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Stressors and Time-to-Degree for Online Social Sciences Doctoral Programs

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

U.S. doctoral program completion rates have remained persistently low in the humanities and biomedical sciences despite educators' efforts. A variety of factors, including stress and dissitation advisor-related issues, were associated with high attrition rates and extended time-to-degree for PhD candidates. The purpose of this correlational study was to examine relationships among life stressors, advisor-related factors, and time-to-degree for a convenience sample of 74 online social sciences doctoral degree holders. Holmes and Rahe's work on stress and Tinto's framework for education program attrition provided the framework for the study. Linear regression and Pearson's correlation statistics were used to examine the relationships between Social Readjustment Rating Scale (SRRS) scores, Advisor-Related Factor scores, and time-to-degree after controlling for covariates of age, ethnicity, and gender. Key findings included: a) SRRS significantly ($p < .01$) predicted time-to-degree after controlling for age, ethnicity, and gender; and b) no significant relationship was found between advisor-related factors. By identifying at-risk students, early intervention could reduce the time need to complete a PhD program and reduce financial and university resources required to finish. Doctoral program administrators could provide closer supervision with PhD candidates and make adjustments based on an accumulation of extraordinary stressors to help PhD candidiates adjust and finish their programs.

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Dedication

I would like to dedicate this dissertation to my parents Gloria M. Nelson and the late Richard Allen Nelson Jr. It is because of my parents continued support that I was able to see this come to fruition. I would also like to also dedicate this to my children Tyler and Carter. I am truly thankful God decided to bless my life with you. It was because of you that I persevered on this journey to the end. I want to be an example that you are proud to call Mommy.

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Chapter 1: Introduction to the Study

Introduction

Doctoral program completion rates have remained persistently low, ranging from 33% for the humanities to 76% in biomedical sciences (National Institute of Health [NIH], 2015). The probability of completing a doctorate diminishes over time. After the 7th year of matriculation, only one in 10 candidates finish (NIH, 2015). Concern over persistent doctoral candidate attrition rates resulted in studies (Council of Graduate Schools [CGS], 2013; Spaulding & Rockinson-Szapkiw, 2012) and initiatives (Walker, Golde, Jones, Conklin-Bueschel, & Hutchings, 2008) on the causes of doctoral candidate attrition and the growing time-to-degree. Sowell, Bell, Francis, and Goodwin (2010) conducted a 10-year study including more than 40,000 students, 30 doctoral programs, and 24 institutions focused primarily on discovering institutional intervention opportunities to reduce attrition. Sowell et al. indicated that lower attrition rates were associated with increased financial support, closer advisor relationships, and family and peer encouragement. Whether in the form of financial concerns, or peer and family support, the common element in each of the initiatives suggested by Sowell et al. was stress reduction.

Researchers reported that prolonged periods of high stress had a negative effect on academic outcomes (Bowen & Rudenstine, 2014; Pillay & Ngcobo, 2010). Although small amounts of stress were associated with improved academic performance, large amounts of stress significantly reduced performance (Richardson, Abraham, & Bond, 2012). The quantity of stress experienced by online doctoral candidates and their ability to mitigate that stress varies (Rocha-Singh, 1994). Students report high levels of stress

from their first year (Pillay & Ngcobo, 2010) through dissertation defense (Cassuto & Jay, 2015).

Online PhD students were more likely to be nontraditional graduate students than those attending on-campus graduate programs (Ramos, 2011). Nontraditional student refers to individuals returning to school to (a) qualify for a promotion, (b) increase their self-esteem, (c) make a career change, (d) enter the workforce, or (e) satisfy a personal agenda. Nontraditional students are often raising a family and carrying a full-time job, which creates its own stress. Online graduate students face loneliness compared to on-campus students. On-campus students enjoy a social network developed through daily personal interactions with professors and peers during and in between classes and discussion groups (Snyder & Tate, 2010).

In addition to the rigorous and demanding academic requirements for PhD students, online doctoral students find it difficult to maintain social and familial obligations, and they may experience a sense of isolation. This isolation creates the need for new social lives, putting added strain on their emotional and psychological health. Additionally, fear of failure constitutes a new source of pressure and stress (Hyder, 2006). The presence of high stress and the ability to cope with it constitutes a variable in the health and wellbeing of students, and it can impact on their performance in the doctoral program (El-Ghoroury, Galper, Sawaqdeh, & Bufka, 2012). In addition to the rigors and demands of student life, doctoral candidates experience many of life's positives such as a promotion, marriage, and birth of a child, and on negative stressful events such as divorce, illness, injury, and death of a relative.

According to the American Psychological Association (APA; 2014), online doctoral programs have become both accepted and available. By the fall 2012 semester, approximately 30% of all graduate students had at least one course online, and approximately 20% took all courses online (APA, 2014). Approximately 85% of all graduate programs offer at least some online courses (Allen & Seaman, 2012). Online doctor programs represent an attractive and accessible alternative to more traditional modes of attaining doctorate-level education for many psychology students. Online programs provide a more flexible learning environment than traditional PhD programs, and they are more readily adaptable to the schedules and workload of students (Fitzgerald, Wong, Hannon, Tokerud, & Lyons, 2013). Online program flexibility has the potential to reduce stress, increasing graduation rates and reduce time-to-degree.

Chapter 1 includes the background on the relationship between stress and academic achievement for PhD students and prolonged periods of time-to-degree. The research questions are also presented in Chapter 1. Tinto's student integration model (SIM) and stress theory, as developed by Holmes and Rahe formed the theoretical foundation for the study. Finally, the methodology, including limitations, scope, delimitations, and assumptions are addressed.

Background

A variety of factors, including stress, have been associated with high attrition rates and extended time-to-degree for online and on-campus doctoral programs (Cassuto & Jay, 2015). Stress is "a pattern of specific and nonspecific responses an organism makes to stimulus events that disturb its equilibrium and tax or exceed its ability to cope" (APA, 2014, p. 176). Philosophers acknowledged the relationship between the mind and

the body for centuries; the mind influences the behavior of the physical body and vice versa. Stress levels can be high or low, may be harmful or benign, depending on the type of stress present in the life of the individual. Stress can create mental and physical burdens on the individual (Richardson et al., 2012). Negative effects of excessive stress on the human body include headaches, shortness of breath, light-headedness or faintness, dizziness, nausea, loss of appetite, and decreased lifespan (Richardson et al., 2012; Zeng et al., 2013). Alleviating stress often involves changing a person's environment.

For doctoral candidates, confidence in mastery of materials, graduate student experience, and oral examination experience are factors associated with an increase in stress levels as measured by neuroendocrine levels and immune alterations (Lacey et al., 2000). Dissertations also constitute a stressor for PhD students; the multiyear nature of the dissertation process creates cumulative stress that increases attrition. Although advisors periodically measure progress, students may still fall behind on their dissertations. For online PhD programs, students may experience more difficulty remaining motivated and achieving progress due to the emotional and time demands associated with raising a family or working fulltime. The dissertation writing process and the pressure to complete and successfully defend the dissertation may be the most stressful aspects of PhD programs. The stress levels for students increase as their dissertation defense dates drew near (Cassuto & Jay, 2015).

Finances can also constitute another potential stressor for PhD students (Fitzgerald et al., 2013). Doctoral students tend not to make much money, generally relying on teaching jobs and student assistant jobs to support themselves (Fitzgerald et al., 2013). The mix of long working hours, low wages, and going to school engender

heightened stress. Many students entering PhD programs also have lingering debt from obtaining an undergraduate or graduate degree (Fitzgerald et al., 2013). The additional financial burden associated with the program can exacerbate already high levels of stress. Online education provides financial and time-allocation flexibility for students and allows students to work at their leisure to a greater degree than traditional PhD programs. The increased flexibility offered by online programs permits students to engage in part-time or full-time work while completing their programs (Fitzgerald et al., 2013). Lastly, online programs tend to offer social support; the open communication between students and instructors decreases social anxiety in such programs and reduces stress (Sutton, 2014). Despite research on factors that affect doctoral time-to-degree, there is a gap in the literature regarding the cumulative effect of stressors on PhD candidates during matriculation and the time-to-degree (Fitzgerald et al., 2013). This quantitative study of time-to-degree for doctoral candidates was a first step toward creating an early warning system to identify doctoral candidates at-risk for prolonged time-to-degree, often associated with attrition.

Problem Statement

Attrition in U.S. doctoral programs represents a waste of financial resources and energy for candidates and educators alike (CGS, 2013). Doctoral candidates who fail to finish waste resources of faculty members and the university, as well as their own personal time and money (Malone, Nelson, & Nelson, 2004). Smallwood (2004) stated, "If actual attrition is really around 50 percent, then this is a scandal" (p. Al4). Doctoral program dropouts are "a serious waste of resources and a terrible waste of time and

energy on the part of students," who leave with a debt load and without a credential with which to repay the debt (Smallwood, 2004, p. Al0).

Approximately 100,000 people in the United States enroll in doctoral programs each year with 22.3% finishing within 5 years and only 56.6% ever finishing (CGS, 2013). Time is a factor for predicting degree completion; after the 7th year the probability of ever receiving a doctorate reduces to 10% (CGS, 2013). Sowell et al. (2010) stated that given the high annual cost for each additional year of matriculation and the diminishing prospects for a successful completion, researchers who study doctoral program attrition rates should focus on understanding factors contributing impacting time-to-degree (Sowell et al., 2010).

Researchers have linked doctoral program attrition rates to a variety of causes, including (a) stress (Lovitts, 2001), (b) feelings of social isolation (Ali & Kohun, 2006; CGS, 2013), (c) poor candidate/adviser relationship (Spaulding & Rockinson-Szapkiw, 2012), and (d) inadequate financial support (CGS, 2013). Scholars who have examined doctoral program retention and time-to-degree were primarily focused on the phenomenon from the institution's perspective and found no single factor, or cluster of factors, that explained retention; the causes were subtle and multifaceted in nature (Gardner, 2009). Esping (2010) linked doctoral candidate retention to a lack of time, exams, poverty, anxiety, fear of failure, academic demands. Other stressors candidates faced were managing the socialization process into their new roles, managing new professional relationships, and building a professional identity (Lee, 2009). However, despite research on factors that affect doctoral time-to-degree, there is a gap in the

literature regarding the cumulative effect of major stressors on PhD candidates during matriculation and time-to-degree (Fitzgerald et al., 2013).

The aim of this study was to measure the number and magnitude of life stressors during the doctoral education process, using the Social Readjustment Rating Scale (SRRS; Holmes & Rahe, 1967) and to collect data on the candidate's choice of research method and test for an association of these independent variables with time-to-degree as the outcome measure. Age, ethnicity, and gender significantly correlated with doctoral program retention and time-to-degree in prior scholarly studies and were treated as potential covariates in this study (Spaulding & Rockinson-Szapkiw, 2012).

Purpose of Study

The purpose of this quantitative study was to examine the relationship between life stressors, advisor-related factors, and time-to-degree for a sample of social sciences graduates from online doctoral programs. The study adds to earlier research on the relationship between stress and factors that contributed to doctoral candidate attrition rates (CGS, 2013; Jairam & Kahl, 2012; Spaulding & Rockinson-Szapkiw, 2012). Time is a factor for predicting doctoral program completion; after the 7th year in a doctoral program, the probability of degree completion falls to 10% (CGS, 2013). In this study, an association between time-to-degree and life stressors and advisor-related factors was used as a means of identifying doctoral candidates at greater risk for attrition.

Research Questions and Hypotheses

RQ1: What is the relationship between the quantity of life event stressors experienced while matriculated in an online doctoral program, as measured by SRRS

(Holmes & Rahe, 1967) and time-to-degree for a sample of online social sciences doctoral graduates?

H$_o$1: There is no significant relationship between SRRS scores and time-to-degree for a sample of online social sciences doctoral graduates.

H$_a$1: There is a significant relationship between SRRS scores and time-to-degree for a sample of online social sciences doctoral graduates.

RQ2: What is the relationship between advisor-related factors as measured by the Advisor-Related Factor Survey (AFS; Kamas, Paxson, Wang, & Blau, 1993) and time-to-degree for a sample of online social sciences doctoral graduates?

H$_o$2: There is no significant relationship between AFS scores and time-to-degree for a sample of online social sciences doctoral graduates.

H$_a$2: There is a significant relationship between AFS scores and time-to-degree for a sample of online social sciences doctoral graduates.

RQ3: What portion of the variance in time-to-degree is accounted for by SRRS scores, and AFS scores combined?

H$_o$3: SRRS scores and AFS scores taken together have no explanatory value in predicting time-to-degree for a sample of online social sciences doctoral graduates.

H$_a$3: SRRS scores and AFS scores taken together have explanatory value in predicting time-to-degree for a sample of online social sciences doctoral graduates.

RQ4: What portion of the variance in time-to-degree is accounted for by SRRS scores and AFS scores taken together, after controlling for age, ethnicity, and gender?

H$_o$4: SRRS scores and AFS scores taken together have no explanatory value in predicting time-to-degree for a sample of online social sciences doctoral graduates, after controlling for age, gender, and ethnicity.

H$_a$4: SRRS scores and AFS scores taken together have explanatory value in predicting time-to-degree for a sample of online social sciences doctoral graduates, after controlling for age, gender, and ethnicity.

Theoretical Framework for the Study

Tinto's Student Integration Model

Tinto's (1975, 1987, 1993) SIM was used as the theoretical framework. Researchers and educators seeking to examine academic attrition rates (Conley, 2008) use Tinto's SIM. The model posits that both academic and nonacademic factors affect student's integration into the institutional environment, which predicts academic success, persistence, and attrition rates. Cumulative stress, as measured by life events, was a nonacademic factors affecting the time required to complete PhD program requirements to graduate. The SIM is used by graduate student administrators to develop interventions to improve retention rates.

The first-year dissertation experience is critical to a PhD candidate's academic, social, and emotional adjustment, and it is predictive of academic achievement and dropout rates (Tinto, 1987, 1993). Tinto (1993) suggested that acculturation to the new academic standards and expectations are essential to establishing a sense of belonging for doctoral candidates. A sense of belonging emanates from positive relationships with peers, staff, and professors through institutional programs designed to promote a sense of belonging (Deci & Ryan, 2008).

Social bond and a sense of belonging have several definitions (Deci & Ryan, 2008; Garza, Alejandro, Blythe, & Fite, 2014; Tinto, 1993). The need to belong involves relating to and caring for others, to feel a person is relating to his or herself and satisfaction with his or her connection to the community (Garza et al., 2014). Belonging in an academic setting reflects "the extent to which students feel personally accepted, respected, included, and supported by others in the school social environment" (Goodenow, 1993, p. 80). Efforts to reduce PhD program attrition concentrated on forming bonds with peers and professors that create a sense of involvement with the new community (Engle, 2007; Holmes & Rahe, 1967; Ojeda, Navarro, & Morales, 2011).

Stress Theory

Stress theory, as developed by Holmes and Rahe (1967), was used and operationalized by the SRRS. Psychological stress refers to a relationship between an individual and the environment in which demands exceed a person's personal resources (Lazarus, 1990). Psychological stress involves an ongoing transaction, event, or encounter appraised by the person as potentially or actually harmful, or presents an obstacle to a desired goal. Coping strategies are used to manage and resolve a troubled relationship. The subjective appraisal and magnitude of the threat influences the intensity of the stress reaction (Lazarus & Folkman, 1989). Stress theory takes a cognitive-relational view, which implies that stress is not part of the person or the environment, but reflects the interaction between motives and beliefs with an environment that poses challenges depending on personal belief systems.

Healthy coping mechanisms involve positive, optimistic, and eager attitudes toward obstacles and positively resolving stressful situations. However, the

accumulation of stressful events can deplete a person's personal resources and cause illness, withdrawal, or maladaptive behavior (Holmes & Rahe, 1967; Lazarus, 1990). The stress relationship is not stable, but a dynamic interaction that is a changing interplay between the person and the environment. For example, emotion-focused coping may change its meaning upon reflection, or a person may choose to deny or create distance from the threat, which also affects the threat appraisal. Stress is a multivariate process involving inputs, outputs, and the arbitrary activities of appraisal and coping through an iterative feedback loop. This view of stress does not include simple input/output analysis; it is a flexible systems analysis that involves a multitude of variables influencing each other in time, across the changing conditions of adaptation, and potentially eroding as the number of significant stressors accumulates (Holmes & Rahe, 1967).

Nature of the Study

A quantitative research design was used to examine the relationship between cumulative life event stressors, as measured by the SRRS (Holmes & Rahe, 1967) and advisor-related factors, as measured by the AFS, and time-to-degree in the social sciences. A correlational research design was used to determine the extent of the relationship between the dependent and independent variables and covariates. Correlation scholars test for relationships among a number of observable numeric variables, but no attempt to ascribe causes for the observed results. The study was nonexperimental because no attempt was made to manipulate variables.

The dependent variable was the SRRS score (Holmes & Rahe, 1967), and the independent variables were AFS scores and number of months from initial matriculation

in a social sciences doctoral program to graduation. Covariates for stress and academic achievement are known to be age, ethnicity, and gender (Ali & Kohun, 2006; CGS, 2013). Data were collected on study variables from 74 graduates from online social sciences doctoral programs within the last 5 years.

Definitions

Contextual knowledge: The degree to which a PhD candidate understands the norms and culture of the institution, procedural information related to program completion, a working understanding of the financial obligation involved in the PhD process, and an appreciation for self-advocacy in the degree process institutional context (Conley, 2008).

Dissertation advisor-related factors: The AFS developed by Kamas and Paxson examines causes for doctoral program attrition related to the quality of the assistance of the PhD candidate advisor as reported by the PhD candidate (Kamas et al., 1993).

Online students: Students enrolled in educational programs delivered through online platform formats (Allen & Seaman, 2012).

Social Readjustment Rating Scale (SRRS): The SRRS was developed by Holmes and Rahe (1967), and it records the occurrence of 43 major stressful life events and awards a life change unit depending on the level of trauma experienced by a large sample of participants.

Stress: Severe emotional response to internal/external change; personal, emotional, and physiological reaction against stimulus; or a situation in which an individual experiences psychological and physical tension from factors that exceeds his or her ability to cope (Thawabieh & Qaisy, 2012).

Time-to-degree: Time-to-degree is the quantity of time expended from the initial moment of matriculation in a social sciences PhD program, measured in years (Conley, 2008).

Assumptions

It was assumed that participants could accurately recall the approximate date of significant life events. Participants may have taken a decade to complete their doctoral work and may be completing the SRRS up to 15 years after the event itself. Although most of the SRRS events are significant, many of the less important events may not be recalled. There can be no assurances that the SRRS included all necessary data.

Scope and Delimitations

The scope of this project extended only to PhD students in the social sciences doctoral programs that have LinkedIn accounts and have graduated in the past 5 years. The LinkedIn network includes 120 million+ U.S. professionals and is used by universities, colleges, and businesses.

Limitations

This study had several significant limitations. The study sample was a convenience sample recruited using the LinkedIn survey tool. First, no effort was made to structure the study sample to reflect any particular geographic of demographic subpopulation and no efforts occurred to randomize the sample. Study findings may not generalize to other knowledge domains, geographies, or populations. Second, the SRRS is a self-report questionnaire. Self-report questionnaires, while in this case validated, are inherently subject to measurement error from bias or incomplete memory. Nonetheless, self-reported measures are acceptable when requested data are a concrete fact knowable

by the participant (Leedy & Ormrod, 2015). Finally, unmeasured covariates may account for any correlational findings beyond the study covariates.

Significance

One potential social benefit from this study may be a predictive model that helps administrators to identify doctoral candidates who are at-risk for prolonged completion periods. Such knowledge is important for administrators seeking to identify at-risk social sciences doctoral candidates in need of additional resources to continue their studies. Program administrators have an interest in achieving high graduation rates and identifying at-risk students. By identifying factors associated with prolonged completion rates, administrators may better advise students about the best way to cope with life stressor events. The first step in addressing any problem is to measure the incidence and identify those in need. A stress metric was created to identify students at risk of a prolong matriculation period.

Summary

Approximately 100,000 of the nation's brightest students enroll in doctoral degree programs each year, of which 22.3% are expected to graduate in 5 years and only 56.6% finish within 10 years (CGS, 2013). Retention rates were associated with stress, feelings of social isolation, poor doctoral adviser relationships, and inadequate financial support for both online and traditional programs. The purpose of this quantitative study was to examine the relationship between life stressors, advisor-related factors, and time-to-degree for a sample of social sciences graduates from online doctoral programs. Holmes and Rahe (1967) stress construct and and Tinto's (1993) SIM provided the theoretical framework to examine doctoral candidate attrition. Chapter 2 includes an analysis and

synthesis of literature regarding the relationship between stress, doctoral candidate attrition, and time-to-complete a doctoral program. The results of this study could provide data to identify candidates at-risk for attenuated time-to-degree periods, which are associated with high attrition rates.

Chapter 2: Literature Review

Introduction

U.S. doctoral programs attrition rates of between 34% and 49% represent a waste of personal and university resources, while denying another individual the opportunity for a doctorate (CGS, 2013). From 2000 to 2010, only 22.3% of doctoralcandidates completed the degree requirements within 5 years and only 56.6% ever finished (CGS, 2013). PhD candidate attrition rates were associated with (a) stress (Lovitts, 2001), (b) feelings of social isolation (Ali & Kohun, 2006; CGS, 2013), (c) poor candidate/adviser relationships (Spaulding & Rockinson-Szapkiw, 2012), and (d) inadequate financial support (CGS, 2013). The aim of this study was to measure the number and magnitude of life stressors that occurred during the doctoral education process, using the SRRS (Holmes & Rahe, 1967) and to test for an association with timeto-degree as the outcome measure. Age, ethnicity, and gender were found to be significantly correlated with doctoral program retention and time-to-degree in prior scholarly studies, and they were treated as covariates in this study (Spaulding & Rockinson-Szapkiw, 2012). Advisor factors were outside the scope of this study.

The literature review I in four sections in this chapter: stressors among student populations, characteristics of online learning, stressors among graduate students, and stressors among advanced-level psychology students. There is a gap in the literature on the impact of stress on the graduation rates for PhD students in online programs. Few scholars delineated the relationship between the levels of stress and the stressors experienced by online PhD psychology students.

The literature search yielded a number of studies on the stressors experienced by students in general, with a concentration of studies on undergraduate students. There are a number of stressors common among online students, such as examinations, grades, and test score stress (Thawabieh & Qaisy, 2012). Such academic stressors affect grade point average (GPA) and overall performance. In addition to the academic stressors, there are a number of nonacademic stressors among online students. Social stressors include the need to make new friends and to become part of social networks (Thawabieh & Qaisy, 2012). Being apart from a person's family and friends and choosing a good career path also constituted stressors.

Three stressors were identified as being more prevalent among PhD students than undergraduate students (Pillay & Ngcobo, 2010). The first of these stressors is relationship with professors and other faculty. A significant number of doctoral students experience high levels of stress due to inadequate relationships between students and professors. Stress caused by this factor was not present in undergraduate students, suggesting a unique source of stress for PhD students. The second stressor unique to PhD students is the stress associated with completing their dissertations. This stressor impacts some PhD students and their stress levels. The third identified stressor that is unique to PhD students is the ability to establish a professional identity. PhD students experience heightened stress as they navigate the transition from being PhD students to professional scholars, teachers, or experts. In examining the available literature on stressors among online students, a context was established for studying stressors among online PhD students. Stressors among students enrolled in online programs, stressors among doctoral students, and stressors among advanced education students in psychology were also

identified. These dimensions of understanding are all relevant to the overall context of student experience in PhD psychology programs.

Literature Search Strategy

The following databases were searched to identify literature regarding the relationship between common life event stressors and time-to-degree: Academic Search Premier, EBSCOhost, ERIC, Google Scholar, JSTOR, ProQuest, PubMed, and Springer. The following education-related government and institutional websites were searched: Council of Graduate Schools, Robert Wood Johnson Foundation, National Science Foundation, Trust for America's Health, and United States Department of Education (DOE). Google was the primary search engine used except when individual sites or databases required the use of another search application.

The development of keywords and key search terms was an iterative process. Initially, databases and websites were searched for combinations and permutations of the following keywords: *academic achievement, PhD program completion, PhD completion rates, quantitative research, stress,* and *theory*. Additional keywords and key search terms were developed during the process. The literature review included scholarly journals, periodicals, published dissertations, books and working papers, and government and university websites. The period reviewed was from 2005 to 2015 and, in some cases earlier for theory, background, and history. One hundred and twenty seven individual works were reviewed, 103 were cited and referenced, and 12 provided context. Approximately two-thirds of the cited studies were quantitative with the rest being qualitative or theory.

Theoretical Foundation

Tinto's Student Integration Model

Tinto's (1975, 1987, 1993) SIM posits that academic and nonacademic factors predict academic success, persistence, and attrition rates. Tinto's SIM is used by graduate student administrators to develop interventions to improve retention rates. The nonacademic factor of cumulative stress as measured by life events was relied upon as predictor of time-to-degree for PhD program graduates. Nonacademic factors include cognitive strategies, social capital, cumulative stress, and coping strategies (Conley, 2008; Tinto, 1975). Cognitive strategies include a person's ability to regulate learning without external cues, applying a variety of learning methods to form a deep understanding and develop mastery (Heikkila, Lonka, Nieminen, & Niemivirta, 2012). Self-efficacy beliefs are cognitive-based and predict student persistence (Sedlacek, 2011).

Social capital, or bond, refers to the accumulation of social ties and includes supportive family and friends, professional networks, school personnel, and fellow PhD candidates (An, 2012). Social bond and a sense of belonging involves attempting to relate to and care for others, to feel a person is relating authentically to his or herself, and satisfaction with a person's connection to the community (Deci & Ryan, 2008; Garza et al., 2014; Tinto, 1993). Social bonding in a PhD program reflects "The extent to which students feel personally accepted, respected, included, and supported by others in the school social environment" (Goodenow, 1993, p. 80). Research regarding successful interventions to reduce PhD attrition rates included programs and practices to encourage

social bonds with peers and professors and a sense of community involvement (Holmes & Rahe, 1967; Ojeda et al., 2011).

First-year students' social and emotional adjustment was predictive of academic achievement and graduation rates (Tinto, 1987, 1993). Newly matriculated doctoral candidates' acculturation to academic standards and expectations was essential to establishing a sense of belonging. A sense of belonging emanates from positive relationships with peers, staff, professors, and through institutional interventions (Deci & Ryan, 2008).

Stress Theory

The researcher used stress theory as developed by Holmes and Rahe (1967) and operationalized by the SRRS. Stress was defined as severe emotional response to internal or external change; personal, emotional, and physiological reaction against stimulus; or a situation in which an individual experiences psychological and physical tension from factors that exceeds their ability to cope (Thawabieh & Qaisy, 2012). Within this context, stressors refer to the factors that cause or create the psychological physical stress. Stressors may be classified according to duration or frequency as sudden trauma, daily hassles, and chronic stressors. According to Thawabieh and Qaisy (2012), approaches to studying stress fall into three main categories. In the first approach, stress is an independent variable that originates from the internal environment of the individual. In the second approach, stress is a response to the individual's external environment, and it represents a dependent variable that affects the emotional, physiological, and cognitive functions of the individual (Thawabieh & Qaisy, 2012). The third approach is transactional and combines the first two approaches (Thawabieh & Qaisy, 2012).

Psychological stress involves the relationship between the individual and the environment when demands exceed a person's personal resources (Lazarus, 1990; Thawabieh & Qaisy, 2012). Psychological stress derives from ongoing transactions, events, or encounters appraised by the individual as potentially or actually harmful, or present an obstacle to a desired goal. Once a situation becomes stressful, coping processes are engaged to manage and resolve the troubled person-environment relationship based on a subjective appraisal of the type and magnitude of the threat (Lazarus & Folkman, 1989). Stress theory is cognitive-relational based, meaning that stress is in neither the environmental input nor the person, but reflects interaction between an individual's motives and beliefs of an environment whose characteristics threaten harm or challenges depending on personal belief systems.

Psychological stress is not static but a dynamic interaction between the person and the environment. For example, what is attended to in emotion-focused coping may change; its meaning may change upon reflection, or a person may choose to deny or create distance from the threat, which could also affect the threat appraisal. Stress is a variable process involving inputs, outputs, and the mediating activities of appraisal and coping through an iterative feedback loop (Holmes & Rahe, 1967). Stress is not a simple input/output analysis; it is a fluid systems analysis involving a host of variables. These variables influence each other in time, and across the changing contexts of adaptation, potentially eroding as the number of stressors accumulates (Holmes & Rahe, 1967). Healthy coping mechanisms involve positive, optimistic, and eager attitudes toward obstacles and positively resolving stressful situations. However, the accumulation of

stressful events can deplete a person's personal resources and cause illness, withdrawal, or maladaptive behavior (Holmes & Rahe, 1967; Lazarus, 1990).

An array of measures for stress exists, from self-reported measures to a range of physiological measures (Moraska, Pollini, Boulanger, Brooks, & Teitlebaum, 2010). This variance in measures of stress impacts the results of studies. Such variance may explain the differences in the findings on stress and perceived stress; differences in what constitutes stress qualifications for individuals who participate in such studies could lead to discrepancies in the data. For instance, some scholars measure stress based on stressors within academic engagement, while others have no such academic-specific requirement. Some researchers measure examination-related stress or stress strictly brought on by examinations and do not include other academic stressors (Moraska et al., 2010). Measures of perceived stress were not relied on for this study; but rather the accumulation of known life stressors, such as divorce and loss of a parent, to determine a student's level of stress that occurred during the doctoral acquisition process, as measured by the SRRS.

Literature Review Related to Key Variables

Graduate Students and Stress

Esping (2010) linked stressors like poverty, academic anxiety, academic demands, fear of failure, examinations, and lack of sufficient time to prepare, while Lee (2009) found three stressors: managing the socialization process into their new roles, managing new professional relationships, and creating a professional identity. Various forms of studying can lead to various levels of stress (Pillay & Ngcobo, 2010). Studying is a factor in heightened stress levels, despite the fact that the likelihood of good performance in

examinations increases with more studying. Studying under the pressure of deadlines can lead to increased levels of stress, well above levels experienced during typical studying times. According to Robotham (2008), "Striving to meet assessment deadlines is a major source of stress for many students" (p. 738). Workload-related stressors also constitute a common stressor for graduate students (Priyadarshini & Sahoo, 2012). Fear of failure is a stressor described as adding healthy and positive motivation to students to take their academic work seriously (Cassuto & Jay, 2015). Time management issues constitute stressors among students, particularly among those taking advanced courses and those who are new to the advanced academic environment.

The following are five primary stressors for graduate students: (a) academic performance, (b) peer pressure, (c) relationships that students developed or failed to develop with faculty members, (d) students' professional or occupational responsibilities, (e) issues in students' personal lives, and (f) issues related to the personal and professional identities of the students (Murphy, Gray, Sterling, Reeves, & DuCette, 2009). A stressor for students is academic performance; however, this stressor may affect graduate students more than undergraduate students. Expectations in graduate programs tend to be high. At the same time, such expectations can make it stressful for students in such programs to attempt to compete with their peers. Because graduate grades tend to be significantly higher than undergraduate grades, graduate students experience even greater stress to perform well (Murphy et al., 2009). Priyadarshini and Sahoo (2012) also found that women tend to have lower stress levels compared to males in graduate programs. For women in online graduate programs, the main stressors were related to their families, health, and finances (Arric, Young, Harris, & Farrow, 2011).

The workload associated with online PhD programs, having to juggle other responsibilities, and teaching classes create added pressures for the student, as limited time is spent studying (Cassuto & Jay, 2015). Insufficient immersion time for studies creates concerns about falling behind others in class, as the student may not be prepared for exams (Cassuto & Jay, 2015). Another problem for PhD students is the doctoral dissertation, which is a long process that can carries challenges with regards to focus; progress in the dissertation may be hindered by other roles such as work as most PhD students tend to teach classes as well. Teaching and preparing to teach courses on their own takes time away from preparation for examinations. Pressure also exists for graduate students, especially PhD students, to participate actively in departmental activities and events such as workshops, lectures, and presentations.

Another stressor among PhD students is the need to develop relationships with faculty members (Pillay & Ngcobo, 2010). Building relationships with faculty is important for a number of reasons. PhD students may be seeking professional relationships as they progress with their studies and prepare to transition to professional careers. They may also seek positive recommendations towards future employment. Building relationships with faculty members is more applicable to students nearing the end of their programs than first-year and second-year PhD students; older students tend to seek such relationships more actively because it is critical for their career moves (Dyrbye et al., 2009). Lastly, issues in the personal lives of students can affect their stress levels; for PhD students, the demanding environment of PhD or other advanced programs can exacerbate the stress from personal issues, such as increased financial responsibility and

time allotments. Exacerbation occurs because such stress creates difficulties in addressing and coping with other issues related to the academic program (Cassuto & Jay, 2015).

El-Ghoroury et al. (2012) assessed stress, coping, and the obstacles to wellness that exist among psychology graduate students and found that over 70% of graduate students in the sample reported stressors that affected their peak functioning. Such stressors included finances/debt, academic responsibilities, anxiety, and poor school/work-life balance (El-Ghoroury et al., 2012). El-Ghoroury et al. also found that PsyD students reported financial cost as an obstacle to their coping more frequently than students in other doctoral-level psychology programs. It is important to evaluate how such stress impacts on completion rates for PhD programs, especially within online formats.

Hyder (2006) studied stress among doctoral students in clinical psychology. The objective of the quantitative study was to evaluate and compare stress levels of doctoral psychology students, as well as to evaluate the impact of students' age, gender, and marital or parental status across 5 years in a doctoral psychology program. Perceived stress levels and external and internal factors affected completion rates (Hyder, 2006). External factors included deadlines for exams and papers, job loss, relationship turmoil, or death of a loved one (Hyder, 2006). Positive stress from external factors has the opposite impact on the individual. Timely completion of exams, workplace promotion based on imminent completion of the dissertation, birth of a child, or marriage are some positive examples. External factors are uncontrollable while internal factors are controllable and influenced by psychological wellbeing, mental state, personality, and lifestyle (Hyder, 2006). Internal factors that affect positive or negative stress incorporate

(a) the level of self-efficacy, (b) an optimistic or pessimistic thinking style, and (c)
personality characteristics. Although there are minimal differences between men and
women who earn doctorates, the character type that the individual possesses determines
how he or she perceives stress.

Hyder (2006) stated that doctoral education is among the most intense areas of
academic study. A critical issue for students is stress and how it affects both their
learning and completion of the program. Academic stressors are listed as personal and
academic responsibilities, the struggle to meet required academic standards, anxiety
related to time management, money management, grade concerns, and the ability to cope
with work and family (Hyder, 2006). Additionally, the fear of academic failure can
influence the students' perceived level of stress. Hyder stated that individuals differ in
their ability to manage stress; individual levels of stress increase with the number and
intensity of hassles they experience. Doctoral student attrition within the academia is
estimated to be as high as 50% (Hyder, 2006). Women tend to drop out at a higher rate
compared to men, and minority students drop out at a higher rate compared to White
students (Hyder, 2006). At the same time, U.S. students drop out at higher rates than
international students do, while students drop out of programs in social science and
humanities at higher rates compared to those in the sciences (Hyder, 2006). Both
educational costs and the time needed to complete doctorate programs have recorded an
increase by 2 years across the last 3 decades (Hyder, 2006).

Psychosocial factors like education, relationships, work, and family can contribute
to or detract from the presence of positive or negative stress (Sirois & Kitner, 2015). The
factors that cause distress can also cause eustress. Eustress refers to the normal and

healthy level of psychological stress associated with motivation and positive adaptation. The response of the doctoral student to stressors may affect cognitive, physiological, behavioral, and emotional dimensions. An important issue with regards to stress among doctoral students is how it affects their learning and whether they will complete the doctoral program. Other studies, found no relationship between demographic predictor variables (such as gender, age, marital or parental status, and program year) or level of stress from academic concerns, environmental concerns, and family or financial concerns (Sirois & Kitner). However, a relationship exists between the same predictor variables and stress levels as measured using the Demand and Coping Scale (Sirois & Kitner). The implications of the study contribute to greater understanding from program faculty, as well as help doctoral psychology students to set realistic priorities for balancing academic work with other roles and so reduce the attrition rates for doctoral programs in psychology.

Hyder's (2006) study offered a detailed review of doctoral stress in the context of psychology programs, as well as presenting a detailed description of the dynamics between positive and negative stressors, and offering insights into attrition issues for doctoral programs. Hyder also validates the need to study how stress affects graduation rates in online doctoral programs since students may consider the online format as a viable alternative where they are unable to cope with stress within traditional programs. An understanding of how stress affects attrition in online programs can promote informed decision-making.

Perry, Boman, Care, Edwards, and Park (2008) conducted a qualitative study to investigate health studies graduate students self-identified reasons for not completing

online graduate programs. Data were collected from students who had initiated withdrawal during 1999-2004. Rovai's (2003) Composite Persistence Model was used as a framework for data analysis, and themes were identified using notices of withdrawal letters submitted by students. Perry et al. (2008) indicated that major reasons for withdrawal fell into two categories: program reasons (such as factors related to career fit and learning style), and personal reasons (factors related to work or life commitments). The findings have key implications for the design of online programs, delivery approaches, as well as student support programs. Understanding students' reasons for withdrawing from an online program will help researchers explore program elements that could alter or improve the student's experience of online learning.

Rovai's (2003) Composite Persistence Model includes student variables such as skills and personal characteristics, as well as external and internal factors that impact student's persistence. Perry et al. (2008) conducted a study on attrition decisions rather than persistence. Withdrawing students listed external factors such as family responsibility, finances, hours of employment, and life crisis as being the factors responsible for their decision to withdraw. Factors identified in the Rovai model, such as learning style, program fit, and clarity of program are designated as internal factors. There was no evidence that the absence of a learning community or perceived lack of social integration, two internal key factors in Rovai's models (Perry et al., 2008) influenced withdrawing. While a logical hypothesis for distance learning medium might be that virtual classrooms are more limited with regard to community experience and social interaction, this was not true in the discussed study. Further study may be needed to examine this finding.

The majority of factors responsible for students' withdrawal as reported by the study participants were external factors in the context of Rovai's (2003) model. Such factors were beyond the control of students, and included pressures of family responsibilities as well as life crises. Such factors were also unpredictable and often unforeseen. These external factors were devastating to the ability of the student to focus on their studies and learning. Graduate student populations were generally older and led complex lives involving children, spouses, careers, older relatives, and financial commitments. The external factors category of the Rovai model appears to be particularly relevant for online graduate students. Students reported changes in their career directions rendering course content irrelevant as another common reason for leaving the program. The factor for leaving is not identified within the Rovai model, but may be incorporated under goal commitment as an additional external factor. Career stability could be incorporated as a new factor. As shown in the study, graduate students are mostly older, and well established in some careers. These students enroll in online programs throughout several years while being employed. This makes it possible for them to receive offers of new positions even while they are still studying, and such changes can lead to withdrawal (Perry et al., 2008).

An assumption in this study is that doctoral attrition is negative, indicating there was something wrong in the program or with the student. This view of attrition assumes if the problem can be identified, it might be possible to develop a solution to reduce or eliminate attrition. Attrition is defined as an individual leaving a program without completing it successfully, a definition that connotes failure; however, many students drop classes because it is the right thing for them to do based on well-informed decisions

as mature persons and experienced adults. Attrition may be the healthy option for students depending on their personal lives and work situations. This view represents an alternative view to attrition as being negative, and is important in considering cases of temporary attrition where a person may withdraw from a program, but wishes to come back at a more convenient time and be readmitted to resume their studies (Perry et al., 2008).

Certain stressors are unavoidable. In such contexts, it is also important to act quickly if students are leaving for reasons such as poorly designed programs, ineffective methods of information delivery, or obsolete information. It is important to examine the reasons for attrition and take appropriate action. When learning disharmony is responsible for student withdrawal, the necessary technological and methodological changes are needed to promote optimal learning and eliminate attrition. Personal competence concerning coping with life's pressures was the key reason identified for withdrawal in this study. It must be noted that it is possible to admit students who are at risk for withdrawal due to open, university policies. This situation makes retention a critical concern. Further research could help institutions develop support systems that could improve retention rates while reducing attrition. Coping strategies could be offered through counseling to help students with stress. Counseling a student undergoing a career change, to pursue a more related course of study, is a positive action (Perry et al., 2008).

Perry et al. (2008) has important implications on the effects of stress on PhD completion rates for online students. The study presents a clear view of what constitutes attrition, and why attrition can be negative or positive. This distinction is important given

the wide-range of roles and engagements that online graduate students have in their lives. This study is important as it presents an analysis of the impact of stress that displays logical sequence of deductions based on a validated tool. Furthermore, the study focused exclusively on online graduate programs. This factor is directly relevant for this study based on the shared variables of online studies and advanced level education, as well as the demographic profile of the population studied.

Furthermore, Perry et al. (2008) presented another perspective that studied the impact of stress, this time using student populations that withdrew from online advanced education programs and how stress affected that decision. Hyder (2006) studied the students level of stress and stressors, and compared them with their grade point averages as a measure of their success in the program, and a potential indicator for graduation rates. This study represents a useful framework for comparing findings while providing a guide for discussing findings.

Karabacak, Uslusoy, Şenturan, Alpar, & Yavuz (2012) examined a similar study population with a sample size of 52 students. Their study utilized a posttest measure for stress perceived among students. A 20-item Creative Style Questionnaire, a technical psychological instrument used to measure stress and anxiety in individuals, was used to measure stress among study participants. Karabacak et al. (2012) did not identify specific stressors that the students experienced; rather, levels of stress experienced by students taking examinations was compared with levels of stress among students who were not taking examinations at the time. The findings of the study were that examinations brought on considerably higher amounts of stress. In conclusion, the average student experienced higher than normal levels of stress, even during non-examination periods. This finding

indicates that the academic experience itself may contribute to stress in advanced students (Karabacak et al., 2012). This finding is relevant for this study on PhD psychology students as it suggests that even in the absence of other stressors, some residual stress exists from engaging in the academic experience.

Gorostidi et al. (2007) investigated stressors present in first-year students in a longitudinal descriptive study with a sample size of 69 students. The KEZKAK tool developed by Zupiria Gorostidi, Uranga Iturriotz, Alberdi Erize, & Barandiaran Lasa (2003), a 41-item tool for measuring stress, anxiety, and other psychological measures was used. A prospective design permitted the researchers to measure changes in the levels of stress students' experienced over the first year; however, results left out a significant number of measures in the KEZKAK tool. The primary stressor identified in the study was lack of competence. A significant number of students believed they lacked the capabilities to succeed in their educational pursuit. This stressor may be closely related to performance in class and overall academic performance, issues that can constitute considerable stressors for students.

Feelings of powerlessness were the second most prevalent stressor observed. Powerlessness in this context describes students' feelings of having no control over critical outcomes in their lives, from academic success to job opportunities (Gorostidi et al., 2007). Uncertainty was also found to be a prominent stressor among students. This factor had similar effects as feelings of powerlessness; they felt they had no control over critical issues in their lives. Feelings of uncertainty were particularly stressful because students tend to worry often about uncertain consequences of their actions. In an environment that is highly unfamiliar, feelings of uncertainty run high especially for

newcomers attending a university for the first time. For juniors and seniors who are already well adapted to the learning environment, feelings of uncertainty are less common. This marks a strong distinction between the stressors in less experienced and more experienced students, a continuum that exists between undergraduate and PhD students, as well. Finally, peer and professional relationships comprised the fourth stressor identified in the study. This type of stressor involves worries about social standing among peers and standing as a student among professors. Where students fail to form relationships with teachers, they may be unable to obtain quality letters of recommendation in the future (Gorostidi et al., 2007).

Incremental Stressors for Online PhD Students

To provide a comprehensive understanding of the environment where learning takes place for the online PhD student in psychology, a review of the primary characteristics of online learning and the role of technology as the key characteristic of the online classroom is necessary. Such a review will not only provide a basis for understanding stress in online learning environments, it would also enable an understanding of stressors that may be associated with unique online learning characteristics. Conversely, it could also provide an understanding of factors that may decrease stress for online students as compared to students in traditional programs.

Higher educational institutions have merged with technology in new ways to create a growing trend toward online programs (Northcote, Reynaud, & Beamish, 2012). Educational service provision through online platform formats strives to meet changing societal needs and maintain competitiveness through the expansion of geographical borders and institutional differentiation (Allen & Seaman, 2012). Transformations in

higher education to online formats are also being driven by increasing social complexities, changes in the goal and delivery of higher education, and economic indices (Trowler, 1998). A valid context for 21st century collegiate ideals occurs within a vision where human interactions maximize, and where there is an efficient experiential and active pedagogy to create high expectations, while supporting development capabilities. Creating a collegiate ideal within a functional matrix dictated by partnership between institutional purpose, student life and faculty culture is particularly challenging in an online environment (Toma & Kezar, 1999).

Both online universities and traditional institutions with online extensions rely on technology to create a uniform learning experience for the student (National Center for Education Statistics [NCES], 2014). Educational technology not only adapts to changing technologies, it adapts to social changes thereby forcing progressive expansion and addition of new technologies. This has implications for instructional design as well as issues of competency in technology use for online students (Caron & Brennaman, 2009). For example, technology-based simulations and social networking affect educational outcomes. Such online simulations provide a learning environment that is complex as well as facilitates experience flows, while promoting a shift to student-focused environments as against instructors' centered environments found in traditional classrooms (Al-Salman, 2011). Social networking includes the use of discussion boards that can be a critical form of support for online students. Technology use and related strategies associated with online learning constitute the core characteristics of the virtual classroom (Cauley, Aiken, & Whitney, 2010).

Important theories related to technology and education include the constructivist theory, cognitive theory of multimedia learning as well as transactional distance theories which are all still considered to be relatively new and emergent (Ford & Lott, 2009). Such theories of learning are harnessed in online learning platforms to promote learning outcomes. The 21st century is marked by rapid information development across all fields as well as rapid knowledge connections with technology; theories of learning are undergoing transformations to align with the pace of modern education (Hodges, 2009). A review of some of these theories is necessary towards understanding information delivery methods in online learning and how, if any, stressors may be associated with the use of technology in online PhD programs.

The setting in which learning occurs is of paramount importance as it creates the contextual meaning for learning theories (Freitas & Neumann, 2009; Schneider, 2009). The educational theories of Piaget and Dewey form the background to constructivism. Dewey proffered the foundation for learning as inquiry, while Piaget developed key concepts such as assimilation and accommodation. In combination, these two concepts define how learning is processed and organized (Priyadarshini & Sahoo, 2012). The theory of constructivism looks at how knowledge is determined, with current constructivist learning theories attempting to balance constructivist based pedagogies while incorporating technology (Ford & Lott, 2009). The main theme in constructivism is that knowledge is vital and constantly evolving. Therefore, learning is an active process involving the personal interpretations of the learners as created through experience (Hodges, 2009). Technology provides flexibility and adaptability that is conscious of pedagogies across different constructivism learning frameworks. Constructivist learning

theories such as situated learning, activity theory, and social constructivism, adjust and empower by using technology as a tool for teaching (Ford & Lott, 2009). The instructor's role in online learning becomes that of interactive provision of scaffolding and collaboration for online students.

Lastly, the construction of knowledge and meaning from social influences forms the foundation for the social cognitive theory (Wicks, 2009). Communications within one's community as well as through online communities influence learning and the construction of meaning all through life. The mind is influenced by these interactions. The social cognitive theory looks at the relationship between cognitive influences, behavioral impacts and technology use (Koch, 2009). Observational learning is defined as being effects-based learning while direct experiential learning is described as being the construction of behaviors based on the observed effects of actions. Learning through modeling is a process that involves conceptions based on observations of behavior structure. Modeling and observations enhance social learning while social learning in turn promotes higher-order thinking (Koch, 2009). Based on this construct, online learning can potentially promote advanced learning outcomes given the vast opportunities it proffers for social interactions. This fact might have implications for understanding performance where the students consider the online platform for a PhD in psychology as providing the best form of instruction for them, or being a format that enhances their learning and consequently, their overall performance.

Ramos (2011) states that all graduate college students, are prone to stress due to time management demands, irrespective of the type of learning format, as well as higher academic expectations than experienced during undergraduate studies. The author further

states that online, or non-traditional students, often face additional stress from multiple

roles such as working full-time or raising a family. These stressors alone may not cause

anxiety, however stress occurs because of interaction with stressors and individual

perceptions.

Substantial differences exist in students' levels of stress experienced in online

learning environments as compared to a physical learning environment (Nedungadi,

Raman, & McGregor, 2013). This position is based on the findings from a study on

enhancing learning using online labs. The empirical study compared physical labs with

tablets and desktops as learning tools. Specifically, the findings suggested that online

courses tend to be more flexible, allow more time for deadlines, and are less rigid in

assignment structures. The study also showed that the specific effects of a class taught

online as compared to classroom formats were highly mitigated by a number of other

factors such as overall structure of the class, availability of resources, availability of

instructors to answer questions, and numerous other factors (Nedungadi et al., 2013).

Thus, while differences may exist between teaching outcomes and the levels of stress

experienced by students taking courses online and in traditional classrooms respectively,

such differences appear to negligible compared to other more important factors.

Further confirming the importance of relationships between students and

instructors as being critical for positive online learning outcomes, Martinak (2012)

observed that relationships between student and professors are important in stress levels

among students. Martinak stated, "These behaviors provide an increase in student

satisfaction, student performance, and results in a good rapport between the professor and

the students" (p. 166). Brindle and Levesque (2000) support the view that positive and

supportive interactions between instructors and students create a low-stress environment for students. A partial explanation for this outcome may be that the presence of such behaviors creates personalized experiences for students in which they feel valued, rather than pressured to compete. Furthermore, such behaviors may increase empathy as perceived by the students while promoting a more favorable learning and interactive environment within the system. Another explanation may be that such behaviors lead to better communication, better organization, easier-to-follow directions, as well as clearer requirements and these factors all reduce the uncertainty that students feel within the online program and so reduce anxiety and stress (Brindle & Levesque, 2000).

Martinak (2012) examined stressors and the levels of stress among graduate students who were taking online courses, and identified six major categories of stress. The primary source of stress was balancing personal life with work and school. Many of the stressors reported by study participants caused by specific events that had occurred during the course of the online program, events such as having a child or spouse being deployed. The second major stressor identified was time management concerning academic workload. The third stressor was the difficulty in scheduling specific virtual meetings for group assignment, in ways that meant that all group members would be available to participate. A fourth stressor related to logistical issues during the course, such as forgetting about discussions or losing files on the computer. A fifth stressor was uncertainty about expectations and assignments; this stressor was also associated with a notable reluctance of the students to ask questions about assignments and expectations. Lastly, the transition from undergraduate to graduate level studies, online tests and formatting, constituted significant stressors, as well (Martinak, 2012).

Doctoral Advisor-Advisee Relationship

The advisor-advisee relationship of the PhD candidate can profoundly affect the student's professional development during the dissertation process and beyond, and the probability of completing the dissertation at all (Magoon & Holland, 1984; Schlosser & Gelso, 2001; Schlosser, Knox, Moskovitz, & Hill, 2003). This finding is not surprising given the responsibility of the advisor to facilitate their student's progress through the dissertation process, and may serve in other capacities for their students (clinical supervision, professor, mentor, etc.). Despite the critical nature of the advising relationship, little research exists on the advisor–advisee relationships (Schlosser & Gelso, 2001; Schlosser et al., 2003).

The Advisory Working Alliance inventory is a measure of self-reporting originally developed by Schlosser and Gelso (2001). This tool was created to assess and determine, from an advisee's perspective, the working alliance between the advisor and advisee. Advisor and advisee working to a common goal characterized this working alliance. Positive student ratings of the working alliance were associated with improvements to ratings such as self-efficacy. Schlosser and Gelso concluded that a working alliance was critical in a graduate advising relationship. These positive ratings were also associated with perceptions of the advisor as characterized by qualities such as trustworthiness. The findings emphasized the key role advisor's qualities played in developing a working alliance with an advisee. The advisor is the faculty member who shoulders the greatest load in guiding students in the graduate program, though psychology doctoral programs use many terms interchangeably with the term advisor (Schlosser & Gelso, 2001).

Data analysis revealed that students described two different advising relationships that could be either positive or negative. Positive students reported feelings of comfort during disagreements and a sense that advisors were friendly and supporting. Students with negative feelings reported that it was difficult to establish a working relationship with their advisor, or that the relationship was strictly businesslike, without the cordiality and friendliness typifying positive working relationships. The finding that positive advising relationships were friendly and consisted of a good rapport was consistent with the positive advisor-advisee relationship characterized by Schlosser and Gelso (2001). Dissatisfied students may have sought more from the relationship or perceived a lack of benefits, which in some cases may have undergone negative relationships that can be harmful to the student (Gelso & Lent, 2000).

Positive relationships are ones where conflict is openly dealt with, while maintaining good rapport and facilitating an advisee's progress and success. Students dissatisfied with the advising relationship characterize negative relationships and who do not describe their advisors as mentors, a term that carries a positive connotation. Negative relationships can involve negative qualities such as neglect on the part of an advisor (Johnson & Huwe, 2002). Current results mirrored these negative responses, characterized advisors as absent, and the relationship as full of conflict. Despite the positive associations with a mentoring relationship however, not all student want or enjoy that close of a relationship, and therefore each advising relationship needs to consider the advisee's needs, expectations, and goals.

Summary and Conclusions

The literature review begins with a review of stressors in student populations. Differences in the educational environment, requirements and social dynamics create stress for students. Modern stress theory includes mechanisms for how individuals evaluate events, and regulate their internal states to compensate for stressors. Measures of stress may be self-reported or physiological. All students identified academic performance anxiety as a strong stressor in general. Other common stressors for students included academic workload, new relationships with peers, and examinations. Feelings of powerlessness and uncertainty were also prominent. Stressors for first year PhD students were mostly related to concerns about adapting to the new environment and underperformance, while for non-freshman, stressors are most closely related to professional concerns and careers choices and the need to maintain higher grades in more competitive classes.

While every student experiences stress, online students face additional stress from multiple roles such as working full-time or raising a family that can increase stress levels. Instructor-student interaction was identified as being the most important stressor in online programs. Another main source of stress was balancing personal life with work and school. Many students identify stressors as specific events that occurred during the course of the online program such as having a child or having a spouse deployed. The second major stressor identified was time management with regard to managing academic workload. A third significant stressor was difficulty in organizing group activities. A fourth stressor was related to logistical issues, and the fifth stressor, uncertainty about expectations and assignments. The effectiveness of online learning for graduate level

students learning can be improved by constructive alignment of program goals and curriculum, development of facilitator's guide specifying expectations, synchronous communication in real-time online tutoring, as well as using established template for content authors.

How people cope with stress is the factor that mediates the outcome and distress occurs where the environmental demands exceeds what the person is able to adapt to or to cope with through behavioral and cognitive efforts that manage the demands of such environment - person transactions. The literature review revealed that graduate programs in psychology are associated with high levels of stress due to rigorous program demands and associated challenges. Over 70% of graduate students in psychology programs experience high levels of stress, a situation indicative of the level of stressfulness in such programs. This stress affects the optimal functioning of students. Reported stressors included finances and debt, academic responsibilities, anxiety, and issues related to poor school/work-life balance. Using grade point average to measure academic success, the more successful students were found to be healthier, reported less stress, accessed more social support, and had higher utilization of positive coping styles.

Academic stressors as constituted by personal and academic responsibilities, the struggle to meet required academic standards, anxiety related to time and money management, concerns about grades, and the ability to cope with work and family responsibilities caused stress among doctoral students in clinical psychology. Fear of academic failure also influenced perceived level of stress. Doctoral attrition in psychology graduate study is therefore, an important problem. Doctoral student attrition within the academia was found to be as high as 50%, and rising.

Reports from recent studies yielded the following facts: women tend are more prone to drop out of doctoral programs at a higher rate by comparison to men, and minority students drop out at a higher rate compared to white students. The major reasons for withdrawal fell into two categories: program reasons such as factors related to career fit and learning style, and personal reasons such as factors related to work or life commitments. Implications of these findings on attrition include the need to evaluate if attrition is positive, as in when the student has a good reason to leave the program. Where attrition is based on issues with program design and delivery, then efforts should be made to address the problem and eliminate attrition. Conversely, retention can also be a problem where the program enrolls student that are at risk for attrition.

Chapter 3 describes in detail the research design and methodology for examining the relationship between SRRS scores and ime-to-egree. Research design rationale, population, participants, sample and powering, and data collection and analysis were presented. Because this study involves human subjects, ethical considerations, informed consent, IRB approval, and procedures for insuring confidentiality and anonymity were discussed.

Chapter 3: Research Method

Introduction

The purpose of this quantitative study was to examine the relationship between life stressors, advisor-related factors, and time-to-degree for a sample of social sciences graduates from online doctoral programs. Doctoral program administrators have an interest in managing institutional resources to minimize the time required for PhD candidates to graduate; only 31% of social sciences PhD candidates graduated within 6 years (CGS, 2013). PhD-granting academic institutions sought factors associated with attrition and delayed graduation as part of early identification and intervention programs for at-risk PhD candidates (CGS, 2013; Spaulding & Rockinson-Szapkiw, 2012).

No single factor, or cluster of factors, explained retention and the significant predictors were subtle and multifaceted (CGS, 2013; Gardner, 2009; Jairam & Kahl, 2012; Spaulding & Rockinson-Szapkiw, 2012). Time was a factor for predicting doctoral program completion (CGS, 2013). The aim of this study was to measure the cumulative effect of life stressors during the doctoral process, using the SRSS (Holmes & Rahe, 1967) and time-to-degree as the outcome measure. Age, ethnicity, and gender were examined as potential covariates.

Chapter 3 includes the quantitative research design for the study, and provide a justification for the choice of research design. The methodology summarizes sample-powering, procedures for data collection, and the data analysis plan. Participant recruitment, ethical considerations, informed consent, and instrumentation are discussed. Study variable operationalization, research questions, and hypotheses are restated, and statistical tests are detailed.

Research Design and Rationale

A quantitative research design was used to examine the relationship between cumulative life event stressors as measured by the SRRS (Holmes & Rahe, 1967), advisor related factors as measured by the AFS, and time-to-degree in the social sciences. Covariates were age, ethnicity, and gender. The SRRS, developed by Holmes and Rahe (1967), provides a standardized measure for the frequency and severity of common stressors. The SRRS score, the independent variable, was calculated by assigning values for stressful life events, such as divorce and death of a family member, and multiplying the frequency for each event to create a cumulative life event stress measure for the period from initial doctoral matriculation through degree completion. Time-to-degree, the dependent variable, was defined as the number of months that passed from enrollment in a PhD program to satisfactory completion of all requirements for graduation. Age, ethnicity, and gender were significantly correlated with doctoral program retention and time-to-degree in prior scholarly studies and were treated as covariates (Spaulding & Rockinson-Szapkiw, 2012). Age was a continuous variable, ethnicity was a categorical variable, and gender was dichotomous.

Significant relationships were tested for among the study variables; however, no attempt was made to identify causes for the observed results. Empirical data were collected using the previously validated instruments to examine the relationship between cumulative life event stress, advisor-related factors, and time-to-degree. The use of a quantitative research design was appropriate because (a) independent and dependent variables were clearly defined and numeric, (b) research questions were addressed using hypothesis testing, (c) high levels of validity and reliability were desirable, and (d) data

collection was accomplished at a reasonable cost (Leedy & Ormrod, 2015). In this study, hypotheses were accepted or rejected based upon analyzed data. This study was nonexperimental because no attempt was made to influence the behaviors of the participants. Regression analysis was appropriate to determine the direction of the relationship and its strength between the dependent and independent variables and potential covariates (Leedy & Ormrod, 2015).

Methodology

Population

The target population for this study was approximately 100,000 individuals who graduated from U.S.-accredited, online PhD programs in the social sciences in the past 5 years. Social sciences PhD candidates represented approximately 33% of the 400,000 individuals enrolled with accredited PhD granting institutions and 33% of the 67,200 doctoral degrees awarded in 2012 (CGS, 2013).

Sampling and Sample Size

The convenience, or opportunity sampling method, was employed for this study to select participants. Convenience sampling is the most common type of sampling procedure in social sciences studies, and it refers to the nonrandom selection of study participants based on their accessibility and proximity to the researcher (Leedy & Ormrod, 2015). Participants were recruited using the Survey Monkey application, which includes a screening feature for identifying individuals willing to participate in online surveys who self-identify as PhDs in the psychology.

G*Power 3.1 software is used to calculate sample sizes necessary to power the study for linear regression and stepwise backward regression (Faul, Erdfelder, Lang, &

Buchner, 2007). Typical assumptions for powering a social sciences experiment were used, specifically α = .05, *p-value* ≤ 0.05, effect size = 0.3 (Leedy & Ormrod, 2015). Based on those assumptions, G*Power 3.1 software indicated that a sample size of 74 was required for linear regression and stepwise backward regression to achieve 90% power using two-tailed tests.

Procedures for Recruitment, Participation, and Data Collection

Participants for this study were recruited using the Survey Monkey Audience Service (SMAS). SMAS recruited participants from their diverse population of 30+ million individuals who complete Survey Monkey surveys every month. SMAS members complete a detailed demographic profile survey to use in market research, surveys, theses, and dissertations. SMAS members information is validated using a public database and is continuously updated to supply accurate data needed to ensure the validity and reliability necessary for its customers (Survey Monkey, 2016).

The Survey Monkey welcome page for participation in this study included the informed consent (Appendix A). Participants were notified of the following: (a) participation could be terminated at any point in time without consequence, (b) no remuneration for participation woud be paid, and (c) no deception would be used. Participants consented by participating in the study. Study participants were asked to complete the following three documents: (a) informed consent (Appendix A), (b) SRRS instrument (Appendix B), (c) Demographic Survey (Appendix C), and AFS (Appendix D). Demographic data were collected using the demographic survey on age, ethnicity, gender, income, PhD granting institution, and year of graduation. The Survey Monkey portal aggregated study variable data from participants in a downloadable Excel

spreadsheet format.

Instrumentation

SRRS. The SRRS was used to collect data regarding participants' life event stressors from initial PhD program enrollment through graduation (Appendix B). The SRRS was modified to extend the period measured from 1 year to the duration of the doctoral program. The SRRS, developed by Holmes and Rahe (1967), is a standardized instrument for measuring the frequency and severity of common stressors to arrive at an overall stress score. The SRRS score, the independent variable, was calculated by assigning values for stressful life events, such as divorce and death of a family member, and multiplying the frequency for each event to create a cumulative life event stress measure. Each stressful life event was given a value calibrated to reflect the comparable amount of stress the event causes. Because stress was cumulative, the SRRS accumulated events over the course of the PhD matriculation.

Scale interpretation was based on the total score for the period being observed. A total of 150 or less suggested stress levels were low, and the probability of developing a stress-related disorder was low (Holmes & Rahe, 1967). An SRRS score of 300 or more was associated with an 80% chance of a significant illness in the succeeding 2-year period. There is a modest correlation between the numbers of life-changing units experienced in the previous year with a person's health in the present year (Holmes & Rahe, 1967). Significant positive correlations were found between SRRS scores and heart attacks, broken bones, diabetes, decline in academic performance, and employee absenteeism (Masuda & Holmes, 1967). The SRRS was developed and validated using male subjects. The instrument was validated using a longitudinal study of 5,000

individuals in Japan and the United States (Masuda & Holmes, 1967).

Thirty years after its introduction, researchers and practitioners used the SRRS most frequently to assess the relationship between life events and medical symptomology (Scully, Tosi, & Banning, 2000). The SRRS was used to study a range of stressful situations from natural disaster to divorce. The instrument's validity and reliability were established, and mental health professionals (Blasco-Fontecilla et al., 2012) have used the SRRS as part of intake assessments. Scully et al. (2000) revalidated the SRRS on a sample of 188 graduate students (N= 109), business executives (N = 62), and stress seminar participants (N = 17). R^2 for predicting Symptom Checklist-90 (SCL-90) scores: .21 (F = 16.63, df = 3/184, p < .05). Stressful life events occurring more recently (past 12 months) were more strongly associated (r = .44, p < .05) with SCL-90 scores than events accumulated across a lifetime (r = .12, p < .05). Although Scully et al. examined stress over the entire program, each event may contribute to the time-to-degree while the stressor is extant.

Blasco-Fontecilla et al. (2012) conducted a study using the SRRS to predict suicide attempts for a sample of 1,183 subjects; 508 healthy subjects, 478 suicide attempters, and 197 psychiatric inpatients. The SRRS outperformed traditional psychometric approaches used to predict suicide based on Fischer linear discriminant analysis (area under the curve 0.85 vs. 0.78, p < .05). Despite the introduction of more than 20 life stress instruments, the SRRS remains the most widely used.

AFS. The AFS, a 19-item survey, was used to collect data from participants regarding advisor-related factors that affected participants' time-to-degree (Appendix D). The AFS, developed by Kamas and Paxson, was initially used to examine causes for

doctoral program attrition at the University of California at Berkeley (Kamas et al., 1993). AFS scores, the independent variable, were collected using a 3-point Likert-style scale. For each item, participants selected *major factor, contributing factor,* or *not a factor* and assigned a score from 1 to 3. The mean response to the 19 statements was used to operationalize advisor-related factors. The survey was validated on a sample of 93 PhD candidates from the Berkeley electrical engineering and computer science program (Kamas et al., 1993). Internal consistency between survey items, as measured by correlation, ranged between .37 and .81, and Cronbach's alpha ranged between .64 and .81.

Operationalization of Constructs Variables

A quantitative research design was used to examine the relationship between cumulative life event stresses, as measured by the SRRS, advisor related factors, and time-to-degree in the social sciences, while controlling for age, ethnicity, and gender. Table 1 summarizes the operationalization of all study variables. The SRRS score was a measure of cumulative stress using the frequency for each event times a weighting factor (Holmes & Rahe, 1967). SRRS scores of 150 or less suggested a low stress level and a correspondingly low probability of developing a stress-related disorder, while scores over 300 were significantly predictive of major illness in the succeeding 2-year period.

For the purposes of this study, time-to-degree referred to the number of months required to graduate from the PhD granting institution. Age, ethnicity, and gender were significantly correlated with doctoral program retention in previous studies and were treated as covariates (Spaulding & Rockinson-Szapkiw, 2012). Age was a continuous

variable, ethnicity a categorical variable, and gender was dichotomous; all have the meanings commonly assigned to each.

Table 1

Variables, Scales of Measurement, Variable Type, and Operationalization

Variable	Scales of Measurement	Variable Type	Source
Cumulative Life Event Stress	Interval	Dependent Variable	SRRS
Time-to-Degree	Continuous	Independent Variable	Survey
Advisor-related factors	Interval	Independent Variable	AFS
Age	Continuous	Covariate	Survey
Ethnicity	Categorical	Covariate	Survey
Gender	Dichotomous	Covariate	Survey

Data Analysis Plan

Study data were downloaded from the Survey Monkey application to an Excel spreadsheet and examined for outliers, missing data, and consistency with statistical test assumptions. Outliers and missing data resulted in a participant being excluded from the study and resulting data transferred from an Excel spreadsheet to Statistical Program for the Social Sciences (SPSS) software for analysis. Assumptions for the use of regression were (a) normality of residuals, (b) homogeneity of variances, (c) linearity, and (d) independence of errors. The study sample was characterized using descriptive statistics (frequencies, percentages, means, and standard deviations). Linear regression and backward stepwise regression statistics were employed to test research hypotheses

(Leedy & Ormrod, 2015). Table 2 describes study variables and inferential statistics to address each hypothesis.

Table 2

Statistical Tests for Null Hypotheses

Hypothesis	Variables	Statistic
H$_o$1: There is no significant relationship between SRRS scores and Time-to- Degree for a sample of online social sciences doctoral graduates.	SRRS score, Time-to-Degree	Linear regression
H$_o$2: There is no significant relationship between AFS scores and Time-to-Degree for a sample of online social sciences doctoral graduates.	AFS scores, Time-to Degree,	Linear regression
H$_o$3: SRRS scores and AFS scores taken together have no explanatory value in predicting Time-to-Degree for a sample of online social sciences doctoral graduates.	SRRS scores, AFS scores, Time-to-Degree	Backward stepwise Regression
H$_o$4: SRRS scores and AFS scores taken together have no explanatory value in predicting Time-to-Degree for a sample of online social sciences doctoral graduates, after controlling for age, gender, and ethnicity	SRRS score, AFS scores, Time-to Degree, age, ethnicity, and gender	Backward stepwise regression

Threats to Validity

External Validity

External validity refers to the degree to which study findings can be generalized to other study populations. The independent variable, cumulative life stress, was collected using the SRRS, an instrument validated using longitudinal studies on large population in

the United States Japan, Malaysia, and certain European populations (Holmes & Rahe, 1967). The dependent variable and covariates were facts and, therefore, not subject to researcher bias, nor was validity a function of research design. The primary threat to external validity is sample bias attributable to the nonrandom convenience sampling procedure (Leedy & Ormrod, 2015).

Internal Validity

Internal validity refers to the degree to which the findings explain the relationship between study variables, particularly with regard to confounding variables or covariates (Leedy & Ormrod, 2015). The lower the probability for confounding variables to explain the relationship between study variables, the higher the internal validity. The choice of age, ethnicity, and gender as covariates was based on their relationship to SRRS scores in previous research.

Ethical Procedures

Approval from the Walden University Institutional Review Board (IRB) was obtained before any study participants were contacted or data collected. IRB policies and procedures maintain the integrity of Walden University and protect human subjects and students from potential harm. Study participation was voluntary, and informed consent was provided before data collection occurred. Informed consent, and associated disclosures, were made available on the welcome page on the Survey Monkey portal (Appendix A). The following disclosures were made on the Survey Monkey portal as part of the informed consent process: (a) procedures for participation, (b) assurances of confidentiality, (c) study risks, (d) IRB and researcher contact information, and (e) study purpose. Participants also acknowledged that they were free to withdraw from the study

without consequence. No compensation was paid for participation. Confidentiality was maintained as follows: (a) completed surveys and related digital data were removed from online storage and kept in a locked drawer, (b) access to stored data was limited to the researcher, (c) data will be destroyed after 5 years, and (d) physical records and notes will be stored in a locked drawer.

Summary

A quantitative research design was used to examine the relationship between cumulative life event stressors as measured by SRRS (Holmes & Rahe, 1967), advisor related factors as measured by the AFS, and time-to-degree in the social sciences. The SRRS is a standardized instrument used for measuring cumulative stress from life events. The SRRS assigns values for stressful life events, such as divorce or a death in the family, and multiplies the frequency, to create a cumulative stress level. Time-to-degree, the independent variable, was defined as the number of months that passed from enrollment in a PhD program to satisfactory completion of all requirements for graduation. Age, ethnicity, and gender were correlated with doctoral program retention and time-to-degree in prior scholarly studies and were treated as covariates (Spaulding & Rockinson-Szapkiw, 2012).

Regression analyses were used to test hypotheses and address research questions. Walden University IRB approval was obtained before study participants were contacted to protect the university and participants from harm. Study participation was voluntary and informed consent provided before data collection occurred. In Chapter 4 includes the study findings and how they relate to the literature review.

Chapter 4: Results

Introduction

The purpose of this quantitative study was to examine the relationship between life stressors, advisor-related factors, and time-to-degree among a sample of social sciences graduates completing various online doctoral programs. The study was developed to add onto previous research regarding stress-related factors that can influence doctoral candidate attrition rates. A convenience sampling method was used in the selection of participants for the study. The criteria for the participants were as follows: members of the Survey Monkey Audience Service and granted with a doctoral degree from an accredited online college or university in the social sciences after 2013.

Study participants were provided demographic data for age, race, sex, income, PhD granting institution, and year of graduation. For the purpose of the study, participants were asked to provide information regarding life event stressors during their PhD program from enrollment to graduation. This data were collected using the SRRS (Holmes & Rahe, 1967). Data regarding advisor related advisor related factors was collected as well using the AFS (Kamas et al., 1993).

Sample Demographics

The study sample comprised 74 graduates from online doctoral programs in the social sciences. As shown in Table 3, 16 online PhD granting institutions were included in the study.

Table 3

PhD Granting Institution

	N	%
Andrews University	2	2.7
Arizona State University	4	5.4
Boston University	4	5.4
Capella University	9	12.2
George Technical University	1	1.4
Grand Canyon University	9	12.2
Iowa State University	4	5.4
Montclair State University	4	5.4
New York University	7	9.5
Northcentral University	7	9.5
Nova Southern University	1	1.4
Nova Southeastern University	4	5.4
Strayer University	3	4.1
University of Houston	2	2.7
University of Phoenix	6	8.1
Walden University	9	12.2
Total	74	100.0

As shown in Table 4, 42 participants were male (57%) while 32 were female (43%); 39 were White (53%), 19 were Black (26%), and 16 were Hispanic (21%). The mean age for individuals at the time of the survey was 47.3 years, with the minimum age of 32 and the maximum age of 67. Annual income range was between $100,000 and $225,000, with a mean of $128,894 (*SD*=$45,209).

Table 4

Study Sample Descriptive Statistics

Demographic variable	*N/%*	Mean	*SD*
Gender			
Male (*N* / %)	42/57%	-	-
Female (*N* / %)	32/43%	-	-
Ethnicity			
White	39/53%	-	-
Black	19/26%	-	-
Hispanic	16/21%	-	-
Age in years	74	47.3	9.8
Household income	74	$128,894	$45,209

N=74.

Table 5 summarizes descriptive statistics for advisor score, SRRS score, and time-to-degree mean; standard deviation, minimum and maximum score are reported for each study variable. The advisor score, using an interval scale from 1 to 3, ranged from 1.05 to 2.90 with a mean of 2.22 (*SD*=.43). The SRRS score range was between 13 and 813 with a mean of 343.39 (*SD*=176.30). The time-to-degree range was between 35 and 137 months with a mean of 74 (*SD*=28).

Table 5

Descriptive Statistics by Study Variable

Variable	*N*	Minimum	Maximum	Mean	*SD*
Advisor Score	74	1.00	3.00	2.22	0.43
SRRS Score	74	13	813	343	176
Time-to-Degree (months)	74	35	137	74	28

Results

Research Question 1

What is the relationship between the quantity of life event stressors experienced while matriculated in an online doctoral program, as measured by the SRRS (Holmes & Rahe, 1967) and time-to-degree for a sample of online social sciences doctoral graduates?

H$_o$1: There is no significant relationship between SRRS score and time-to-degree for a sample of online social sciences doctoral graduates.

H$_a$1: There is a significant relationship between SRRS score and time-to-degree for a sample of online social sciences doctoral graduates.

To test Hypothesis 1, a linear regression was calculated to predict time-to-degree based on SRRS score. As shown in Table 6, a significant regression equation was found, $F(72, 1) = 19.845$, $p < .05$, with an $R^2 = .216$, meaning that 21.6% of the variance in time-to-degree was accounted for by SRRS score. Participants' predicted time-to-degree, in months, was equal to 48.544 + (.075 * SRRS score). Therefore, the null hypothesis was rejected, and the SRRS score significantly predicted time-to-degree.

Table 6

SRRS Score and Time-to-Degree Regression

Model	R	R^2	Adjusted R^2	Std. Error of Estimate
	.465	.216	.205	25.280157

Table 7

SRRS Score and Time-to-Degree F Statistic

Model	Sum of Squares	df	Mean Square	F	*Sig.*
Regression	12682.981	1	12682.981	19.845	.000
Residual	46014.215	72	639.086		
Total	58697.196	73			

a. Dependent Variable: Time-to-Degree
b. Predictors: (Constant), SRRS Score

Table 7 reports SRRS items with either high frequency rates or high stress scores. More than half of participants reported a change in financial condition during the dissertation process, and more than 40% reported a change in living conditions or change in work hours or conditions. In terms of significant stressors, personal injury or sickness frequency was 27%, death of a family member was 24%, and divorce was 21%. These statistics indicate that significant nondissertation stress during the dissertation process was pervasive.

Table 8

Notable SRRS Responses

SRRS item	Frequency	Stress score
Change in financial state	59%	38
Change in living conditions	44%	25
Change in work hours or conditions	43%	20
Personal injury or sickness	27%	53
Death of a family member	24%	63
Divorce	21%	73

Research Question 2

What is the relationship between advisor-related factors as measured by the AFS and time-to-degree for a sample of online social sciences doctoral graduates?

H$_o$2: There is no significant relationship between AFS score and time-to-degree for a sample of online social sciences doctoral graduates.

H$_a$2: There is a significant relationship between AFS score and time-to-degree for a sample of online social sciences doctoral graduates

To test Hypothesis 2, a linear regression was calculated to predict time-to-degree based on AFS score. As shown in Table 8, no significant relationship was found, $F(72, 1)$ = .024, p=.877, with an R^2 = .000, meaning that 0.0% of the variance in time-to-degree was accounted for by AFS score. Therefore, the null hypothesis was accepted, and the AFS score did not significantly predict time-to-degree.

Table 9

AFS Score and Time-to-Degree Regression -Model Summary

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate
	.018ᵃ	.000	-.014	28.547598

Table 10

AFS Score and Time-to-Degree F Statistic

Model	Sum of Squares	df	Mean Square	F	*Sig.*
Regression	19.690	1	19.690	.024	.877
Residual	58677.506	72	814.965		
Total	58697.196	73			

a. Dependent Variable: Time-to-Degree
b. Predictors: (Constant), Advisor Score

Research Question 3

What portion of the variance in time-to-degree is accounted for by SRRS score and AFS score combined?

Hₒ3: SRRS score and AFS score taken together have no explanatory value in predicting time-to-degree for a sample of online social sciences doctoral graduates.

Hₐ3: SRRS score and AFS score taken together have explanatory value in predicting time-to-degree for a sample of online social sciences doctoral graduates.

As shown in Table 9, to test Hypothesis 3, a stepwise linear regression was calculated to determine the incremental predictive value of combining SRRS scores with AFS scores to predict time-to-degree. Adding AFS scores to SRRS scores slightly increased R^2 from .216 to .220, but AFS was not a statistically significant contributor to predictive value. Due to SRRS score to predict time-to-degree, combined AFS score and

SRRS score significantly predicted time-to-degree, $F(2, 71) = 10.006$, $p = .000$.

Therefore, the null hypothesis was rejected, and the combined SRRS and AFS scores

taken together significantly predicted time-to-degree.

Table 11

SRRS Score plus AFS Score Stepwise Regression to Predict Time-to-Degree

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate
	.469	.220	.198	25.395582

Table 12

SRRS Score plus AFS Score Stepwise Regression to Predict Time-to-Degree F Statistic

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	12906.768	2	6453.384	10.006	.000
Residual	45790.428	71	644.936		
Total	58697.196	73			

a. Dependent Variable: Time-to-Degree
b. Predictors: (Constant), SRRS Score, Advisor Score

Research Question 4

What is the relationship between the quantity of life event stressors experienced

while matriculated in an online doctoral program, as measured by the SRRS, and time-to-

degree for a sample of online social sciences doctoral graduates?

H₀4: What portion of the variance in time-to-degree is accounted for by SRRS

score and AFS score taken together, after controlling for age, ethnicity, and gender?

Hₐ4: SRRS score and AFS score taken together have explanatory value in

predicting time-to-degree for a sample of online social sciences doctoral graduates, after

controlling for age, gender, and ethnicity.

Hypothesis 4 was tested using stepwise regression to predict time-to-degree using SRRS score and AFS score, after controlling for age, ethnicity, and gender. Table 10 indicates that R^2 increased slightly from .216 for SRRS score alone to .250 when adding AFS score and controlling for age, ethnicity, and gender. Only SRRS score (p=.003) significantly contributed predictive value for time-to-degree. SRRS score and AFS score significantly predicted time-to-degree, after controlling for age, ethnicity, and gender F(2, 71) = 4.523, p =.001. Therefore, the null hypothesis was rejected, and SRRS score and AFS score significantly predicted time-to-degree, after controlling for age, ethnicity, and gender.

Table 13

SRRS Score, AFS Score, Age, Gender, Ethnicity to Predict Time-to-Degree – Model Summary

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate
	.500	.250	.194	25.4512

a. Dependent Variable: Time-to-Degree
b. Predictors: (Constant), Ethnicity, Gender, Advisor Score, SRRS Score, Age at finish

Table 14

SRRS Score, AFS Score, Age, Gender, Ethnicity to Predict Time-to-Degree – F Statistic

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	14649.014	5	2929.803	4.523	.001
Residual	44048.183	68	647.767		
Total	58697.196	73			

a. Dependent Variable: Time-to-Degree
b. Predictors: (Constant), Ethnicity, Gender, Advisor Score, SRRS Score, Age at finish

Summary

Table 11 summarizes the four research questions and four hypotheses. The explanatory power of SRRS score and AFS score on time-to-degree were investigated. SRRS score had significant explanatory power for all research questions. When testing RQ1 to determine explanatory value for time-to-degree, SRRS score had significant explanatory value at $p<.05$. Testing in this instance was conducted using linear regression in order to produce these results. When testing RQ4, multiple linear regression yielded no significant relationship between AFS score and time-to-degree. When testing RQ3, SRRS and AFS scores combined were found to have statistically significant value, although only the SRRS score was a statistically significant predictor, $p<.05$. In this case, backward stepwise regression was used to produce the statistical results. When testing RQ4, SRRS score had statistically significant value to predict time-to-degree when controlling for age, gender, and ethnicity. After controlling for age, gender, and ethnicity, the combined SRRS and AFS scores were found to have statistically significant value. However, individually, only the SRRS score had statistically significant explanatory value, $p<.05$. This was once again tested for using backward stepwise regression.

In addition, the influence of AFS on time-to-degree was explored. The AFS was not found to have significant explanatory value in the three instances tested. When testing research question two to determine if AFS had any explanatory value for time-to-degree, AFS score was not found to have statistically significant explanatory value, $p>.05$. This testing was conducted using linear regression. In testing research question three, AFS and SRRS scores were assessed to determine if combined they held explanatory value. The combined scores of AFS and SRRS were found to have statistically significant value,

however, assessed individually, AFS did not have statistically significant explanatory value at $p>.05$. In this case, backward stepwise regression was used. For research question four, AFS and SRRS combined were tested to determine if they had statistically significant value when controlling for age, gender, and ethnicity. After controlling for age at completion of degree, gender, and ethnicity, the combined scores for AFS and SRRS had statistically significant explanatory value for time-to-degree. However, individually, AFS did not have statistically significant explanatory value, $p<.05$. In this final case, backward stepwise regression was used.

The key finding of this study was that, taken individually, SRRS score held explanatory value for time-to-degree while AFS score did not. The combined scores for SRRS and AFS held explanatory value for time-to-degree individually and after accounting for age, gender, and ethnicity. However, within the combined scores, SRRS score alone had statistically significant explanatory value while AFS score alone held no statistically significant explanatory; and these relationships persisted after controlling for age, gender and ethnicity.

A majority of participants reported significant non-dissertation stressors during the dissertation process. More than half of participants reported a major life change and nearly 25% reported a *personal injury or sickness, death of a family member, or a divorce.* It is not known if these frequencies are in excess of non-dissertation seeking peers.

Table 11

Summary of Statistical Tests for Null Hypotheses

Hypothesis	Statistical Test	Significance	Outcome
$H1_0$: There is no significant relationship between SRRS scores and Time-to- Degree for a sample of online social sciences doctoral graduates.	Linear regression	$p < .05$	Rejected
$H2_0$: There is no significant relationship between AFS scores and Time-to-Degree for a sample of online social sciences doctoral graduates.	Linear regression	$p > .05$	Accepted
$H3_0$: SRRS score and AFS score taken together have no explanatory value in predicting Time-to-Degree for a sample of online social sciences doctoral graduates.	Backward stepwise Regression	$p < .05$	Rejected
$H4_o$: SRRS score and AFS score taken together have no explanatory value in predicting Time-to-Degree for a sample of online social sciences doctoral graduates, after controlling for age, gender, and ethnicity	Backward stepwise regression	$p < .05$	Rejected

Chapter 5: Discussion

Introduction

Researchers from diverse academic disciplines studied factors that affect dissertation time-to-degree in an effort to increase doctoral program completion rates (Burkholder, 2012; Cassuto & Jay, 2015; Flynn, Chasek, Harper, Murphy, & Jorgensen, 2012). Factors that significantly predicted time-to-degree are categorized as either program-related or personal. Program-related factors are policies or practices within the control of the university or doctoral program, and personal factors are situations or circumstances external to the university and program. Program-related factors that significantly affect time-to-degree and completion rates include mentoring (Flynn et al., 2012), advising (Burkholder, 2012), program expectations and advisor match, and program and institutional culture (Burkholder, 2012). Personal factors, such as finances (Breckner, 2012; Flynn et al., 2012), chronic and episodic health issues (Burkholder, 2012), employment issues, and emotional support (Flynn et al., 2012) predict doctoral experiences and outcomes.

The relationship between the quantity and quality of life stressors (personal factors), advisor-related factors (program-related factors), and time-to-degree were examined. The study was conducted using a sample of social science graduates who participated in online doctoral programs. Attrition rates for online doctoral programs were impacted by a variety of factors, including stress (Cassuto & Jay, 2015). Attempting to master their domain of study, completing their dissertations, and passing their oral examinations were associated with an increase in stress for graduates (Lacey et al., 2000). Finances were also noted as a source of stress for doctoral students (Fitzgerald et al.,

2013). Failure to complete a doctoral program was noted as a waste of resources for faculty and universities (CGS, 2013). This study added to the existing literature regarding the influence of stress and advisor-related factors on the time required until a doctoral student graduated from an online program. The data collected could be used for creating models through which doctoral students could be identified, particularly those at risk of spending a prolonged period in their program. The ability to identify doctoral students who would spend a prolonged time in their programs would help to address factors influencing time-to-degree.

Previous scholars examined the relationship between perceived stress and actual academic outcomes, among other variables (Ohrstedt & Lindfors, 2015). The current study was similar in looking at stress and advisor factors with relation to the academic outcome of time-to-graduate. A predictive model could be developed based on data associating stress with increased time-to-graduate. By basing the model on these tatistics, it would be possible to identify students at risk of having an extended time in their program or even potentially dropping out.

In accordance with the four research questions created for the purposes of this study, there were four major findings following the research. First, there was a significant relationship between life stressors and time-to-degree for online social sciences doctoral graduates in that the greater the number and severity of life stressors a person faced, the longer the time-to-degree. The second finding was that there was no statistically significant relationship between advisor ratings and time-to-degree. Finally, the combined scores collected from the SRRS score and AFS score predicted time-to-degree after controlling for age, gender, and ethnicity. Earlier research regarding the influence of

stress on time-to-degree was confirmed (Cassuto & Jay, 2015). However, research

regarding the importance of advisor relationships was not confirmed, as the individual

AFS scores did not have explanatory value for time-to-degree (Cassuto & Jay, 2015).

Interpretation of Findings

A Significant Correlation between Life Stressors and Time-to-Degree

Life stressors are a personal factor previously found to affect the dissertation

experience and outcomes for doctoral candidates (Breckner, 2012; Cassuto & Jay, 2015).

Negative chronic and episodic health issues, such as postponing critical health care,

sickness, depression, long-term mental health counseling, weight gain, and

hospitalization were previously shown to the dissertation experiences and outcomes of

students (Breckner, 2012). Other personal factors, such as romantic relationship break-

ups, births, and deaths of family or close friends are life events found to impact doctoral

students (Breckner, 2012; Burkholder, 2012).

For this study, life stressors, as measured by the SRRS, predicted time-to-degree

for online PhD holders in the social sciences. This finding confirms prior research from

similar studies on brick and mortar doctoral programs who found that anxiety, financial

pressure, and fear of failure contributed to doctoral candidates attrition and longer time-

to-degree (Cassuto & Jay, 2015; Esping, 2010; Lee, 2009; Murphy et al., 2009). In the

present study, more than half of study participants reported one or more significant

stressors, and more than 20% reported significant stressful life events, such as the death

of a close family member. Seventy percent of graduate students indicated that stress

contributed to a decline in their performance (El-Ghoroury et al., 2012). Consequently,

there were numerous stressors that could lead to a decline in performance and lead to

students leaving their programs entirely. Findings indicated that life stressors, such as the death of a close family member, were common (21%), and stressful life events were pervasive in the study sample. The findings of this study built upon the previous research in that the number and severity of life stressors, such as death of a close family member, serious illness or injury, and divorce, increased the time-to-degree for online doctoral students.

Schools can address stress among students by increasing and promoting mental health services. They can provide counselors who can work with individuals experiencing stressful circumstances. Counselors can also recommend students under particular duress to academic support services that include more out-of-class tutoring and education. However, the primary focus would be on addressing the stress experienced by students. By promoting counseling services among students and encouraging attendance, schools can promote counseling as a means of working through stressful events.

No Significant Correlation between Advisor Related Factors and Time-to-Degree

In the context of the dissertation process, the advisory relationship involves formal and informal processes between a designated faculty member and a doctoral candidate to facilitate development from a student to a professional colleague (Cassuto & Jay, 2015). This relationship often includes mentoring and the emotional support over a prolonged period of time, often creating long-term bonds between the student and dissertation chairs. Advisors also hold powerful positions as professors, program chairs, and dissertation committee members. Researchers reported that the advisory relationship is a program-related factor in the dissertation experience, although there was a gap in the literature regardingan empirical relationship between doctoral candidate's opinion of the

quality of the advisory relationship and time-to-degree (Burkholder, 2012; Flynn et al., 2012).

There was no statistically significant correlation found between advisor-related factors and the time necessary for doctoral students to graduate. This conflicted with previous researchers who indicated that the relationship between an advisor and a doctoral student was important to retention and performance (Magoon & Holland, 1984; Schlosser & Gelso, 2001; Schlosser et al., 2003). Students previously indicated that their relationship with advisors was important and sought out less businesslike and more personal relationships (Schlosser & Gelso, 2001). However, despite these indications that relationships with advisors was important, little research was conducted on the impact of the student and advisor relationship (Schlosser & Gelso, 2001; Schlosser et al., 2003). Advisor-related factors had little impact on time-to-degree. Although average advisor ratings were low, this quality was not associated with time-to-degree.

One reason why the current study might have produced conflicting results with past findings may be rooted in the nature in which the sample that was drawn for this study. A convenience sample was used for this study, that may not have been representative of the larger body of students pursuing doctoral degrees. As such, there may be population factors unaccounted for. There may be circumstances encountered by a representative sample of doctoral students that make the lack of adequate advisor level support have a negative outcome on the time-to-degree. Students of certain ages, gender, ethnicity, or sociodemographic background may benefit from advisor level support. The current study was not able to account for this due to the nature of the convenience sample.

Esping (2010) suggested that stressors could lead to doctoral candidate turnover, but Esping did not cite advisor-related factors with time-to-degree. One potential explanation for the absence of a significant relationship advisor related factors and time-to-degree was the low variance in AFS scores. Low variances means there was little variation in AFS score to attribute to any factor, including the advisory relationship. It is possible that an instrument with a broader range of possible responses might provide greater variance and create an opportunity for attribution. Although it is not clear why advisor performance was not associated with time-to-degree, future researchers could focus on doctoral candidate advisor expectations as a source of unexpectedly low advisor ratings.

A new tool could be developed that asks students to respond to advisor level factors. Subsequent studies could use a tool with a broader range of questions, and each question could include a larger number of responses. Using this updated tool, with expanded items and responses, might allow for subsequent research to pick up on advisor level factors that improve or reduce time-to-degree among doctoral students.

The conclusion reached, on the basis of this study, is that adviser related factors do not significantly influence time-to-degree, despite contrary findings (Magoon & Holland, 1984; Schlosser & Gelso, 2001; Schlosser et al., 2003) in the literature. Individuals do not seem influenced by these factors. Instead, other factors related to the doctoral process may play a more significant role in determining time-to- degree. Advisers may not fill the critical role attributed to them in the life of a doctoral student; however, this study did not set out to definitively ascertain the degree to which advisers influence the lives of these students. Based on the findings of this study, future efforts to

improve retention and time-to-degree should not focus on improving stressors outside of the campus

The stress factors that could be explored to determine the strongest relationship between stress and time-to-degree could be those explored in this study. This would include (a) death of spouse, (b) divorce, (c) marital separation, (d) jail term, (e) death of close family member, (f) personal injury or illness, and (g) marrigage. These factors had the largest impact scores, with each scoring at least 50 points or above. A host of other stress factors explored in this study did not score highly, and could also be explored. These include lesser impact events like changes in living conditions or changes in social activities.

Combined SRRS Scores Predict Time-to-Degree

The findings of the study indicated that SRRS scores had explanatory value for predicting time-to-degree. Previous research indicated that stress played a role in graduate student performance and retention (Cassuto & Jay, 2015; Esping, 2010; Lee, 2009; Murphy et al., 2009) and that advisor relationships were perceived as important to doctoral students (Magoon & Holland, 1984; Schlosser & Gelso, 2001; Schlosser et al., 2003). Within the findings, life stress scores played the most significant role in determining time-to-degree, with advisor scores playing only a minimal role. The combined scores held explanatory value for predicting time-to-degree, but stress largely drove that value. Examined separately, the individual AFS score contributed little to the overall score. Therefore, though the combined score did have explanatory value, this would have to be attributed largely to the role of stress.

Stress was previously found to play a large role in affecting graduate student performance (El-Ghoroury et al., 2012), but little research was conducted regarding the impact of advisor related factors on graduate student performance (Schlosser & Gelso, 2001; Schlosser et al., 2003). The data from this study reinforced previous findings that stress contributes significantly to the performance of graduate students while also adding to the body of literature regarding the role of advisors, whom this study found had little impact on time-to-degree.

Esping (2010) noted several individual stress factors that contribute to the overall reduction in timely completion of a doctoral degree. However, the current study was not consistent with this work. On the basis of the current study, data indicates overall stress reduction might be most effective at improving time-to-degree. Given that individual stressors did not have a significant effect on reducing degree completion time, the remaining conclusion is that the cumulative impact of multiple stressors is what created the increased time-to-degree completion. Efforts to improve time-to-degree should focus most on reducing a broad range of stressors in order to reduce the overall stress of doctoral candidate students.

Schools could expand the number of mental health services available to students. These services could provide mental counseling for events like the death of a spouse. Initiating contact with mental health services could be followed up by the school, recommending students to academic support services. This may help to transition students through difficult periods and offset the most negative elements of their life stressors. The first step in expanding mental health services would be the hiring of counselors, and promotion of those services. Intraschool networks, bulletin boards, and

emails could all be used to promote the services. The services could also be discussed at the beginning of each year during orientation meetings and included in teachers' syllabus.

The current study did not find any associations between indvidiual stressors and increased time-to-degree, suggesting that efforts to reduce stress should be broad based, and focused on total stress reduction rather than emphasizing any one individual stressor. Reducing stress would require a comprehensive approach that addresses the multiple stressors that doctoral students encounter. While universities cannot help to reduce all these stressors, they can take ownership of, and work to reduce, the stressors created in school. Another way to address stressors may be by reducing problems like room conditions, educating instructors on how to deal with newer generations of students, and matching students to mentors. This would require investments in the upgrade of existing classrooms, funding the training of teachers, and setting aside money for the creation of a mentor program.

Combined SRRS Scores and AFS Scores Predict Time-to-Degree after Controlling for Demographics

Building on the previous results, the combined SRRS and AFS scores had explanatory value for predicting time-to-degree after controlling for the demographic factors of age, gender, and ethnicity. Stress was linked with a graduate student's ability to perform in his/her program, and also impacted whether he/she remained with the program (Cassuto & Jay, 2015; Esping, 2010; Lee, 2009; Murphy et al., 2009). Researchers indicated there was not enough research regarding the impact of advisors on graduate performance and retention (Schlosser & Gelso, 2001); however, separate research did indicate that graduate students valued personal relationships with their advisors

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(Schlosser & Gelso, 2001). After accounting for other demographic factors, exploration of the scores revealed that stress had the major explanatory value. AFS score's impact on the cumulative SRRS and AFS scores was minimal when compared against SRRS score alone. The findings from this study aligned with previous research indicating that stress contributed to time-to-degree, but the results also added to the thin body of research regarding the impact of advisors on time-to-degree by indicating advisors had a minimal role regarding the time necessary for degree completion.

Potential covariates of age, ethnicity, and gender had no effect on the relationship between life stressors and time-to-degree. This finding was somewhat unexpected in that prior research on undergraduate students found that age and ethnicity significantly predicted academic achievement and graduation rates. Demographic factors such as ethnicity are associated with variance in academic outcomes (Nitardy, Duke, Pettingell, & Borowsky, 2015; Nora, Cabrera, Hagedorn, & Pascarella, 1996). Gender differences have also been identified, with academic outcomes impacted by gender (Stoet & Geary, 2015).

Demographic factors that have previously been associated with variance in outcomes demonstrated no influence in this study. This might be due to the use of a convenience sample that inadequately reflects the larger population. The study may not have adequately captured appropriate demographic samples of the larger population. While these factors could have influenced Time-to-Degree, they had no effect after accounting for life stressors.

Study findings show adviser related factors did not have a significant impact on time-to-degree among doctoral students, this conflicts with earlier reseach that suggested

adviser related factors negatively affected PhD student outcomes (Magoon & Holland, 1984; Schlosser & Gelso, 2001; Schlosser et al., 2003) and agreed with the literature stating that stressors can reduce time-to-degree (Esping, 2010). The minimal impact of AFS scores in combination with SRRS scores was predictive of time- to-degree, but highlighted the disproportionate impact of total stress on time-to-degree over adviser related factors. The tool used to assess the students may not be sensitive to picking up responses from the participants. A broader number of questions that address different advisor related variables may help to detect an impact from advisor related factors on time-to-degree. The questions could also be adjusted to increase the number of responses, which may help to increase options for participants and allow for more subtle responses.

Consequently, the findings of the study again highlight the important role of overall stressors on increasing time-to-degree and the minimal role that adviser related factors play in that process. Such findings suggest that efforts to curtail overall stress in the life of the doctoral student is the most effective means of improving time-to-degree. This might be accomplished through the expansion and promotion of mental health services within the university. Counselors could work with students, and recommend them to academic support services during these stressful periods. This could help address the stress students experience, while helping them persist in their academic studies.

Adviser related factors only marginally impact the time-to-degree. In the scope of observing their combined effects, the outsized influence of the general stressor score again suggested that the score accounted for the majority of the increased time-to-degree for students. School efforts to address general levels of stress could help to improve the experience for doctoral students and reduce their time-to-degree.

Limitations of the Study

There were several limitations to the study. The first limitation encountered in the creation of the study was the need for a convenience sample, which drew from the larger population using the SurveyMonkey tool. The study was not designed to be structured around specific geographic regions or demographic populations, and was not randomized. Due to this limitation the generalizability of the study was limited. A sample that does not appropriately reflect the larger population limits the generalizability of a study. Non-representative samples carry characteristics that the larger population does not. Findings among non-representative samples may be influenced by factors not present to the same degree in the larger population. This makes generalizing findings difficult.

Geographic differences may exist between schools, the doctoral students attending them, and the factors that influence tim- to-degree. Certains factor at play in one state may impact time-to-degree among students in a way that is not found in another state. One example is advisors in one state may be underfunded and have a more combative relationship with their students. By expanding the geographic breadth of the sample, it is possible to reduce the influence of these factors and determine commonalities between states that impact time-to-degree.

A second limitation of the study was the nature of the SRRS, which was a self-report questionnaire. Previous research has suggested that self-report questionnaires, even when validated, are by their nature subject to a participant's bias and incomplete memories of an event (Leedy & Ormrod, 2015). However, self-report questionnaires have been accepted as a means of drawing data when that data is factually known to the participant. A final limitation of the study was the possibility for unmeasured covariates

to influence the outcomes, such as socioeconomic status, number of advisors, or difficulty of the doctoral program. Such covariates can affect conclusions drawn from the data beyond the variables included for study.

Recommendations

The current study added to the existing body of knowledge regarding the impact of stressors and advisor related factors on time-to-degree. Some general recommendations for future research can be made. First, one of the limitations of the study can be addressed using a convenience sample. The use of a convenience sample, rather than a random sample limits generalizability of study findings.

Given the limitations associated with the current sample, it may be that the findings differed due to sample selection. Follow up research may better probe how individual stressors impact students. A purposeful sample that draws a demographically reflective sample can better capture the characteristics of that larger population. Findings would be more applicable to the larger population. The current sample may only capture a partial look at the larger population without fully reflecting it, limiting the ability to generalize the current findings.

There may be specific stressors that influence time-to-degree, such as poverty, parents' level of academic achievement, and socioeconomic status of family of origin. Statistical analysis revealed that life stressors predicted time-to-degree for online, social science doctorate holders. A general study into researching what stressors most influenced time-to-degree could be conducted in order to determine what stressors had the greatest impact. For instance, it may be that the death of a family member, or a divorce, account for the preponderance of the variance in time-to-degree. A factor

analysis would yield the items on the SRRS that accounted for the greatest portion of the variance in time-to-degree.

The finding that advisor related factors did not influence time-to-degree could be more thoroughly investigated in future research. Future studies could be designed to more thoroughly delineate between the factors and create new categories, perhaps as a qualitative research design meant to explore these factors more greatly. Further research could then use statistical analysis to determine which of those factors accounted for the most variance in time-to-degree, if any such relationship existed.

With regard to the current study, the composition of the sample was again problematic to generalizability. The study sample was older and financially stable, which may limit the generalizability to a younger or less financially stable subpopulation of doctoral degree candidates. Additional research on younger doctoral candidates is needed to isolate the effect of life stressors on those individuals. Based on the findings from this study, and prior studies on the predictive relationship between stress and time-to-degree for doctoral candidates, pilot studies identify interventions to support doctoral candidates during stressful events to reduce time-to-degree, and perhaps attrition rates.

The most significant finding from the study is that time-to-degree is impacted by overall stress and not individual level stressors. Given this finding, school administrators can attempt to reduce overall stress levels of doctoral candidates through a broad approach. Such a broad approach would require addressing multiple stressors in the academic environment and providing support services that might help students manage stressors that occur away from the school environment. A general approach to stress reduction may be effective at reducing time-to-degree among doctoral students.

Implications & Conclusions

The time necessary for doctoral students to graduate is important to understand, given that it impacts the resources of universities and their faculty. Research has previously indicated that stress can influence the performance of doctoral students as well as their retention, while doctoral students have also indicated that relationships with advisors were important to them. This study reinforced the idea that stress impacted doctoral student performance by establishing correlations between specific life stressors and time-to-degree. This study also indicated that while relationships with advisors may be important to doctoral students, advisor related factors played a small role in time-to-degree. From the data, future models could be built that would help universities better identify students who were at risk of spending a prolonged amount of time in their doctoral program. The study also contributed to the existing body of literature regarding the impact of stress and advisor related factors on doctoral students.

The fact that stress was consistently correlated with the time necessary to complete a degree indicated that universities should model their approaches to reducing time-to-degree around life related stressors, rather than focusing on improving relationships between doctoral students and advisors. By identifying these students, universities could tailor interventions that would help students better cope with their stress and reduce the time necessary to complete their programs. Interventions may include grief counseling, financial aid counseling, or marital counseling based on the type of life stressor experienced. Collapsing time-to-degree would "free-up" academic institutions' resources and increase the number of candidates in the pipeline. While some life stressors, such as personal illness or injury may be beyond the capability of an

intervention to help, the list of life stressors associated with time-to-degree presents many

potential opportunities.

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Appendix A: Social Readjustment Rating Scale

Instructions. Place a check mark next to each life event that occurred during the period of time between your initial matriculation in a doctoral program and the final granting of a doctoral degree.

Event	Impact Score	
Death of spouse	100	
Divorce	73	
Marital Separation	65	
Jail Term	63	
Death of close family member	63	
Personal injury or illness	53	
Marriage	50	
Fired at work	47	
Marital reconciliation	45	
Retirement	45	
Change in health of family member	44	
Pregnancy	40	
Sex difficulties	39	
Gain of a new family member	39	
Business readjustment	39	
Change in financial state	38	
Death of a close friend	37	
Change to a different line of work	36	
Change in number of arguments with spouse	35	
Mortgage over $20,000	31	
Foreclosure of mortgage or loan	30	
Change in responsibilities at work	29	
Son or daughter leaving home	29	
Trouble with in laws	29	
Outstanding personal achievement	28	
Spouse begins or stop work	26	
Begin or end school	26	
Change in living conditions	25	
Revisions of personal habits	24	
Trouble with boss	23	
Change in work hours or conditions	20	
Change in residence	20	
Change in schools	20	
Change in recreations	19	
Change in church activities	19	
Change in social activities	19	
Mortgage or loan less than $20,000	17	
Change in sleeping habits	16	
Change in number of family get-togethers	15	
Change in eating habits	15	
Vacation	13	
Christmas approaching	12	
Minor violation of the law	11	
Total		

Source. Holmes & Rahe (1967).

Appendix B: Demographic Survey

PhD Granting Institution: _____

Field of Study: _____

PhD Start Date: _____

PhD Finish Date: _____

Age @ PhD Finish: _____

Age Now: _____

Gender: Male / Female

Ethnicity: _____

Annual Income: _____

Appendix C: Advisor-related Factors

Instructions. To what extent did the following factors affect the time required to complete your doctoral program. Please choose for each statement from 1 to 3 where 1 means it was a major factor, 2 means it was a contributing factor, and 3 means it was not a factor.

	major factor	a factor	not a factor
could not find a research project	1	2	3
couldn't get into the research group doing the work I was interested in	1	2	3
could not find a match on the faculty for my research interests	1	2	3
was unexcited by my research topic	1	2	3
the focus of my research group shifted to an area of little interest to me	1	2	3
lack of guidance from advisor	1	2	3
my advisor didn't provide any specific timeline for progress	1	2	3
my advisor was uncaring about students' professional development	1	2	3
my advisor expected too much grunt work (not enough research content in the work)	1	2	3
my research area was marginal to my advisor's core interest	1	2	3
my advisor and I didn't get along	1	2	3
my advisor was hard to work with	1	2	3
my advisor never encouraged me or complimented me	1	2	3
my advisor discouraged me from getting a Ph.D.	1	2	3
my advisor didn't treat me with respect	1	2	3
my advisor left or didn't get tenure	1	2	3
I felt like an outsider in my research group	1	2	3
no peers to discuss my work with	1	2	3
pressure to publish	1	2	3
other _____	1	2	3

Source: Kamas, Paxson, Wang, & Blau, 1993.