
		Sig. (2-tailed)		.107
		N	247	247
Female	Grit Score	Pearson Correlation	1	.100
		Sig. (2-tailed)		.041*
		N	422	422

Note. * = correlation is significant at the $p < .05$ level (2-tailed); N = number of
participants.

Further, a multiple regression was run in order to test for the significance of the

relationship between grit and GPA while attempting to control for age. A significant

model emerged from the regression analysis, $F(2,666) = 3.033, p = .049$, Adjusted R

Square = .006. The coefficients in the regression model revealed that age was not

significantly related to GPA, but that grit score was. The predictor variables are shown in

Table 11.

Table 11

Predictor Variables of Regression Model of Age, Grit, and GPA

Predictor Variable	Beta	Sig.
Age	.018	.650
Grit Score	.023	.019*

Note. * = correlation is significant at the $p < .05$ level.

Taken together, while the overall Pearson correlation for grit and GPA was significant as noted in Table 9, the Pearson correlations for grit and GPA by gender showed that grit was related to GPA for females but not for males, though the correlation was small (see Table 10). Also, the multiple regressions revealed that age was not a significant predictor of GPA, but that grit score was, as noted in Table 11. Thus, grit was positively related to GPA, but only for females.

Research Question Five

Research question 5 asked: Is there a difference between mean grit scores of third year doctoral students who have successfully defended their dissertation proposal and those that have not?

The related hypothesis for research question 5 is: There will be a significant difference between mean grit scores of third year doctoral students who have defended their dissertation proposal and those who have not. The mean grit scores and standard deviations for third year doctoral students who have or have not successfully defended their dissertations are shown in Table 12.

Table 12

Mean Grit Scores of 3rd Year Students Who Have or Have Not Successfully Defended

their Dissertations Proposals

	N	Mean	SD
Defended	16	4.23	.45
Not Defended	66	4.06	.44
Total	82	4.10	.44

Note. N = number of participants; SD = standard deviation.

   To compare the mean grit scores of third year doctoral students who have or have not successfully defended their dissertation proposals a between-groups analysis of variance (one-way ANOVA) was performed. There were no significant differences in mean grit scores for third year doctoral students who have or have not successfully defended their dissertation proposals, $F(1,80) = 1.95$, $p = .167$. These results did not support Hypothesis 5. The results of the ANOVA are shown in Table 13.

Table 13

Results of ANOVA for Mean Grit Scores 3rd Year Students Who Have or Have Not

Successfully Defended their Dissertation Proposals

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.38	1	.38	1.95	.167
Within Groups	15.63	80	.20		
Total	16.01	81			

Note. df = degrees of freedom.

Research Question Six

Research question 6 asked: After controlling for student characteristics, is there a difference between mean grit scores of third year doctoral students who have successfully defended their dissertation proposal and those who have not?

The related hypothesis for research question 6 is: After controlling for student characteristics there will be a significant difference between mean grit scores of third year doctoral students that have defended their dissertation proposal and those that have not.

Table 14

Results of ANCOVA for Mean Grit Scores of 3rd Year Students Who Have or Have Not Successfully Defended their Dissertation Proposals with Covariates Age and Sex

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1.40	3	.47	2.49	.066
Intercept	25.69	1	25.69	137.15	.000
Age	.10	1	.01	.36	.549
Sex	.91	1	.91	4.86	.030*
Defended Y/N	.35	1	.35	1.88	.174
Error	14.61	78	.19		
Total	1391.77	82			
Corrected Total	16.01	81			

Note: * = differences were significant at the $p < .05$ level.

In order to compare the mean grit scores of third year doctoral students who have or have not successfully defended their dissertation proposals while controlling for student characteristics an analysis of covariance (ANCOVA) was performed. There were no significant differences in mean grit scores for third year doctoral students that have or

have not successfully defended their dissertation proposals after controlling for student characteristics. The results of the ANCOVA are shown in Table 14.

While there were not significant main effects for age $F(1, 78) = .36$, p = .549, there were significant main effects for sex $F(1, 78) = 4.86$, p = .030. However, while there were significant differences in grit by sex, there were still no significant differences in mean grit scores for those who had or had not successfully defended their dissertation proposals, even when accounting for the differences in grit by sex. This is evidenced in the overall model results $F(1, 78) = 1.88$, p = .174. These results did not support Hypothesis 6.

Supplemental Analysis

In order to examine other possible significant differences or relationships not proscribed in the scope of the research questions the following tests were conducted but did not result in significant findings. ANOVA tests were conducted to compare mean grit scores for male versus females, mean grit scores for first, second, and third year students groups for males only, mean grit scores for first, second, and third year students groups for females only, and mean GPAs of male versus females. Pearson correlations were conducted to examine the relationships between grit and the average number of hours worked per week, as well as for grit and the total number of courses successfully completed.

In contrast, the following tests did result in significant findings. The Pearson correlation to examine the relationship between grit and age was significant, $r(669)= .11$, $p < .003$. Also, the Pearson correlation to examine the relationship between grit and the average number of hours spent on the program of study per week was significant,

$r(669)= .11, p < .006$.The Pearson correlation for age and the average number of hours worked per week revealed a negative relationship, $r(669)= -.16, p < .000$. The correlation for age and average number of hours spent on program of study per week showed a positive correlation $r(669)= .25, p < .000$. The correlation for the average number of hours worked per week and that average number of hours spent on the program per week revealed a negative correlation $r(669)= -.17, p < .000$.

In summary the results of this study did not support the hypothesis that there would be significant differences in grit scores between first, second, or third year non-traditional doctoral students, nor where there differences in mean grit scores for students that had or had not successfully defended their dissertation proposal. However, significant relationships between students grit scores and current GPA, student grit scores and the average number of self reported hours spent on the program of study, and grit scores and age were found to be significant at the $p < .005$ levels.

Chapter 5: Discussion

As higher education experiences new shifts toward serving larger and more diverse populations, new modalities are beginning to emerge (Allen et al., 2011; Walton, 2011). Among these are online non-traditional programs of study that require little to no residency time on physical campuses (Allen et al, 2011). Amid the growing trend of these types of programs are non-traditional doctoral programs (Archbald, 2011; Pappas & Jerman, 2011). While, online and hybrid modalities allow students to pursue their studies within the confines of life circumstances, non-traditional doctoral programs face challenges of attrition similar to those of traditional brick and mortar programs (Bowden & Rudenstine, 1992; Rockinson-Szapkiw, 2011). These challenges have led some authors to argue that non-traditional online programs may even have higher attrition rates than their brick and mortar counterparts (Aragon & Johnson, 2008; Carr, 2000).

While much has been written on the challenges students face in being successful in traditional doctoral programs, less is available about student success in non-traditional programs, and even less is known about how individual student character traits may influence academic success (Pauley et al., 1999). This section briefly reviews this study in general terms as well as its findings in relation to relevant literature. In addition, this section discusses the findings within the context of the limitations of each research question and hypotheses. This chapter also draws conclusion from this study's finding and makes recommendations for new practices and research in the area of non-traditional online doctoral programs and students.

Summary of the Study

This study was centered on examining how and if grit as an internal student characteristic impacts measures of academic success amongst non-traditional doctoral students (Duckworth et al., 2007; Duckworth & Quinn, 2009). In this case, academic success was defined by longevity in the program (as measured by the number of courses taken, and thus the subsequent student groups of first-year, second-year and third-year students). Also, academic success was examined through the lens of current grade point average (GPA). Furthermore, academic success was measured for third-year doctoral students by whether or not they had successfully defended their dissertation proposals. Consequently, the study examined whether or not there were differences in mean grit scores for first-year, second year, and third-year students as a way to gauge whether or not grittier students in general persisted further into the program of study than less gritty students. Moreover, the study examined whether or not grit was related to current student GPA and whether or not mean grit scores for third year students who had successfully defended their dissertation proposal were significantly different from those who had not. In short, this dissertation study examined grit in relation to non-traditional doctoral student measures of success.

Summary and Integration of Results

Research questions 1 and 2 were concerned with whether or not there were differences in grit scores between first, second, and third year student groups. The purpose of these research questions and their related hypotheses was to understand if, as attrition occurred throughout the course of a doctoral program, this attrition would result in the loss of less gritty students. Following this logic, it was hypothesized that the first

year student group should, overall, have a lower average grit score than their second-year and third-year counterparts. This was theorized to be possible because only gritty students would be able to persist through the first year of study to become second or third year students. In this way, the examination of average grit scores for each student group was hypothesized to be a way to take a snapshot of which types of students had persisted to make up each student group.

However, as reported in the results section, while there was a slight difference in average grit scores across the different student groups, theses differences were not statistically significant. As a result, the hypothesis that there would be differences between the student groups was not supported by the findings. Also, the second hypothesis related to research question 1 that there would be significant differences between first and third year average student grit scores was not supported. Further, the hypothesis related to research question 2, that there would be significant differences in average grit scores by student group, when controlling for student characteristics was also not supported.

The findings of this study relate to, and contrast with, similar studies. For instance, Batres (2011) examined grit in relation to academic success measures amongst high school students enrolled in an alternative program. In comparing average grit scores across different grades, the author found no significant differences. This finding is similar to the finding in this study that average grit scores were not significantly different for students within a similar educational setting, but separated by categorical group. Conversely, the findings of this study and that of Batres stand in contrast to Duckworth's et al. (2007) finding that grit was a good predictor of which students would or would not

successfully complete the rigorous first-year training of cadets at West Point and which participants would make it furthest in the Scripps Spelling Bee. However, it is important to note that comparing groups of students, as was done in this study, is not the same as giving a pre-grit test to participants, tracking their progress, and then comparing outcomes to individual grit scores. Thus, in order to examine the question of whether or not grit impacts or is related to longevity of students in non-traditional doctoral programs, it would be necessary to longitudinally track the same students (a particular sample taken at the beginning of a program) through their entire program of study or at least for a set number of years. Afterwards, a comparison, following a similar pattern employed by Duckworth et al., could be made of the grit scores of those students who remained enrolled with those who dropped out.

While there were no significant differences in mean grit scores between student groups there were significant differences in mean grit scores for age. Post hoc Pearson correlations confirmed that there was a significant relationship between grit and age. This finding confirms Duckworth's et al. (2007) finding that older individuals tend to be grittier than younger individuals. This finding, in conjunction with Duckworth et al., may suggest that grit increases with age and may be related to life experiences.

Research question 3 and its related hypothesis were concerned with whether or not there was a relationship between student grit scores and current student GPAs. The underlying theoretical framework for this research question and its hypothesis is that students with higher grit scores would be more likely to have higher GPAs. This theory builds on Duckworth's et al. (2007) findings that grit was predictive of undergraduate GPA. However it was not known whether or not grit would be predictive of GPAs at the

doctoral level, and specifically within the student body of non-traditional doctoral students. In this instance academic success was operationalized via GPA and as such was examined in relation to grit scores. In contrast to the previous research questions, research question 3 and its related hypothesis were tested, not by looking for differences in average grit scores between first, second, third-year student groups, but rather in a correlational fashion by comparing student grit score and GPA directly.

As noted in the results section of this study, grit and GPA were significantly correlated with each other. While this does not imply that one variable causes the other to increase, it does show that grit and GPA amongst non-traditional doctoral students are related, and this validates Duckworth's et al. (2007) previous findings by showing the presence of the relationship between grit and GPA in a new population. However, these results are in opposition to Batres' (2011) study of high school students enrolled in an alternative education program for at risk students in that when comparing grit and GPA the author found no significant relationship. However, Batres' results may be accounted for in that the sample size was only 97 students. While the results of this study are promising and show that there is a relationship between grit and student GPA, it is important to note that this initial correlation does not control for student characteristics.

Along these lines research question 4 and its related hypothesis were centered on examining the relationship between grit and GPA while attempting to isolate grit in relation to GPA by also examining student characteristics. The main idea for this research question and its hypothesis is that even when accounting for the student characteristics of gender and age that there would be a significant relationship between grit and GPA. In this way, this research question was interested in seeing if grit alone was responsible for

the relationship found between grit and GPA, or whether age or gender was impacting this relationship.

The findings showed that there was no relationship between grit and GPA for male respondents, but that there was a relationship between grit and GPA for female respondents. Next in performing a regression analysis to see how age impacted the relationship between grit and GPA the model revealed that age was not significantly related to GPA but that grit score was. Thus, grit is related to GPA but only for female participants regardless of age. This may imply that grit can be a predictor of GPA amongst non-traditional doctoral students.

Similarly, Aragon and Johnson (2008) in their study found that previous GPA, meaning GPA as measured at the beginning of a semester were significantly different for students who completed or did not complete their online courses. Thus, it may be interesting to examine how GPA and course completion were related in this population. If they were related, grit may be an important predictor of course completion if GPA and course completion proved to be related.

Moreover, the results suggest that female students were the main reason that grit was related to GPA. This was revealed in comparing grit scores in relation to GPA for both males and females separately. As such grit appeared most related to female student GPA. This finding was somewhat perplexing in that there were no significant differences in mean grit scores between male and female students. However, grit scores for female were related to GPA with a weak but significant relationship, while the same was not true for males.

Research questions 5 and 6, as well as the related hypotheses were concerned with

understanding if there were differences in mean grit scores for third year students who had or had not successfully defended their dissertation proposal (and in the case of research question 6 comparing differences in mean grit scores for their students while controlling for student characteristics). Thus, this set of research questions was centered only on third year students, but broke the students into two distinct categories that of students who had successfully defended their dissertation proposals and those who had not. The rationale behind these research questions was to understand if, when confronted with the difficult task of completing a dissertation proposal and then successfully defending the proposal, students with higher average grit scores would be the ones to complete the task within a certain time frame. As, Denecke et al. (2004) notes, doctoral students often desist in their programs of study in the beginning of their coursework and at the end during the dissertation phase. Thus, these research questions seek to understand if grit impacted student success when confronted with completing a large portion of the dissertation successfully.

When comparing the average grit scores of third-year students who had or had not successfully defended their dissertation proposal no significant differences were found. In addition, when controlling for student characteristics of gender and age, no significant differences were found in mean grit scores for those that had or had not successfully defended their dissertation proposal within the given time frame. In this way, the hypotheses that there would be significant differences between these two groups of students were not supported. However, these findings might be a result of the small sample size of third-year students who participated in the study. Overall, 82 third-year students responded, but of those 82 students only 16 had successfully defended their

dissertation proposals while 66 had not. Thus, particularly in the case of the student group that had successfully defended a dissertation proposal, the sample size might not have been large enough to create a true representation of third-year students in general for this population.

In order to better examine how grit might impact the successful defense of dissertation proposals it would be necessary to have a larger sample size. Specifically, it would be important to have more equal groups in each category of students, both in the group that successfully defended their dissertation proposal and those that had not. Hence, more evenly populated groups would make it easier to compare mean grit scores. Also, the ability to further parse the group of students that had not yet successfully defended their dissertations within the time that the data were collected into two groups by studying these participants over an extended period of time would be helpful. In this way, it would be possible to see which students in the group that had not successfully defended their dissertations would eventually complete this task given more time and which ones would not. Grit scores could then be compared to see if there were differences.

In addition to the research questions that the study was designed around, several other interesting findings emerged from the study. For example, grit scores and the reported average number of hours spent on the program of study per week were positively related. This may imply that grit may be a predictor of how many hours per week, on average, a student might spend on program related tasks. As time on task has been suggested to be an important element of non-traditional doctoral student success, this finding may be important in informing the literature on what helps students be successful in doctoral education (Wyman, 2013).

Also a Pearson correlation conducted on age and grit scores resulted in a positive correlation. This finding confirmed work done by other authors that grit was related to age, in that older individuals tend to be grittier (Duckworth, et al., 2007). This too might be an important finding to help inform the literature surrounding non-traditional doctoral students in that as grittier students tend to be older, and grittier students report spending more time on their program of study, as well as tend to have higher GPAs, this information may help flesh out the profile of student characteristics that impact successful doctoral students.

General Limitations of Study

Generally this study had several limitations. These limitations fall into two large categories, (a) limitations of study design and (b) limitations of population and data collected. These limitations are listed below:

Limitations of study design:

- Data were collected only for actively enrolled students, limiting the study scope and results only to current students rather than to active and non-active students.

- The data collected were self-reported and as such may or may not have been an accurate reflection of true demographic information or grit scores.

Limitations of population and data collected:

- Overall the population studied had a fairly high average grit score nearing four out of a five-point scale. As many of the analyses were focused on differences in mean great scores this high overall average may have rendered these tests less effective.

- Data collected for grit had a restricted range in scores, meaning that over-all participants in this study rated themselves high on the grit scale.

Conclusions, Implications, and Recommendations

As doctoral education changes both in purpose and format helping students be successful in their programs of study becomes not only important for institutions of higher education but for society at large. As many newly minted graduates will not enter the ranks of academia, but rather be employed in industry or other organizational settings, successful doctoral education becomes an integral solution to the increasing demand for knowledge workers trained in pragmatic research skills (Servage, 2009). While others have studied how to help students in non-traditional online programs be successful, less has been done in the realm of non-traditional doctoral education (Pauley et al., 1999). This study, was concerned with understanding how individual character traits, specifically grit, impact doctoral student success.

In this study grit was not predictive of students' longevity in their program of study. In this case, longevity was conceptualized by which year group the student belonged to either first, second, or third year student group. To better understand the differences in grit scores for students as a function of longevity in a program of study, it might be wise to conduct research that examines mean pre-programmatic grit scores for the groups of completers and non-completers after a set number of years such as four. This type of longitudinal design would allow the researcher to compare grit scores for those who dropped out as well as for those who completed their program of study.

Moreover, while grit was not predictive of how far students made it into their program study, conceptualized as groups, it was predictive of current GPA. In addition,

further research into how grit could be predictive of not only current GPA, but also final programmatic GPA should be conducted. In this way, grit could be compared to the GPA for an entire program of study rather than just being compared to a snapshot of current GPA. This manner of research would allow for a more powerful analysis of grit's relationship to GPA.

Also, in relation to the successful dissertation proposal defense and dissertation as a whole, it would be important to conduct research that examines how or if grit relates to time to completion of both the successful dissertation proposal defense and the entire dissertation process. This type of research would allow for a richer picture of how grit may impact how long it takes a student to complete their dissertation successfully.

In short, this study confirms that grit was related in some ways to non-traditional online doctoral student success, and as such, warrants further investigation. Further, the study confirmed what previous authors have found in relation to grit and age as well as self-motivation and related character traits; namely that they are important for successful doctoral students (Duckworth et al., 2007; Pauley, et al., 1999). However, tempering these findings was the notion that non-traditional online doctoral students, at least in this case, appeared overall to be a largely gritty group, and as such grit might or might not be as powerful of a construct amongst this population as it would be among other populations. However, it may not be that grit is the problem here, but rather, that for abnormally highly gritty groups like doctoral students, new measures of grit that are more sensitive need to be developed.

However, following from the findings in this study, administrators, faculty, staff and students of non-traditional online doctoral programs might want to consider the

implications of grit on doctoral student success. For instance, as noted in this study, older students exhibited higher grit scores than younger students. Also, grittier students, especially women, had higher GPAs than less gritty students. Grittier students also spent, on average, more time per week working on their program of study than less gritty students. Thus, it might be important to continue to encourage older individuals and/ or women to enroll in non-traditional online doctoral programs, even while focusing on recruiting all populations. Further, these results imply that it might be helpful to spend remediation resources on younger students who appear to be less gritty as revealed in this study. In addition, as previous research has shown, relationships are often important catalysts for helping students successfully complete their degrees; it might be helpful to encourage more gritty students to interact with and develop relationships with less gritty students (Radda & Mandernach, 2012; Rockinson-Szapkiw, 2011). This is not to say that grit will be transferred from the more gritty individuals to the less gritty ones, but rather that gritty students may be able to provide an example of fortitude and perseverance for their less gritty peers. All in all, this strategy represents the heterogeneous mixing of gritty students with less gritty students in an effort to have students form relationships that might be mutually beneficial. Thus, grit may become an integral tool to assisting administrators, staff, and faculty of non-traditional online doctoral programs help students to be successful, however more research is needed to confirm and add to the results of this study.

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APPENDIX A

Research Questions, Related Hypothesis, Data Elements, and Statistical Approach

Research Question	Related Hypothesis	Data Elements	Statistical Approach
1. Is there a difference between mean grit scores for first year, second year, and third year doctoral students?	1. A. There will be a significant difference between mean grit scores for first year, second year, and third year doctoral students. 1. B. Specifically there will be a significant difference between mean grit scores for first and third year students.	Mean grit scores Number of courses taken (to determine 1st, 2nd, or 3rd year student groups)	One Way ANOVA, TUKEY Post Hoc Analysis
2. After controlling for student characteristics is there a difference between mean grit scores for first year, second year, and third year	2. A. After controlling for student characteristics there will be a significant difference between mean grit scores for first year, second year,	Mean grit scores Number of courses taken (to determine 1st, 2nd, or 3rd year student groups) Student Characteristics (Demographics)	ANCOVA, TUKEY Post Hoc Analysis

doctoral students?	and third year doctoral students.		
	2. B. After controlling for student characteristics, specifically there will be a significant difference between mean grit scores for first and third year students.		
3. Is there a relationship between student grit scores and current student GPA?	3. There will be a significant relationship between student grit scores and current student GPA.	Student grit total score Current Student GPA	Pearson Correlation
4. After controlling for student characteristics, is there a relationship between student grit scores and current student GPA?	4. After controlling for student characteristics there will be a significant relationship between student grit scores and current student GPA.	Student grit total score Current Student GPA Student Characteristics (Demographics)	Pearson Correlations and Multiple Regression

5. Is there a difference between mean grit scores of third year doctoral students that have successfully defended their dissertation proposal and those that have not?	5. There will be a significant difference between mean grit scores of third year doctoral students that have defended their dissertation proposal and those that have not.	Mean grit score for 3rd year students Successfully defended or not successfully defended proposal	One Way ANOVA
6. After controlling for student characteristics, is there a difference between mean grit scores of third year doctoral students that have successfully defended their dissertation proposal and those that have not?	6. After controlling for student characteristics there will be a significant difference between mean grit scores of third year doctoral students that have defended their dissertation proposal and those that have not.	Mean grit score for 3rd year students Successfully defended or not successfully defended proposal Student characteristics (Demographics)	ANCOVA

APPENDIX B

Survey Instrument With Informed Consent

Questionnaire (to be placed in a fluidsurvey.com online survey)

Web Form Page 1
Explanation and Informed Consent

Consent to Participate and Explanation of Research

The purposes of this form is to provide you (as a prospective research study participant) information that may affect your decision as to whether or not to participate in this research and to record the consent of those who agree to be involved in the study. Ted Cross MA, MSed, a doctoral student under the direction of Ronald Stephens Ed.D., Pepperdine University, has invited your participation in a research study.

The purpose of the research is to investigate the impact of student grit scores (passion and persistence for long-term goals) as measured on the short grit survey on student success. Success will be operationalized in several ways: first in terms of student persistence (as measured by longevity in the program), by current student GPA, and if a third year student by the successful completion of the proposal defense.

If you decide to participate, then as a study participant you will join a study funded by the Center for Innovation in Research and Teaching at Grand Canyon University involving research of doctoral students at Grand Canyon University. The study seeks to understand the impact of student grit scores on student success, or if other demographic factors have any impact on student success. In order to measure these different variables, you will be asked to fill out a simple survey that will ask you basic demographic information (your age, sex, GPA etc.), your academic progress (how many courses you have finished in the doctoral program), as well as questions to determine your grit score. **Participation in this study is voluntary and you may desist from participation at any time.** However, only completed questionnaires will be used in the study.

If you say YES, and agree by selecting the option to continue below, then your participation will last for approximately 5-10 minutes. Approximately 350 subjects will be participating in this study via the online survey link.

There are no known risks from taking part in this study, but in any research, there is some possibility that you may be subject to risks that have not yet been identified. Possible risks include boredom, fatigue, or mild stress. Although there may be no direct benefits to you, the possible benefits of your participation in the research is helping the principle investigator shed light on what may or may not impact student success in a doctoral program at GCU, as well as the possible emergence of new questions and areas of research to inform future studies.

If the researcher finds new information during the study that would reasonably change your decision about participating, then they will provide this information to you.

All information obtained in this study is strictly confidential. The results of this research study may be used in reports, presentations, and publications; however, in order to maintain confidentiality of your records, Ted Cross will de-identify all personal identifiers in the reporting of the research. **Specifically no names will be published or used in the reporting of the research.** Further information will be stored in a password-protected computer as well as backed up to a password protected drive. Only the principle researcher will have access to data that has not been de-identified. The data will be securely stored for a minimum of five years.

Your decision will not affect your relationship with Grand Canyon University or otherwise cause a loss of benefits to which you might otherwise be entitled.

The researcher wants your decision about participating in the study to be absolutely voluntary. Yet they recognize that your participation may pose some inconvenience. In order to thank you for your time in completing the survey, your name, if you choose, will be entered into a private raffle with the chance to win either an IPad Mini or a Kindle Fire. Your name will not be made public. If your name is chosen in the raffle, you will be contacted by the principle researcher directly via email to make arrangements for you to receive your IPad Mini or your Kindle Fire. There is no other possible payment for your participation in the study and you may only be entered into the raffle once.

Any questions you have concerning the research study or your participation in the study, before or after your consent, will be answered by:

Ted Cross MA, MSed
Phoenix, AZ
ted.cross@gcu.edu

If you have questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact the Chair of the **Grand Canyon University IRB 602-639-77804 or irb@gcu.edu**

This form explains the nature, demands, benefits and any risk of the project. By signing this form you agree knowingly to assume any risks involved. You may choose not to participate or to withdraw your consent and discontinue participation at any time without penalty or loss of benefit. In signing this consent form, you are not waiving any legal claims, rights, or remedies.

By clicking the "yes" box below you are electronically signing and indicating that you consent to participate in the above study and agree to all of the above.

Yes Check box
No Check box

(If, and only if they choose to participate by clicking "Yes" will they proceed to the questionnaire. If they click "No" then they will not be allowed to continue.)

Web Form Page 2

(The answers to each question on the grit scale should be a radio button selection, e.g. click radio button to select "most like me" etc.)

Short Grit Scale
Directions for taking the Grit Scale: Please respond to the following 8 items. Be honest – there are no right or wrong answers!

1. New ideas and projects sometimes distract me from previous ones.*
       Very much like me
       Mostly like me
       Somewhat like me
       Not much like me
       Not like me at all

2. Setbacks don't discourage me.
       Very much like me
       Mostly like me
       Somewhat like me
       Not much like me
       Not like me at all

3. I have been obsessed with a certain idea or project for a short time but later lost interest.*
       Very much like me
       Mostly like me
       Somewhat like me
       Not much like me
       Not like me at all

4. I am a hard worker.
       Very much like me
       Mostly like me
       Somewhat like me
       Not much like me
       Not like me at all

5. I often set a goal but later choose to pursue a different one.*
       Very much like me
       Mostly like me
       Somewhat like me

Not much like me
Not like me at all

6. I have difficulty maintaining my focus on projects that take more than a few months to complete.*
 Very much like me
 Mostly like me
 Somewhat like me
 Not much like me
 Not like me at all

7. I finish whatever I begin.
 Very much like me
 Mostly like me
 Somewhat like me
 Not much like me
 Not like me at all

8. I am diligent.
 Very much like me
 Mostly like me
 Somewhat like me
 Not much like me
 Not like me at all

Web Form Page 3

Directions: Please answer the following:

9. Age (Fill in blank)

10. Sex (Male /Female)

11. On average how many hours per week do you work? (Fill in the blank)

12. On average how many hours per week do you spend working on your doctoral program? (Fill in the blank)

13. Which Doctoral Program are you enrolled in? (Drop down- choose program: DBA Management, EdD Behavioral Health, EdD Christian Ministry, EdD Higher Education Leadership, EdD K-12 Leadership, EdD Organizational Development, EdD Special Education, PhD Cognition and Instruction, PhD Industrial Organizational Psychology, PhD Integrating Technology, Learning, and Psychology, PhD Performance Psychology)

14. What is your current (GCU Doctoral) GPA? (Fill in the blank)

Web Form 4

15. How many classes have you successfully completed in your GCU Doctoral Program? (Choose: 1 to 7, 8-14, 15 or more) (Example: If I have taken 5 classes I would choose the 1-7 category)

> First Year Students= 1-7 classes taken
> Second Year Students= 8-14 classes taken
> Third Year Students= 15+ classes taken

16. Have you successfully completed one of the following classes: DBA 955 (Dissertation 1), DIS 955 (Dissertation 1), PSY 955 (Dissertation 1)? (Y/N)

> (If answer "Yes" the next question will appear)

17. Have you successfully defended your dissertation proposal? (Y/N)

18. What are the top 3 things that have helped you be successful thus far in your program? (Fill in the blank)

19. What are the top 3 obstacles to your success in the program thus far? (Fill in the blank)

End of Survey

Web Form Page 5

End of Survey: Please make sure to hit SUBMIT to complete the survey.

Completion Page

(After survey the following will appear on a separate page):

Thank you for taking the time to complete this survey. Please use the link below to enter the raffle for the IPad Mini or Kindle Fire. (Please copy and paste the link into your browser) http://fluidsurveys.com/surveys/ted-cross/raffle-for-ipad-or-kindle-fire/ (the link will take the participant to a separate fluid survey)

Completion Page Continued
(This information will also be included on the last page after the survey)
Thank you for completing the survey. Below are some citations with links for your information on grit.

Duckworth, A.L, & Quinn, P.D. (2009). Development and validation of the Short Grit Scale (Grit-S). *Journal of Personality Assessment, 91,* 166-174. http://www.sas.upenn.edu/~duckwort/images/Duckworth%20and%20Quinn.pdf

Duckworth, A.L., Peterson, C., Matthews, M.D., & Kelly, D.R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology, 9*, 1087-1101. http://www.sas.upenn.edu/~duckwort/images/Grit%20JPSP.pdf

Raffle Survey

Please Enter The Following

I would like to be entered into the raffle for: (Choose: I Pad Mini, Kindle Fire, Neither)

Name

Email

Phone Number

(End Raffle Survey)

Notes: (not on survey but for scoring purposes)
Grit Scale Scoring

Scoring:
1. For questions 2, 4, 7 and 8 assign the following points:

5 = Very much like me
4 = Mostly like me
3 = Somewhat like me
2 = Not much like me
1 = Not like me at all

2. For questions 1, 3, 5 and 6 assign the following points:

1 = Very much like me
2 = Mostly like me
3 = Somewhat like me
4 = Not much like me
5 = Not like me at all
Add up all the points and divide by 8. The maximum score on this scale is 5 (extremely gritty), and the lowest score on this scale is 1 (not at all gritty).