Factors in Graduate Student Resilience and Intention to Persist During Doctoral Study

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Attrition is a major problem for the doctoral education system and in particular for underrepresented groups. Research has proposed several reasons for students dropping out that include both personal and programmatic variables. A review of the literature identified several factors that overlap in the research on attrition, resilience, and intention to persist however, there have also been varied results across studies and very few studies focused specifically on doctoral students. Doctoral education can be considered in three phases of the education process, each with its own stresses and challenges. Factors and variables that could be the most helpful for universities to foster to promote resilience and intention to persist in doctoral study are not well understood. This study endeavored to learn more about how stress, social support, self-efficacy, and doctoral program culture/context, may relate to doctoral students’ level of resilience and intention to persist in doctoral study, and explore the possible relationships of these variables with phase of doctoral study, race, and gender.

A sample of 251, Counseling Psychology, Counselor Education, and Higher Education Leadership/Administration/Student Affairs doctoral students participated in this study. Participants were given a background characteristics survey and five assessment measures: Perceived Stress Scale (PSS10) (Cohen, Kamarck, & Mermelstein, 1983), Interpersonal Support Evaluation List-12 (ISEL-12) (Cohen, Mermelstein, Kamarck & Hoberman, 1985), Doctoral
Program Context Inventory (DPCI) (Sorokosh 2004), New General Self-Efficacy Scale (NGSE) (Chen & Gully, 1997), and Scale of Protective Factors (SPF24) (Ponce-Garcia, Madewell, & Kennison, 2015). Correlation analyses, analysis of variance, multiple regression analysis, canonical correlational analysis, and Welch tests followed by Games-Howell post-hoc tests were used to examine the variables that may predict resilience and intention to persist as well as differences between phase, gender, and race. A multiple regression was performed on resilience and 41.4% of the variance in resilience was explained by the combined predictor variables of perceived stress, social support, self-efficacy, interpersonal environment, and academic environment. A hierarchical multiple regression was conducted on intention to persist and 28.6% of the variance was explained by the predictor variables of perceived stress, social support, self-efficacy, interpersonal environment, academic environment, and resilience. Correlations were conducted to study the relationships between the 11 DPCI subscale scores and resilience. DPCI subscales correlating significantly with resilience included curriculum quality, faculty-student relationships, instructor quality, peer-student relationships, advisement, psychological integration, and climate.

Differences on the variables in this study across program phases were investigated and participants in their first phase of doctoral study were found to score statistically higher than students in the second and/or third phase on curriculum quality, professional activities, psychological integration, climate, academic environment, and interpersonal environment. Analysis was also conducted to explore relationships between perceived stress, social support, self-efficacy, interpersonal environment, academic environment, and the DPCI subscales with gender and race. Findings, implications, and directions for future research are discussed.
FACTORS IN GRADUATE STUDENT RESILIENCE AND INTENTION TO PERSIST DURING DOCTORAL STUDY

by

Amber Mosley

A dissertation submitted to the Graduate College in partial fulfillment of the requirements for the degree of Doctor of Philosophy Counselor Education and Counseling Psychology Western Michigan University June 2022

Doctoral Committee:

Patrick H. Munley, Ph.D., Chair
Mary Z. Anderson, Ph.D.
Toni Woolfork-Barnes, Ph.D.
ACKNOWLEDGMENTS

All of the greatest accomplishments are done in the community of others. My community has been diverse in role, skill, identity, and affinity. They have contributed to my well-rounded growth, professional development, encouragement, drive, and self-care through sharing their love compassion, and wisdom with me. Acknowledgment is the first part of gratitude and follow-through with the gifts that others have supported me with is the second piece. The completion of this research project along with all of the related growth and inspiration to continue down the path of understanding has been a product of those acknowledged here operating in concert with me. In the beginning was The All Mighty Creator who gave me the internal properties to develop a strong sense of self rooted in compassion, curiosity, and the will to fight for love and freedom. The Creator also saw fit through divine wisdom and planning to surround me with an amazing team of supporters and growth companions.

My chair Dr. Patrick H. Munley never gave up on me and gave me both the space to learn on my own and the guidance necessary to grasp the things I could not do on my own. He found me support both when I asked for it but also at times when I did not know I needed it. He worked around my schedule of working full time and supported me through the extension processes when others may have given up on me completing this degree and project. My committee members Dr. Mary Z. Anderson and Dr. Toni Woolfork- Barnes offered support and encouragement. Dr. Anderson specifically has demonstrated positive advocacy, professional intentionality, and organization as well as was a great support for the statistical components of this project. Dr. Woolfork-Barnes has always been a huge emotional support and spearheaded
Acknowledgments—Continued

my interest in understanding more about how to support student success. She demonstrated how
to stand strong in academic institutions in the interest of student support, particularly for those
students that often are not thought of in the initial conversations about student support programs.

My parents Karmaleta Mosley and Dushun Mosley are amazing examples of principle,
determination, grace, compassion, drive, and professionalism. There is no way for me to be who
I have become without their guidance and example. Their reminder that I am not who the world
says I am but who my creator says I am, has guided my life. During times when my self-efficacy
deteriorated, their wisdom and resolve guided me back to being centered and confident. My
brother, Dr. Phillip Mosley, is my best friend, my greatest confidant, and holds wisdom way
beyond his years. Throughout my experiences, he regularly has given much-needed emotional
and chiropractic adjustments. He encourages me to care for myself, protect and cherish my
energy, and strive to be a positive and accessible example for others in my community. My
family has instilled and reinforced living a values-driven life and staying in congruence with
those values guided the sampling considerations and informed research questions for this project
that were important to increasing visibility and understanding of communities often left invisible.

The process of completing this research was a long and arduous one. My fiancé and
partner, Anitra White, has stuck with me through the process of ebb and flow for the past 7
years. She has endured living in separate states, time and availability changes, and all of the
frustrated mood that comes along with the process. She never stopped supporting me even when
what I was doing did not make sense to her. She encouraged me publicly and privately.
Acknowledgments—Continued

Additional Counselor Education Counseling Psychology faculty who supported my dissertation work were Dr. Beasley, Dr. Duncan, and Dr. Croteau. Dr. Beasley supported me by drawing my ideas into a picture so that I could see the variables of my study in a clear way which then facilitated some of the early work on this project. Dr. Duncan and Dr. Croteau were both early advisors to me and supported me in thinking about what it truly meant for me to become a responsible researcher for groups that are often marginalized or oppressed. Their identities and unique ways of living their truth helped me to know that my identity doesn’t preclude me from doing this work. I hope that they knew before their death how much they impacted and influenced me to take ownership of this responsibility.

A huge thank you to Sindecuse Health Center, my major funding source for this degree and project. Cari Robertson was my unit director at Sindecuse and her continual faith in me allowed me to retain funding through her department for as long as I wanted to work there. She is a major contributor to my professional development and leadership experience. She provided space, grace, wisdom, guidance, and opportunity for me to become the professional I am today. I have built several of my leadership principles from my experience of being lead by her and watching her continually lead a team towards greatness.

Dr. Rebecca Schlesinger was exactly what I needed and right on time. Rebecca forced me to be her friend and then subsequently learned how to encourage me in ways that were specific to me. She has been relentless in her support of me through the internship and dissertation process, often asking me “what else can I do to support”? Dr. Dawnielle Simmons has been a major backbone throughout the doctoral process. She has engaged in a multitude of conversations with
Acknowledgments—Continued

me that have challenged me to consider the purpose of my work and how could it specifically impact different groups of people. Dr. Dave Jones encouraged me to know that it was ok for me to take a non-traditional method and to ask for what I needed.

Two influential people who voiced their belief in me becoming a doctor and demonstrated trust in my skill building were Dr. Lynn Kelly-Albertson and Dr. Kelly McDonell. Dr. Kelly-Albertson named and claimed my doctoral status when I met her during my undergraduate degree and has continued to hold that understanding for me throughout the years. Her assertion touched me deeply and let me know that I belonged. Dr. McDonnell was the first person in the psychology profession who was a supervisor of mine that demonstrated that she trusted me in this profession which boosted my self-efficacy to do this work.

I am sure that my pen may have missed some people to acknowledge but my heart keeps the ledger. Thank you for all the ways I have been shown and taught loving-kindness, accountability, and strength. The hope is that your contributions to me will continue to live on in my contributions to others and to the field of Psychology.

Amber Mosley
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CHAPTER I
INTRODUCTION

The doctoral level of graduate education has a high and persistent level of attrition across academic discipline and identity characteristics (Lovitts, 2002). Attrition rates in the United States have been reported at the staggering rate of approximately 50% across disciplines (Nettles & Millett, 2006; Smallwood, 2004; Tinto, 1993) and the rate of attrition for underrepresented groups is even higher (Council of Graduate Schools, 2004; Gardner, 2008). Students are not completing their degrees for a myriad of reasons in the personal, financial, and academic categories (Lovitts, 2002). As the decision to leave is studied it can be seen that this is not a decision that students take lightly, often they draw on their inner resources and the people around them to make this decision and it has been suggested that they may be experiencing different levels of resilience (Lovitts, 2002). Given the stressful challenges presented at each phase of doctoral education, perceived stress; doctoral program culture/context; self-efficacy; and social support, may be important in contributing to student resilience which in turn may help doctoral students positively adapt to the challenges of doctoral-level training.

Aside from the realization that only about half of students who enter a Ph.D. program complete it, there are several other consequences to this problem. High attrition rates are connected to low production rates and thus jeopardize the ability of existing programs to justify their relevance to a university. This also affects the jobs of the faculty in these programs, and forces students enrolled in the threatened program to transfer and lose time or to accept the decrease in available resources. This concern is most relevant during times of financial struggle for universities. Attrition also negatively affects the finances of universities as they lose the value of expended academic, administrative, and faculty support resources when students leave, and
they must expend more resources on a new student. Data related to the financial impact of attrition shared with graduate college administrators and accrediting bodies may serve as a good catalyst to inspire a more indept look at ways to support all of their students in developing the resilience and intention to persist needed to matriculate through their programs. Students are selected to join Ph.D. programs that show promise to carry forward the given profession in a positive way, but as these students drop out those perspectives and gifts possessed by them are lost. Lastly, the cost to the student’s personal, professional and financial situation is high and affects their efficacy in the job market and their perception of self (Lovitts, 2002).

Mediating the problem of attrition several researchers have cited social support (Ali & Kohun, 2007; Thoits et al., 1986) which has also been found to be a protective factor for resilience and against stress (Riise, et al., 2011; Wilks & Spivey, 2010). Several researchers have operationalized social support to include positive effects of coping with stress (Arti et al., 2006; McCorkle et al., 2008), and perceiving the availability of social support can change the appraisal of stress (Sadat Nurullah, 2012). Multiple researchers have also challenged doctoral programs to facilitate opportunities to develop social relationships to decrease the negative impacts of social isolation (Ali & Kohun, 2007; Hortulanus et al., 2006; Thoits et al., 1986), which affects retention (Tinto, 1975) and persistence through graduation (Rockinson-Szapkiw, Spaulding, & Bade, 2014).

The rates of attrition vary across several identity characteristics (Lott, Gardner, & Powers, 2009) and program disciplines which supports the idea that both personal factors and university systems influence students’ ability to complete their programs (Ali & Kohun, 2006; Lovitts, 2002). Identity characteristics associated with differences in attrition rates are age, gender, race, and relationship status (Lott et al., 2009).
Researchers have also studied attrition across progress to degree. Some researchers have studied this concept in a stage or phase model (Ali & Kohun, 2006; Gardner, 2009) while others have looked at this through the lens of the year in the program (Lott et al., 2009; Lovitts, 2002). Attrition rates have been shown to differ across the process of progress to degree (Ali & Kohun, 2006; Gardner, 2009; Lott et al., 2009; Lovitts, 2002) regardless of how this is measured. While research on attrition rates for doctoral students share common concerns, agreement about ways to correct this problem is less common. This study has chosen to specifically consider two constructs that could be in opposition to attrition, resilience and intention to persist, and their correlational and predictive relationships to perceived stress, social support, self-efficacy, and doctoral program culture/context. An exploration of the impact of program phase, race and gender on these relationships seemed also important to consider given previous studies.

**Purpose of the Study**

Considering the centrality of the problem of doctoral student attrition across doctoral programs and disciplines, this study seeks to learn more about factors that may relate to doctoral students’ resilience and intention to persist throughout their graduate education. Hopefully, this study may help increase understanding and awareness of factors that may decrease attrition across the phases of the doctoral graduate education process through impacting resilience and intention to persist. In particular, this study aims to investigate how stress, social support, self-efficacy, and doctoral program culture/context, may affect and relate to doctoral students’ level of resilience and intention to persist in doctoral study. In addition, how the phases of doctoral education and the identity characteristics of race and gender may relate to these variables are also studied.
Research has shown positive correlations between social support and resilience. Self-efficacy has been identified as a consistent protective factor in a list of various and interchanging other factors for the development of resilience (Baron, Eisman, Scuello, Veyzer, & Lieberman, 1996; Wagnild & Young, 1993). Research has also shown that identity affects how resilience functions across these factors. The relationship between the constructs of perceived stress, social support, program phase, self-efficacy, doctoral program culture/context, and identity characteristics to resilience and intention to persist for doctoral students has not been studied. Thoits (2010) proposed several policy implications from a review of research about stress, one of those being identifying best practices and spreading the use of social support interventions to reduce the health impacts of adversity. This study is a step in that direction by providing information that can support the development of programming geared towards fostering the right type and quality of social support and doctoral program culture/context for students to increase resilience and intention to persist, thus in theory decreasing attrition.

**Research Questions**

Given the purposes of this proposed study, this investigation is designed to investigate six research questions:

**Research Question 1:** To what extent does perceived stress, social support, self-efficacy, and doctoral program culture/context, predict resilience as measured by the SPF24 among doctoral students in Counseling Psychology, Counselor Education, and Higher Education Leadership/Administration/Student Affairs?

**Null Hypothesis 1:** Participants perceived stress, social support, self-efficacy, and doctoral program culture/context, as measured by the Interpersonal and Academic Environment scales of the Doctoral Program Context Inventory (DPCI). will not contribute, either collectively or
individually in the regression model, significant unique variance to predicting participants’ resilience as measured by the SPF24.

**Research Question 2:** To what extent does perceived stress, social support, self-efficacy, and doctoral program culture/context, relate to intention to persist among doctoral students in Counseling Psychology, Counselor Education, and Higher Education Leadership/Administration/Student Affairs?

**Null Hypothesis 2:** Participants perceived stress, social support, self-efficacy, doctoral program culture/context, as measured by the Interpersonal and Academic Environment scales of the DPCI, will not contribute, either collectively or individually in the regression model, to significant unique variance to predicting participant’s intention to persist in doctoral study.

**Research Question 3:** After controlling for perceived stress, social support, self-efficacy, and doctoral program culture/context, to what extent does resilience as measured by the SPF24 contribute unique variance to predicting intention to persist among doctoral students?

**Null Hypothesis 3:** After controlling for perceived stress, social support, self-efficacy, and doctoral program culture/context, resilience as measured by the SPF24 will not contribute significant unique variance to predicting intention to persist among doctoral students.

**Research Question 4:** What is the nature of the relationship between doctoral program culture/context as measured by the 11 subscales of the DPCI and resilience as measured by the four subscales of the SPF24 for Counseling Psychology, Counselor Education, and Higher Education Leadership/Administration/Student Affairs doctoral students?

**Null Hypothesis 4:** The canonical correlation analysis between the 11 subscales of the DPCI (Curriculum Quality, Instructional Orientation, Student Activities, Professional Activities, Faculty-Student Relationships, Peer Student Relationships, Faculty Scholars and Researchers,
Instructional Quality, Advisement, Psychological Integration, and Climate) and the four resilience subscales of the SPF24 (Social Support, Social Skills, Prioritizing/Planning Behavior, and Goal Efficacy) will indicate that all squared canonical correlation coefficients, $R_c^2$, are equal to zero.

**Research Question 5:** To what extent does program phase relate to the variables of perceived stress, social support, self-efficacy, doctoral program culture/context, resilience as measured by the SPF24, and intention to persist among doctoral students in Counseling Psychology, Counselor Education, and Higher Education Leadership/Administration/Student Affairs?

**Null Hypothesis 5:** Program phase will not be correlated to the variables of perceived stress, social support, self-efficacy, doctoral program culture/context, resilience as measured by the SPF24, and intention to persist. The pattern of correlations among the variables by program phase will be explored and individual ANOVAs conducted as may be appropriate.

**Research Question 6:** Exploratory analyses will be conducted to see whether or not the pattern of results are invariant across gender and race. The pattern of correlations among the variables by gender and race will be explored and individual ANOVAs conducted as may be appropriate.
CHAPTER II

REVIEW OF LITERATURE

Graduate student attrition at the doctoral level has been found to be somewhere between 40 and 70 percent across disciplines and on average only 50% of students persist through to complete their programs (Gardner, 2009; Nettles & Millett, 2006; Lovitts, 2002). This is a problem that has great costs to the students, the institutions, and society (Lovitts, 2002). Although not all researchers have found the same level of significance for the factors that contribute to this problem, several factors have been shown to be important, and in general, the idea seems to be supported that both personal and university or program factors influence student’s ability to complete their programs (Ali & Kohun, 2006; Lovitts, 2002).

This chapter will review the current literature on graduate student attrition to support the need to study factors that may affect graduate students’ ability to bounce back from difficult experiences and persist through graduate programs of study. The graduate student attrition section will discuss the rates of attrition and several factors that present risks for students, society, and the university. Various definitions of resilience along with the history of resilience research for doctoral students across the identity characteristics of age, race, gender, and relationship status are presented. Intention to persist will be defined and reviewed for the graduate student population. The factors of interest reviewed will be perceived stress, social support, self-efficacy, doctoral program culture/context, identity characteristics, and the phases of doctoral education. A review of the literature regarding the factors of interest in relationship to attrition, resilience, and or intention to persist will be followed by the programs of interest section. This section will review the accreditation standards and general structure of the doctoral
programs included in the sample, Counseling Psychology, Counselor Education, and Higher Education Leadership/Administration/Student Affairs.

**Graduate Student Attrition**

Over a century ago the University of Chicago President, William Harper, called for the examination of college student development. This included factors such as students’ character, intellectual capacity and characteristics, as well as, the social networks that aid students. Thus, student development has become a central component of student affairs, a foundational aspect of graduate programs, and an inspiration for amendments to higher education. While this has been the charge much college student development research has focused on the undergraduate population and not the graduate level student (Gardner, 2009).

The doctoral degree is the highest academic degree in the United States, with 23 types of doctoral degree designations. The process to receive this degree is different than other higher education experiences because it is focused on discovering, integrating, applying, and disseminating knowledge (Gardner, 2009). In addition to the tasks associated with degree completion, many doctoral students must also balance family obligations and work which may affect the amount of time they spend on campus outside of class (Little & Garcia, 2009). While all doctoral students are working towards degree completion as the common goal they are not a homogenous group.

Early research on attrition focused on differences in student characteristics that would promote degree completion (Sorokosh, 2004). Across multiple studies of graduate students’ attrition, no one cause has been identified (Gardner, 2008). Lovitts (2002) asserts that the factors affecting student persistence are not their personal characteristics but the context they find themselves in while in graduate school. She cited that degree completers and non-completers
generally enter their doctoral programs academically indistinguishable. Explaining graduate student attrition must therefore account for the differences across graduate program characteristics, supports, and students’ identities. This creates difficulties for generalization (Gardner, 2009) and guides us towards a more multiculturally minded and comprehensive approach to research that accounts for factors both inside the student and in the environment (Nerad & Miller, 1996).

Gardner (2009) cites attrition as a problem due to the institutional expense of recruitment, assistantships, and degree tailoring. The costs of recruitment and retention are lost and investments made through assistantships and fellowships produce zero return when students do not complete a degree. In interviews with non-completers, long-term personal, professional and financial consequences were reported. Faculty time and effort are also wasted, with the cost of this exponentially increasing as students progress through the phases of the program (Lovitts, 2002). Additionally, consequences to the U.S.’s ability to compete internationally, the impact on the student’s future success in the job market, and the loss of potential research at the doctoral level are also consequences of attrition (Gardner, 2009).

**Attrition Risk**

While education statistics change by year and study scope, the consensus is that attrition from doctoral programs is high. Doctoral graduate students make up about 18 percent of the graduate student population (Gardner, 2009) and experience a general attrition rate of around 50 percent (Gardner, 2009; Lovitts, 2002; Nettles & Millett, 2006) and a projected estimate across disciplines of between 40 and 70 percent. This exceeds the undergraduate rate by 10 to 20 percent (Golde, 2005). Graduate student attrition studies have shown multiple trends and vary greatly across universities, graduate programs (Bair & Haworth, 1999), progress to degree, and
identity characteristics of students (Lovitts, 1996, 2002). The odds of dropout are increased by 59 percent for students belonging to a hard-applied science major, such as chemistry or biology, (Lott et al., 2009). Of all doctorates conferred in 2005, 45.1 percent were granted to those in the sciences and engineering. The humanities field has shown a longer general time to degree and is characterized by high attrition (Groen, Jakubson, Ehrenberg, Condie, & Liu, 2008). Golde’s (2005) departmental overview at a single institution showed that between the years 1984-1993 doctoral students had different rates of attrition across the disciplines of biology (17.7%), geology (30.5%), English (30.5%), and history (36.9%). The two science departments of biology and geology were similarly organized (Golde, 2005) suggesting that there must be another reason for the difference in attrition rate. This may cause us to wonder how doctoral program culture/ context may impact attrition.

A more comprehensive example that considers other factors is Lott et al.’ (2009) discrete-time event history analysis of 10,088 individuals, in 56 departments in the sciences, technology, engineering, and mathematics (STEM) disciplines, at one research-extensive institution, over a 20-year period (1984-2006). They showed the factors that contributed to attrition across students’ years in their program were gender, race, age, Graduate Record Exam (GRE) score, and relationship status. Other researchers have considered the systemic nature of the problem that may occur within departmental factors (Sorokosh, 2004). As the structure and processes of graduate education does not commonly change, if student characteristics were the sole contributor to attrition we would expect to see change over time as students change. Instead, there is a similarity in attrition rates irrespective of time (Lovitts, 2002). Haworth (1996) reports that attrition is seldom caused by academic failure and is more likely affected by a combination of factors including student frustration with academic policies and procedures, student
disappointment with program offerings and faculty advising, and student experiences with an inhospitable departmental climate.

**Factors Affecting Attrition**

**Resilience**

Resilience has been defined in multiple ways but in general the consistent components include the ability to adapt or respond to adversity or stress (Masten, 2001; Richardson, 2002). Several protective factors have been studied and found to be related to promoting resilience (Masten, 2014). In addition, resilience has been shown to be connected to academic success and to have a positive correlation with undergraduate outcomes from the first year (Allan, McKenna, & Dominey, 2014). Findings in the resilience literature have been inconsistent across the nature of potential risk and protective factors, and in estimates of prevalence across populations. This produces additional difficulties in comparing prevalence across studies (Windle, Bennett, & Noyes, 2011). There have been varied conclusions regarding resilience (Hu, Zhang, & Wang, 2015) but two consistent characteristics of resilience research have been the lack of a uniform definition and the four waves of the development of the construct.

As one of the leading resilience researchers for the past 30 years, Masten (2001) asserted that resilience is two-dimensional and includes adversity and positive adaptation. Her definition associates resilience with development or developmental tasks (Masten, 2001) such as those tasks graduate students face as they progress through their programs. A staple of her work is the concept of developmental risks and protective factors, stemming from personality factors, family factors, and environmental factors. Roberts and Masten (2004) claimed that environmental and contextual factors play important roles in shaping personal resiliency. In this sense, the notion of resilience as a dynamic process is reflected (Luthar et al., 2000). Resilience is regarded as not
fixed but dynamic, changeable over time, and dependent on interactions among various factors surrounding the individual (Dyer & McGuinness, 1996). In this point of view, the concept of resilience fits well with the evaluation of a change in response to stress and protective factors graduate students may experience along various phases of the graduate school process.

**Defining resilience.** While resilience is a widely used concept, there is a lack of a uniform operational definition for resilience and a corresponding methodology for studying it (Davydov, Stewart, Ritchie, & Chaudieu, 2010; Windle et al., 2011). As research has evolved on this construct it has been defined in a myriad of ways making it difficult to compare definitions and data across available literature (Earvolino-Ramirez, 2007; Gillespie, Chaboyer, & Wallis, 2007; Grafton, Gillespie, & Henderson, 2010; National Centre for Victims of Crime, 2005; Richardson, 2002). The differences in defining resilience are important to highlight because concept definition provides researchers with theoretical boundaries that support the nature, direction, and veracity of research inquiry. Conceptual inconsistencies obstruct the evaluation and comparison of research findings, impede meta-analysis, and create difficulty for researchers to operationalize the construct (Hu et al., 2015; Miller, 2003). In addition, how resilience is defined in a study reflects how it is assessed and thus relates to important factors and the type of process necessary to understand when selecting one of the many measures for a study (Windle et al., 2011)

There appear to be three currently accepted orientations for defining resilience: trait-oriented approach, outcome-oriented approach, and the process-oriented approach (Hu et al., 2015). These three approaches describe how resilience is thought to be developed and how it supports the individual. The trait orientation asserts that resilience is a personality trait that protects individuals against the impact of adversity or traumatic events by supporting coping and
promoting positive adjustment and development (Hu et al., 2015). This approach stemmed from the observation of a proportion of children in high-risk settings who achieved normal development. This led to assumptions that resilience was determined by innate factors relatively unaffected by development or environment. This concept of psychological immunity was dismissed as youth deemed resilient experienced psychological or physical distress with high levels of certain stressors or situations (Harvey & Delfabbro, 2004).

The outcome-oriented approach views resilience as a function or behavioral outcome that can conquer and help individuals to recover from adversity (Hu et al., 2015). This body of research focuses on behaviors that foster success and the contexts that reinforce those behaviors. This approach explains why people with nurturing social support and outgoing engaging personalities develop greater resilience and coping skills. Socially confident and responsive individuals are more likely to illicit social reinforcement and responses from others that may provide models of behaviors fostering successful outcomes that can be imitated. Those without appropriate roles models may not have the same opportunities to learn resilient behaviors. Identity characteristics of gender, age, and race might influence resilience due to a lack of similarities in role models and mentors. This view shifts responsibility for resilient outcomes from the individual to environmental and social circumstances that develop resilient behavioral outcomes (Harvey & Delfabbro, 2004).

The view of resilience as a dynamic process of positive growth or adaptation post periods of homeostatic disruption (Richardson, 2002) is the process-oriented approach to defining the construct. This view is broadened from past definitions that only account for a few people who possess resilience to the belief that resiliency is a normal process of human adaptation (Bonnano, 2004; Masten, 2001) that is multidimensional and dynamic as opposed to being static. It asserts
that individuals actively and positively adapt to and recover from major adversities (Haddadi & Besharat, 2010; Hu et al., 2015). This approach often conceptualizes resilience along a continuum of vulnerability to stress (Madewell & Ponce-Garcia, 2016; Wilks & Spivey, 2010), psychological disorder (Hu et al., 2015), and trauma (Madewell & Ponce-Garcia, 2016; Wagnild & Young, 1993).

The dynamic process approach is the newest way researchers are looking at the construct of resilience because the narrower definitions of trait and outcome-oriented resilience are incongruent with the large number of people who return to normal levels of functioning following stress, trauma, or adversity (Bonnano, 2004; Masten, 2001). Nor do the narrower definitions account for the interaction between individuals and the environment around them, such as social support systems (Lee, Nam, Kim, Kim, Lee, & Lee, 2013) or graduate program characteristics. A process-oriented understanding of resilience has the potential to have a significant impact on treatment and support programming. Given the above-described graduate student problem of high attrition rates and the stressful challenges that students face throughout their programming, it follows that resilience would be an important construct to facilitate in the interest of supporting doctoral students through the challenges they may face.

**Resilience and graduate students.** Graduate study is a time of change through socialization into the professional field (Hammond & Shoemaker, 2014 Weidman, Twale, & Stein, 2001). It has been suggested that students develop when both challenge and support are present (Gardner, 2009). As students respond to challenges and experience support it makes sense that resilience would be a helpful characteristic to have at high levels. Research has stressed the importance of high resilience in medical students and its connection to general well-being because it supports one’s ability to bounce back from life’s challenges (Eley & Stallman,
Unfortunately, there is little research on resilience for graduate students and the studies that have been done have focused on medical students or international student adjustment.

**History of resilience literature (waves of research).** Resilience research is not a new topic. While the construct has been studied for over a century the term resilience to describe a psychological process first emerged in the 1970s as studies found that subgroups of children who were at risk for developing psychopathology were displaying positive adaptation. Since then, research on resilience has come through 4 waves (Goldstein & R.B. Brooks, 2005) across the disciplines of health and social sciences (Davydov et al., 2010), and varied definitions of resilience stem from the differences between the focus in the research across time (Luthar et al., 2000).

The first wave of research focused on internal and external characteristics that support coping with and recovering from adversity (Earvolino-Ramirez, 2007; Richardson, 2002; Waite & Richardson, 2004). This wave described resilience concepts and methodologies with a focus on the individual (Goldstein & R.B. Brooks, 2013). Several important research topics emerged during this wave. Children at high risk for psychopathy due to the circumstances they lived in, adolescents as an age group at high risk for stress, survivors of major natural disasters, and loss created by sociopolitical problems such as the Holocaust were some of the studied groups.

Literature focused on identifying predictors of positive adaptation at all levels of risk (compensatory factors) (Goldstein & R. B. Brooks, 2013) and identifying specific traits that predict recovery and adaptation from adversity (protective factors) (Goldstein & R.B. Brooks, 2013; Grafton et al., 2010). Identified protective factors included hardiness, coping, self-efficacy, optimism, patience, tolerance, faith, adaptability, self-esteem, and a sense of humor (Grafton et al., 2010). Several other studies proposed that resilience included psychological and biological
factors such as social support and cognitive ability. Many of these studies also identified several of the above-mentioned protective factors. The research identified hope, coping, and self-efficacy as having statistical associations with resilience (Gillespie et al., 2007). A list of characteristics associated with resilience was developed however there was little agreement about a finite and generalizable list (Grafton et al., 2010). Debates over how to define resilience stemmed from disagreement over criteria for adaption by which resilience should be judged (Goldstein & R.B. Brooks, 2013).

Resilience as a dynamic process was the focus of the second wave. This wave took a developmental systems approach to positive adaptation in the face of adversity, with a focus on the relationships between individuals and systems, and the integration of biological, social, and cultural processes into the models (Goldstein & R. B. Brooks, 2013). The development of resilience came to be understood as a process that is the result of frequent experiences of adversity and positive adaptation despite these experiences (Gillespie et al., 2007; Luther & Cicchetti, 2000). Complex models of resilience were developed that focused on healthy vs. maladaptive pathways of development over time (Goldstein & R. B. Brooks, 2013). This expanded the research past a list of protective factors that some possess into a dynamic process used to cope, recover, and access resources during and following adversity.

This shift meant that resilience could be learned and thus taught and it was important to do this, especially in fields of high demand like nursing (Gillespie et al., 2007). Purposeful specific educational processes designed to teach resilience produced measurable results (Jackson et al., 2007; Waite & Richardson, 2004). Specifically, cognitive transformation and personal growth educational processes and practices showed increases in self-efficacy, adaptability, and resilience (Grafton et al., 2010). Moderating effects of personal and environmental
characteristics that contributed to why protective factors worked only for some people in some circumstances also began to be studied in this wave prompting a movement away from individually based conceptualization and towards a contextually situated framework (Goldstein & R.B. Brooks, 2013).

The third wave of research sought to understand how to create resilience by changing developmental pathways (Goldstein & R.B. Brooks, 2013). This wave posited that developing personal resilience is a cyclical internal process of uncovering and using the resilience within the self as opposed to acquiring something external to the self (Grafton et al., 2010). Researchers began to describe resilience as the complex interplay between innate strength and outer support (Butler, 1997), a self-righting mechanism (Werner & Smith, 1982), or as "ordinary magic" that comes from the ordinary processes of normal human adaptation systems (Masten, 2001). While the terminology was not consistent across research, the fundamental notion that resilience is an inner strength or resource within the individual that enables a positive stress response supported by resources external to the person appears consistent. This emerging understanding in the third wave of investigation brought forth resilience meta-theory (Richardson, 2002). From this meta-theory came theory-driven interventions to promote resilience. Often these interventions were studied with randomized control and comparison groups with explicit models of change. Researchers discovered that there is a need to promote competence that builds resilience and reduces risk (Goldstein & R. B. Brooks, 2013).

The fourth wave of resilience research seeks to understand and integrate resilience across multiple levels of analysis including evolution and genetics, neurobiology, brain development, and the ways systems interact to shape development. The trend of evaluating protective factors (Richardson, 2002) and shifting from a disease-based to a strength-based or wellness model has
increased in popularity as the Positive Psychology movement has emerged. Additionally, both prevention and intervention strategies with college students that help promote protective factors that assist students to be resilient when facing stressors have become important to study (Seligman & Csikszentmihalyi, 2000).

**Intention to Persist**

Intent to persist has been linked to actual persistence in several studies. While actual persistence has been shown to be related to the intention to persist, they are not the same thing (Bean, 1982, 1990; Faghihi & Ethington, 1996; Hammond & Shoemaker, 2014). Sorokosh (2004) has defined intention to persist as “the extent to which students who enter their doctoral programs intend to complete the course of study and receive their degrees” (p. 8). It suggests a students commitment to continuing graduate studies and is the antecedent to persistence (Faghihi & Ethington, 1996). Gardner (2008) describes graduate students’ intention to persist in direct opposition to attrition.

Persistence has been studied at a community college (Tinto, 1997), masters’ level (Hammond & Shoemaker, 2014), and doctoral level (Sorokosh, 2004), and several factors have been found to influence students’ intention to persist. Research has shown that as students’ integration into campus life increases the likelihood that they will persist also increases (Tinto, 1997). Persistence has also been linked to several graduate program factors with the faculty-student relationship being one of the strongest predictors (Lovitts, 1996; Sorokosh, 2004).

In a comparison mixed methods study at a community college of a coordinated studies program (CSP) and individualized education programs, students in the CSP programs were found to persist at a significantly higher rate in subsequent semesters. Qualitative results showed the themes of building supportive peer groups, shared learning, bridging the academic divide,
and gaining a voice in the construction of knowledge to be linked to persistence. Students identified that involvement in the CSP programs helped them to balance struggles of attending college, influenced their desire to stay enrolled, and expanded their access to diverse viewpoints. Students were able to meet academic and social needs simultaneously as opposed to having to give up one for the other. The structure of the CSP programs was similar to that of graduate school programs that focus on the cohesion of a cohort where classes are taken together, students learn in groups both inside and outside the classroom through cooperative learning activities in which they are interdependent learners (Tinto, 1997). Additionally, the importance of perceived peer and faculty support was found in several additional studies including a study of first-year students’ intention to persist and second-year retention. These two predictor variables were found to be significantly positively related to intention to persist and as perceived peer support increased the more likely students were to return in their second year (Morrow & Ackermann, 2012).

Master’s level students’ attrition and intention to persist have been the least studied group, but a few studies of persistence have found that masters’ students complete their programs at slightly higher rates than undergraduate and doctoral students. In a study of masters-level agricultural students, Hammond and Shoemaker (2014) found significant positive correlations between intention to persist and both social integration and socialization. Students reported various experiences on subscales including quality of advisor relationship, peer group support, faculty interactions, and involvement in social interactions. Students’ perception of time to degree also affected their intention to persist. Students who believed program completion would take less time or the same time as they expected upon program entry indicated higher intention to persist (Hammond & Shoemaker, 2014). This might suggest other factors may be
affecting student social support factors and how they may interact with intention to persist. This study does not explain variance that may occur due to students with different identity characteristics or at different phases of programming.

**Intention to Persist and Doctoral Students**

Research indicates there are a number of factors that can contribute to persistence in graduate students (Cohoon, Wu, & Chao, 2009; Terrell, Snyder, Dringus, & Maddrey, 2012). Persistence was found to be challenged by factors that affected student perception of “fitting the mold”. Included in these factors were a general feeling of differentness, negative experiences, structural barriers to success, and identity factors of race, age, and gender. Cohoon et al.’s (2009) found gender to be of specific importance due to women’s experience of sexism. They found that women who thought of leaving were 21 times more likely to depart if they also selected sexism as a reason they thought of leaving. They also found the most frequent reasons their sample thought of leaving were to take a job or lack of confidence in their abilities (Cohoon et al., 2009).

Race and the combination of race and gender’s impact on retention and persistence have been shown to be significant particularly in the African American female population. These studies suggest that African American graduate students may be experiencing less academic and social integration into their programs and institutions (Proctor & Truscott, 2012). This integration is important because the student to program match of academic and social components has been shown to affect doctoral students’ decision to persist in a sample of 33 Counselor Education doctoral students. Academic match was the perception that the curriculum prepared them for what they wanted to do. Social-personal match was described as a connection with faculty and peers. Students who dropped out reported academic and social mismatch (Hoskins & Goldberg, 2005). Gasman, Hirschfeld, and Vultaggio (2008) studied African
American graduate students enrolled in the department of education at Ivy League institutions and found that several of them reported realizing within the first year that there were no programs or support systems for them and that learning how to navigate to get information and support was one of the most difficult aspects of graduate school. Many cited that they felt like outsiders and complained of mistreatment in their social interactions with faculty and a lack of closeness with white peers. Students in Johnson-Bailey’s (2004) study described having to decide if they wanted to continue graduate school in a program that did not match their social and academic integration needs. She found that supportive mentoring and respect from faculty, the presence of networking by Black peers, and the availability of funding affected their likelihood to persist. These outcomes are similar to Tinto’s (1975) Theory of Student Departure in which he describes key determinants of academic and social integration as facilitating academic persistence. He theorized that there is an academic interplay between motivation to do school-related work and students’ sense of belonging.

Sorokosh’s (2004) study focused on the development of the Doctoral Program Context Inventory (DPCI) and found that persistence was higher in environments with greater integration, cohesive curriculums, warmer climates, and better relationships between students and between students and faculty. She found the highest correlations between intention to persist and faculty-student relationships (.665), psychological integration (.593), and climate (.510). There were lower but still significant correlations between intention to persist and peer-student relationships (.440), curriculum quality (.401), advisement (.351), and instruction quality (.349). The lowest correlation was found between intention to persist and instruction orientation (.314) while faculty as scholars and researchers, student activities, and professional activities did not correlate at a significant level (Sorokosh, 2004). This study did not assess for differences in
intention to persist and perceived program characteristics across program phase. However, Tinto (1993) asserted that in the latest phase of doctoral education, persistence is most likely to be influenced by a single faculty member or a small group of faculty members. This may account for the overall higher importance of this variable in Sorokosh’s (2004) study since 31% of her sample was in the dissertation phase.

**Factors Affecting Graduate Student Attrition, Resilience, and Intention to Persist**

Researchers and faculty have proposed several theories about the factors contributing to graduate student attrition and posited attrition is likely affected by multiple combinations of factors (Lovitts, 2002). Structure and process of graduate education along with factors that separate students from each other and from faculty contribute to attrition (Gardner, 2009; Lovitts, 2002). Gilmore, Wofford, and Mahe (2016) cite poor doctoral socialization and use socialization theory to understand faculty and advisors’ attributions of factors affecting graduate student success and attrition. It is within the context of individual programs that doctoral program characteristics, challenges across the program, social support, student identity characteristics, motivation, and “persistence through challenges” is assessed (Gilmore et al., 2016, p. 426). Additionally, Gardner (2009) reports that several challenges at each phase of graduate education increase stress.

There is a tendency to place the responsibility for attrition solely on students by graduate program faculty and program directors (Gardner, 2009; Lovitts, 2002). Several studies report faculty perceptions of reasons students depart from graduate school as being largely due to students’ characteristics (Gilmore et al., 2016; Lovitts, 2002). This likelihood to believe that students are responsible may be rooted in the selective admissions myth. This myth that the
admissions process has identified the best students that are likely to meet graduate program demands, assumes that the process seeks talent rather than develops it (Lovitts, 2002).

Lovitts (2002) reported on a study of 18 program directors and 33 faculty who offered more than 90 reasons students depart from graduate school. Two-thirds of faculty suggested students were responsible for leaving and many focused-on students’ inability to navigate components of the dissertation process. One-third of the responses were situational and focused on factors external to the university. When those who departed were interviewed, they gave sixty-two reasons often in combinations of categories. The most frequent theme students attributed attrition to was academic concerns. This contained categories of dissatisfaction with the academic environment, loss of interest in the program, academic failure, and loss of advisor. A similar theme between faculty and student response was students’ report of difficulty in the dissertation phase regarding socialization to research in graduate school (Lovitts, 2002).

**Perceived Stress**

Researchers have found prolonged exposure to stress to have damaging effects on physical and mental health (Fleshner & Laudenslager, 2004). Cohen and Janicki-Deverts (2012) cite research showing associations measured using the Perceived Stress Scale between stress and multiple factors such as depression, elevated markers for aging, and higher cortisol levels. In addition, people with high levels of stress have been shown to be generally less resilient (Bruwer, Emsley, Kidd, Lochner, & Seedat, 2008). Hodges, Keeley, and Grier (2005) found that resilient nurses are better able to manage their response to stress increasing well-being and their ability to continue in their jobs in the presence of overwhelming complexity and adversity. Researchers have asserted that it is not low exposure to stress that promotes well-being but one’s response to stress (Engel, 2004; Grafton et al., 2010; Hamilton, Kitzman, & Guyotte, 2006).
Understanding resilience as a response to a stressful condition highlights the need to develop processes that support the development of resilience and ameliorate the effects of stress (Grafton et al., 2010).

Many researchers agree that resilience facilitates a positive stress response that is improved by external resources (Grafton et al., 2010; Masten, 2001; Richardson, 2002), and several have included the ability to cope with and recover from stress in the definition of resilience (Jackson et al., 2007; Richardson, 2002). Many of the resilience measures have included tolerance of stress (CD-RISC-25) and stress coping ability as factors loading into the overall resilience score.

In Cohen and Janicki-Deverts's (2012) analysis of data from the administration of the Perceived Stress Scale nationally, three times over the past 26 years they found that stress was also associated with several independent demographic categories. The distribution of stress was found to be the same across the 1983, 2006, and 2009 surveys showing women, unemployed people, and minorities reporting higher stress, and a decrease in stress as people aged, gained education, or increased income. Statistical control of demographic variables did not change the results except for the difference between white people and minorities no longer approaching statistical significance (Cohen & Janicki-Deverts, 2012).

**Lazarus’ theory of stress appraisal.** Lazarus (1966, 1974) asserts that people interact with their environment and appraise challenging life events and available coping resources. Stressor effects occur as the situation is appraised as threatening or demanding and as insufficient resources are available to cope with these situations. A stress response is based on personal and contextual factors and not simply the intensity of a stressful event. Measuring stress through the cognitive appraisal process assesses for perceived stress as opposed to objective
stress. Using perceived stress scales in conjunction with objective scales helps to determine protective factors (Cohen, Kamarck, & Meremstein, 1983).

**Stress and graduate students.** Graduate school has been described as stressful. This stress is increased by any personal stressors students may be facing (Cushway, 1992; Stratton et al., 2007). Students encounter a variety of stressors during their time in the doctoral program such as heavy course demands, anxiety-provoking expectations, continued academic evaluation (Stratton et al., 2007), clinical training, employment, relationships, and balancing responsibilities (El-Ghoroury et al., 2012; Myers et al., 2012). In a study of first-year graduate psychology students, 57% of all stressful events and 59% of all intense stressful events were related to their graduate school experience. More socially isolated students reported greater stress levels, more stressful events, and longer periods of disruption from life changes and stress. Students who reported more frequent interactions with faculty outside of class were less likely to report intense and elongated life disruption (Goplerud, 1980).

Graduate students regularly report the need to cope with stress related to their role as students and balancing their work, social, and family life (Boren, 2013). In a sample of 387 psychology graduate students given a 22-item questionnaire about academic and interpersonal stressors, 70.5 percent of them reported experiencing a challenge that interfered with their optimal functioning since beginning graduate school (El-Ghoroury et al., 2012). In another study, over 50 percent of graduate students within their first 2 years reported life changes that placed them in the life crisis category. Included in the challenges that they reported were school and social relationships. Students’ attempts to cope with stress may be evidenced by research showing graduate students are the second most frequent users of psychiatric services at a university (Goplerud, 1980).
Several identity characteristics of graduate students were also found to relate to perceived stress. A multivariate analysis of El-Ghoroury et al.’s (2012) sample suggested that race has an overall large effect size on stress and coping. In a separate study (Myers et al., 2012) with a sample of 488 psychology graduate students, significant differences were found in perceived stress across relationship status, age, and cost of living to income need ratio. They found that married students, older students, and students with a sufficient cost of living to income ratio were significantly related to lower stress levels. Contrary to El-Ghoroury et al.’s (2012) study, race presented no significant difference in students reported perceived stress (Myers et al., 2012). Differences in study instrumentation, the lack of sample diversity in Myers et al.’s (2012) study, and the inclusion of racial discrimination as a stressor by El-Ghoroury et al. (2012) are potential reasons for this inconsistency.

Social Support

Social support has been defined in multiple ways. In several literature reviews, social support has been identified as the provision of assistance by others in the form(s) of informational, emotional, material companionship (Sadat Nurullah, 2012) practical or instrumental resources (Thoits, 2010). Social supports come from an individual’s social network but belonging to a network does not guarantee support is received or provided, nor does it guarantee the quality or availability of those supports (Sadat Nurullah, 2012). Assistance may be received or simply perceived from significant others, such as family members, friends, or advisors (Sadat Nurullah, 2012; Thoits, 2010).

In Thoits’s (2010) review of the literature on sociological stress, she cites research that social support is a buffer to stress and, in particular, perceived emotional social support decreases stress-induced psychological distress and arousal. Lepore (2012) further asserts that the
perception of the availability of social support often reduces the negative impact of stress. Support occurring without a student’s knowledge may also prevent exposure to stress. In a sample of 387 psychology graduate students, half of the participants at least moderately endorsed peer and family support, and another quarter of the sample endorsed supervisor or mentor support as effective in managing stress (El-Ghoroury et al., 2012).

Social support has also been identified as one of many protective factors that support resilience in general (Gillespie et al., 2007), and as a predictor of resilience in several studies across several populations (Johnson, et al., 2015; Wilks & Spivey, 2010) including college students (Khan & Husain, 2010). Student retention is partially based on the quality of the social system in place (Tinto, 1975, 1988). In a sample of first and second-generation college students, unsatisfactory peer-group and faculty social interactions were found to increase the likelihood of college attrition (Pike & Kuh, 2005). In a study of 145 undergraduate social work students, Wilks and Spivey (2010) found that friend and family support accounted for most of the variance in resilience. Variance in resilience scores was affected by the types of social support students reported as high. Students reporting high overall social support were 5.3 times more likely to have higher resilience, those reporting high family support were 2.9 times more likely to have higher resilience, while those reporting high friend support were 29 times more likely to have high resilience score (Wilks & Spivey, 2010). Friend support was found to significantly interact with academic stress and moderated the relationship between stress and resilience. Family support and overall social support were not shown to significantly interact with stress or resilience in this sample (Wilks & Spivey, 2010).

**Social support and graduate students.** Social support has been shown to affect the graduate student experience as a predictor of success (De Valero, 2001) and research indicates
that it is generally related to graduate student wellbeing (Myers et al., 2012). El-Ghoroury et al. (2012) cited prior studies finding that graduate psychology students most frequently utilize social support to manage stress and that difficult relationships with advisors were positively correlated with increased stress. They suggest that the quality of that relationship affects students’ professional outcomes and help-seeking behavior (El-Ghoroury et al., 2012). Other researchers have also found a significant relationship between social support and stress. One such study of 284 counseling psychology doctoral students across 53 programs showed that students who perceived more social support also reported less stress (Myers et al., 2012). Peer support has been shown to be critical in the emotional and academic development of graduate students (Goplerud, 1980).

For graduate students, the process of socialization, which occurs through social interactions with faculty and peers, has been found to support the development of students into academic professionals by socializing them into the norms, values, ways of thinking, and communication within a specific field (Hammond & Shoemaker, 2014). Doctoral programs that include climates of peer support have positive effects on the rate of time to degree and program completion (De Valero, 2001; Lovitts & Nelson, 2000; Nerad & Cerny, 1993). In departments where faculty treated students as junior colleagues and participated in social and academic activities, time to degree was also shorter. Acquisition of knowledge and skills has also been connected to higher contact with peers and faculty (Nerad & Cerny, 1993).

Several researchers have examined the social isolation that occurs during the dissertation phase of doctoral education (Ali & Kohun, 2007; Sigafus, 1998; Thoits et al., 1986; West et al., 2011). As the transition into the dissertation phase occurs the learning process changes from dependent participant learning to independent and isolated learning (West et al., 2011). The
dependent learning style is characterized by slight inquisitiveness and learning necessary content only, while the independent style is characterized by self-reliant thinking and preference for learning content they feel is important (Gujjar & Tabassum, 2011). The isolation occurring during this transition creates a struggle to complete the dissertation phase (Ali & Kohun, 2007; Thoits et al., 1986). Sigafus (1998) proposes that students miss the experience of contact with colleagues they once had and would like to have intellectual and faculty interactions.

Goplerud (1980) cites research that socially isolated students do not perform as well academically and professionally, experience more emotional and physical distress, and withdraw more frequently than students linked to support groups. Many agree that the solution to this isolation is to provide opportunities to develop social relationships and support. Doctoral programs have been challenged by several researchers to view social isolation as an institutional or administrative matter, not an individual issue for the student (Ali & Kohun, 2007; Lovitts, 2002; Thoits et al., 1986).

The importance of creating departmental climates that are supportive and form cooperative opportunities for institutional and peer support has been emphasized by existing research on social support at the graduate level (West et al., 2011). Increasing the understanding of how social support climates can be specialized to fit the population within specific programs based on students’ identities and phase in graduate program may help to increase student’s resilience thus decreasing attrition.

**Graduate student socialization theory.** Much of the research about doctoral education and doctoral student experience focuses on socialization to their academic discipline as students and potential future faculty (Austin, 2002; Gardner, 2008; McCoy & Winkle-Wagner, 2015; Weidman et al., 2001). Socialization should be a continuous process of role acquisition
throughout students’ entire experience from admission to entry into their fields (Weidman et al., 2001). Graduate student socialization is the process by which students, within the contexts of their specific programs, internalize expectations, standards, and norms through learning relevant skills, attitudes, values, etc. (Gilmore et al., 2016; McCoy & Winkle-Wagner, 2015), and develop role identity and commitment to their profession. Throughout the process some experiences are collective and others are perceived differently depending on students’ characteristics. Social learning theory posits that students would learn and develop from other people through observation, imitation, and modeling (Bandura, 1977).

Students experience anticipatory socialization as they prepare to start graduate school. McCoy and Winkle-Wagner (2015) found that enrolling in a summer bridge program focused on socialization prior to entering graduate school could support developing scholarly habits and aided their anticipatory socialization. Communication students have with others in the department throughout the graduate process moves students into instability and uncertainty. As they navigate their environments they move back to stability; each experience advances students’ professional maturity, cognitive and affective development (Weidman et al., 2001). Differences are also experienced across phase in the program with separate difficulty levels and settings becoming turning points or factors of change for students. Core elements of knowledge acquisition, investment in the development of their role, and involvement in their programs occur across the stages of socialization (Weidman et al., 2001).

Weidman et al. (2001) described a model for graduate student socialization that assumes socialization occurs in 4 interactive stages, each reflecting different levels of understanding and commitment to their future profession. The Anticipatory stage may begin during undergraduate education (McCoy & Winkle-Wagner, 2015) and includes the recruitment and preparatory time
as students enter their graduate programs. Students in this phase make a commitment to their journey and often have generalized preconceived ideas and expectations from media, observations, and interactions that become modified in later stages. Beginning students demonstrate uncertainty as they learn about their new roles and rules through a one-way communication between faculty, supervisors, clinicians, and existing students (Weidman et al., 2001).

The formal stage occurs after students are inducted into their programs and begin to receive formal instruction. While observing those already in the field and students in older cohorts they learn about normative role expectations and opportunities that the general public does not know. Students begin to practice their role, interpret their environment, develop professional goals, and seek positive feedback on their development. Communication is informative, integrative, and regulative through course material, interactions with others, and normalizing expectations. Students are validated as they successfully move towards their goals and complete comprehensive exams students (Weidman et al., 2001).

The third stage is the informal stage in which students begin to feel more like a professional. Learning occurs through skilled communication and cultural immersion. Students observe acceptable behavior from cues from faculty and the developed social and emotional support system of their peers. Students learn about the flexibility in their roles through implicit messages typically referring to attitudinal and cognitive features of their roles. Students’ communal experience, particularly in cohort groups, provides a space to communicate and ease anxiety (Weidman et al., 2001). Structured peer social support was found to have benefits for students in Little and Garcia’s (2009) study on cohort and non-cohort programs. Students in a
cohort program significantly scored higher on the measure of intention to persist and rated their relationships with their peers higher.

The last stage is the personal stage of socialization in which the components of social roles, personality, and social structures all become fused and internalized as students evolve into scholars and colleagues. Students separate themselves from their departments as they seek their own identities. Students’ professional identity is formed and dissonance between their previous self-identity and professional identity. Through this process, students become compliant with values and attitudes with increased expectations from faculty and themselves. Students gain formal recognition through assistantships, fellowships, and scholarships. Students focus on research interests, specializations publications, and conference presentations.

**Academic and social integration.** Tinto’s (1993) model of doctoral student persistence describes academic and social integration as a student’s full involvement in the academic and social systems of the departmental community. Experiences of academic and social integration are intersecting (Golde, 2005; Tinto, 1993). Socialization could be defined as “the process through which students learn how to behave and what it means to succeed or fail” (Hammond & Shoemaker, 2014, p. 24), this includes the categories of academic integration and social integration (Gardner, 2008; Hammond & Shoemaker, 2014).

Research has found that academic and social integration is developed through interactions with the faculty and peers within the university (Lovitts, 2002; Tinto, 1993). These two factors could be considered the primary indicators of adjustment to college. Specifically, social integration includes interpersonal relationships, support, interactions with others, and a sense of belonging at a university (Hammond & Shoemaker, 2014; Tinto, 1975). These outcomes stem from extracurricular activities, informal dealings with peer groups, and interactions with
faculty and staff (Hammond & Shoemaker, 2014; Tinto, 1975;) primarily experienced through the student’s department (Lovitts, 2002; Tinto, 1993). Students who are successful academically and socially integrated have been found to be more likely to persist through graduate school (Tinto, 1993).

One potentially harmful association that has been found between socialization and graduate students is co-rumination. Co-rumination occurs when graduate students frequently and mutually discuss a problem they are experiencing in school with no focus on solving the problem (Boren, 2013). Boren’s (2013) study of the mediating effects of social support on emotional exhaustion of graduate students found that while frequency and severity of emotional exhaustion were negatively correlated with social support, co-rumination may suppress the positive effects of social support.

Self-Efficacy

Students may experience obstacles while working towards their goal of Ph.D. completion. These challenges create an opportunity for them to give up or persist. Self-efficacy beliefs have been found to be a characteristic that supports people in persisting towards their goals rather than avoiding or quitting when faced with challenges (Gallagher, 2012). First proposed by Albert Bandura in 1977, the concept of self-efficacy is part of social cognitive theory, a unified theory of behavior change. Social cognitive theory provides a model for understanding human emotion, behavior, cognition, and motivation. Bandura (1977, 1997) defined self-efficacy as a person’s belief in their capacity to perform the necessary actions to reach a desired goal. Bandura (1997) proposed that among the mechanisms of human agency self-efficacy beliefs are the most central and other factors of personal agency are rooted in these beliefs. The absence of efficacious beliefs provides little incentive to persist, nor does it promote
their resilience in the face of challenges. Self-efficacy beliefs regulate human functioning through multiple processes and these processes are affected more by their beliefs in their ability than what is objectively true. Students’ cognition is affected by regulating if they think in self-enhancing or self-debilitating ways and how well they motivate themselves to persist towards degree completion. These beliefs also affect the quality of one’s emotional life by affecting their perceptions of stress, coping behaviors, and the choices they make at important decisional points (Bandura, 1997, 2002).

A core construct of social cognitive theory that is directly related to self-efficacy is triadic reciprocal determinism which proposes the constant interplay between self-efficacy beliefs, behavior, and environmental factors. It assumes people are the agent of action, actively interacting with their environment as opposed to being controlled by it. As people interact with their environments, they develop internal models judging their capability across potential courses of action, developing outcome expectations (Bandura, 1997), that regulates their behavior (Bandura, 1977, 1997; Gallagher, 2012).

Self-efficacy also affects the emotional experience in 3 ways, cognitions, actions and affect. Cognitively efficacy affects both how one perceives their ability to control intruding and anxious forms of thought and how environmental events are understood. (Bandura, 1997). These beliefs can vary in magnitude and strength on the following three dimensions: (a) perception of task difficulty (magnitude), (b) perception of ability to perform a task at a particular level of difficulty (strength), (c) the extent to which a person generalizes their beliefs about magnitude and strength (Bandura, 1986, 1997). Those with higher levels of self-efficacy beliefs behaviorally are more likely to seek more challenges and are more likely to believe in their ability to complete challenging tasks and preserve through adversity towards goal attainment.
Self-efficacy beliefs support courses of action that change the environment in ways that have the potential to effect affect. Self-efficacy allows for affect regulation through one’s perceived ability to eliminate aversive emotional states (Bandura, 1997). Those with higher levels of self-efficacy are less likely to experience anxiety due to their appraisal of their ability to cope with difficult tasks or environments (Gallagher, 2012). People who persist through activities that induce anxiety have corrective experiences that reinforce efficacy and eliminate defensive behavior (Bandura, 1977).

If we consider the tasks associated with completion of a doctoral degree as behaviors students must do to matriculate through program phases, then how that efficacy is acquired and regulated becomes important. Self-efficacy is believed to be acquired through 4 sources, (a) performance experiences, such as previous successes and failures; (b) vicarious experiences, which include observational learning and imitation; (c) verbal persuasion, such as feedback; and (d) emotional arousal, with positive affect leading to more self-efficacious beliefs than negative affect (Bandura & Adams, 1977). Performance experiences are based on the success and failures of personal mastery experiences. Once efficacy is established it tends to transfer to other experiences but most predictably to similar activities. Vicarious experience is inferred through social comparison and efficacy is benefited most by seeing people overcome difficulties. Models that include effortful coping minimizes the perceived negative impact of temporary distress. Verbal persuasion that suggests people can cope with tasks that have overwhelmed them. However, persuasion without environmental support may lead to more failure which discredits the person providing feedback and extinguishes efficacy gained in this manner. Individuals understand their anxiety and stress response in part through emotional arousal. Anxiety can be
induced past the level of danger through fear-provoking thoughts, or it can be attenuated through learned coping skills developed through accomplishing stressful tasks (Bandura, 1977).

Of these 4 sources of self-efficacy information, the two most impactful in determining self-efficacy expectations are performance experiences and vicarious experiences (Bandura & Adams, 1977; Bandura, 1977). Through vicarious experience, individuals learn new behavior patterns that serve as guides for future behavior (Bandura, 1971) refined through self-corrective behavior and feedback from performance experiences. Self-efficacy expectations of one’s abilities to complete a task influence initiation and persistence of behavior. The stronger an individual’s self-efficacy the more likely they are to attempt to cope with aversive experiences (Bandura, 1977). Therefore, students can learn behaviors necessary to achieve a doctorate degree but if they don’t believe they can do these behaviors they are less likely to use what they have learned to be successful.

The impact of the four sources of information on self-efficacy is affected by cognitive appraisals. The introduction of the appraisal process means that self-efficacy is not always easily generalizable across experiences and existing efficacy expectations that have been working are not easily extinguished. Appraisals of successful performance can be weakened by the discrimination process across conditions with various safeguards, attributions of personal achievement to the environment, and success experiences achieved through high effort. Success experiences achieved with conditions with high safety, lots of identifiable environmental aids, high effort, or through vicarious/ symbolic experience may not create change in one’s sense of efficacy. Objectively mistaken discriminations hinder changes in self-efficacy and make people less likely to attempt feared activities and be easily dissuaded by negative experiences (Bandura, 1977).
Bandura’s research (1977) showed that lasting changes in self-efficacy are best supported when there is powerful induction to develop capabilities, then removal of aids to verify efficacy, then self-directed mastery to strengthen and generalize efficacy. Experiencing negative encounters among many successful encounters may develop discriminative avoidance of realistic threats and is unlikely to change efficacy. However, if people do not experience feared or negative encounters with their success, efficacy is weaker, more susceptible to change, and negative attributions may generalize inappropriately (Bandura, 1977).

**Self-Efficacy and Doctoral Students**

Self-efficacy has been described as a domain-specific perception of ability within a specific context and not a stable personality trait. Therefore, it is possible for a doctoral student to have high self-efficacy doing coursework but not be efficacious about understanding the statistical models necessary to write their dissertation. This would suggest that measures should be domain-specific as well, a concept Bandura consistently argued for (Gallagher, 2012). Much of the self-efficacy research done with doctoral students has been in the domain of research self-efficacy, often including social support as a factor, particularly the supervisory working relationship (Lambie & Vaccaro, 2011; Overall et al., 2011).

Chen, Gully, and Eden (2001) cite that many researchers have limited their study of self-efficacy to the magnitude and strength dimensions of the construct applied to a specific domain or task. Researchers have also begun to consider self-efficacy as a general trait-like construct that is one’s belief in their overall ability across a wide variety of situations and contexts. The difference in these two ways of viewing self-efficacy is the scope of the domain as specific or general. Both ways of viewing self-efficacy share the previously discussed four sources of self-efficacy information with previous experience being the most powerful source. An important
consideration in research is specificity matching when studying domain-specific self-efficacy and intentional use of generalized view when the task is not specific and standardized (Chen et al., 2001). While research efficacy has been the most studied specific task for doctoral students (Lambie & Vaccaro, 2011; Overall et al., 2011), several additional tasks vary based on program context (Sorokosh, 2004) and program phase (Gardner, 2009) and thus specificity matching could be difficult making results illusive.

Studies on factors related to research self-efficacy could be considered important in this study as the dissertation is a required capstone for many programs. Research efficacy was defined as the degree to which a student believes they can complete research tasks, including efficacy in data collection, data analysis, writing, and research integration (Lambie & Vaccaro, 2011; Overall et al., 2011). Research has suggested that individual factors may play a role in student’s productivity and research attitudes (Hollingsworth & Fassinger, 2002).

In a study by Love, Bahner, Jones, and Nilsson (2007), they looked at if early research experiences, positive research experiences, and level of research experience affected counseling psychology doctoral students (predissertation) level of research self-efficacy. They found that research interest was a significant predictor of self-efficacy accounting for 31 percent of the variance in research self-efficacy. Beyond that individual and team research experience together accounted for another 7 percent of the variance. Individual research experience alone was not significant. They also found that positive individual and team research experiences were significantly correlated with self-efficacy and that team experiences were a predictor of self-efficacy. This may be because team experiences may be more likely to provide opportunities for all 4 sources of self-efficacy information. The range of the number of research experiences was from 0-14 with a mean of 3 and a standard deviation of 2.01. There was no
significant difference in experience level between those above or below the mean. Just over one-third of the variance in self-efficacy was explained by the variables of research interest and experience in this study. The study did not identify other variables that may relate to the two-thirds of variance unaccounted for.

One additional factor found to be important was the research training environment. Qualities of the research training environment have been shown to be a way to support program differentiation (Hollingsworth & Fassinger, 2002). Research has shown a positive relationship between the research training environment, students' research self-efficacy, and students' research productivity (Brown et al., 1996; Hollingsworth & Fassinger, 2002). Greater research self-efficacy, research interest, and productivity have been found to be associated with positive appraisals of students' training environment (Hollingsworth & Fassinger, 2002). When the self-efficacy variable is removed from the equation the relationship between student’s perception of the research training environment and productivity was reduced which shows the relative importance of this construct in the overall model (Brown et al., 1996).

Another factor found to affect the relationship of these variables was gender. In a sample of 219 Counseling Psychology doctoral students across 12 APA accredited institutions, men showed a stronger relationship between self-efficacy and productivity while women had stronger relationships between their perception of the research training environment and research self-efficacy. The mediation effect of self-efficacy was stronger for men and the effect of their perception of the research training environment on productivity is indirect but almost fully mediated by self-efficacy. For women, there was an indirect and direct relationship between their perception of the research training environment on productivity. This relationship was indirectly,
and partially mediated by self-efficacy, and the direct effect is reduced in contrast with men (Brown et al., 1996).

An additional variable studied widely as affecting the self-efficacy of students is the supervisory relationship or alliance. Some researchers have suggested that it should be part of the research training environment model (Hill, 1997; Mallinckrodt, 1997) while others have argued that it is related to self-efficacy but separate from the environment (Hollingsworth & Fassinger, 2002; Royalty & Reising, 1986). Caldwell, Wusik, He, Yager, and Atzinger (2018) did an exploratory study of second-year genetic counseling students and found that students’ perception of the supervisory working alliance was significantly related to task-oriented self-efficacy. They found that in this phase of a student’s program the number of supervisors was an important variable. All factors on the self-efficacy scale were found to be significantly correlated with the overall supervisory working alliance score and each of the subscales for students with only one current supervisor as opposed to multiple supervisors. This suggests that students working alliance with a primary supervisor is related to the way students perceive their ability to perform clinical competencies and that the working alliance is not impacted by multiple supervisors at one time.

Overall et al. (2011) found research self-efficacy to be the greatest when supervisors balanced direct support and student autonomy through encouraging students to share their ideas and providing opportunities for them to make decisions. Students reported lower levels of research self-efficacy when supervisors provided high levels of personal support but low levels of autonomy support. As students reported being in their programs longer they reported gaining less support and satisfaction decreasing. Students in professional programs as opposed to Ph.D. programs reported lower efficacy on the research tasks of data analysis and writing. Gender and
age were not found to be associated with supervisor support, self-efficacy, or satisfaction. The patterns discovered in this study suggested the most effective supervision included regular meetings to provide task-oriented support while also encouraging students to share their opinions.

The findings of autonomy were supported by earlier research showing that greater autonomy supports persistence and academic success through cultivating efficacy and competence (Black & Deci, 2000). Findings of supervision frequency were also reported in an earlier study showing that graduating students were more likely to report regular meetings with less delay in feedback (Heath, 2002), and students who did not complete degrees reported infrequent and random meetings with a lack of guidance and poor relationships (Frischer & Larsson, 2000).

**Program Characteristics**

Studies have begun to examine the impact of doctoral program departmental culture and characteristics on student attrition (Bair & Haworth, 1999; Golde, 2005; Lovitts, 2002; Nerad & Miller, 1996; Weidman et al., 2001). Golde (2005) asserts that these program factors not only affect non-completers but those who persist as well. Lovitt's (2002) study surveyed 511 graduates and 311 non-completers and observed departmental characteristics via site visits and found significant variability across universities, disciplines, and departments. Measures of integration showed that a department’s integration score was negatively and significantly correlated with attrition rates indicating that as departments provide more opportunities, particularly for academic integration attrition rates lower.

Several departmental characteristics have been found to be related to attrition such as program characteristics contributing to climate, peer support opportunities, and engagement.
Faculty are major contributors to students’ experience of the departmental culture, academic environment, and socialization into the field which has also been found to influence attrition (Golde, 2005; Lovitts, 2002; Tinto, 1993). In particular, involvement with faculty has been found to influence intention to persist. Faculty advising, as well as, academic and social support, when provided at each phase of doctoral education, have been found to be significantly related to higher completion rates for students when compared with students who are offered limited advising and few academic and social activities (Nerad & Cerny, 1993).

In a study of doctoral students and faculty across doctoral programs at a research-intensive university, students reported departmental issues of bad advising, lack of financial support, faculty attrition, and departmental politics as the second-highest reason for attrition (Gardner, 2009). A cross-case analysis from interviews of 58 students across 4 universities who did not complete their degree, found six themes that contributed to their attrition behaviors which included a mismatch in research practices, lack of fit regarding departmental expectations, advisor and student mismatch, incompatible career goals, perception of the job market and availability of tenure track faculty positions is poor, and isolation of the student from the department (Golde, 2005).

While generally research shows that program characteristics and quality affect graduate student retention and intention to persist, the variability in characteristics and relationship strength may come from a lack of consistency in the measure for quality (Little & Garcia, 2009). Sorokosh’s (2004) study assessed program factors associated in the literature with retention and attrition. She developed a measure to assess students’ perceptions of these structural, cultural, and academic program characteristics with an outcome variable of intention to persist (Sorokosh,
She found a significant correlation between intent to persist and the factors of faculty-student relationships, integration, climate, peer-student relationships, curriculum quality, advisement, instruction quality, and instruction orientation. The academic and interpersonal environment was also found to be correlated with each other and with intention to persist. Students experiencing greater levels of integration and cohesion with faculty and peers in the academic and social environment were found to have higher levels of intention to persist (Sorokosh, 2004).

**Program Phase**

As students progress toward degree completion, the experience is neither continuous nor unchanging and research has separated the experience into phases (Lovitts, 2002). There are similarities across studies for how the doctoral process can be separated into phases. Each phase has separately identifiable characteristics, challenges, and attrition risks (Gardner, 2009; Lovitts, 2002; Tinto, 1993). Several researchers agree on a 3-phase model with the transitions being entry and adjustment in the first year, development of competence for years 2 through the completion of all coursework and comprehensive exam requirements, and finally completing the dissertation (Gardner, 2009; Lovitts, 2002; Tinto, 1993).

**Doctoral Student Development Model**

Gardner (2009) proposed the Doctoral Student Development Model which proposes three phases of challenges and the supports for each phase. This model is fluid in nature with overlap between phases and it addresses this experience from both a programmatic and developmental perspective. Gardner (2009) developed this model from a compilation of several studies and interviews with 177 doctoral students in various phases of development across multiple United States institutions. Interviewed students were in the disciplines of Counseling Psychology,
Teaching and Learning, Educational Psychology, Higher Education, Chemistry, History, Communications, English, Oceanography, Engineering, Mathematics, and Forestry. From these studies, she posited the separation of the phases of doctoral education along three major transitions.

Phase one of Gardner’s model includes the time leading up to admission until when coursework begins through the first year of the program (Gardner, 2009). This phase affects students’ choice of program discipline, where they attend, and if they pursue a Ph.D. During this stage, the student develops an understanding of doctoral experience from several sources including the master’s degree experience, department websites, peers, and media (Gardner, 2009). Gardner (2009) cites that about 30 to 40 percent of attrition occurs in this phase. Contrary to these findings some researchers have found the rates of attrition to be similar across the years of a program (Bowen & Rudenstine, 1992; Golde, 1998).

Challenges in phase one include learning about the explicit and implicit expectations of faculty for coursework, workload, and balance. Gardner (2009) cites a large part of attrition in the first year as being due to the ambiguous nature of doctoral work expectations conveyed during students’ initial experiences like orientation (Gardner, 2009). In addition, changes in students’ view of themselves in relation to faculty and as knowledge creators and disseminators as opposed to knowledge consumers are also a challenge. Supports to success in this phase include comprehensive orientation in which faculty expectations are shared and the initial relationships are formed with faculty and peers (Gardner, 2009).

Phase two includes time doing coursework, as well as, social and academic integration as students progress towards candidacy (Gardner, 2009). This is structured and familiar to students as they engage as dependent participant learners (West et al., 2011). Challenges in this phase
include demonstrating competency in coursework and examination processes while making the transition from being a knowledge consumer to a knowledge producer. Supports to success during this stage are the forming of deeper relationships with peers and faculty (Gardner, 2009).

Candidacy status is the third phase and takes place after students have passed their comprehensive exams. This phase encompasses an unfamiliar unstructured process (West et al., 2011) that many students are unprepared for (Gardner, 2009; West et al., 2011). This stage may be marked by social isolation as students become independent and isolated learners (West et al., 2011). Challenges are intensified in this stage as the supports students had in the previous two stages often dissipate while focusing on dissertation, job search, and transitioning to the professional world (Gardner, 2009; West et al., 2011). There is a decrease or ceasing of contact with peers and intellectual faculty interactions (Sigafus, 1998; West et al., 2011).

During this phase writing groups and the student-advisor relationship have been identified as important factors impacting degree completion (de Valero, 2001; Gardner, 2009; Lovitts & Nelson, 2000; Tenenbaum et al., 2001; West et al., 2011). Student advisor relationships characterized by high advisor involvement promote student success (de Valero, 2001; Gardner, 2009). Students benefit from developing social networks through programs aimed at facilitating peer relationships and strong peer relationships have been found to promote resilience. Accessing programs such as dissertation writing workshops that bring several students and faculty together have also been shown to support students’ navigation of the dissertation process (West et al., 2011).

**Student Identity Characteristics/Impact of Identity**

As students work towards degree completion, they are not void of their existing identity characteristics. In fact, the doctoral experience may affect identity development through
coursework and research, as well as psychosocial development and interpersonal maturity from peer and faculty relationships (Gardner, 2009). While many studies include identity characteristics in their models some general trends emerge particularly for age, race, gender, and relationship status. Institutional demographic make-up and supportive programming have been shown to affect how these factors influence the variables of attrition, intention to persist, and stress. Critical masses of students with similar identities seem to decrease attrition rates thus calling graduate programs to be attentive to the needs of their student population with an effort to recruit and retain groups of historically marginalized students (Lott et al., 2009).

**Race.** Student body make up across programs and regions of the country is disproportionate which alters attrition rates and variance explained by contributing factors. This affects the generalizability of statements about race and attrition across the country. Several general themes have emerged from studies across institutions considering race as a factor. Students from underrepresented racial populations have generally been shown to have higher rates of attrition (Council of Graduate Schools, 2004; Nerad & Miller, 1996) however this has been varied based on specialized programs and baseline representation within a program (Lott et al., 2009). Some research suggests that students of color do not receive the same amount of support as do white students (McCoy & Winkle-Wagner, 2015), which may contribute to a higher attrition rate in some places. Research is showing a general lack of representation of students of color in STEM (Lott et al., 2009) and humanities fields (McCoy & Winkle-Wagner, 2015). A disproportionate amount of conferred degrees in the STEM field were awarded to non-US citizens at a percentage of 65.6 percent (Lott et al., 2009). International students are demonstrating higher completion rates (Council of Graduate Schools, 2004) than their domestic counterparts.
**Gender and sexual orientation.** Research on the effects of gender on attrition and persistence provided mixed results. Bair and Haworth’s (1999) meta-analysis found there was no significant effect of gender on retention across 20 studies. Several other studies found the risk of non-completion for females (relative to males) to be higher (Bair & Haworth, 1999; Council of Graduate Schools, 2004; Nerad & Miller 1996) and that it differs with the length of time in the program (Lott et al., 2009). Interestingly, women were found to enter graduate programs with substantially higher GPAs than men did.

While the above research review indicates the importance of gender to this topic, sexual orientation is connected to a wider set of sexual minority issues involving diversity of gender and sexuality. There is an appeal to collapsing sexual minority identities into a unified category, however, this also increases the risk of substantive differences across groups continuing to be invisible and disregarding group-specific concerns (Moradi et al., 2009). Sexuality research often explores sexual minority experiences through both heteronormative and mononormative assumptions by grouping the population into a larger LGBT category of gender nonconformity to compare this to the heterosexual experience. This grouping can be problematic. This conflates sexual orientation with gender identity which can contribute to the invisibility of individuals within this poorly defined group (Galupo, Ramirez, & Pulice-Farrow, 2017). Sexual identity labeling has traditionally required an individual to consider their gender identity in relation to the label of individuals they are attracted to. Researchers have found that transgender individuals have more difficulty with this labeling system as they are more likely to view their identity as complex, related to a binary system not meant to describe them, and negating of potential identity fluidity (Galupo et al., 2018).
Defining a sexual minority population presents dissonance between the desire to be inclusive and research consequences. A major difficulty in addressing this dissonance has been the lack of consensus among the labels and language within the constructs of sex, gender, gender expression, gender identity, transgender, gender variant, sexuality, sexual orientation, sexual identity, and sexual orientation identity. Additionally, the constructs overlap and are interconnected, therefore they are not easily placed into binary categories (Moradi et al., 2009). An example of this supported by genetic testing is that about 1 in 2,000 children are born intersex which is a mix of male and female anatomy characteristics (Blackless et al., 2000). Further complicating this issue are the tensions between essentialism and social constructivist views of sexual orientation, the conflation of gender with sexual orientation, and the impact of research on public policy that ultimately affects people’s lives (Moradi et al., 2009).

This conflict lends itself to methodological issues in research design that can result in measurement error. The most common of these errors is the lack of clarity of the concept being measured. This clarity can be elusive due to measuring the continuum of both sexual and gender identity as nominal categories (Federal Interagency Working Group on Improving Measurement of Sexual Orientation and Gender Identity in Federal Surveys, 2016b). Researchers must contend with defining label language and experience of identity in a static way for conceptual clarity. This includes: balancing the specificity of the variable with the desired level of sexual minority specific versus global outcomes, matching the level of gender and sexual variable specificity to the research question, individual participant preference to disclose their identity and/or current commitment to any one identity, and issues of representative measurement often leading to individual researchers adapting existing scales (Moradi et al., 2009). How the data is coded is also important as coding a sample as heterosexual or non-heterosexual will focus analysis on
sexual minority versus non-minority differences however it will not illuminate the nuances within both these larger categories (Parent et al., 2013). An example of the difficulty with labeling can be found in a study of 172 participants who identified within the plurisexual spectrum (Galupo et al., 2017). This study found four major themes; (1) not being 100 percent sure about how or if they identify as a single label; (2) distinctions of attraction within each label; (3) explicit use of binary or non-binary language; and (4) identity transcendence/fluidity. An additional minor theme of confusion or sexual identity questioning was also present (Galupo et al., 2017).

Additionally, the face validity of identity questions changes based on participants sexual and gender identity. This was demonstrated in a study of the face validity of three sexual orientation scales and one gender scale by sexual minority adults. The gender inclusivity scale is the only scale of those studied that does not subscribe to binary gender and sexuality which may explain why it was the only scale in which the validity ratings did not differ across gender identities. Researchers found differences in perception of accurate representation of their identity related to the participants' monosexual vs plurisexual identity, as well as, cisgender vs. transgender identity. Monosexual participants were more likely to rate all four scales as a more valid representation of their sexuality and gender. All participants rated the gender inclusivity scale as accurately reflecting their identity however, monosexual individuals rated the scale more favorably than plurisexual individuals. Participants with gender identities that were non-binary rated all scales as a less valid representation of their identity. Transgender participants rated all scales as less valid measures of their sexual orientation than cisgender participants (Galupo et al., 2018), which aligns with qualitative studies conducted by Galupo et al. (2017) and Galupo et al. (2014).
**Relationship status.** The effect of relationship status has also varied across studies. Several studies found no significant relationship between relationship status and attrition (Bair & Haworth, 1999) while others asserted that married students have a higher rate of completion among the Ph.D. student population (Lott et al., 2008; Lovotts, 2001; Price, 2006). Marriage has been found to be related to persistence but the effects of that persistence on degree completion have varied (Sorokosh, 2004). Research does support that negative interactions with a spouse, such as undermining, have a greater effect on wellbeing and depressive symptoms than positive interactions. Spousal relationships, when compared to other relationships, may exacerbate the negative and positive effects of that relationship on other variables (Cranford, 2004) thus how a person perceives the support from these relationships is important to consider.

**Age.** The age of a student has also been shown to affect the likelihood of drop-out. Lott et al. (2009) showed an inverse relationship between age and the likelihood of dropping out, with older students having lower odds of attrition regardless of the year in the program. Students under the age of 25 by comparison to students age 25 to 29 were 31 percent more likely to drop out. Students aged 30 to 34 were 15% less likely to drop out in any time period relative to 25 to 29 year olds and the 35 to 44-year-old students were 32 percent less likely to drop out in any time period. This has been consistent with other research that has found that older students complete the doctorate at higher rates than younger students (Baker, 1998; Nerad & Miller, 1996).

**Graduate Programs of Interest**

The programs chosen for this study were Counseling Psychology, Counselor Education, and Higher Education Leadership/Administration/Student Affairs. Counseling psychology is a practice area of a larger professional psychology designation called Health Service Psychology.
Health Service Psychology is defined as “the integration of psychological science and practice in order to facilitate human development and functioning” (American Psychological Association, Commission on Accreditation, 2015). The Society of Counseling Psychology (Division 17) was created in 1946 and by 1951 the field emerged as a separate specialty with a job title that began to be used (Leong, 2008). Counseling Psychology was first recognized as a specialty by the APA in 1946 and was reaffirmed in 1998 (Gelso & Fretz, 2001). Programs began to be accredited under this body in 1952 (Blustein, Goodyear, Perry, & Cypers, 2005). Counseling Psychology focuses on culturally sensitive practices (Society of Counseling Psychology, Division 17, n.d.) to support the individual and relational functioning across multiple domains throughout the lifespan (APA, n.d.). Counselor Education doctoral programs (CACREP, 2016) are designed to prepare students to be counselor educators, supervisors, researchers, and practitioners in academic and clinical settings. The 2016 CACREP standards support a unified profession and educational quality through delineated accreditation standards, however, they do not direct the way programs meet those standards. The Doctoral Standards for Counselor Education and Supervision include the standards for the learning environment, professional identity, and doctoral level practicum and internship requirements (CACREP, 2016). Master’s level counselor educators can be licensed as Licensed Professional Counselors. Students seeking a Ph.D. in Counselor Education often intend to specialize in training master’s level students in the academic environment (Leong, 2008).

Higher Education Leadership/Administration/Student Affairs emerged from the development of advising/counseling positions and the rapid increase of administrative and management functions on college campuses during the late 19th to early 20th century. The current trends influencing this area are developmental theory, a re-concentration on the learning
experiences of students, and the exploration of the role and enhancement of student engagement. Students enrolled in these programs are preparing for advising, counseling, management, and administrative functions at universities outside the classroom (Hevel, 2016; Love, n.d.)

Programs of interest were selected for several reasons including a wish to study a range of students in programs that are commonly found at the doctoral level in Colleges of Education or Arts and Sciences with a focus on personal or administrative human development (Figueroa-Garcia, Goodwin, Skourtes, & Holliday, 1998). Additionally, a major reason for the choice of these programs was researcher interest in the career paths that often come out of these degree programs. Attrition was also a consideration. Finding program and discipline-specific attrition rates is often challenging or not possible due to many institutions not publishing this data for public consumption (Monsour & Corman, 1991) and federal privacy laws (Middleton, Mason, Stilwell, & Parker, 1998). The Council of Graduate schools (2008) has shown humanities and social science to have some of the highest attrition rates, and the three program areas studied appear to be aligned with this general area. While specific attrition rates were not located for Counselor education doctoral programs, Counselor Education is closely aligned social science discipline (Burkholder, 2012). Also, Higher Education Leadership, Administration, and Student Affairs may be considered to be aligned with the social science discipline.

**Conclusion**

Graduate student attrition at the doctoral level has been found to be somewhere between 40 and 70 percent across disciplines and on average only 50 percent of students persist through to complete their programs (Gardner, 2009; Lovitts, 2002; Nettles & Millett, 2006). The rate of attrition for underrepresented groups is even higher (Gardner, 2008; Council of Graduate Schools, 2004). This is a problem that has great costs to the students, the institutions, society,
and the job market (Lovitts, 2002). Although not all researchers have found the same level of significance for the factors that contribute to this problem, several factors have been shown to be important, and in general, the idea seems to be supported that both personal and university or program factors influence student’s ability to complete their programs (Ali & Kohun, 2006; Lovitts, 2002).

Several studies have found the social sciences and humanities to have higher attrition rates (Bair & Haworth, 1999; Golde, 2005). Research on doctoral programs has found some specific characteristics regarding attrition and variables affecting student success. Variables of interest from research have included themes of faculty, advisor and peer relationships, dissertation phase or induction year difficulties, socialization across program phase, stress, self-efficacy, and program culture and characteristics. Variables have been found to affect students reported needs, attrition, intention to persist, and resilience at various levels and in different combinations with each other across study methodology, sample, and identity focus (Cushway, 1992; El-Ghoroury et al., 2012; Kaufman & Pimpinelli, 2004; Kennedy, Terrell, & Lohle, 2015; Myers et al., 2012; Protor & Truscott, 2012; Riise et al., 2011; Townsend et al., 2010).

Attrition rates have been shown to differ across the phases of progress to degree (Ali & Kohun, 2006; Gardner, 2009; Lott et al., 2009; Lovitts, 2002). Each phase of doctoral education has been found to have separate characteristics, challenges, and attrition risks (Gardner, 2009; Lovitts, 2002; Tinto, 1993). Several researchers agree on a 3-phase model with the transitions ending each phase being: (a) entry and adjustment in the first year; (b) development of competence for years 2 through the completion of all coursework and comprehensive exam requirements; (c) dissertation (Gardner, 2009; Lovitts, 2002; Tinto, 1993). The relationship of program phase to social support (Gardner, 2009; West et al., 2011) and the program
culture/context of the student-advisor relationship (de Valero, 2001; Gardner, 2009; Lovitts & Nelson, 2000; Tenenbaum et al., 2001; West et al., 2011) have been found to differ between the phases.

Attrition rates have also been found to differ across identity characteristics in different ways depending on the characteristic. Relationship status, gender, and sexual orientation have reported varied results in their relationship to attrition. The results on race across studies were aligned and showed results such as students from underrepresented racial populations have generally been shown to have higher rates of attrition (Council of Graduate Schools, 2004; Nerad & Miller, 1996) however this has been varied based on specialized programs and baseline representation within a program (Lott et al., 2009). Some research suggests that students of color do not receive the same amount of support as do white students (McCoy & Winkle-Wagner, 2015), which may contribute to a higher attrition rate in some places.

Mediating the problem of attrition several researchers have cited social support (Ali & Kohun, 2007; Thoits et al., 1986) which has also been found to be a protective factor for resilience (Riise, et al., 2011; Wilks & Spivey, 2010). Social support has been found to be a buffer (Thoits, 2010) against stress and the perception of the availability of social support often reduces the negative impact of stress (Lepore, 2012). Studies on graduate school students have shown difficult advisor relationships as being related to increases in stress (El-Ghoroury et al., 2012) and peer relationships have positive effects on the rate of time to degree and program completion (de Valero, 2001; Lovitts & Nelson, 2000; Nerad & Cerny, 1993). Additionally, students linked to support groups have been found to be less likely than students in isolation to experience academic and professional difficulty, emotional and physical distress, and have a higher likelihood of dropping out (Goplerud, 1980). Isolation is a common challenge related to
the final phase of graduate programming that has been found to increase the struggle to complete the dissertation phase (Ali & Kohun, 2007; Thoits et al., 1986). The importance of creating departmental climates that are supportive and form cooperative opportunities for institutional and peer support has been emphasized by existing research on social support at the graduate level (West et al., 2011). Several researchers have also called upon graduate programs to view social isolation as an institutional or administrative matter, not an individual issue for the student (Ali & Kohun, 2007; Lovitts, 2002; Thoits et al., 1986).

Targeted programming toward providing social opportunities for students more likely to feel marginalized may be of particular importance during this time of social change movements challenging systemic oppression. Rates of attrition have been found to vary across several identity characteristics (Lott et al., 2009) and program disciplines which further supports the idea that both personal factors and university systems influence student’s ability to complete their programs (Ali & Kohun, 2006; Lovitts, 2002). Studies have begun to examine the impact of doctoral program culture/context on student attrition (Bair & Haworth, 1999; Golde, 2005: Lovitts, 2002; Nerad & Miller, 1996; Weidman et al., 2001). Golde (2005) asserts that these program factors not only affect non-completers but those who persist as well. Several departmental characteristics have been found to be related to attrition such as program characteristics contributing to climate, peer support opportunities, and engagement. (Lovitts, 1996; Lovitts & Nelson 2000). Faculty are major contributors to students’ experience of the departmental culture, academic environment, and socialization into the field which has also been found to influence attrition (Golde, 2005; Lovitts, 2002; Tinto, 1993).

Gardner (2008) describes graduate students’ intention to persist in direct opposition to attrition. Research indicates there are a number of factors that can contribute to persistence in
graduate students (Cohoon et al., 2009; Terrell, Snyder, Dringus, & Maddrey, 2012). Persistence was found to be challenged by a general feeling of differentness, negative experiences, and structural barriers to success and identity (Cohoon, et al., 2009; Gardner, 2008; Proctor & Truscott, 2012). Specifically, the combination of race and gender has been found to have a significant impact on a student’s experience of academic and social integration into their programs and institutions (Proctor & Truscott, 2012). This integration is important because the student-to-program match of academic and social components has been shown to affect students’ decision to persist in a sample of Counselor Education doctoral students (Hoskins & Goldberg, 2005). A sample of African American doctoral students attending an Ivy League institution reported feeling like outsiders, complained of mistreatment in their social interactions with faculty, and a lack of closeness with white peers (Gasman et al., 2008). Students in Johnson-Bailey’s (2004) study found that supportive mentoring, respect from faculty, presence of networking by Black peers, and availability of funding affected Black students’ likelihood to persist.

Resilience has been shown to be connected to academic success (Allan et al., 2014) and to have a negative relationship with stress (Bruwer, et al., 2008) or the inability to manage stress (Engel, 2004; Grafton et al., 2010; Hamilton et al., 2006). Students encounter a variety of stressors during their time in the doctoral program such as heavy course demands, anxiety-provoking expectations, continued academic evaluation (Stratton et al., 2007), clinical training, employment, relationships, and balancing responsibilities (El-Ghoroury et al., 2012; Myers et al., 2012). The perception of stress was found to be significantly different across identity characteristics of relationship status, age, and cost of living to income need ratio (Myers et al., 2012). Race had an overall large effect size on stress and coping (El-Ghoroury et al., 2012) in
samples of graduate students. Many researchers agree that resilience facilitates a positive stress response that is improved by external resources (Masten, 2001; Grafton et al., 2010; Richardson, 2002).

Another student characteristic affecting resilience and intention to persist could be self-efficacy as Bandura (1997) asserted absence of efficacious beliefs provides little incentive to persist, nor does it promote resilience in the face of challenges. Self-efficacy beliefs have been found to be a characteristic that supports people in persisting towards their goals rather than avoiding or quitting when faced with challenges (Gallagher, 2012). Self-efficacy has been described as a specific perception of ability within a specific context (Gallagher, 2012) therefore existing research on doctoral research self-efficacy (Lambie & Vaccaro, 2011; Overall et al., 2011) does not offer generalizable insight into the two phases before the dissertation phase. Research showed that self-efficacy’s relationship to other variables is impacted by gender (Brown et al., 1996) and the student’s perception of the supervisory working alliance (Caldwell et al., 2018). One study of graduate students found positive appraisals of students' training environment to be associated with greater research self-efficacy, research interest, and productivity (Hollingsworth & Fassinger, 2002) which might be evidence of the relationship between the personal characteristic of self-efficacy and program culture/context.

Several studies have shown that faculty tend to believe that student attrition is due to student characteristics (Gardner, 2008; Gilmore et al., 2016; Lovitts, 2002). Operating from the lens of student characteristics only may leave out large amounts of variance explained by factors that graduate programs could use to update graduate student programming and systems to impact the student experience and attrition. Studies examining the impact of doctoral program departmental culture/context on student attrition (Bair & Haworth, 1999; Golde, 2005; Lovitts,
2002; Nerad & Miller, 1996; Weidman et al., 2001) have indicated that as departments provide more opportunities, particularly for academic integration attrition rates lower.

A general limitation in research has been inconsistent operationalization or definition of the variables of resilience and program phase. Another general limitation in research has been identity-based studies of resilience that do not represent the diversity within graduate programs and the general lack of graduate student research. Additional research with both diversity in the sample and designed specifically to review the impact of identity characteristics interacting with a student’s experience of stress, social support, and the doctoral program culture/context on resilience and intention to persist is needed. While the challenges unique to graduate students throughout the phases of their program and doctoral program context and culture have been studied, additional research is needed. Additionally, there is little research on resilience for graduate students, and studies that have been done have focused on medical students or international student adjustment.

The current study is intended to be a contribution to the fourth wave of research and seeks to understand how doctoral programs may help shape students’ development of resilience and intention to persist. Additionally, it is novel as it seeks to understand how perceived stress, self-efficacy, social support, and doctoral program culture/context may relate to students’ resilience and intention to persist. Also, the study explores if the various phases of doctoral education for students and various identity characteristics may also relate. Through a better understanding of factors that may help with resilience and intention to persist the hope is that programs would be able to develop structures that support retention and success. To date no study has focused on studying Ph.D. students’ level of resilience and intent to persist across multiple phases of the program; and how these may relate to student identity, stress, self-
efficacy, social support, and students’ perception and experience of doctoral program culture/context. While this particular combination has not been studied these concepts have at times been found to have, individually and in combination with other factors, significant relationships with graduate students’ success, stress, attrition, and experience. Additional research on the factors of characteristics of graduate student programs, identity characteristics, stress, social support, self-efficacy, and their possible relationship to resilience and intention to persist may be helpful in understanding doctoral students’ resilience and persistence in graduate study.
CHAPTER III
METHODOLOGY

Chapter III presents the quantitative methodology used to address the research questions detailed in Chapter I. This chapter is divided into the following sections, sample, procedure, instrumentation, and data analysis. In the sampling section, there is an explanation of the sample collected, the strategy that was used for sampling, and the rationale. The procedure section includes the method that was used for data collection and the instrumentation section describes the measures used and their psychometric properties. The data analysis section discusses the procedures used to analyze the data for the results chapter that follows.

**Procedures**

**Participants**

Participants for this study (approved by the Human Subjects Institutional Review Board; see Appendix B) were a sample of two hundred and fifty-one doctoral students. Participants were recruited from Higher Education Leadership/Administration/Student Affairs programs 62.9% \((n = 158)\), Counseling Psychology 24.3% \((n = 61)\), and Counselor Education and Supervision 12.7% \((n = 32)\). Their ages ranged from 22-75 with the average age being 36.62 \((SD = 8.59)\) and they were mostly U.S. citizens or permanent residents 96.8% \((n = 243)\). Participants identified their gender as mostly women 72% \((n = 182)\), 24.7% \((n = 62)\) identified as men, and 2.8% \((n = 7)\) of people chose none of these apply. Ethnically participants identified themselves as not of Hispanic, Latin, Spanish Origin 87.6% \((n = 220)\), Mexican, Mexican American, Chicano 7.2% \((n = 18)\), Puerto Rican 1.2% \((n = 3)\), Cuban .4% \((n = 1)\) or another Hispanic Latin, or Spanish Origin 3.6% \((n = 9)\). Racially participants were mostly White 71.7% \((n = 180)\), and People of the Global Majority (PGM) 28.3% \((n=71)\) including Black, African American 12.7%
(n = 32), American Indian or Alaska Native 3.6% (n=9), mixed White and Black 2% (n = 5).
Chinese, Asian Indian, Other Asian, and Korean each made up .8% (n = 2), Filipino,
Vietnamese, Other Pacific Islander and mixed White and Filipino each made up .4% (n = 1). 2% of participants answered “None of these Apply” to the question on race. Participants identified their relationship status as married 59.8% (n = 150), single 24.3% (n = 61), partnered 11.2% (n = 28), and divorced, separated, or widowed 4.8% (n = 12). Participants mostly reported identifying their sexual orientation as straight 76.5% (n = 192), gay or lesbian 9.6% (n = 24), bisexual 8.8% (n = 22), none of these apply 4.4% (n = 11) or they chose not to answer. Most participants answered “No” to identifying as transgender 97.2% (n = 244), 1.6% (n = 4) identified as transgender, .8% reported “I do not know” and .4% (n = 1) chose not to answer. Participants were also sorted into three phases based on their answers to task completion questions and 41% (n = 103) were in phase 2 of their doctoral education, 39% (n = 98) were in phase 3, and 19.9% (n = 50) were in phase 1. Table 1 presents demographics for participant variables.

Table 1

<table>
<thead>
<tr>
<th>Frequencies and Percentages for Participant Variables</th>
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<tr>
<td><strong>Participant Variables</strong></td>
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<tr>
<td>Program</td>
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A total of 300 participants began the survey. Participant data was excluded from data analysis if they did not complete the survey, if their answers to task completion were not possible, or were not able to be interpreted into one of the three phase options operationalized for this study. Of the 300 participants whose data was collected 49 were considered unusable.

### Sampling Method

A national sample of participants was recruited through email invitation. Training Directors for APA accredited Counseling Psychology doctoral programs, Training Directors/Department Chairs for CACREP accredited Counselor Education and Supervision

<table>
<thead>
<tr>
<th>Participant Variables</th>
<th>Category</th>
<th>$f$</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Man</td>
<td>62</td>
<td>24.7</td>
</tr>
<tr>
<td></td>
<td>Woman</td>
<td>182</td>
<td>72.5</td>
</tr>
<tr>
<td></td>
<td>None of these apply</td>
<td>7</td>
<td>2.8</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>251</td>
<td>100.0</td>
</tr>
<tr>
<td>Race</td>
<td>1 White</td>
<td>180</td>
<td>71.7</td>
</tr>
<tr>
<td></td>
<td>2 Black or African American</td>
<td>32</td>
<td>12.7</td>
</tr>
<tr>
<td></td>
<td>3 American Indian or Alaska Native</td>
<td>9</td>
<td>3.6</td>
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<tr>
<td></td>
<td>4 Chinese</td>
<td>2</td>
<td>0.8</td>
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<tr>
<td></td>
<td>5 Filipino</td>
<td>1</td>
<td>0.4</td>
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<tr>
<td></td>
<td>6 Asian Indian</td>
<td>2</td>
<td>0.8</td>
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<tr>
<td></td>
<td>7 Other Asian</td>
<td>2</td>
<td>0.8</td>
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<tr>
<td></td>
<td>8 Vietnamese</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>9 Korean</td>
<td>2</td>
<td>0.8</td>
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<tr>
<td></td>
<td>14 Other Pacific Islander</td>
<td>1</td>
<td>0.4</td>
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<tr>
<td></td>
<td>15 None of these Apply</td>
<td>13</td>
<td>5.2</td>
</tr>
<tr>
<td></td>
<td>16 White and Black</td>
<td>5</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>17 White and Filipino</td>
<td>1</td>
<td>0.4</td>
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<tr>
<td></td>
<td>Total</td>
<td>251</td>
<td>100.0</td>
</tr>
<tr>
<td>Race (White and PGM)</td>
<td>White</td>
<td>180</td>
<td>71.7</td>
</tr>
<tr>
<td></td>
<td>PGM</td>
<td>71</td>
<td>28.3</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>251</td>
<td>100.0</td>
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</tbody>
</table>
doctoral programs, and Department Chairs for Higher Education Leadership/Administration/Student Affairs doctoral programs were contacted via email requesting that they forward an email invitation to their doctoral students with a link to the online survey delivered through the QualtricsXM program (Appendix C). Additional follow-up emails were sent to Training Directors/Chairs of Counseling Psychology, Counselor Education and Supervision, and Department Chairs for Higher Education Leadership/Administration/Student Affairs requesting that they please forward the invitation to participate to their students as a reminder.

The sample size need of 160 and actual power of 0.9506385 was calculated using G*Power 3.1.9.7 software. This program is commonly used in social and behavioral research to do power analysis (Faul, Erdfelder, Lang, & Buchner, 2007) specifically for correlational and regression methods (Faul et al., 2009). For the purpose of this study, it was used to determine A priori probability for a linear multiple regression: Fixed model, R² deviation from zero. Effect size was set at the medium level (f² = .15) to calculate the sample size. This decision was due to the small level (f² = .02) sample size being unobtainable for this level of study at N = 1145, and the concerns that the large effect size (f² = .35) sample would be too low of a sample size at N = 74 for the canonical analysis to be significant. Additional input to the A Priori analysis were α err prob = 0.05, power (1-β err prob) = 0.95, and number of predictors = 8.

Instrumentation

Participants were asked to complete a Background Characteristic Survey to obtain the identity, program of interest, progression of tasks status associated with the program phase, and related demographic information about the sample. They then were asked to complete a series of instruments designed to measure perceived stress, social support, doctoral program culture/
context, resiliency, intention to persist, and self-efficacy. Each instrument and the related psychometrics are detailed in the next section.

**Identity characteristics and program phase.** Identity characteristics and program phase were measured through a student background survey (see Appendix A) in which participants were asked to report age, gender, sexual orientation, race, relationship status, program progress, and program area. The selection of which identity characteristics to study was based on characteristics found to impact research results of the other predictive and criterion variables, as well as, those characteristics found to be appropriate for the population. The development of the Student Background Survey Questions used in this study was initially adapted from Little and Garcia’s (2009) work on Graduate Student Culture and Intention to Persist, then they were informed by consultation, theoretical and best practice research cited in Chapters II and III in an attempt to be culturally inclusive and responsive.

Questions on race were adapted from the United States Census Bureau’s (2019) American Community Survey and edited based on comprehensive research. Respondents were offered the option to free respond in this category. Gender and Sexual Orientation questions were developed through a review of theoretical research (Galupo et al., 2017), face validity research (Galupo et al., 2018), best practice and question prevalence research (Baker & Hughes, 2016; Federal Interagency Working Group on Improving Measurement of Sexual Orientation and Gender Identity in Federal Surveys, 2016a, b, c), qualitative response to survey questions research (Ellis et al., 2017) and sexual minority survey methodology research (Moradi, et al., 2009; Parent et al., 2013). Following an assessment of this research gender categories include: (a) Male; (b) Female; (c) Intersex; (d) None of these Apply (open response option), followed by a secondary question to allow for the addition of Transgender to their gender. Sexual orientation
allowed for the categories of (a) Gay or Lesbian; (b) Straight, this is not Gay or Lesbian; (c) Bisexual; (d) None of these Apply (open response option) (e) I don’t know; (f) Choose not to Answer. An initial analysis of racial and gender minority differentiation from the dominant group was intended to be followed by a more specific analysis as provided the sample diversity for this analysis. Regarding marital status, Little and Garcia’s (2009) question regarding marital status was adapted to include the category of partnered in an effort to increase inclusivity for those who are in a relationship but not married.

Phase in the program was assessed using an adapted version of Gardner’s (2009) model (see Figure 1). Gardner (2009) proposed three phases of doctoral education (a) Induction year, (b) Integration (coursework years typically occurring in years 2 through 5), and (c) Candidacy (time post comprehensive exams). In the current study, additional items designed to measure status with comprehensive exams were included in the coursework phase and internship was included in the dissertation phase as part of the ending capstone tasks that distance students from their home universities and support systems. Phase in the program was assessed through survey questions designed to understand a student’s progress as completed, in progress, or not started on the tasks associated with each phase. This may support a more detailed understanding of the nuances within each phase.

![Figure 1. Gardner’s (2009) adapted phase program.](image)
**Perceived stress.** The Perceived Stress Scale-10 (PSS-10) was used to measure each graduate student’s report of the perceived stress they have experienced in the past month. This is a 10-item self-report measure designed to assess the extent to which individuals perceive their life circumstances to be stressful (Cohen et al., 1983). It does not differentiate perceived stress from other types of stress (Cohen & Williamson, 1988) although it should be noted other instruments developed during the same time as the PSS measured stress objectively with an emphasis on specific events (Taylor et al., 2015). The original instrument which contained 14 items was created using Lazarus’s theory of stress appraisal (Cohen et al., 1983). This theory considers personal and contextual factors that influence the degree to which a person perceives a situation as stressful (Lazarus, 1966). Factors include perceiving aspects of life as uncontrollable, unpredictable, and overloading (Roberti et al., 2006). The PSS-10 is one of the most widely used measures of perceived stress across the globe. The measure was created for use in a community sample with at least a junior high school education, but the general nature of question content allows for its use in many areas of study and with several populations (Cohen & Williamson, 1988), including students experiencing stress during graduate school.

The PSS-10 was shortened from the original 14-item test through an exploratory factor analysis study that found the PSS measured a single factor with 10 of the items loading with at least .42 to that factor. Responses are on a 5-point Likert scale ranging from 0 (never) to 4 (very often), potential composite scores range from 0-40 with higher scores indicating greater perceived stress (Roberti et al., 2006). Items 4, 5, 7, and 8 are positively worded and coded in reverse with items such as “In the last month, how often have you felt confident about your ability to handle your personal problems?” The remaining six items are negatively worded with questions like “In the last month, how often have you found that you could not cope with all the
things that you had to do?” (Cohen & Williamson, 1988). All items are worded to ask for appraisal in the past month because predictive validity is expected to decrease rapidly after four to eight weeks (Cohen et al., 1983).

Internal consistency of the measure was found to be .78 with Cronbach’s alpha by Cohen and Williamson (1988) and more recently was found to be .89 (Roberti et al., 2006). Convergent validity has been demonstrated with other assessments of stress (Cohen et al., 1983; Cohen & Williamson, 1988; Roberti et al., 2006). It has also been shown to be a better predictor of stress than other life-event scales of psychological symptoms and utilization of health services. PSS scores were found to correlate highly with physical complaints and psychosomatic difficulty (Cohen et al., 1983). Those with higher PSS scores have also been found to be less likely to successfully complete smoking cessation programs, to be associated with failure among diabetics to control blood sugar and to experience greater vulnerability to stressful life events. The PSS has also been used to assess changes in perceived stress associated with life events, coping processes, and personality factors (Cohen & Williamson, 1988). Reliability has been found to be adequate (Roberti et al., 2006).

**Social support.** The Interpersonal Support Evaluation List-12 (ISEL-12) is a 12-item inventory measuring the perceived availability of social support. The measure has a 3-factor structure of tangible support relating to material aid, belonging support, which relates to the availability of people to do things with, and appraisal support, which relates to the availability of someone to talk to about problems (Cohen & Hoberman, 1983). Items are assessed on a 4-point scale ranging from 1 (definitely false) to 4 (definitely true). The total score for this measure was used in this study as the variable of interest for social support and not the factors that make up social support.
Validity was assessed in a sample of 5,313 Hispanic/Latino(x) individuals from the Hispanic Community Health Study. The total scores were found to have high internal consistency with Cronbach alpha’s all above .70. The subscales showed inadequate Cronbach alphas for Appraisal (.65), Belonging (.62) and Tangible (.57) for the full sample but when the English only sample was assessed Appraisal and Belonging had adequate internal consistency above .70. Assessment of convergent validity showed the ISEL-12 correlated positively with measures of social network, integration, and life engagement and negatively with perceived stress, anxiety, and depression. All relationships were moderate but directed as expected based on existing research (Merz, et al., 2014). Cohen (2008) showed weaker yet still significant relationships between overall social support on the ISEL-12 and anxiety, stress, and depression.

**Self-efficacy.** The New General Self-Efficacy Scale (NGSE scale) was used to measure participants general self efficacy which is defined as “individuals’ perception of their ability to perform across a variety of different situations” (Judge et al., 1998, p. 170). This 8 item unidimensional scale of general self-efficacy that was used to identify differences between participant’s tendency to perceive themselves as capable of meeting task demands. General self efficacy is a trait-like general dimension of self-efficacy related to general performance as opposed to a state-like construct related to a specific domain of performance. (Chen et al., 2001).

Items are rated on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree) (Scherbaum, Cohen-Charash, & Kern, 2006). Three studies were conducted to validate the measure by comparing it to another measure of self efficacy, the General Self Efficacy Scale (SGSE). Test-retest reliability coefficients were high and yeiled a scale that was internally consistent, and demonstrated stability over time. Two independent panels of 8 graduate students in industrial and organizational psychology and 14 undergraduate psychology majors were used
to examine content validity of the NGSE and found that its items were more consistent with the general self-efficacy construct than the items on the General Self Efficacy Scale (SGSE). The NGSE was compared to the SGSE on the following variables; the consistency with the general self-efficacy construct, reliability, dimensionality, and distinction of self-efficacy from self-esteem. The NGSE was found to measure self-efficacy distinct from self-esteem although they were highly related constructs and the measurement of general self-efficacy was more highly related to motivational constructs than self-esteem. Predictive validity tests found that the NGSE correlated positively and significantly with a specific self-efficacy scale designed to measure 10 tasks and had a stronger correlation than the SGSE. In general, the NGSE had higher predictive validity than the SGSE. Content validity of the NGSE was found to be higher than the SGSE. The NGSE was found to have high internal consistency (Chen et al., 2001).

**Resilience.** The Scale of Protective Factors-24 (SPF24), developed and validated by Ponce-Garcia, Madewell, and Kennison (2015), is a 24-item multidimensional scale measuring the hierarchic factors of social-interpersonal and cognitive-individual protective factors that determine resilience. These two variables are broken into 2 subscales each with social skills and social support loading to the social-interpersonal variable and goal efficacy and planning and prioritizing behavior loading to the cognitive-individual factor. This scale is different from several other resilience scales that represent only cognitive/individual factors of resilience (Ponce-Garcia & Madewell, 2016). Each of the subscales (social support, social skills, goal efficacy, and prioritizing/planning behavior) are assessed with 6 items each (Ponce-Garcia et al., 2015). Items are scored on a 7-point Likert scale, ranging from 1 (disagree completely) to 7 (completely agree) (Ponce-Garcia et al., 2015). This scale allows for the identification of both strengths and deficits (Ponce-Garcia & Madewell, 2016). Mean scores from the sum of each
subscale may be calculated, with mean scores below 5 on any subscale indicating a deficit in that specific protective factor (Ponce-Garcia et al., 2015). These items were drawn from the literature showing that a preference for planning and organizing, as well as, confidence, goal setting, and mastery is related to resilience (Ponce-Garcia et al., 2015).

In a comparison study of 5 commonly used resilience measures, conducted on 421 emerging adults, the SPF 24 and its subscales were found to be a good fit model and significantly positively correlated with the other measures of resilience (Ponce-Garcia & Madewell, 2016). The SPF24 scale was originally developed by investigating the factor structure of the Scale of Protective Factors-35 with a sample of 942 college student participants in 3 studies at 2 institutions. A subsample of people who have experienced violent trauma was selected to examine the diagnostic function of the SPF, by comparing scores from a well-established resilience scale to the SPF-24. Results showed that the low-resilient group scored significantly lower on all subscales of the SPF. The overall internal consistency reliability was found to be .94. The internal consistency reliabilities for the subscales were Social Support .93, Social Skills .89, Prioritizing/Planning Behavior .90, and Goal Efficacy .83. The validity was assessed by using the CD-RISC and the Resilience Scale as criterion variables and calculating the amount of variance explained by the SPF24, which was 71% and 38% respectively (Ponce-Garcia et al., 2015).

**Doctoral program culture/context, interpersonal and academic environment, intention to persist.** The DPCI was originally developed by Sorokosh (2004) as a 64-item 6-point Likert scale questionnaire to assess students' individual and program aggregate responses to structural, cultural, and academic characteristics with 64 items and an additional 6 items to measure the outcome variable of intention to persist. The instrument was created to assist
programs in studying themselves through a critical assessment of student opinions in an effort to support faculty in understanding how their actions contribute to problems students experience such as attrition. The instrument was also intended to assist administrators with accreditation by providing them with a scientific survey-based on research traditions that will assess program characteristics. The survey also allows researchers to conduct program-comparison research and a national data pool can be created through regular surveying of current students, non-completers, and graduates.

Sorokosh (2004) developed this measure by identifying important factors associated with attrition and/or retention in the literature and surveying 81 educational administration doctoral programs with these factors. She assessed both student and program administrators’ responses and used the student data from institutions with 6 or more respondents. This totaled 54 institutions with student data. Program administrators from 64 programs including the 54 with student responses were used in the statistical analysis. From this she found 12 factors with high internal consistency and 11 of the 12 factors measure program characteristics. The 12th factor was the outcome variable of intention to persist (Sorokosh, 2004). Sorokosh noted that scores from other educational administration doctoral programs could be standardized to the original sample. However, results may not be generalizable to other program disciplines.

Sorokosh (2004) drew variables of interest from the literature on doctoral student attrition/retention and intention to persist and used them to develop the instrument. The variables of interest were used to develop inventory items that fell into the categories of: (a) student-related factors, (b) discipline-specific factors, (c) and program-related factors. These factors formed an initial pool of 103 items. A principle factor extraction was performed using SPSS 10.0 to arrive at 69 final items. The data used to reduce the items was taken from 773
Doctoral student participants who entered their programs between 1993 and 2003 at 54 educational administration programs across the US. Most of the students were continuously enrolled (88%) with the largest proportions of them beginning their programs in 2002 (33.6%), slightly more than half were enrolled part-time (59.9%), and only 31% of students were in the dissertation phase. The sample was largely white (77.9%) with only 8.3% African American, 5.4% Latina/o and other underrepresented groups. The majority of participants were women (62%) and .9% did not answer this question. While 80% of the programs had cohorts only 67% of students reported they perceived themselves as cohort members (Sorokosh, 2004) which is interesting because it could potentially affect the social factor of a sense of belonging and social networking.

The sample used to develop the DPCI differed from the student profile of the population reported in the National Postsecondary Student Aid Study (NPSAS:2000) by the National Center for Education Statistics in 1999-2000. Differences included a larger percentage in the NPSAS data of part-time doctoral students, women, and African American students. Smaller percentages of students with research and teaching assistantships and students, in general, securing financial aid were found in the DPCI study than in the NPSAS sample (Sorokosh, 2004).

Doctoral Program Culture/Context is defined as the “social context” and “specific character” of a program that informs how students are treated and the way things are done in the program. Factors used to measure doctoral program culture/context on the DPCI are: (a) curriculum quality (8 items), (b) instructional orientation (4 items), (c) student activities, (d) professional activities, (e) faculty-student relationships, (f) peer-student relationships, (g) faculty as scholars and researchers, (h) instruction quality, (i) advisement, (j) psychological integration, and (k) climate. The twelfth factor measures the outcome variable of intention to persist.
(Sorokosh, 2004; Little, 2009). Also revealed were the two higher-order factors of academic environment and interpersonal environment. Academic environment consisted of the factors of climate, curriculum quality, instruction orientation, and instruction quality and correlated with intention to persist at .466. Faculty-student relationships, psychological integration, and peer-student relationships composed the higher-order factor of interpersonal environment which correlated with intention to persist at .642. These two higher-order factors correlated with each other at .584. Faculty as scholars and researchers, student activities, and professional activities did not correlate with intent to persist at a significant level (Sorokosh, 2004).

Evidence of reliability of the 12 subscales has been demonstrated with Cronbach’s alpha Reliabilities ranging from .81 to .96 (Sorokosh, 2004). Reliability of specific scales are as follows: (a) curriculum quality (.95), (b) instruction orientation (.81), (c) student activities (.88), (d) professional activities (.91), (e) faculty-student relationships (.96), (f) instruction quality (.95), (g) faculty as scholar and researchers (.93), (h) peer-student relationships (.96), (i) advisement (.86), (j) psychological integration (.95), (k) climate (.95), and (l) intention to persist (.82) (Sorokosh, 2004).

**Research Design**

This study examined how the factors of perceived stress, social support, self-efficacy, and doctoral program culture/context and how the identity characteristics of race and gender may relate to doctoral students’ resilience and intention to persist in each of the three phases of doctoral education. These relationships were studied and measured with the following instruments: (a) Student Background Survey, (b) Perceived Stress Scale (PSS10) (Cohen et al., 1983) (c) Interpersonal Support Evaluation List-12 (ISEL-12) (Cohen et al., 1985), (d) Doctoral Program Context Inventory (DPCI) (Sorokosh 2004), (e) New General Self-Efficacy Scale
(NGSE) (Chen et al., 2001), and (f) Scale of Protective Factors (SPF24) (Ponce-Garcia et al., 2015). A quantitative descriptive design correlational method was used to display the relationships among the variables (Heppner, Wampold, & Kivlighan, 2008). In the proposed study data relevant to the research questions was analyzed with hierarchical regression, canonical analysis, correlational analysis, and analysis of variance to study the research questions and hypotheses of interest. Details concerning the data analysis used to study each research question and test the null hypotheses are presented in the data analysis section of this chapter.

**Data Analysis**

Participants were recruited between March and November of 2021. Upon termination of the survey collection process no follow-up was performed. No identifying information was collected and all data was stored in an encrypted file. Descriptive statistics, correlation analyses, analysis of variance, multiple regression analyses, canonical correlational analysis, and Welch test followed by Games-Howell post-hoc tests were used to analyze the data and examine the research questions.

To test null hypothesis 1, simultaneous multiple regression analysis was performed with perceived stress, social support, self-efficacy, and doctoral program culture/context as measured by the Interpersonal and Academic Environment scales of the Doctoral Program Context Inventory (DPCI) as predictor variables and resilience as measured by the SPF 24 as the criterion variable. The significance of the overall regression model and the significance of individual beta weights were used to test null hypothesis 1.

To test null hypothesis 2, simultaneous multiple regression analysis was performed with perceived stress, social support, self-efficacy, and doctoral program culture/context as measured by the Interpersonal and Academic Environments scales of the Doctoral Program Context
Inventory (DPCI) as predictor variables, and participant’s intention to persist in doctoral study as the criterion variable. The significance of the overall regression model and the significance of individual beta weights was used to test null hypothesis 2.

To test null hypothesis 3, hierarchical multiple regression was used. The criterion variable was intention to persist among doctoral students. Perceived stress, social support, self-efficacy, and doctoral program culture/context, as measured by the Interpersonal and Academic Environment scales of the Doctoral Program Context Inventory (DPCI), were used in the first step of the model. In the second step, resilience, as measured by the SPF 24, was added. The significance of the change in $R^2$ in predicting intention to persist was used to test null hypothesis 3.

To test null hypothesis 4, a canonical correlation analysis between the 11 subscales of the DPCI (Curriculum Quality, Instructional Orientation, Student Activities, Professional Activities, Faculty-Student Relationships, Peer Student Relationships, Faculty Scholars and Researchers, Instructional Quality, Advisement, Psychological Integration, and Climate) and the four resilience subscales of the SPF24 (Social Support, Social Skills, Prioritizing/Planning Behavior, and Goal Efficacy) was conducted to test the null hypothesis that all squared canonical correlation coefficients, $R_{c}^{2}$, are equal to zero.

To test null hypothesis 5, the pattern of correlations among the variables of perceived stress, social support, self-efficacy, doctoral program culture/context, resilience, and intention to persist were studied to explore possible differences by program phase with correlations, individual ANOVAs Welch Tests and Games-Howell post-hoc tests to compare means across the three program phases.
To test the null hypothesis 6, the pattern of correlations among the variables of perceived stress, social support, self-efficacy, doctoral program culture/context, resilience, and intention to persist were studied to explore possible differences by race and gender, with correlations, individual ANOVAs, Welch Tests and Games-Howell post-hoc tests to compare means and explore possible differences.
CHAPTER IV

RESULTS

Chapter IV presents the research findings of this study. First, descriptive statistics and correlations among the variables are reported. This is followed by the results of the main statistical analysis for each research question. A 300-person sample was initially recruited to participate. Forty-three people began the survey measures that did not complete all measures and are not included in the study. An additional 5 participants were not included because their responses to the phase measure were not consistent with instructions for the measure, resulting in a final sample of 251.

Descriptive Statistics and Correlations Among the Variables

The means, standard deviations, range, and Pearson $r$ correlations were calculated for each of the scales (see Tables 2 and 3). Doctoral students’ level of perceived stress was measured using the Perceived Stress Scale (PSS-10) (Cohen et al., 1983). Total scores ranging from 0 to 13 are considered low perceived stress, scores ranging from 14-26 are moderate perceived stress, and scores ranging from 27 to 40 are considered high perceived stress (Cohen et al., 1983). The mean scores for the PSS-10 ($N = 251$) ranged from 0 to 36 with a mean of 17.58 ($SD = 6.41$), which indicated the sample’s mean perceived stress was in the moderate range.

Social Support was measured using the Interpersonal Support Evaluation List-12 (ISEL-12) on which total scores may range from 0 to 36 (Cohen et al., 1985). Social support scores ($N = 250$) in the present study ranged from 9 to 36 with a mean of 27.78 ($SD = 6.39$).

Self-efficacy was measured using the New General Self-Efficacy Scale (NGSE scale) total mean score of the 8 likert scale items ranging from 1 to 5 (Chen et al., 2001). The mean score for self-efficacy ($N = 251$) ranged from 2 to 5 with a mean 4.25 ($SD = .48$).
Doctoral program culture/ context was measured using the Doctoral Program Context Inventory (DPCI) 11 scale scores, and 2 higher-order factor scales (Sorokosh, 2004). The 11 scale scores of the DPCI were Curriculum Quality (CQ) \((N = 219)\) ranged from 14 to 48, \(M = 34.58\) \((SD = 7.33)\), Instructional Orientation (IO) \((N = 245)\) ranged from 7 to 23, \(M = 15.19\) \((SD = 3.11)\), Student Activities (SA) \((N = 209)\) ranged from 4 to 24, \(M = 12.75\) \((SD = 4.89)\), Professional Activities (PA) \((N = 249)\) ranged from 4 to 24, \(M = 15.00\) \((SD = 5.56)\), Faculty Student Relationships (FSR) \((N = 248)\) ranged from 10 to 60, \(M = 43.02\) \((SD = 10.71)\), Peer Student Relationships (PSR) \((N = 249)\) ranged from 10 to 54, \(M = 38.57\) \((SD = 10.67)\), Faculty Scholars and Researchers (Res) \((N = 247)\) ranged from 2 to 12, \(M = 9.70\) \((SD = 2.28)\), Instructional Quality (IQ) \((N = 249)\) ranged from 3 to 18, \(M = 13.30\) \((SD = 3.60)\), Advisement(A) \((N = 235)\) ranged from 5 to 30, \(M = 23.04\) \((SD = 6.66)\), Psychological Integration (PI) \((N = 248)\) ranged from 11 to 42, \(M = 32.74\) \((SD = 7.44)\), and Climate (Clmt) \((N = 249)\) ranged from 8 to 48, \(M = 35.87\) \((SD = 8.74)\). The mean score for the higher-order factor scales were Interpersonal Environment (IE) \((N = 247)\) ranged from 36 to 152, \(M = 114.28\) \((SD = 24.32)\) and Academic Environment (AE) ranged from 37 to 132, \(M = 98.86\) \((SD = 18.67)\).

Resilience was measured using the Scale of Protective Factors (SPF24) total mean score and the mean score for the subscales of Social Skills, Social Support, Planning Behavior, and Goal Efficacy (Ponce-Garcia et al., 2015). The total mean score for resilience \((N = 251)\) ranged from 3 to 7 with a mean of 5.51 \((SD = .73)\). The mean scores for the subscales of Social Skills \((N = 251)\) ranged from 2 to 7 with a mean of 5.38 \((SD = 1.16)\), Social Support \((N = 251)\) ranged from 3 to 7 with a mean of 5.17 \((SD = .99)\), Planning Behavior \((N = 251)\) ranged from 2 to 7 with a mean of 5.45 \((SD = 1.09)\), and Goal Efficacy \((N = 251)\) ranged from 4 to 7 with a mean of 5.98 \((SD = .67)\).
Intention to Persist was measured using the Doctoral Program Context Inventory (DPCI) intention to persist scale total score (Sorokosh, 2004). The total score for intention to persist ($N = 251$) ranged from 12 to 30 with a mean of 25.28 ($SD = 4.17$).

Prior to testing the hypotheses of the study, the data was examined to determine whether the data met the assumptions of linearity of relationships, homoscedasticity, and the absence of multicollinearity among the independent variables were met. First, the standardized residual partial plots were examined to detect evidence for violations to linearity and homoscedasticity. The multiple regression analysis was found to have one outlier that was included in the analysis. Second, the collinearity diagnostics and correlations matrix were examined for multicollinearity of the independent variables. The main multiple regression analyses met the assumption of the absence of multicollinearity and Variance Inflation Factors (VIF) were all less than 5. One follow-up regression analysis for research question four did not meet the multicollinearity assumption and thus one variable was dropped from the analysis. The criterion variable of Intention to Persist was negatively skewed and several transformations were performed which did not significantly improve the concerns. Therefore, the non-transformed data analysis is reported here.

Table 2

*Scale Descriptive Statistics*

<table>
<thead>
<tr>
<th></th>
<th>Perceived Stress</th>
<th>Self-Efficacy</th>
<th>Social Support</th>
<th>Academic Environment</th>
<th>Interpersonal Environment</th>
<th>Resilience</th>
<th>Intention to Persist</th>
</tr>
</thead>
<tbody>
<tr>
<td>N Valid</td>
<td>251</td>
<td>251</td>
<td>250</td>
<td>216</td>
<td>247</td>
<td>251</td>
<td>251</td>
</tr>
<tr>
<td>Missing</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>35</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mean</td>
<td>17.58</td>
<td>4.25</td>
<td>27.78</td>
<td>98.86</td>
<td>114.28</td>
<td>5.51</td>
<td>25.28</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>6.41</td>
<td>0.48</td>
<td>6.40</td>
<td>18.67</td>
<td>24.32</td>
<td>0.73</td>
<td>4.17</td>
</tr>
<tr>
<td></td>
<td>Perceived Stress</td>
<td>Social Skills</td>
<td>Social Support</td>
<td>Planning Behavior</td>
<td>Goal Efficacy</td>
<td>Resilience</td>
<td>Self-Efficacy</td>
</tr>
<tr>
<td>---------------</td>
<td>------------------</td>
<td>---------------</td>
<td>----------------</td>
<td>-------------------</td>
<td>---------------</td>
<td>------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Perceived Stress</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Skills</td>
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<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Support</td>
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<td>-0.416</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planning Behavior</td>
<td>-0.264</td>
<td>0.392</td>
<td></td>
<td></td>
<td>0.485</td>
<td>0.815</td>
<td>1</td>
</tr>
<tr>
<td>Goal Efficacy</td>
<td>-0.383</td>
<td>0.485</td>
<td>0.815</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resilience</td>
<td>-0.353</td>
<td>0.749</td>
<td>0.704</td>
<td>0.802</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>-0.357</td>
<td>0.310</td>
<td>0.272</td>
<td>0.702</td>
<td>0.555</td>
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<td></td>
</tr>
<tr>
<td>Social Support</td>
<td>-0.349</td>
<td>0.355</td>
<td>0.257</td>
<td>0.296</td>
<td>0.455</td>
<td>0.215</td>
<td>1</td>
</tr>
<tr>
<td>Curriculum Quality</td>
<td>-0.165</td>
<td>0.088</td>
<td>0.079</td>
<td>2.487</td>
<td>2.336</td>
<td>2.681</td>
<td>0.066</td>
</tr>
<tr>
<td>Instruction Orientation</td>
<td>0.026</td>
<td>-0.022</td>
<td>0.012</td>
<td>0.008</td>
<td>0.051</td>
<td>0.001</td>
<td>0.007</td>
</tr>
<tr>
<td>Professional Activities</td>
<td>-0.019</td>
<td>0.194</td>
<td>0.068</td>
<td>0.076</td>
<td>0.063</td>
<td>0.169</td>
<td>0.047</td>
</tr>
<tr>
<td>Student Activities</td>
<td>-0.088</td>
<td>0.050</td>
<td>0.271</td>
<td>0.060</td>
<td>0.064</td>
<td>0.044</td>
<td>0.096</td>
</tr>
<tr>
<td>Faculty-Student Relationships</td>
<td>-0.204</td>
<td>0.207</td>
<td>0.198</td>
<td>0.246</td>
<td>0.257</td>
<td>0.233</td>
<td>0.681</td>
</tr>
<tr>
<td>Advisement</td>
<td>-0.167</td>
<td>0.132</td>
<td>0.154</td>
<td>0.190</td>
<td>0.147</td>
<td>0.170</td>
<td>0.100</td>
</tr>
<tr>
<td>Faculty as Scholars and Researchers</td>
<td>-0.010</td>
<td>0.048</td>
<td>0.048</td>
<td>0.030</td>
<td>0.004</td>
<td>0.001</td>
<td>0.007</td>
</tr>
<tr>
<td>Peer-Student Relationships</td>
<td>-0.052</td>
<td>-0.212</td>
<td>0.205</td>
<td>0.143</td>
<td>0.248</td>
<td>0.211</td>
<td>0.139</td>
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<tr>
<td>Psychological Integration</td>
<td>-0.373</td>
<td>0.194</td>
<td>0.207</td>
<td>0.237</td>
<td>0.176</td>
<td>0.762</td>
<td>0.560</td>
</tr>
<tr>
<td>Climate</td>
<td>-0.151</td>
<td>0.070</td>
<td>0.121</td>
<td>0.192</td>
<td>0.190</td>
<td>0.180</td>
<td>0.066</td>
</tr>
<tr>
<td>Academic Environment</td>
<td>-0.177</td>
<td>0.098</td>
<td>0.122</td>
<td>0.200</td>
<td>0.184</td>
<td>0.224</td>
<td>0.071</td>
</tr>
<tr>
<td>Preparedness Environment</td>
<td>-0.169</td>
<td>0.223</td>
<td>0.149</td>
<td>0.217</td>
<td>0.224</td>
<td>0.564</td>
<td>0.217</td>
</tr>
<tr>
<td>Intention to Persist</td>
<td>-0.315</td>
<td>0.195</td>
<td>0.245</td>
<td>0.217</td>
<td>0.345</td>
<td>0.314</td>
<td>0.013</td>
</tr>
</tbody>
</table>

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

Note: Pearson r for this matrix is based on N =251 with the exception of correlations for Social support (as measured by ISEL-12), which were based on N = 250; Instruction Orientation (as measured by the DCPI) which was based on N = 248; Professional Activities (as measured by the DCPI) which was based on N = 249; Peer-Student Relationships, and Climate (as measured by the DCPI), which were based on N=247, Professional Activities (as measured by the DCPI), which is based on N=245; Faculty as Scholars and Researchers which is based on N=219, Academic Environment (as measured by the DCPI) which is based on N= 245. Curriculum Quality (as measured by the DCPI) which is based on N= 245. Academic environment (as measured by the DCPI), which was based on N=251.
Hypothesis Testing

Research Question 1: To what extent does perceived stress, social support, self-efficacy, and doctoral program culture/context, predict resilience as measured by the SPF24 among doctoral students in Counseling Psychology, Counselor Education, and Higher Education Leadership/Administration/Student Affairs?

Null Hypothesis 1: Participants perceived stress, social support, self-efficacy, and doctoral program culture/context, as measured by the Interpersonal and Academic Environment scales of the Doctoral Program Context Inventory (DPCI), will not contribute, either collectively or individually in the regression model, significant unique variance to predicting participants’ resilience as measured by the SPF24.

To consider the first research question and test the null hypothesis, simultaneous multiple regression analysis was performed with perceived stress, social support, self-efficacy, and doctoral program culture/context as measured by the Interpersonal and Academic Environment scales of the Doctoral Program Context Inventory (DPCI) as predictor variables and resilience as measured by the SPF 24 as the criterion variable. For this study the predictor variable of perceived stress was examined using the total PSS-10 score, social support was examined using the total score of the ISEL-12, self-efficacy was examined using the mean score on the NGSE, and the doctoral program culture/context was examined with the 2 higher-order factor scales of Interpersonal Environment and Academic Environment of the DPCI. All predictor variables were entered into the model simultaneously.

Prior to testing hypothesis 1, the data was examined to determine whether the data met the assumptions of linearity, homoscedasticity, and the absence of multicollinearity among the independent variables. First, the standardized residual plots were examined to detect evidence for
violations to linearity and homoscedasticity. The multiple regression analysis had one outlier which was included in the analysis. The collinearity diagnostics and correlations matrix were examined for multicollinearity of the independent variables. The multiple regression analysis met the assumption of the absence of multicollinearity with all Variance Inflation Factors (VIF) less than 5. The results of this multiple regression analysis were statistically significant $R = .644$; $R^2 = .414$, $F(5, 208) = 29.45$, $p < .001$ and indicated that the combined predictor variables of perceived stress, social support, self-efficacy, interpersonal environment, and academic environment predicted resilience. The independent variables explained 41.4% of the variance in resilience. Furthermore, an examination of beta weights showed that Self-Efficacy made the strongest unique contribution ($\beta = .45$, $p < .001$), followed by Social Support ($\beta = .24$, $p < .001$) and Interpersonal Environment ($\beta = .18$, $p = .025$). The individual contributions of perceived stress ($\beta = -.09$, $p = .130$) and academic environment ($\beta = -.07$, $p = .348$) were not significant in this regression model. The null hypothesis was rejected. Results of the multiple regression are presented in Table 4.

Table 4

<table>
<thead>
<tr>
<th>Model</th>
<th>B</th>
<th>Std. Error</th>
<th>Beta</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>40.023</td>
<td>11.720</td>
<td>-</td>
<td>3.415</td>
<td>0.001</td>
</tr>
<tr>
<td>Perceived Stress</td>
<td>-0.248</td>
<td>0.163</td>
<td>-0.091</td>
<td>-1.520</td>
<td>0.130</td>
</tr>
<tr>
<td>Social Support</td>
<td>0.660</td>
<td>0.160</td>
<td>0.241</td>
<td>4.121</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Self- Efficacy</td>
<td>16.577</td>
<td>2.136</td>
<td>0.450</td>
<td>7.760</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Academic Environment</td>
<td>-0.068</td>
<td>0.072</td>
<td>-0.073</td>
<td>-0.941</td>
<td>0.348</td>
</tr>
<tr>
<td>Interpersonal Environment</td>
<td>0.127</td>
<td>0.056</td>
<td>0.176</td>
<td>2.261</td>
<td>0.025</td>
</tr>
</tbody>
</table>

*Note. Dependent variable in this model is Resilience (as measured by the Total Mean score SPF24). Model 1: $R = .644$; $R^2 = .414$; Adjusted $R^2 = .400$; $F_{\text{Change}} = 29.45$; $p < .001$.}
Research Question 2: To what extent does perceived stress, social support, self-efficacy, and doctoral program culture/context, relate to intention to persist among doctoral students in Counseling Psychology, Counselor Education, and Higher Education Leadership/Administration/Student Affairs?

Null Hypothesis 2: Participants perceived stress, social support, self-efficacy, and doctoral program culture/context, as measured by the Interpersonal and Academic Environment scales of the DPCI, will not contribute, either collectively or individually in the regression model, significant unique variance to predicting participant’s intention to persist in doctoral study.

To consider the second research question and test the null hypothesis, simultaneous multiple regression analysis was performed with perceived stress, social support, self-efficacy, and doctoral program culture/context as measured by the Interpersonal and Academic Environment scales of the Doctoral Program Context Inventory (DPCI) as predictor variables, and participant’s intention to persist in doctoral study as the criterion variable. For this study the predictor variable of perceived stress was examined using the total PSS-10 score, social support was examined using the total score of the ISEL-12, self-efficacy was examined using the mean score on the NGSE, and the doctoral program culture/context was examined by using the 2 higher-order DPCI scales Interpersonal Environment and Academic Environment.

In checking the assumptions for this analysis, the distribution of the Intention to Persist variable was negatively skewed and the scatter plot for regression standardized residuals by regression standardized predicted values did not appear to meet the assumption of homoscedasticity. A square root transformation was performed and yielded similar concerns.
The original results are presented for this analysis. The assumption of the absence of multicollinearity was considered met with a review of the VIF values which were all less than 5.

The results of the multiple regression were statistically significant $R = .527; R^2 = .278, F(5, 208) = 16.01, p < .001$ which indicated that the combined set of predictor variables of perceived stress, social support, self-efficacy, interpersonal environment, and academic environment predicted intention to persist. The independent variables explained 27.8% of the variability in intention to persist. Furthermore, an examination of beta weights showed that Perceived Stress ($\beta = -0.30, p < .001$) and Interpersonal Environment ($\beta = .37, p < .001$) made the strongest unique contributions, followed by Self-Efficacy ($\beta = .15, p = .025$). The individual contributions of Social Support ($\beta = -.09, p = .162$) and Academic Environment ($\beta = -.04, p = .681$) were not statistically significant. The null hypothesis was rejected. Results of the multiple regression are presented in Table 5.

Table 5

*Model Predicting Intention to Persist*

<table>
<thead>
<tr>
<th>Model</th>
<th>B</th>
<th>Std. Error</th>
<th>Beta</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>18.537</td>
<td>3.104</td>
<td>5.972</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Perceived Stress</td>
<td>-0.194</td>
<td>0.043</td>
<td>-0.298</td>
<td>-4.484</td>
</tr>
<tr>
<td></td>
<td>Social Support</td>
<td>-0.060</td>
<td>0.042</td>
<td>-0.091</td>
<td>-1.405</td>
</tr>
<tr>
<td></td>
<td>Self-Efficacy</td>
<td>1.277</td>
<td>0.566</td>
<td>0.145</td>
<td>2.256</td>
</tr>
<tr>
<td></td>
<td>Academic Environment</td>
<td>-0.008</td>
<td>0.019</td>
<td>-0.035</td>
<td>-0.412</td>
</tr>
<tr>
<td></td>
<td>Interpersonal Environment</td>
<td>0.063</td>
<td>0.015</td>
<td>0.365</td>
<td>4.221</td>
</tr>
</tbody>
</table>

*Note.* Dependent variable in this model is Intention to Persist (as measured by the Intention to Persist Scale). Model 1: $R = .527; R^2 = .278, F(5, 208) = 16.01, p < .001.$
Research Question 3: After controlling for perceived stress, social support, self-efficacy, and doctoral program culture/context, to what extent does resilience as measured by the SPF24 contribute unique variance to predicting intention to persist among doctoral students?

Null Hypothesis 3: After controlling for perceived stress, social support, self-efficacy, doctoral program culture/context, resilience as measured by the SPF24 will not contribute significant unique variance to predicting intention to persist among doctoral students.

To consider this third research question and test the null hypothesis, hierarchical multiple regression was used. The criterion variable was intention to persist among doctoral students. Perceived stress, social support, self-efficacy, and doctoral program culture/context, as measured by the Interpersonal and Academic Environment scales of the Doctoral Program Context Inventory (DPCI), were used in the first step of the model. In the second step, resilience, as measured by the SPF 24, was added to the model, and the significance of the change in $R^2$ in predicting intention to persist was used to test null hypothesis 3.

The variables of perceived stress, social support, self-efficacy, and doctoral program culture/context, as measured by the Interpersonal and Academic Environment subscales explained 27.8% of the variance ($R = .527; R^2 = .278; \text{Adjusted } R^2 = .261; R^2\text{Change} = .278; F_{\text{Change}}(5, 208) = 16.01; p < .001$). Interpersonal Environment ($\beta = .06, p < .001$) and Perceived Stress ($\beta = -.30, p < .001$) made the strongest significant contribution followed by Self-Efficacy ($\beta = .57, p = .025$).

The variable of resilience as measured by the total mean score of the SPF24 was added to the model and did not produce a statistically significant increase in variance in the model predicting Intention to Persist ($R = .535; R^2 = .286; \text{Adjusted } R^2 = .265; R^2\text{Change} = .008; F_{\text{Change}}(1, 207) = 2.32; p < .129$). Interpersonal Environment and Perceived Stress were still found to be
significant predictors in this model, but Self-Efficacy was no longer found to be a significant predictor. The null hypothesis was accepted. Results of this hierarchical regression analysis are presented in Table 6.

Table 6

*Model Predicting Intention to Persist with Resilience Added*

<table>
<thead>
<tr>
<th>Model</th>
<th>B</th>
<th>Std. Error</th>
<th>Beta</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Constant)</td>
<td>18.537</td>
<td>3.104</td>
<td></td>
<td>5.972</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Perceived Stress</td>
<td>-0.194</td>
<td>0.043</td>
<td>-0.298</td>
<td>-4.484</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Social Support</td>
<td>-0.060</td>
<td>0.042</td>
<td>-0.091</td>
<td>-1.405</td>
<td>0.162</td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>1.277</td>
<td>0.566</td>
<td>0.145</td>
<td>2.256</td>
<td>0.025</td>
</tr>
<tr>
<td>Academic Environment</td>
<td>-0.008</td>
<td>0.019</td>
<td>-0.035</td>
<td>-0.412</td>
<td>0.681</td>
</tr>
<tr>
<td>Interpersonal Environment</td>
<td>0.063</td>
<td>0.015</td>
<td>0.365</td>
<td>4.221</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>2 (Constant)</td>
<td>17.421</td>
<td>3.180</td>
<td></td>
<td>5.479</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Perceived Stress</td>
<td>-0.187</td>
<td>0.043</td>
<td>-0.287</td>
<td>-4.314</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Social Support</td>
<td>-0.078</td>
<td>0.044</td>
<td>-0.120</td>
<td>-1.773</td>
<td>0.078</td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>0.815</td>
<td>0.640</td>
<td>0.093</td>
<td>1.272</td>
<td>0.205</td>
</tr>
<tr>
<td>Academic Environment</td>
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<td>0.019</td>
<td>-0.027</td>
<td>-0.313</td>
<td>0.755</td>
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<tr>
<td>Interpersonal Environment</td>
<td>0.059</td>
<td>0.015</td>
<td>0.345</td>
<td>3.947</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Resilience</td>
<td>0.669</td>
<td>0.439</td>
<td>0.117</td>
<td>1.523</td>
<td>0.129</td>
</tr>
</tbody>
</table>

*Note.* Dependent variable is Intention to Persist. Model 1: $R = .527; R^2 = 0.278; Adjusted R^2 = 0.261; F_{\text{Change}} = 16.01; p < 0.001$. Model 2: $R = .535; R^2 = 0.286; Adjusted R^2 = 0.265; R^2_{\text{Change}} = .008; F_{\text{Change}} = 2.32; p = 0.129$.

Research Question 4: What is the nature of the relationship between doctoral program culture/context as measured by the 11 subscales of the DPCI and resilience as measured by the four subscales of the SPF24 for Counseling Psychology, Counselor Education, and Higher Education Leadership/Administration/Student Affairs doctoral students?

Null Hypothesis 4: The canonical correlation analysis between the 11 subscales of the DPCI (Curriculum Quality, Instructional Orientation, Student Activities, Professional Activities, Faculty-Student Relationships, Peer Student Relationships, Faculty Scholars and Researchers, Instructional Quality, Advisement, Psychological Integration, and Climate) and the four
resilience subscales of the SPF24 (Social Support, Social Skills, Prioritizing/Planning Behavior, and Goal Efficacy) will indicate that all squared canonical correlation coefficients, $R_c^2$, are equal to zero.

To consider this fourth research question a canonical correlation analysis between the 11 subscales of the DPCI (Curriculum Quality, Instructional Orientation, Student Activities, Professional Activities, Faculty-Student Relationships, Peer Student Relationships, Faculty Scholars and Researchers, Instructional Quality, Advisement, Psychological Integration, and Climate) and the four resilience subscales of the SPF24 (Social Support, Social Skills, Prioritizing/Planning Behavior, and Goal Efficacy) was conducted. Table 7 presents the results of this canonical correlation analysis.

Table 7

<table>
<thead>
<tr>
<th>Function</th>
<th>Correlation</th>
<th>Eigen value</th>
<th>Wilks Statistic</th>
<th>$F$</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.403</td>
<td>0.194</td>
<td>0.732</td>
<td>1.339</td>
<td>0.074</td>
</tr>
<tr>
<td>2</td>
<td>0.268</td>
<td>0.077</td>
<td>0.875</td>
<td>0.833</td>
<td>0.722</td>
</tr>
<tr>
<td>3</td>
<td>0.209</td>
<td>0.046</td>
<td>0.942</td>
<td>0.614</td>
<td>0.889</td>
</tr>
<tr>
<td>4</td>
<td>0.122</td>
<td>0.015</td>
<td>0.985</td>
<td>0.346</td>
<td>0.947</td>
</tr>
</tbody>
</table>

This analysis yielded four canonical functions. However, the model with all four canonical functions was not significant. The Wilk’s Lambda was $0.732 (F = 1.34, p < .074)$. Since the full model was not significant the null hypothesis was accepted.

In the context of the interest in understanding the relationships between DPCI subscales and resilience; a follow-up multiple regression analysis was performed to study the relationships between the DPCI subscale scores and resilience as measured by the total score on the SPF24. To conduct this analysis, the correlations between the DPCI and the SPF24 were reviewed and
those subscales that had a significant correlation at the \( p = .05 \) or \( p = .01 \) level with the total score on resilience were identified. These subscales included Curriculum Quality (\( r = .21, p < .01 \)), Faculty-Student Relationships (\( r = .25, p < .01 \)), Instructor Quality (\( r = .17, p < .01 \)), Peer-Student Relationships (\( r = .21, p < .01 \)), Advisement (\( r = .17, p < .01 \)), Psychological Integration (\( r = .26, p < .01 \)), and Climate (\( r = .16, p < .05 \)). These were used in this follow-up multiple regression analysis to predict resilience as measured by the SPF24.

In conducting this analysis, the assumptions for the regression analysis were reviewed. The standardized residual plots were examined to detect evidence for violations to linearity and homoscedasticity. The multiple regression analysis had one outlier which was included in the analysis. The collinearity diagnostics and correlations matrix were examined for multicollinearity of the independent variables. The multiple regression analysis did not meet the assumption of the absence of multicollinearity with Variance Inflation Factors (VIF) for Faculty-Student Relationships and Psychological Integration being greater than 5. These two subscales were found to be highly correlated with each other. Psychological Integration was removed from the analysis and the assumption of the absence of multicollinearity was met. The results of this multiple regression analysis were statistically significant \( R = .313; R^2 = .098, F(6, 203) = 3.68, p = .002 \) and indicated that the combined subscales predicted resilience. The subscales explained 9.8% of the variance in resilience. Furthermore, an examination of beta weights showed that the subscales of Faculty-Student Relationships (\( \beta = .25, p = .036 \)) and Peer-Student Relationships (\( \beta = .16, p = .036 \)) made the largest unique significant contributions followed by Curriculum Quality (\( \beta = .24, p = .039 \)). The results of this follow-up multiple regression analysis are presented in Table 8.
Research Question 5: To what extent does program phase relate to the variables of perceived stress, social support, self-efficacy, doctoral program culture/context, resilience as measured by the SPF24, and intention to persist as measured by the DPCI among doctoral students in Counseling Psychology, Counselor Education, and Higher Education Leadership/Administration/Student Affairs?

Null Hypothesis 5: Program phase will not be correlated with the variables of perceived stress, social support, self-efficacy, doctoral program culture/context, resilience as measured by the SPF24, and intention to persist as measured by the DPCI. The pattern of correlations among the variables by program phase will be explored and individual ANOVAs conducted as may be appropriate.

To consider this research question the pattern of correlations between program phase and the variables of perceived stress, social support, self-efficacy, doctoral program culture/context, resilience, and intention to persist were reviewed. Those individual variables that showed a significant correlation with program phase were identified and a one-way ANOVA was
conducted to explore possible differences by program phase. The variables identified as having a statistically significant correlation with program phase were included in this analysis: Social Support \((r = .14; p < .05)\), Curriculum Quality \((r = -.20; p < .01)\), Instruction Orientation \((r = -.129; p < .05)\), Professional Activities \((r = -.16; p < .05)\), Psychological Integration \((r = -.18; p < .01)\), Climate \((r = -.16; p < .05)\), Academic Environment \((r = -.19; p < .01)\), Interpersonal Environment \((r = -.13; p < .05)\).

The number of participants in each of the three phases for this analysis were unequal, with Phase 1 \((n = 36)\), Phase 2 \((n = 88)\), and Phase 3 \((n = 89)\). The Levene statistic was used to test for homogeneity of variance and indicated the assumption of homogeneity of variances was not met. Since the assumptions for the ANOVA were not met and the n for the groups were unequal, the Welch test was used. If significant the Welch test was followed by Games-Howell post-hoc tests to further compare means across the three program phases. These results may be found in Tables 9 and 10. The Welch tests found that the means across program phase for Social Support and Instructor Orientation were not statistically significant. The Welch test for the remaining variables in this analysis were significant. Follow-up Games-Howell post hoc test showed that for Curriculum Quality phase 1 was significantly higher than phases 2 and 3 with the difference between phase 2 and 3 not significant. Professional Activities showed a statistically significant difference between phases 1 and 3 with phase 1 having a higher mean. Psychological Integration showed a statistically significant difference between phases with the mean for phase 1 higher than 2 and 3, and no significant difference between phases 2 and 3. Climate was found to have statistically significant differences between phases 1 and phases 2 and 3, but not between phases 2 and 3. The Climate mean for phase 1 was significantly higher than the means for phases 2 and 3. Academic Environment was found to have a significant difference
between phase 1, and phases 2 and 3 with no statistically significant difference between phases 2 and 3. Phase 1 for Academic Environment was significantly higher than the means for phases 2 and 3; with no significance between phases 2 and 3. A statistically significant difference was found between phase 1, and phases 2 and 3 on Interpersonal Environment with no significant difference found between phases 2 and 3, with phase 1 having a significantly higher mean than phases 2 and 3. The null hypothesis was rejected.

Table 9

*Welch Tests for Variables with Significant Correlation with Phase*

<table>
<thead>
<tr>
<th></th>
<th>Statistic</th>
<th>df1</th>
<th>df2</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Support</td>
<td>2.143</td>
<td>2</td>
<td>124.288</td>
<td>0.122</td>
</tr>
<tr>
<td>Curriculum Quality</td>
<td>14.817</td>
<td>2</td>
<td>120.362</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Instruction Orientation</td>
<td>2.251</td>
<td>2</td>
<td>118.841</td>
<td>0.110</td>
</tr>
<tr>
<td>Professional Activities</td>
<td>3.892</td>
<td>2</td>
<td>133.901</td>
<td>0.023</td>
</tr>
<tr>
<td>Psychological Integration</td>
<td>7.907</td>
<td>2</td>
<td>147.698</td>
<td>0.001</td>
</tr>
<tr>
<td>Climate</td>
<td>7.331</td>
<td>2</td>
<td>144.074</td>
<td>0.001</td>
</tr>
<tr>
<td>Academic Environment</td>
<td>14.781</td>
<td>2</td>
<td>125.171</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Interpersonal Environment</td>
<td>4.159</td>
<td>2</td>
<td>140.590</td>
<td>0.018</td>
</tr>
</tbody>
</table>

Table 10

*Games- Howell Multiple Comparisons for Variables Correlated with Phase*

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Support</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>-1.361</td>
<td>1.196</td>
<td>0.493</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>3</td>
<td></td>
<td>-2.411</td>
<td>1.200</td>
<td>0.116</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1</td>
<td></td>
<td>1.361</td>
<td>1.196</td>
<td>0.493</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3</td>
<td></td>
<td>-1.050</td>
<td>0.863</td>
<td>0.445</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>1</td>
<td></td>
<td>2.411</td>
<td>1.200</td>
<td>0.116</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>2</td>
<td></td>
<td>1.050</td>
<td>0.863</td>
<td>0.445</td>
</tr>
<tr>
<td>Dependent Variable</td>
<td>Phase</td>
<td>Phase</td>
<td>Mean Difference (I-J)</td>
<td>Std. Error</td>
<td>Sig.</td>
<td></td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------</td>
<td>-------</td>
<td>-----------------------</td>
<td>------------</td>
<td>--------</td>
<td></td>
</tr>
<tr>
<td>Curriculum Quality</td>
<td>1</td>
<td>2</td>
<td>5.656*</td>
<td>1.121</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>2</td>
<td>5.061*</td>
<td>1.144</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1</td>
<td>-5.656*</td>
<td>1.121</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>1</td>
<td>-0.595</td>
<td>1.103</td>
<td>0.852</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>2</td>
<td>0.595</td>
<td>1.103</td>
<td>0.852</td>
<td></td>
</tr>
<tr>
<td>Instruction Orientation</td>
<td>1</td>
<td>2</td>
<td>0.909</td>
<td>0.554</td>
<td>0.235</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>1</td>
<td>1.199</td>
<td>0.567</td>
<td>0.093</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1</td>
<td>-0.909</td>
<td>0.554</td>
<td>0.235</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>1</td>
<td>0.291</td>
<td>0.436</td>
<td>0.783</td>
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</tr>
<tr>
<td></td>
<td>3</td>
<td>2</td>
<td>-0.291</td>
<td>0.436</td>
<td>0.783</td>
<td></td>
</tr>
<tr>
<td>Professional Activities</td>
<td>1</td>
<td>2</td>
<td>1.568</td>
<td>0.888</td>
<td>0.186</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>1</td>
<td>2.534*</td>
<td>0.906</td>
<td>0.017</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1</td>
<td>-1.568</td>
<td>0.888</td>
<td>0.186</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>1</td>
<td>0.965</td>
<td>0.798</td>
<td>0.449</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>2</td>
<td>-2.534*</td>
<td>0.906</td>
<td>0.017</td>
<td></td>
</tr>
<tr>
<td>Psychological Integration</td>
<td>1</td>
<td>2</td>
<td>3.277*</td>
<td>1.043</td>
<td>0.006</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>1</td>
<td>3.945*</td>
<td>1.085</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1</td>
<td>-3.277*</td>
<td>1.043</td>
<td>0.006</td>
<td></td>
</tr>
<tr>
<td></td>
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<td>0.668</td>
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<td></td>
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<tr>
<td></td>
<td>3</td>
<td>2</td>
<td>-3.945*</td>
<td>1.085</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>Climate</td>
<td>1</td>
<td>2</td>
<td>4.118*</td>
<td>1.248</td>
<td>0.004</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>1</td>
<td>4.425*</td>
<td>1.320</td>
<td>0.003</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1</td>
<td>-4.118*</td>
<td>1.248</td>
<td>0.004</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>1</td>
<td>0.306</td>
<td>1.283</td>
<td>0.969</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>2</td>
<td>-4.425*</td>
<td>1.320</td>
<td>0.003</td>
<td></td>
</tr>
<tr>
<td>Academic Environment</td>
<td>1</td>
<td>2</td>
<td>12.789*</td>
<td>2.657</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>1</td>
<td>12.287*</td>
<td>2.780</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1</td>
<td>-12.789*</td>
<td>2.657</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>1</td>
<td>-0.501</td>
<td>2.878</td>
<td>0.983</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>2</td>
<td>-12.287*</td>
<td>2.780</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>0.501</td>
<td></td>
<td>2.878</td>
<td>0.983</td>
<td></td>
</tr>
</tbody>
</table>
Table 10—Continued

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Phase</th>
<th>Phase</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpersonal Environment</td>
<td>1</td>
<td>2</td>
<td>8.694*</td>
<td>3.659</td>
<td>0.050</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td></td>
<td>9.713*</td>
<td>3.672</td>
<td>0.025</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1</td>
<td>-8.694*</td>
<td>3.659</td>
<td>0.050</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td></td>
<td>1.019</td>
<td>3.581</td>
<td>0.956</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>1</td>
<td>-9.713*</td>
<td>3.672</td>
<td>0.025</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td></td>
<td>-1.019</td>
<td>3.581</td>
<td>0.956</td>
</tr>
</tbody>
</table>

Research Question 6: Exploratory analyses will be conducted to see whether or not the pattern of results are invariant across gender and across race. The pattern of correlations among the variables by gender and race will be explored and individual ANOVAs conducted as may be appropriate.

To explore research question 6 the pattern of correlations among the variables of perceived stress, social support, self-efficacy, doctoral program culture/context, resilience, and intention to persist were studied by gender and race. Initially, the correlations among the variables of interest were reviewed to identify those variables with a significant correlation between gender and the variables of interest. Correlations significant at the $p < .05$ or $p < .01$ level were identified. For the correlations with gender, two gender groups were used in this correlational analysis (Men coded 1, $n = 52$; Women coded 2, $n = 154$). A third group, None of these Apply, with a very small number of participants ($n = 6$) was not included in this analysis because of the very small $n$ in this group. Since the groups being studied had unequal $n$’s the Welch test was used instead of ANOVA to explore for possible differences.

Nine variables found to have significant Point-biserial correlations with gender were Perceived Stress ($r = .20, p < .01$), Curriculum Quality ($r = -.14, p < .05$), Instruction Orientation ($r = -.16, p < .05$), Faculty- Student Relationships ($r = -.14, p < .05$), Instructor Quality ($r = -.16,$
$p < .05$), Advisement ($r = -.14, p < .05$) Psychological Integration ($r = -.13, p < .05$), Climate ($r = -.13, p < .05$), and Academic Environment ($r = -.18, p < .01$). Welch tests were conducted on each of these variables comparing men and women. All were found to be significant with the exception of Instructor Quality. The Welch test results can be found in Table 11. The Welch test showed a statistically significant difference in the means for Perceived Stress ($p = .001$), Curriculum Quality ($p = .043$), Instruction Orientation ($p = .011$), Faculty-Student Relationships ($p = .014$), Instructor Quality ($p = .046$), Advisement ($p = .019$), Psychological Integration ($p = .025$), Climate ($p = .027$), and Academic Environment ($p = .005$). Men tended to score higher than women for all correlated variables with the exception of Perceived Stress.

Table 11

*Welch Test Results for Variables Correlated with Gender*

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Statistic</th>
<th>df1</th>
<th>df2</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Stress</td>
<td>10.680</td>
<td>1</td>
<td>116.171</td>
<td>0.001</td>
</tr>
<tr>
<td>Curriculum Quality</td>
<td>4.200</td>
<td>1</td>
<td>90.309</td>
<td>0.043</td>
</tr>
<tr>
<td>Instruction Orientation</td>
<td>6.665</td>
<td>1</td>
<td>106.044</td>
<td>0.011</td>
</tr>
<tr>
<td>Faculty-Student Relationships</td>
<td>6.198</td>
<td>1</td>
<td>131.524</td>
<td>0.014</td>
</tr>
<tr>
<td>Instructor Quality</td>
<td>4.073</td>
<td>1</td>
<td>115.439</td>
<td>0.046</td>
</tr>
<tr>
<td>Advisement</td>
<td>5.683</td>
<td>1</td>
<td>128.575</td>
<td>0.019</td>
</tr>
<tr>
<td>Psychological Integration</td>
<td>5.152</td>
<td>1</td>
<td>126.579</td>
<td>0.025</td>
</tr>
<tr>
<td>Climate</td>
<td>4.983</td>
<td>1</td>
<td>118.935</td>
<td>0.027</td>
</tr>
<tr>
<td>Academic Environment</td>
<td>8.163</td>
<td>1</td>
<td>106.357</td>
<td>0.005</td>
</tr>
</tbody>
</table>

The participants grouped by race had unequal sample sizes, and very small sample sizes in certain groups self-identified by race. Thus, this variable was analyzed first with the total sample of participants identified as White people ($n = 180$) and People of the Global Majority (PGM) ($n = 71$). Following this analysis, the variable was studied further with a sample of equal sizes of Black and White people. In the first analysis for the full sample, with the race identified
as White and PGM, two variables were found to be significantly correlated with race. These were Professional Activities ($r = .21, p < .01$) and Student Activities ($r = .21, p < .01$). Given the unequal sample sizes, the Welch test was conducted and showed statistically significant mean differences for both Professional Activities ($p = .001$) and Student Activities ($p = .004$). White people score significantly lower for both Professional Activities ($M = 14.26$) and Student Activities ($M = 12.09$) than their PGM peers ($M = 16.86; M = 14.33$). Results of the Welch Test are found in Table 12. The null hypothesis was rejected.

Table 12

<table>
<thead>
<tr>
<th>Statistic</th>
<th>df1</th>
<th>df2</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional Activities</td>
<td>12.093</td>
<td>1</td>
<td>135.026</td>
</tr>
<tr>
<td>Student Activities</td>
<td>8.916</td>
<td>1</td>
<td>106.076</td>
</tr>
</tbody>
</table>

For the comparison of Black and White people, a sample of White participants (n = 32) were randomly selected and compared with all the Black participants (n = 32). In this second analysis with the smaller sample and race identified as Black and White, none of the variables studied were found to be significantly correlated with race. ANOVAs were conducted on the two variables identified and studied in the first analysis for the total sample, Professional Activities, and Student Activities. The ANOVA test showed a non-statistically significant mean difference between Black and White participants. ANOVA results can be found in Table 13.
Table 13

ANOVA Test Results for Variables Correlated with Race (White/Black)

<table>
<thead>
<tr>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional Activities</td>
<td>38.861</td>
<td>1</td>
<td>38.861</td>
<td>1.681</td>
</tr>
<tr>
<td>Student Activities</td>
<td>25.539</td>
<td>1</td>
<td>25.539</td>
<td>1.049</td>
</tr>
</tbody>
</table>

Summary

In Chapter IV, the results of this study were presented. The focus of this chapter was to present the results of the analysis on the relationships between stress, social support, self-efficacy, doctoral program culture/context, and how they may relate to doctoral students’ level of resilience and intention to persist in doctoral study. The variables of doctoral phase, race, and gender were considered in these relationships. The descriptive statistics reflecting the Pearson's r correlations along with the means and standard deviations of the scales of Perceived Stress, Social Support, Self-Efficacy, 11 Doctoral Program Context Inventory subscales, and two higher-order factor scales, Resilience, and Intention to Persist were presented. The findings from two simultaneous multiple regression analyses, one hierarchical multiple regression analysis, one canonical correlation analysis, and exploration analysis with ANOVA, Welch tests, and Games-Howell post-hoc tests were reported.

The first multiple regression examined the relationships between perceived stress, social support, self-efficacy, and doctoral program culture/context in the prediction of resilience. The combined predictor variables were found to be significant predictors of resilience with self-efficacy, social support, and interpersonal environment making individual significant contributions. The second multiple regression examined the relationship between perceived stress, social support, self-efficacy, and doctoral program culture/context in predicting intention.
to persist. The combined set of predictor variables were found to be significant predictors of intention to persist with perceived stress, interpersonal environment and self-efficacy making unique significant contributions. A third hierarchical multiple regression analysis examined adding resilience to the prediction of intention to persist after other predictor variables were already in the regression model. Resilience was found not to contribute significant additional variance to the prediction of intention to persist. A canonical correlation analysis then examined the relationship between the 11 subscales of the DPCI and the four subscales of the Resilience measure. This canonical analysis was found to be non-significant. A follow-up multiple regression was then conducted to try to understand the relationship between the seven DPCI subscale scores that correlated significantly with total resilience. This analysis showed the combined subscales of the DPCI predicted resilience. Additionally, an examination of beta weights showed that Faculty-Student Relationships, Peer-Student Relationships, and Curriculum Quality each contributed significant variance to the prediction of resilience. Three sets of exploratory analyses were conducted to examine the relationships between perceived stress, social support, self-efficacy, and doctoral program culture/ context, resilience, and intention to persist with the independent variables of doctoral phase, gender, and race. The doctoral phase was found to significantly relate to Curriculum Quality, Professional Activities, Psychological Integration, Climate, Academic Environment, and Interpersonal Environment. Gender was found to significantly relate to Perceived Stress, Faculty-Student Relationships, and Academic Environment. Race was found to significantly relate to Professional Activities, and Student Activities.
CHAPTER V
DISCUSSION

This study uniquely contributes to research by focusing on doctoral students' resilience and intention to persist with the hope that programs would be able to develop structures that support retention and success. The purpose of the current study was to explore how stress, social support, self-efficacy, and doctoral program culture/context, relate to doctoral students’ level of resilience and intention to persist in doctoral study. In addition, how the phases of doctoral education and the identity characteristics of race and gender relate to these variables. This particular combination of variables has not been studied in this way however, these variables have been found both individually and in combination with other factors to have significant relationships with graduate students’ success, stress, attrition, and experiences. Chapter V will include a discussion of the results from this study organized by the two criterion variables of resilience and intention to persist followed by the variables of phase, race, and gender. The relationships identified by the two simultaneous multiple regression analyses, one hierarchical multiple regression analysis, one canonical correlation analysis, and exploration analysis with ANOVA, Welch tests, and Games-Howell post-hoc tests are discussed in the context of the previous research literature. This is followed by the implications and limitations of the study.

Resilience

Overall, the participants in this study scored higher on resilience than the sample the SPF24 was developed with (Ponce-Garcia et al., 2015) and in general was found to be resilient. Both this study and the development study had similar standard deviations. The development study also found that there were no significant mean differences by gender (Ponce-Garcia et al., 2015) which is consistent with the current study findings of gender and resilience not being
correlated. A major difference between this study and the development study is age. The current sample’s mean age was older by about 17 years and included more people of the global majority (PGM) than the development sample.

In general, the resilience criterion variable demonstrated significant small to large correlations with the primary predictor variables of interest in this study, i.e. perceived stress, social support, self-efficacy, and doctoral program context as measured by the Academic Environment and Interpersonal Environment scales of the DPCI. These relationships appeared consistent with the literature which suggested these variables may be important in terms of their relationship with resilience. Resilience showed a moderate negative correlation with students’ perceived stress. The higher the stress the lower the measured resilience. This is in line with research on resilience which often describes resilience as a protective factor against vulnerability to stress (Madewell & Ponce-Garcia, 2016; Wilks & Spivey, 2010) or as a response to stress (Seligman & Csikszentmihalyi, 2000; Masten, 2001; Richardson, 2002). Additionally, these findings are supported by previous research showing a negative relationship of resilience to stress (Bruwer et al., 2008). This is important because graduate school has been described as stressful (Cushway, 1992; Stratton et al., 2007). The participants of the current study had a higher mean, for their perceived stress score than the most recent validation sample (Roberti, Harrington, & Storch, 2006), and all three years (1983, 2006, 2009) of a national longitudinal study (Cohen & Janicki-Deverts, 2012) for the PSS10. In general, PSS10 scores for the current sample were found to be in the moderate stress range. Perceived stress also demonstrated moderate negative correlations with self-efficacy, and social support; and small negative correlations with Academic Environment and Interpersonal Environment.
Resilience demonstrated a large significant positive correlation with self-efficacy; a moderate significant positive correlation with social support; and small significant positive correlations with the two higher-order factor scales of the Doctoral Program Context Inventory measure, academic environment, and interpersonal environment. The higher-order factor scale of academic environment represents academic context and includes the scales of instructor quality, curriculum quality, climate, and instructor orientation. The higher-order factor scale of interpersonal environment represents the programs social atmosphere, sense of belongingness and includes the scales of psychological integration, peer-student relationships, and faculty-student relationships. In addition to the two higher-order scales and the subscales that compose them advisement also demonstrated a small significant positive correlation with resilience. As scores on the resilience measure increased so did the scale scores for these variables.

The sample for this study scored slightly higher but similar to the validation sample on self-efficacy, and self-efficacy was the strongest predictor of resilience in the current model. This similarity is interesting as the validation sample was undergraduate students. In contrast to the validation and development samples for the measures, the current sample scored slightly lower but had similar mean averages for social support, intention to persist, psychological integration, advisement, academic environment, and interpersonal environment.

Research question 1 explored how stress, social support, self-efficacy, and doctoral program culture/context may relate to resilience. In the analysis for question 1, the combined variables of perceived stress, social support, self-efficacy, interpersonal environment, and academic environment in the regression model together were found to predict resilience. Self-efficacy, social support, and DPCI interpersonal environment scale were found to independently contribute to predicting resilience. In the analysis for research question 4, in considering only the
11 basic scales of the doctoral program culture context measure, the combined variables of curriculum quality, faculty-student relationships, instructor quality, peer-student relationships, advisement, and climate were found to predict resilience. Faculty-student relationships, peer-student relationships, and curriculum quality were significant as independent predictors of resilience.

Previous research supports several results of the current study. Similar to findings in the current study, research has indicated a combination of factors may facilitate resilience by operating as protective factors. These are defined as factors that predict resilience (Goldstein & R. B. Brooks, 2013; Grafton et al., 2010). Research has considered self-efficacy (Grafton et al., 2010), and social support (Gillespie et al., 2007; Riise, et al. , 2011; Wilks & Spivey, 2010) as protective factors that support or predict resilience. A review of literature seemed to show that no studies have explored the relationship between perceived stress, social support, program phase, self-efficacy, doctoral program culture/ context, and identity characteristics to resilience and intention to persist for doctoral students.

**Intention to Persist**

The intention to persist criterion variable demonstrated a significant moderate correlation with resilience; and significant small to moderate correlations with the majority of primary predictor variables of interest in this study, i.e., perceived stress, self-efficacy, and doctoral program context as measured by the Academic Environment and Interpersonal Environment scales of the DPCI. The correlation between social support and intention to persist was not significant. The significant relationships with intention to persist appear consistent with the literature which suggests these variables may be important in terms of their relationship with intention to persist (Gallagher, 2012; Hammond & Shoemaker, 2014; Sorokosh, 2004; Tinto,
Intention to persist demonstrated a moderate significant negative correlation with students’ perceived stress. The higher the stress the lower the measured intention to persist. The author is not aware of any other studies that investigated the relationship between stress and intention to persist or persistence, particularly in the doctoral student population.

Intention to persist had significant moderate positive correlations with self-efficacy, resilience, and the Doctoral Program Context Inventory (DPCI) higher-order scales of Academic Environment and Interpersonal Environment. In addition, intention to persist also showed significant small correlations with Curriculum Quality, Student Activities, Instructor Quality, Climate; and significant moderate correlations with Faculty-Student Relationships, Peer Student Relationships, Advisement, and Psychological Integration. This is consistent with prior research which described self-efficacy as a characteristic that supports persistence towards a goal (Gallagher, 2012) and that the absence of self-efficacy beliefs negatively impacts intention to persist (Bandura, 1997, 2022). Also consistent is research by Sorokosh (2004) which developed the intention to persist measure, academic environment was found to have a significant moderate positive correlation with intention to persist (.466) and interpersonal environment had a significant large correlation with intention to persist (.642).

Research question 2 explored how stress, social support, self-efficacy, and doctoral program culture/context may relate to intention to persist. Previous research is consistent with this study in demonstrating the predictive relationship between the combined set of predictor variables of perceived stress, social support, self-efficacy, interpersonal environment, academic environment, and intention to persist. The developer of the intention to persist measure, Sorokosh (2004) found that interpersonal environment represented 41% of the variance in intention to persist scores. This study showed similar results as interpersonal environment was
one of the stronger predictors of intention to persist. Other research has found similar combinations of variables (Lovitts, 1996; Lovitts & Nelson 2000). For example, Tinto (1993) found the combination of academic success and social integration predicted actual persistence through graduate school, and Lovitts (2002) described departments with higher integration scores on departmental culture, academic environment, and socialization into the field as negatively correlated with attrition.

The analysis for research question 3 showed that resilience did not independently predict and contribute to accounting for additional variance in the model with the initial predictors of interest in predicting intention to persist. Current findings did, however, indicate that the criterion variables of resilience and intention to persist demonstrated a moderate significant positive correlation with each other. With the addition of resilience to the model, self-efficacy was no longer significant as an independent predictor of intention to persist. This may indicate that the shared variance between self-efficacy and resilience, which had a large correlation with each other at .553, diminished both variables as independent predictors in this particular model. Both self-efficacy and resilience had significant moderate correlations with intention to persist. Self-efficacy’s significant positive correlation with intention to persist is consistent with previous studies showing that self-efficacy supports persistence when faced with challenges (Gallagher, 2012). Important to note is that the resilience measure used in the present study, SPF24, included component subscale variables of social skills, social support, goal efficacy, planning, and prioritizing which may facilitate self-efficacy. The subscales of social skills, social support, planning, and prioritizing each showed a significant moderate positive correlation with self-efficacy. The subscale of goal efficacy had a significant large correlation with self-efficacy. More research may be helpful to better understand the relationships between the resilience SPF
24 subscales and self-efficacy. The variables of perceived stress and interpersonal environment were still found to be predictors when resilience was added to the model. This finding is consistent with research that showed that resilient nurses were better able to manage their stress response and their ability to persist (Hodges, Keeley, & Grier, 2005). It is also consistent with research describing positive interpersonal environment as a mitigating force against the stress of racism and sexism (Cohoon et al., 2009; Proctor & Truscott, 2012).

Research has described faculty’s belief that student characteristics are solely responsible for not persisting (Gardner, 2009; Gilmore et al., 2016; Lovitts, 2002). This study has shown contrary evidence to this assumption. The current study describes both personal student factors and factors that are created and controlled by graduate programs as being correlated with and predicting intention to persist. In particular, findings on the relationships with the DPCI Academic Environment and Interpersonal Environment scales with intention to persist highlight the importance of two major factors of the doctoral program environment. These relationships support a deeper consideration of what programs can do to support and retain students and encourage persistence, apart from focusing primarily on individual students’ characteristics.

**Phase**

Analysis related to research question 5 showed phase 1 of doctoral education as different than the other two phases. In general, as the phases of doctoral program education progressed participants reported experiencing less satisfaction with their curriculum quality, engaging in fewer professional activities, experiencing less of a sense of belonging, as well as, experiencing more insensitive and chillier climates. Participants who were in phases 2 and 3 also reported being generally less satisfied with both the academic and interpersonal contexts of their programs. This difference should be interpreted with caution and requires replication in other
studies since the current study had a much smaller sample size in phase 1 than in the other two phases.

Gardner (2008) proposed that each phase of doctoral study embodied its own unique set of tasks and stressors, which may be why perceived stress in the current study was not correlated with phase nor did it represent unique differences between the means across phases. Interestingly social support and instructor orientation both had significant small magnitude correlations with phase however, neither demonstrated significant mean differences between the phases. This result may seem incongruent with previous research which showed that students experience more social isolation in phase 3 (Sigafus, 1998; West et al., 2011) and that the instructor orientation becomes more constructivist and student-led (Gardner, 2008). However, the significant small magnitude negative correlations between phase and the DPCI scales of psychological integration, climate, academic environment, and interpersonal environment may reflect, in part, an increasing sense of lack of belongingness and isolation from the program as students progress through the phrases. Perhaps students have a stronger sense of belongingness and connection during their first year in their doctoral program when they may share more common course work and experiences together. As students progress in their programs, paths and timing of coursework and program milestones may diverge and vary more, and result in less connection and sense of belongingness with their program peers.

**Race and Gender**

Research question 6 examined the relationship of perceived stress, social support, self-efficacy, doctoral program culture/context, resilience, and intention to persist with gender and race separately. The results for both race and gender should be interpreted cautiously given that the differences in sample size may impact the statistical power (Faber & Fonseca, 2014) of the
results. Gender was found to be correlated with considerably more variables than race. It is interesting to note that neither gender nor race was correlated with intention to persist or resilience. Previous research on both gender and race was varied and did not examine their relationship to many of the variables of interest in this study. Multiple previous researchers have cited the relationship of persistence to gender and race, particularly regarding the decisions that women who are of the global majority need to make related to staying enrolled in programs where they are also experiencing the consequences of exclusion and discrimination (Gasman et al., 2008; Hoskins & Goldberg, 2005; Johnson-Bailey’s, 2004).

Gender was found to be negatively correlated with curriculum quality, instruction orientation, faculty-student relationships, instructor quality, advisement, psychological integration, climate, and the higher-order factor of academic environment from the DPCI. Welch tests following up on these correlations indicated that men score significantly higher than women on each of these variables. Gender was also found to be positively correlated with perceived stress and the Welch test showed that women scored higher mean scores than their male peers. This is consistent with previous longitudinal research on stress from the years 1983, 2006, and 2009 which showed women as generally more stressed than men (Cohen & Janicki-Deverts, 2012).

Race was found to be positively correlated with professional activities and student activities and Welch tests showed that PGM obtained higher mean scores than their white peers. Johnson-Bailey (2004) found particularly for Black students integrating social and academic needs supported intention to persist specifically for students who perceived supportive mentoring and respect from faculty, as well as, the presence of networking by Black peers. Previous research also showed particularly African American females experienced less academic and
social integration (Proctor & Truscott, 2012). It also has shown that students of color do not receive the same amount of support as do white students (McCoy & Winkle-Wagner, 2015). Both of these findings in previous studies are important to note because another study showed these variables impact decisions to persist (Hoskins & Goldberg, 2005).

Unlike previous research showing that race is correlated with stress and that PGM tend to report higher stress (Cohen & Janicki-Deverts, 2012) this study did not show these two variables as significantly related. This study is also inconsistent with previous research which studied graduate students at Ivy League institutions and found that African American students reported no support systems or sense of belonging (Gasman et al., 2008). There appear to be two possible reasons for the differences in this study’s findings on race and previous studies. The current study has a relatively small PGM sample size \((n = 64)\) that consisted of combined racial groups which may have impacted the findings. Another possibility is that participants in the present study had different experiences than participants in other studies and describe their experiences differently than earlier classes of students.

The fact that PGM participants scored higher on Professional Activities and Student Activities may reflect a higher motivation by PGM participants to become actively involved in their respective professions and engaged in student life in their programs than their White peers. In addition, in light of the published research findings on the challenges faced by students of color in becoming integrated academically and socially into their programs, their higher scores on Professional Activities and Student Activities may reflect more active efforts on the part of their respective program faculty and peer student groups to meaningfully support and encourage PGM students to become involved in the program, student life, and their profession. This is an important area that will benefit from continued research.
Implications

The major findings of this study demonstrate that perceived stress, social support, self-efficacy, and doctoral program context show significant relationships with resilience among doctoral students in graduate training. Similarly, the findings reveal that perceived stress, self-efficacy, and doctoral program context display significant relationships with intention to persist in doctoral study among graduate students. While the Interpersonal Environment scale of the doctoral program context measure consistently appeared as a prominent significant independent variable predictor in the multiple regression analysis for both resilience and intention to persist; other doctoral context scales also demonstrated significant small to moderate correlations with both resilience and intention to persist. These included Academic Environment, Curriculum Quality, Faculty-Student Relationships, Instructor Quality, Peer-Student Relationships, Advisement, Psychological Integration, and Climate. Beyond the important personal variables of perceived stress, social support, and self-efficacy, several doctoral program context factors showed important relationships with doctoral student resilience and intention to persist; and doctoral program context appears to be a very important contextual environmental variable relating to doctoral student resilience and intention to persist.

Analysis comparing participants across the three phases of doctoral study showed some significant differences on select DPCI scales with participants in Phase 1 scoring higher than those in Phase 2 and 3. However, this difference needs to be interpreted with caution and requires replication and additional research. Phase 1 had a much smaller sample size than the other two phases and may not be truly representative of a broader sample of Phase 1 students. Findings comparing men and women indicated that women scored higher on perceived stress while men scored higher on eight of the DPCI scales. Given the large difference in sample size
for men and women in this analysis these findings also need to be interpreted cautiously and require additional research and replication. Analysis comparing participants by race first compared participants identified as White people with People of the Global Majority (PGM). This comparison identified two scales on which PGM participants scored higher than White participants, Professional Activities and Student Activities. Following this analysis, a comparison of a small sample of equal size Black and randomly selected White participants was conducted which showed no significant differences. The findings on the analysis for race also need to be interpreted cautiously and require additional research on larger samples with more representative racial diversity.

In terms of applied implications for doctoral graduate programs, the findings of the relationships between stress, social support, self-efficacy, doctoral program context with resilience, and intention to persist, merit careful consideration by programs. At a basic level, doctoral programs should make available on a periodic and regular basis information for students on resources and sources of support within the university and the community, e.g. counseling and support services. These would be resources students may confidentially contact on their own for assistance when needed. Ideally, such sources of support would be free or low-cost and readily available to students when needed. Also, in view of the relationships between self-efficacy and social support with resilience, and the relationships of specific DPCI scales with resilience and intention to persist, encouraging and supporting students to be actively involved and engaged in program activities with faculty and student peers seems very important. One of the main findings with the DPCI is the prominent relationship of the programs’ Interpersonal Environment in supporting a sense of belongingness and fit with the program among students which supports resilience and intention to persist. This implication is also supported by previous
research which reports correlations of the faculty-student supervisory and advising relationship with higher completion rates and self-efficacy (Lambie & Vaccaro, 2011; Nerad & Cerny, 1993; Overall et al., 2011).

One of the challenges doctoral programs face is gaining a better understanding of student needs related to these relationships in order to support building their self-efficacy, resilience, and intention to persist while decreasing stress. This challenge may be particularly important for students who hold identities that have been historically oppressed, (i.e., women and PGM) for whom the literature indicates have had challenges in receiving adequate support and social integration in developing a sense of belongingness and fit in their graduate programs (Cohoon et al., 2009; Proctor & Truscott, 2012).

One of the main findings of this study is the importance of doctoral program context in supporting doctoral student resilience and intention to persist. In the current study the two higher-order factor scales of the DPCI, Academic Environment and Interpersonal Environment, each had a significant small positive correlation with resilience and a significant moderate positive correlation with intention to persist. Both factors are an important part of doctoral program context. What seems interesting in the present study is that the interpersonal environment had a somewhat stronger relationship with both criterion variables and was more prominent as an independent predictor in the regression analyses. Although the academic environment and academic quality of doctoral programs receive a lot of university, program, and public attention, the interpersonal environment of doctoral programs appears to receive less public attention. One of the important implications of this study may be that doctoral programs and doctoral students may benefit from more attention to the interpersonal environment of the program. While doctoral programs typically do regular evaluations and assessments of the
academic aspects of the program, i.e. regular teaching evaluations of faculty by students, annual student evaluations by faculty; the extent of regular evaluations of doctoral programs of their interpersonal context is not clear. Sorokosh’s (2004) Doctoral Program Context Inventory (DPCI) is a resource that programs might use anonymously to do regular program assessments of both the academic environment and the interpersonal environment with the intention of making improvements in both areas to support program quality and doctoral program resilience and intention to persist. This study contributes to the fourth wave of resilience research and programs can consider using the results as well as their own program specific research to develop prevention and intervention strategies specific to their doctoral students that can help promote factors that assist students to be resilient and intending to persist.

**Limitations**

There are several possible limitations to this study. The first is that this research design was correlational and therefore no causal relationships could be inferred from the results. Future studies might explore these questions from a longitudinal developmental perspective and consider the possible impact of the variables of interest on the development of resilience and intention to persist over time.

The sample composition is also a limitation. While the sample was large, several variables had unequal and/or small numbers within some groups of interest. The current study was largely made up of students in the Higher Education Leadership/Administration/Student Affairs programs, with a majority of students being married, women, and greater numbers of students in phases 2 and 3 of their doctoral studies. The sample had low racial, ethnic, sexual orientation, and international status diversity. The identity characteristics of race, international status, and genders outside of the binary all had sample sizes too small to generalize. A more
diverse sample might show more relationships, particularly for race and gender. In addition, studies that sample specifically from populations of identity characteristics that were small in this study may support understanding the unique needs of students who may fit these identities. Consistant with other research, identity-based studies of the variables of interest that do not represent the diversity within graduate programs continues to challenge external validity.

Another possible limitation is the measures used to assess the variables in the study. There are alternative measures of resilience, social support, and intention to persist. This is similar to a general limitation in research which is the inconsistent operationalization or definition particularly of the variables of resilience and program phase. If alternative measures were used, particularly measures that have different operational definitions of the variables, this study may have yielded different results.

A limitation that isn’t yet well understood at the time of this study is the potential impact of the current global pandemic COVID-19. Data was collected for this study during a school year that both students and higher education were still largely grappling with how to manage the impact and changes created by the pandemic. Research to better understand the impact of this pandemic on higher education and doctoral students could support a more contextualized understanding of the current findings. Additionally, replication studies done post-stabilization of systems and psychological response to COVID-19 would also be supportive in understanding how the pandemic may have affected students’ scores in the current study and help programs to better understand what factors may be more important during times of national or global crisis.

Given that several variable combinations have never been studied in this way additional exploration and replication studies would help to increase statistical power and increase validity. Additionally, several variables that were found to be significant contributors in others studies
were not studied here. The variables of full-time/part-time status, cohort programs vs. non-cohort programs, and financial status, found to be significant in other studies could have accounted for variance in this study. Additionally, experiences of discrimination were not analyzed in this study but were found to be important in many other studies and demonstrated a relationship with the variables of interest in this study (Johnson-Bailey, 2004; Gasman et al., 2008; Cohoon, Wu, & Chao’s, 2009; Proctor & Truscott, 2012). Finally, in line with previous researchers’ assertion that intention to persist and resilience could decrease attrition (Gardner, 2008), studying these variables in direct relation to attrition could help to understand how to develop programming that will be more likely to decrease attrition risk.

**Conclusion**

This study makes a unique contribution to the literature on resilience, intention to persist and graduate students while also demonstrating the need for further investigation to both support generalization and specification of results within and between populations. This work is important because doctoral attrition has not changed much particularly for PGM and those in the STEM fields (Lovitts, 2002; Sowell, 2015). Additionally, this study shows that in addition to attending to the academic environment programs need to also consider the interpersonal environment within their programs as well. Interpersonal environment is not a separate part but and integral part of a student’s experience and it impacts the other personal student protective factors of self-efficacy, social support, and perceived stress.

This study was very complex and opens the door for additional data analysis to help understand more nuances of factors that support student resilience and intention to persist. The hope is that programs and future students will be moved to engage further in this research in the interest of bettering the overall environment of the doctoral program. A recommendation is for
the faculty to vision with their students implications for their programs that both represents the needs faculty know are necessary related to academic outcomes, while also actively listening about how to integrate a positive interpersonal environment related to their students’ needs. As the researcher who also identifies as an educator, mental health professional, program creator and agent of change, continuing to grow a deeper understanding of ways to support resilience and intention to persist as well as better understand how these constructs may be related to attrition seems critical. More intentional sample collection methods within PGM by becoming a trusted community support and engaging buy-in practices prior to asking for research support. Consultation with graduate programs that are interested on ways to do program development that may match their student’s needs will also expand understanding and support program completion for future doctoral students.
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doi:10.1080/02615470902912243

Appendix A

Background Characteristics Survey
**Student Background**

How many years including this one have you been enrolled in your current degree program?

1. This is my first year
2. Year 2
3. Year 3
4. Year 4
5. Year 5
6. Year 6
7. Year 7
8. Above 7 years

Please check the status of the following tasks:

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<th>Task</th>
<th>Completed</th>
<th>In Progress</th>
<th>Not Started</th>
<th>Not Required</th>
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<td>Dissertation data Collection and Analysis</td>
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<td>Writing Dissertation/Preparing to Defend (Data Collection and Analysis Completed)</td>
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Relationship Status:
1. Single
2. Married
3. Divorced or Separated or Widowed
4. Partnered

We are interested in how you describe yourself. The next few questions will ask you to describe yourself in multiple ways:

Are you of Hispanic, Latino or Spanish origin?
- No, not of Hispanic, Latino or Spanish Origin
- Yes, Mexican, Mexican Am., Chicano
- Yes, Puerto Rican
- Yes, Cuban
- Yes, another Hispanic, Latino, or Spanish Origin-Enter, for example, Salvadoran, Dominican, Colombian, Guatemalan, Spaniard, Ecuadorian, etc.

Which of these groups best represents your race? Mark one or more boxes AND enter origins.
- White – Enter, for example, German, Irish, English, Italian, Lebanese, Egyptian, etc
- Black or African Am. - Enter, for example, African American, Jamaican, Haitian, Nigerian, Ethiopian, Somali, etc.
- American Indian or Alaska Native – Enter name of enrolled or principal tribe(s), for example, Navajo Nation, Blackfeet Tribe, Mayan, Aztec, Native Village of Barrow Inupiat Traditional Government, Nome Eskimo Community etc.
- Chinese
- Filipino
- Asian Indian
- Other Asian Enter, for example, Pakistani, Cambodian, Hmong etc.
- Vietnamese
- Korean
- Japanese
- Native Hawaiian
- Samoan
- Chamorro
- Other Pacific Islander – Enter, for example, Tongan, Fijian, Marshallese, etc
- None of these apply - Enter race or origin

What is your age? ____________________
We are interested in how you describe yourself. The next three questions are about sexual orientation and gender identity:

1. Which of the following best represents how you think of yourself?
   a. Gay or Lesbian
   b. Straight that is, not gay or lesbian
   c. Bisexual
   d. None of these apply _____________________
   e. I do not know the answer
   f. Choose not to answer

2. Gender
   a. Man
   b. Woman
   c. Intersex
   d. None of these apply _____________________

3. Do you consider yourself to be transgender?
   a. Yes
   b. No
   c. I do not know
   d. Choose not to answer

Please indicate your current status below:
1. U.S. citizen or permanent resident
2. International student
3. Other

Please select the program area you are seeking a doctoral degree in:
1. Counseling Psychology
2. Counselor Education and Supervision
3. Higher Education Leadership/Administration/Student Affairs
Appendix B

HSIRB Approval and Informed Consent Document
Date: March 22, 2021

To: Patrick Munley, Principal Investigator
    Amber Mosley, Student Investigator for dissertation

From: Amy Naugle, Ph.D., Chair

Re: IRB Project Number 21-03-10

This letter will serve as confirmation that your research project titled “An Investigation of Factors Related to Graduate Student Resilience and Persistence During Doctoral Study” has been approved under the exempt category of review by the Western Michigan University Institutional Review Board (IRB). The conditions and duration of this approval are specified in the policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note: This research may only be conducted exactly in the form it was approved. You must seek specific board approval for any changes to this project (e.g., add an investigator, increase number of subjects beyond the number stated in your application, etc.). Failure to obtain approval for changes will result in a protocol deviation.

In addition, if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the IRB for consultation.

The Board wishes you success in the pursuit of your research goals.

A status report is required on or prior to (no more than 30 days) March 21, 2022 and each year thereafter until closing of the study. The IRB will send a request.

When this study closes, submit the required Final Report found at https://wmich.edu/research/forms.

Note: All research data must be kept in a secure location on the WMU campus for at least three (3) years after the study closes.
You are invited to participate in this research project titled "An Investigation of Factors related to Graduate Student Resilience and Persistence During Doctoral Study."

STUDY SUMMARY: This consent form is part of an informed consent process for a research study and it will provide information that will help you decide whether you want to take part in this study. Participation in this study is completely voluntary and you can refuse to participate, stop participating at any time, or choose to not answer any question without prejudice, penalty, or risk of any loss of service you might otherwise have. The purpose of the research is to: Explore the factors that relate to graduate student’s resilience and persistence during doctoral study and will serve as Amber Mosley’s dissertation for the requirements of the Counseling Psychology Ph.D. program. If you take part in the research, you will be asked to complete a set of online surveys. Your replies will be completely anonymous, so do not put your name anywhere on the survey. It will take approximately 20 minutes to complete the survey.

Possible risk and costs to you for taking part in the study may be discomfort from questions about yourself and your experiences. Potential benefits of taking part in this study may not be directly to you as the participant. Your participation however, may help increase an understanding of factors that support graduate student resilience and intention to persist. This may increase awareness and program building focused on supporting students persisting through their programs with resilience and success in completing their programs. Your alternative to taking part in the research study is not to take part in it.

The following information in this consent form will provide more detail about the research study. Please ask any questions if you need more clarification and to assist you in deciding if you wish to participate in the research study. You are not giving up any of your legal rights by agreeing to take part in this research. After all of your questions have been answered and the consent document reviewed, if you decide to participate in this study, please indicate this by clicking the “I agree to participate in this research study” button below.

What are we trying to find out in this study/ What is being measured? This study seeks to learn more about factors that may relate to doctoral students’ resilience and intention to persist throughout their graduate education. Understanding ways to support students
in persisting through their graduate program serves all students and has the potential to identify the needs of specific identity groups who may be historically underrepresented or underserved. My hope is that graduate programs will be able to use this research to inform policy, procedure and programming that supports students to be resilient through the challenges they face in graduate school, to help increase student success, and decrease attrition rates for graduate students.

**Who can participate in this study?**
Eligible participants must be currently enrolled doctoral students in a Counseling Psychology, Counselor Education and Supervision, and or Higher Education Leadership/Administration/Student Affairs Ph.D. or Psy.D. or Ed.D. program in the United States.

**Where will this study take place?**
The study will take place via an online survey that can be completed on the computer, phone or other electronic device that connects to the internet.

**What is the time commitment for participating in this study?**
Completion of the online surveys will take about 20 minutes of your time.

**What will you be asked to do if you choose to participate in this study?**
Participation includes reviewing this informed consent document then choosing to select the “I agree to participate in this study” button. Then completion of the online survey set and submitting your results.

**What are the risks and costs of participating in this study and how will these risks be minimized?**
Possible risk and costs to you for taking part in the study may be discomfort from questions about yourself and your experiences. To minimize risk you can refuse to participate, stop participating at any time, or choose to not answer any question without prejudice, penalty, or risk of any loss of service you might otherwise have.

**What are the benefits of participating in this study?**
Potential benefits of taking part in this study may not be directly to you as the participant. Your participation however, may help increase an understanding of factors that support graduate student resilience and intention to persist. This may increase awareness and program building focused on supporting students persisting through their programs with resilience and success in completing their programs.
What will happen to my information collected for this research project after the study is over?
No personally identifiable information will be collected and to avoid indirect identification data will only be shared in aggregate form, institution names will not be reported with any one participants data and no individual responses will be shared. Thus, participating in this research study will be anonymous. The de-identified (anonymous) information collected for this research may be used by or distributed to investigators for other research without obtaining additional informed consent from you.

Should you have any questions prior to or during the study, you can contact the principal investigator, Patrick Munley at 269-352-6158 or the student investigator, Amber Mosley at (708)288-9161 or a3mosley@wmich.edu. You may also contact the Chair, Institutional Review Board at 269-387-8293 or the Vice President for Research at 269-387-8298.

This consent has been approved for use for one year by the Western Michigan University Institutional Review Board (WMU IRB) on March 22nd, 2021.

Participating in this survey online indicates your consent for use of the answers you supply.
Appendix C

Recruitment Email
Dear Training Director or Department Chair,

My name is Amber Mosley and I’m a doctoral candidate in Counseling Psychology at Western Michigan University. I am requesting your assistance with participant recruitment for my doctoral dissertation research project titled An Investigation of Factors related to Graduate Student Resilience and Persistence During Doctoral Study. This study has been approved by Western Michigan University’s Human Subjects Institutional Review Board (HSIRB).

The purpose of this study is to examine factors that may relate to resilience and intention to persist in doctoral graduate study.

Below is a copy of an email invitation to potential participants. I would greatly appreciate it if you would please forward this invitation to doctoral students in Counseling Psychology or Counselor Education and Supervision, or Higher Education Leadership/Administration/Student Affairs doctoral program as appropriate for your program(s).

Thank you very much for your help.

Amber Mosley, M.A.
Doctoral Candidate Counseling Psychology
Western Michigan University
a3mosley@wmich.edu

Research Invitation to Doctoral Students in Counseling Psychology; Counselor Education and Supervision; and Higher Education Leadership/Administration/Student Affairs.
Dear Doctoral Student,

My name is Amber Mosley. I am a doctoral candidate in Counseling Psychology at Western Michigan University. I am reaching out to you to invite you to participate in my doctoral dissertation research focusing on exploring the factors that may support graduate students in completing their doctoral programs.

In this time of social change and justice understanding the unique ways we can support all students in persisting through their graduate programs is important. Developing our knowledge in this area serves all students and has the potential to identify the needs of specific identity groups who may be historically underrepresented or underserved. My hope is that graduate programs will be able to use this research to inform policy, procedure and programming that supports students to be resilient through the challenges they face in graduate school, to help increase student success and decrease attrition rates for graduate students.

Eligible participants must be currently enrolled doctoral students in a Counseling Psychology, Counselor Education and Supervision, or Higher Education Leadership/Administration/Student Affairs Ph.D. or Psy.D. or Ed.D. program in the United States.

Participation involves completion of a brief online set of surveys. and is anonymous, voluntary, and takes about 20 minutes.

By clicking the following link, you will be provided with a brief description of the study and informed consent to participate:
https://wmich.co1.qualtrics.com/jfe/form/SV_ebTjLXHxUoqJ25g

Sincerely,

Amber Mosley, M.A.
Doctoral Candidate Counseling Psychology
Western Michigan University
a3mosley@wmich.edu