

Toward a Better Understanding of Doctoral Degree Completion:
A 17-Year View of an Executive Leadership Doctoral Program

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Abstract of the Dissertation

Toward a Better Understanding of Doctoral Degree Completion: A 17-Year View of an Executive Leadership Doctoral Program

This study attempts to analyze factors that contribute to doctoral degree completion in one cohort based doctoral program over a period of seventeen years. Four research questions were identified: What is the relationship between doctoral degree completion and student perceptions of three doctoral program factors: research preparation, faculty involvement, and dissertation advisor/advisee relationship; between doctoral degree completion and student perception of a cohort experience; between doctoral degree completion and doctoral student personality type as measured by the Singer-Loomis Type Deployment Inventory (SL-TDI); and between student perception of cohort experience and SL-TDI scores?

The population consisted of 364 doctoral students in a nontraditional cohort based program. Two samples were identified as “survey sample” and “personality sample”. A 68-question survey was administered with a response rate of 61%. A quantitative associational study using descriptive statistics, reliability tests, correlational analysis and linear and logistical regression was designed to analyze the data.

Results of the study indicated that there was no correlation between degree completion and demographics. Three program factors were found to be significant in predicting completion: “Dissertation committee members experienced problems that hindered my progress”; “Faculty members have encouraged me to pursue research questions that are of interest to me”; and

“Required coursework in my doctoral program prepared me for writing my dissertation”. No significant relationship was found between personality and cohort experience; however, two personality trait types (extroverted sensing and extroverted feeling) were significant in predicting doctoral degree completion and noncompletion. Finally, a relationship was found between “I rely a great deal on other students in my cohort” and “small group work is beneficial to me” and degree completion. The study also demonstrated that the constructs of the study were reliable.

Nine recommendations were made including expanding the use of the survey, recommendations regarding three significant program factors, accountability measures for dissertation committees and chairpersons, improved monitoring of attrition; further research in exploring the relationship between research efficacy and degree completion and among leadership, personality and research efficacy.

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Preface

This research reflects an attempt to better understand the “black box” of doctoral degree education in the United States. The literature indicates that the typical *survival of the fittest* modus operandi of most doctoral programs has resulted in 40% to 60% student attrition, or as stated by Kerlin (1995), a “slow killing off of the lingering hopes of . . . students” (p. 547). Hopefully, this research will begin to build new knowledge, theory, and practice that constructs a bridge for improved student persistence and degree completion.

The Bridge Builder

An old man going a lone highway,
Came at the evening, cold and gray,
To a chasm, vast and deep and wide,
Through which was flowing a sullen tide.
The old man crossed in the twilight dim—
That sullen stream held no fears for him;
But, he turned when he reached the other side,
And built a bridge to span the tide.

“Old man,” said a fellow pilgrim near,
“You are wasting your strength in building here.
Your journey will end with the ending day;
You never again must pass this way.
You have crossed the chasm, deep and wide,
Why build you the bridge at eventide?”

The builder lifted his old gray head.
“Good friend, in the path I have come,” he said,
“There followeth after me today
Youth whose feet must pass this way.
This chasm that has been naught to me,
To those fair-haired youth may a pitfall be.
They, too, must cross in the twilight dim;
Good friend, I am building the bridge for them.”

—Will Allen Dromgoole

CHAPTER 1: INTRODUCTION

Overview

In today's global knowledge economy, the need for postsecondary education has become ever more critical. A well-educated workforce is fundamental to the American economy and to tomorrow's innovation. Knowledge and intelligence are now viewed as commodities (Heilbroner, 1986), and human capital growth and management are essential to business, organizational, and governmental success (Government Accounting Office [GAO], 2003). The GAO (2003) report stated:

The early years of the 21st century are proving to be a period of profound transition for our world, our country, and our government. As the Government-wide perspective volume of this series makes clear, this transition is being driven by a number of key trends, including global interdependence; diverse, diffuse, and asymmetrical security threats; changes in the nature of the economy; rapidly evolving science and technologies; dramatic shifts in the age and composition of our population; important quality of life issues; and evolving government structures and concepts. (p. 3)

One major key to building the capacity to respond to the rapidly evolving interdependent global economy is through "acquiring, developing and retaining talent" (GAO, 2003, p. 16). To successfully compete in the 21st-century marketplace, higher levels of skill and academic preparation are required. This extends from the level of skilled worker, where a high school degree is no longer adequate, to middle and advanced professional positions, where a graduate degree has become the entry credential. Fierce competition for knowledge acquisition seems to be dominating our global society, where the United States has long been viewed as a premiere nation in the development of intellectual capital.

Yet, the United States rates very poorly among other nations in student completion of graduate degrees. Student attrition from doctoral programs is typically reported at 50% (Bowen & Rudenstein, 1992; Good, 2002; Golde, 2002; Nerad & Cerny, 1991), with even higher attrition rates up to 70% (Bair, 1999) from the most prestigious U.S. universities. Of equal significance among U.S. universities is the long history of high attrition from doctoral programs extending over a 50-year period. Based on Faghihi's (1999) estimate that there were 500,000 individuals in all but dissertation (ABD) status in the United States and Sternberg's (1981) estimate that over 50,000 new ABDs are generated every year, it is estimated that there are well over 700,000 ABDs in the United States. Researchers advise that this is an old issue that has been on the discussion table for nearly 50 years, beginning with Berelson's landmark study in 1960. What are the ramifications of this mammoth failure of our universities and our students?

In addition, reports also document the growing erosion of public support for universities, the decline in government and business financial support, and the demand for greater higher education accountability (Nerad, June, & Miller, 1997). Colleges and universities report growing economic austerity issues, shrinking university resources, reduced federal and state research budgets, and rising tuition costs (National Research Council, 1989). With the demand for more graduate degrees and greater talent pools and the decrease in research and other funding, a new societal economic classification has emerged. The wealthy, the middle class, and the poor have made room for the new rapidly growing category: the indebted student. It has become critically apparent that the student, the universities, and our communities can no longer afford to continue down this path of high graduate school dropout rates and low doctoral degree completion.

In his 1960 seminal study, Berelson summarized that attrition in the United States wastes both human and institutional resources. A frequent and more recent issue is the question of whether doctoral students emerge from graduate programs with enhanced feelings of self-worth, intelligence, and ability or whether they emerge demoralized with feelings of failure (Kearney, 1996; Nerad et al., 1997). The relationship between goal setting, goal achievement, self-efficacy, and adult well-being is the subject of considerable research (Bandura, 1997; Heckhausen, 2002; Pulkkinen, Nurmi, & Kokko, 2002). In light of a half century of high student attrition rates from U.S. doctoral programs, this study seeks to identify factors that may contribute to this long-standing erosion of student and university success in the highest levels of our educational system.

This research reviews data from 17 years of an executive leadership cohort-based doctoral program (ELDP). The problem of attrition is viewed through a multifaceted lens that includes both doctoral student and program attributes. The student lens includes demographics, personality preference type, research efficacy, and student perception of cohort experience. The lens through which the program is viewed includes faculty involvement, dissertation advisor/advisee relationship, and quality of research preparation. The remainder of this chapter reviews the problem that is addressed in the study, as well as the study's purpose, research questions, significance, conceptual framework, methodology, and delimitations and limitations. Definitions of key terms are provided in Appendix A.

Statement of the Problem

There are many reasons why students decide to pursue a doctoral degree. Students most often mention personal goal fulfillment, earning the highest degree offered, being a

life-long learner, and career-related issues such as advancement, derailment, or change as reasons for entering a doctoral program (Good, 2002; Kerlin, 1995). Nerad, June, and Miller (1997) reported that the growth in the number of doctoral degrees awarded doubled every decade in the United States until the 1950s, tripled during the post-Sputnik era, and increased by 3.8% each year from 1961 until the late 1990s. Yet, Bowen and Rudenstine (1992) reported that there is an increasing trend for longer time to complete a degree, often 6 to 12 years, and that only 40% to 60% of all entering students in doctoral programs eventually obtain the degree. Nerad and Cerny (1991) conducted an in-depth study at the University of California at Berkeley that verified the broad range of degree completion statistics across different fields, spanning 72% for the biological sciences to 48% for the social sciences. Similarly, time to degree ranged from 5.5 years in engineering to 8.9 years in the arts and humanities.

Numerous studies have shown that the longer the time a doctoral student spends in the process of earning the degree, the less likely he or she will persist and complete the degree (Bowen & Rudenstine, 1992; Nerad & Cerny, 1991). In November 2005, the Council of Graduate Schools (CGS) reported preliminary results from its Ph.D. Completion Project, indicating that one means of comparing persistence progress is looking at the point in time that 50% of entering students complete the doctoral degree across various fields of study. Their findings indicated that 50% of students in engineering completed the degree in 6 years, compared with 7 years for the life sciences, 8 years for the physical sciences and mathematics, 9 years for the social sciences, and 10 years for the humanities. This is not dissimilar from the findings of Bowen and Rudenstine (1992) nearly 15 years earlier that demonstrated that lower doctoral degree

completion rates are more typical of the social sciences and humanities; graduate students in education had a median time to degree of over 12 years, whereas students in the physical sciences typically completed the doctoral degree in 6 years.

Katz (1995) reported that “retention of graduate students is a major concern in higher education. . . . Enrollment and completion rates have a direct impact on the university’s reputation and financial standing” (p. 55). She stressed the significance of low completion rates, indicating that the university and the students are *both* central to the process and that both spend large amounts of time, energy, resources, and money in doctoral education. On April 18, 2006, the *Washington Post* reported that based on data from the CGS Ph.D. Project, U.S. high schools and U.S. doctoral programs share the same problem: low graduation rates and how to keep students in school long enough to earn a degree. They reported that the dropout rate for doctoral students and urban high school students is similar, at 50% to 60%.

Nationally there is also a concern regarding America maintaining its dominance in research, innovation, and the number of Ph.D. degrees earned (Strauss, 2006). In the growing competitive climate of the 21st-century global economy, with the new focus on and investment in education, particularly by China and India, there is indeed a wake-up call for the United States to complete an in-depth analysis of attrition and completion and to develop strategies and interventions to help doctoral students succeed (Stewart, 2006). Although it is difficult to obtain absolute numbers, it is estimated that there are over 1.5 million students in graduate schools in the United States and that over 400,000 are in doctoral programs (CGS, 2006). With the high cost of graduate education to students, educational institutions, and society and with the critical loss of future talent represented

by the high rates of attrition, “institutions and researchers have a profound obligation to improve understanding of the causes and consequences of high rates of doctoral student attrition and to pursue policy changes aimed at increasing student success and reducing doctoral student dropout” (Kerlin, 1995, p. 7).

Ten years later, addressing the same but growing problem of high rates of attrition, the CGS (2006) stated, “Attrition in U.S. doctoral programs is a tremendous waste of America’s financial resources and human energies” (p. 1). The CGS advocated that improving doctoral degree completion rates is “vital to meeting our nation’s present and future workforce needs” (p. 1). The research has been consistent. As a nation and across individual colleges and universities, we are losing America’s future intellectual and research potential and in the process wasting public and personal economic capital and possibly harming the efficacy of some of our brightest potential scholars.

In light of consistent findings of high attrition and longer time to degree completion reported in the literature over the past three decades (Nerad & Cerny, 1991; Katz, 1995; CGS, 2006; Bowen & Rudenstine, 1992; Kerlin, 1997), two major questions and areas of research interest emerge: What are the program and institutional variables that contribute to student success and doctoral degree completion? What are the student attributes and variables that contribute to persistence and degree completion? These two primary questions and the extent to which program and student variables are interrelated and interdependent are the focus of this study.

Purpose of the Study

The purpose of this research is to inform our understanding of the factors that contribute to doctoral student attrition and to degree completion. This study has an expo

facto, nonexperimental quantitative associational research design employing a survey instrument, demographic data, and student personality assessment data. The data examined through this study are used to inform program development and student decision makers, with the goal of identifying variables that contribute to building student/program partnerships for successful and timely doctoral degree completion.

This study addresses a two-part problem. First is the consistent prevalence of high rates of doctoral student attrition in the United States, which has been documented in the literature for over a half century (Bair, 1999; Bowen & Rudenstine, 1992; CGS, 2006; Kerlin, 1995; Nerad & Cerny, 1991). Second, as a result of these formidable data on attrition of doctoral students, there is a growing concern in the 21st century over the continued loss of future research talent that is represented by high attrition rates and the resultant unacceptable cost of failed doctoral programs to students, higher education institutions, government, and society.

Research Questions

This study seeks to determine the factors that have contributed to doctoral student persistence and degree completion among the students enrolled in the 17 U.S.-based student cohorts in the ELDP in a large East Coast university. Four research questions are addressed:

1. What is the relationship between doctoral degree completion and student perceptions of three doctoral program factors: research preparation, faculty involvement, and dissertation advisor/advisee relationship?
2. What is the relationship between doctoral degree completion and student perception of a cohort experience?

3. What is the relationship between doctoral degree completion and doctoral student scores on the Singer-Loomis Type Deployment Inventory (SL-TDI)?
4. What is the relationship between the cohort experience and SL-TDI scores?

Significance of the Study

Despite decades of confirming research (Bowen & Rudenstine, 1992; CGS, 2006; Kerlin, 1995; Nerad & Cerny, 1991), little progress has been made in reducing attrition and improving time to degree and degree completion rates. By studying factors related to program structure as well as factors related to student traits and experience, this research aims to identify barriers to doctoral degree completion, gain insight to augment student self-awareness of and adjustment to the rigors of doctoral studies, and inform doctoral program policy, procedures, roles, and relationships.

This study provides the first comprehensive data collection and analysis study of a thriving, successful doctoral program with the expectation of identifying opportunities for continued program improvement and growth; gaining insight regarding student variables associated with attrition and retention; developing an understanding of student perception of faculty involvement, research preparation, and advisor/advisee relationships; and defining the program's rates of attrition, retention, and completion. Of particular significance, this study may contribute unique data to the literature in determining if a relationship exists between individual student personality preferences and student perception of cohort experience and degree completion. It is also anticipated that the findings of this study may be applicable to other similar doctoral programs and to students anticipating enrolling in doctoral studies.

Karl Weick (1984) has indicated that problems in the social sciences are often defined in ways that are overwhelming and make successful management of them difficult. He suggested viewing problems in smaller pieces to allow for controllable size, potential solutions, and more visible results. Weick stated: “This strategy of small wins addresses social problems by working directly on their construction and indirectly on their resolution” (p. 40). It would seem then that the study of one academic department over 17 years might result in data that are manageable and may have implications for transferability to similar academic departments and possibly similar disciplines.

Conceptual Framework

A conceptual framework is a formal way of thinking or conceptualizing about a process, system, or theory that is being studied. This skeletal, structural frame for a study is often represented by a graph, design, or model. Most often, the conceptual framework represents concepts or constructs that cannot be directly seen or observed and provides the ground rules and vocabulary that help to focus the theory.

In this study, the conceptualization involves exploration of the relationships among the constructs and variables that contribute to student persistence and attrition in pursuit of a doctoral degree. The conceptual framework in Figure 1-1 represents the interrelationships and interdependencies that contribute to successful completion of the doctoral degree. There are two main constructs: doctoral program factors and student factors. The literature (Bowen & Rudenstine, 1992; CGS, 2006; Nerad & Cerny, 1991) reflects the importance of doctoral program factors that contribute to building an environment that supports social and emotional factors. These factors include faculty involvement and support, dissertation advisor/advisee relationships that mentor the

student, and academic factors such as quality research training and research experience. The second vital component of the conceptual framework is a collection of student factors: demographics, cohort experience, personality preferences as measured by the SL-TDI, and personal perceptions. Based on recent literature (Katz, 1995; Nerad & Cerny, 1991), the extent to which program attributes and student attributes complement and support one another is often the basis for the development of a sound relationship that supports doctoral degree persistence and completion.

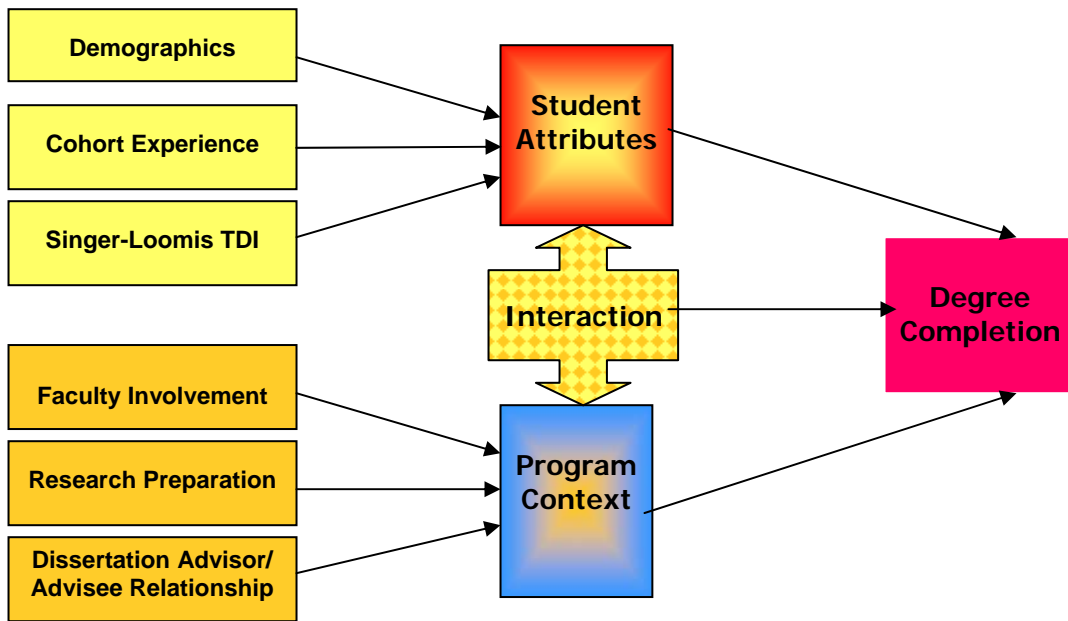


Figure 1-1. Conceptual framework: toward a better understanding of doctoral degree completion.

Theoretical Foundation

The conceptual framework is built on three primary constructs: social learning theory, constructivist philosophy, and Jungian personality theory. The basic premise of

this model is that learning takes place in a social environment and that learning is a social process. Integral to this process is the belief that the learner constructs knowledge as a result of interaction with others and the environment. Social learning theory is helpful in understanding both individual and group behavior and in identifying ways that individual and group behavior might be modified.

Although subject to vast differences in interpretation from radical to social perspectives, the focus of constructivist philosophy for this research is that there is not one “royal road” (Murphy, 1997) to truth, but that knowledge is socially constructed from the learner’s cognitions, beliefs, experiences, and concepts of knowledge and that the social construction of knowledge is based on reflection, sensemaking, collaboration, and shared meanings. Learning is contextual, active, and social. Learning is intricately tied to our interaction with others and to our language. Knowledge is more than the ontological perspective of an external reality to be identified; it is our means of making sense of the physical world, our interactions with others, and our individual experiences (Bandura, 1986).

The social construction of knowledge is closely related to Bandura’s (1977, 1986, 1989a, 1989b) concept of triadic reciprocal determinism and self-efficacy, which Bandura believes is integral to social learning theory. By moving beyond the concept that the environment impacts behavior and behavior impacts the environment, Bandura added the individual’s personality traits and psychological processes to the equation (Boeree, 1998). He saw personality traits as “an interaction among three things: the environment, behavior, and the person’s psychological processes” (Boeree, 1998, p. 2).

Incorporating personality traits and psychological processes is also central to Jungian psychology (Jung, 1971). In 1971, Carl Jung developed a theory of psychological types that distinguished one person from another. Jung described cognitive modes as combinations of two orientations (introversion and extroversion) and four functions (sensation, intuition, thinking, and feeling) that formed individual cognitive types. The four functions describe ways that individuals take in and process information and the two orientations describe the directions of an individual's psychological energy. From the two orientations and four functions, Jung developed eight archetypes: introverted sensation, extraverted sensation, introverted intuition, extraverted intuition, introverted thinking, extraverted thinking, introverted feeling, and extraverted feeling. Each archetype is described in Appendix B.

Jung believed that of the various ways available of receiving and processing information, individuals tend to rely on some more than others. He called this their cognitive mode, which he conceptualized as their orientations and functions (Singer & Loomis, 1984). He saw these cognitive styles as bipolar and mutually exclusive (Singer & Loomis, 1993). Singer and Loomis, two Jungian psychologists and developers of the SL-TDI, believed that individuals could transcend these opposites and use all their cognitive modes to some degree. In their development of the SL-TDI, they incorporated Jung's eight cognitive modes of psychological archetypes and their belief that individuals could learn to understand the archetypes and develop greater self-knowledge, which could be used as a tool for career development, improved team and organizational functioning, and building leadership capability. Olson (2006) discussed the individual's personality traits as measured by the SL-TDI as "a moment in time." He valued the use of

the SL-TDI as a means of assessing one's predominant style of functioning at a given point in time and stated that these preferences are subject to modification and transformation through the individual's understanding and learning (Olson, 2006).

Cervone (2004) discussed the individual as a complex dynamic learning system or a dynamically developing system based on interacting cognitive and affective processes. This concept is also central to social learning theory, a constructivist approach, and the concept of the individual as a dynamic social learning system capable of learning how to better understand one's own psychological and behavioral preferences, how one interacts in groups and organizations, and how one can make more informed decisions about personal goal setting and performance. It would seem that students intending to pursue a doctoral degree might benefit from a better understanding of their psychological and behavioral preferences and how they are best suited to interact in groups, cohort-based doctoral programs, and organizations.

Herein lies an opportunity to consider the potential relationship between positive self-efficacy in a complex dynamic human system and its impact on positive collective efficacy in complex dynamic groups (cohorts) and/or organizations. In social cognitive theory and Jungian theory, personality preferences and self-efficacy are not seen as genetically predetermined sets of traits with unfolding timelines that are reactive primarily to environmental impacts. Instead they are seen as dynamically developing systems based on interacting cognitive and affective processes (Cervone, 2004). Therefore, as stated previously, there is a dynamic nonlinear interactive learning process involving the environment, behavior, personality, and psychological processes. Construction of meaning and sensemaking (learning) can result in modifications in

personality, behavior, and the environment. During this process, one would anticipate that different personality types may interact and evolve differently, such as in the case of introverts and extroverts as well as other personality trait types.

Research on the psychological and psychosocial factors that contribute to attrition has indicated that key factors in doctoral degree completion are persistence, self-motivation, and self-direction (Tinto, 1998; Kluever, Green, & Katz, 1997). Butler (1995) also found that the two most important individual factors in degree completion were personal commitment and personal motivation.

Bandura (1994) addressed each of these factors in his discussion of self-efficacy. He stated: "Motivation based on goal setting involves a cognitive comparison process" (p. 74), and people with high self-efficacy make personal self-satisfaction conditional on matching performance to their valued goals. Linking goals, performance, and self-satisfaction gives direction to behavior and may intensify efforts when an individual with high self-efficacy is not content with substandard performance. Research also supports the proposition that self-efficacy will influence the choice between engaging or not engaging in a task, the effort expended in performing it, and the persistence shown in accomplishing it as well as the standard of performance (Bandura, 1997; Gist & Mitchell, 1992). Cervone, Artistic, and Berry (2006) reported that high self-efficacy results in people setting more challenging goals and remaining more highly committed to their goals. Therefore, self-efficacy contributes to motivation, persistence, and commitment in relationship to the goals people select, the amount of effort they expend, how long they will persevere in the face of challenges, and their resiliency. The relationship between

goal setting, goal achievement, and well-being in adulthood has been the subject of much study (Heckhausen, 2002; Pulkkinen et al., 2002).

Based on the theoretical foundations of social learning theory, a constructivist perspective, and Jungian personality theory, this research seeks to determine if there is a relationship among student personality type preference as measured by the SL-TDI, student perception of cohort experience, and student perception of selected program factors and doctoral degree completion.

Summary of Methodology

The ELDP that is the focus of this study is situated within the Human and Organizational Studies division of a large East Coast university. The program has an interdisciplinary approach, with roots in the behavioral and physical sciences. With a balanced curriculum of theory, research, and practice, the program draws on five areas in the social sciences (psychology, sociology, management, anthropology, and education) and five areas in the physical sciences (chemistry, physics, biology, engineering, and economics). In addition to its interdisciplinary approach, the program has a strong base of international students enrolled in U.S.-based campuses and provides doctoral studies in other countries, including China, Singapore, and Japan.

The ELDP is a cohort-based doctoral program founded in 1989. Each year the program enrolls a new cohort, with the 17th cohort commencing in the summer of 2006. In addition to the U.S.-based cohorts, two Asian-based satellite cohorts were part of the program but are not included in this research. Despite the longevity and success of this program, data regarding attrition, persistence, time to degree, and degree completion have not been formally studied. Student attributes and program parameters that may

significantly contribute to understanding student dissertation persistence and degree completion have not been identified or formally examined.

The design for this research is a quantitative associational study that employs a web-based survey developed by this researcher to provide information related to the perceptions, attitudes, preferences, practices, and data available about individual students, the faculty, the doctoral program, or specific groups within the population. The research consists of a correlational analysis among variables, with a dependent variable of doctoral degree completion and four data sources as independent variables:

- Demographic data, acquired from data maintained by the ELDP and from the web-based survey. These data include gender, age, race, ethnicity, marital status, country of citizenship, research or teaching assistantship, and sibling status, as well as the status of student coursework, comprehensive exams, dissertation persistence, and degree completion.
- Personality-type preference data from the SL-TDI, which “measure[s] the personality of individuals as determined by the way they view themselves in a variety of situations” (Singer & Loomis, 1996).
- Student perceptions of the cohort experience, using questions based on the Doctoral Student Experience Questionnaire developed and piloted by Stallone (1996).
- Student perceptions of the environment and structure of the doctoral program—focusing on research preparation, faculty involvement, and dissertation advisor/advisee relationship—using questions based on the Dissertation Questionnaire (Faghihi, Rakow, & Ethington, 1999).

Using a census approach, all students accepted and enrolled full-time in the ELDP from 1990 to 2006 were included in the research, and anyone who was not a member of the identified population was excluded. The 17 student cohorts had an average enrollment of 21 students and a total population of 364 students.

Data analysis consisted of several steps: descriptive statistics for each data element to describe the parameters or characteristics of the population; correlational analysis to measure the degree of relationship between variables delineated in each research question; and a logistical regression analysis, with degree completion as the dependent variable and SL-TDI, total score for cohort experience, and total scores for each program variable (research preparation and environment, faculty involvement, and dissertation advisor/advisee relationship) serving as independent variables.

Delimitations and Limitations of the Study

This study involves students from one program in a single large university on the East Coast of the United States. Findings are limited to this program, and generalizations of findings beyond this setting must be done with caution, as the specificity of the population may be a threat to the external validity of the study (Campbell & Stanley, 1963). The independent variables in this study cannot be manipulated; thus, causation inference is limited in that only the strength of the relationship can be described. The research instrument is a self-report survey, which is limited to the extent subjects report true data and beliefs. The demographic and the SL-TDI data were collected at the time of student enrollment in the doctoral program and are not considered to have serious limitations based on current knowledge.

Other limitations of the study are the potential complications and interpretation difficulties of implementing a survey retrospectively. Will participant responses relative to research training and preparation, dissertation advisor/advisee relationship, faculty involvement, and cohort experience reflect changes in the participants over time or recollection of their perceptions during their participation in the program? Because there has been regular documented communication from the program with participants over 17 years and because many graduates and “persisting” students have ongoing involvement with the program, it was anticipated that the limitations of the study would be minimal. Staff estimated that approximately 90 to 100 students were actively involved in coursework or the dissertation process and that another 80 to 90 students, or nearly 50% of the population, remain in ongoing reciprocal contact with the program.

CHAPTER 2:

REVIEW OF THE LITERATURE

The doctorate as a degree exists at the junction of the intellectual and moral. The PhD recipient is expected to serve as a steward of her discipline or profession: dedicated to the integrity of its work in the generation, critique, transformation, transmission and use of its knowledge. —Shulman, 2006

Historically, attrition from doctoral programs has not been viewed as a serious issue: survival of the fittest was the accepted *modus operandi*. In fact, Steinberg (1981) reported that the concept that only the best will survive has been viewed as normal and desirable. Tinto (1993) stated, “In most countries the more selective the level of education, the higher the rate of student completion. In the United States the reverse is true. The higher, the more selective, the level of education, the lower the rate of completion” (p. 230). He reported that failure to complete ranges from 35% to 40% in less selective U.S. postsecondary institutions and up to 50% in the most selective institutions. It has been estimated that there are over 700,000 individuals in all but dissertation (ABD) status in the United States based on the projections of some researchers (Faghihi et al., 1999; Steinberg, 1981). This loss of over 50% of doctoral students has been referred to as the “black box” of graduate education (Ehrenberg, Jakubson, Groen, So, & Price, 2005). In light of decades of unchanging and dismal statistics, particularly in the social and human sciences, this researcher seeks further insight in identifying factors that contribute to lower graduation rates and longer time to degree and in identifying the student and program factors that influence doctoral degree completion.

Over the past several decades, a plethora of research has been conducted on rates of attrition in higher education and particularly in doctoral degree programs. The research covers a broad spectrum of institutions, fields of study, and student demographics. This literature review focuses on two primary areas of research related to doctoral degree completion: student factors and doctoral program factors. The literature review is divided into three sections. The focus of the first section is on factors related to students and includes student demographics, personality traits as measured by the Singer-Loomis Trait Deployment Inventory (SL-TDI), and cohort experience. The second section addresses selected program factors that may influence student degree completion. These factors include student perceptions of faculty involvement, of the dissertation advisor/advisee relationship, and of research preparation and experience. Finally, doctoral degree persistence and completion is discussed in terms of the interaction and relationship between student factors and program factors.

Student Factors That Influence Degree Completion

Doctoral Student Demographics

The relationships among student factors, attrition, and doctoral degree completion have been studied by many researchers (Nerad & Cerny, 1991; Katz, 1995; Council of Graduate Schools [CGS], 2006; Bowen & Rudenstine, 1992; Golde, 2000; Kerlin, 1995, 1997; Tinto, 1998). Prior to the mid 1980s, much attrition research focused on student demographics and included areas such as race, gender, ethnicity, financial status, age, and academic ability. Most of the research to date has been inconclusive, with conflicting results. This section provides a brief summary of this research. It is important to note, however, that over several decades and numerous studies in many postsecondary

institutions, most of the research on demographics has pointed to a multiplicity of factors rather than one particular demographic factor. Across all research, financial ability/support has tended to be the most consistently influential *demographic* variable in attrition and completion.

Academic Performance

Traditionally, grade-point average (GPA) and scores on the Graduate Record Examinations (GRE) and Miller Analogies Test (MAT) were considered the best predictors of doctoral degree success and completion (Lemp, 1980). In fact, in 1973 Krauskopf found that a score of 70+ on the MAT was the single best predictor of doctoral degree completion. Long (1987), however, found that higher GRE scores were obtained by students who left doctoral programs than by those who completed the programs. Although recent research has failed to identify academic variables or graduate test performance as significant in degree completion (Bair, 1999; Hagedorn & Nora, 1996), in a study of 331 graduate students in Ph.D. programs conducted at the University of Iowa, Lee (2000) found that GPA was more important than any other variable in degree completion. Lee studied demographics, academics, discipline of study, and financial variables. Following GPA, discipline and duration of assistantship (financial support) most influenced degree completion. Her results also indicated that time to degree and degree completion were most often related to a multiplicity of issues and not a single factor.

Researchers have also found that the lack of predictive value of the GPA, GRE, and MAT is due to the bias these measures have relative to women, minorities, and socioeconomic background (Hagedorn & Nora, 1996; Vaseleck, 1994). Bair (1999)

reported that the results of numerous research studies suggest that “traditional academic indicators are not reliable predictors of persistence to the doctoral degree, with the exception of GRE Advanced Scores” and these scores are not available for most students (p. 118). She concluded that researchers need to consider student-faculty relationships, discipline differences, and doctoral students’ thoughts and feelings about attrition and persistence. GRE Advance scores were found to be significant in doctoral degree success in several research studies (Hirschberg & Itkin, 1978; Porozny, 1970; Traw, 1973).

Age

Research studies regarding age and time to degree and completion of degree are inconsistent both across universities and within universities (Renetzky, 1966; Benkin, 1984, 1987). Bratrud (1999) found that older adults in higher education were more autonomous, solitary, and high in perseverance to degree. This may also help to enlighten our understanding of the different needs of older adults in doctoral programs and as cohort members. Lunneborg and Lunneborg (1973) found that older students were more likely to complete their degrees, while Renetsky (1966) found that younger students and those who began their program soon after completing an undergraduate degree were more likely to complete the doctoral degree. Despite a multitude of studies (Lee, 2003; Bair, 1999; Good, 2002), age does not appear to be a reliable or consistent variable influencing degree completion.

The overall age of students who receive the doctoral degree has also been studied. In a review of age data, Kerlin (1995) found evidence that the mean age of doctoral recipients has risen over the past two decades. Specifically, he found that the mean age in 1987 was 33.6 years (32.8 for males and 35.4 for females). By 1993 the mean age was

34.1; however, for nontraditional students who were entering the doctoral program in increasing numbers, the mean age was 42.5 years. Age also varied by discipline, with education most often have the highest mean age of 43.0 years, while the mean for the sciences was 29.7 years.

Gender

The research on the relationship between gender, attrition, and degree completion has been controversial (Lee, 2000). Although some research studies found no relationship between gender and degree completion (Cook & Swanson, 1978; National Research Council, 1989). Patterson and Sells (1973) reported that graduate school attrition in the United States formed two major patterns: women were more likely to drop out than men, and students in the physical sciences were more likely to complete the doctoral degree than students in the social sciences and humanities. Touchton and Davis (1991) reported that of the over 20,000 doctoral degrees awarded to men in 1987, 55% were in the physical sciences and only 25% were in the social sciences and humanities, whereas over 11,000 doctoral degrees were awarded to women, with 67% in the humanities and social sciences and only 27% in the physical and life sciences (Kerlin, 1997). Bowen and Rudenstine (1992) also found that differences in gender were often related to discipline or other factors.

Research has also demonstrated that there is more financial support for the hard sciences, where male enrollment has traditionally been higher, and women have traditionally been more self-supporting (Kerlin, 1997). Therefore, lack of financial support has been believed to result in both higher attrition and longer time to degree for women. The increasing financial debt of students combined with the shrinking job market

has resulted in many students deciding that it may not be worth the cost of and time to degree (Cude, 1988, as cited in Kerlin, 1997).

Gonzales (1996) suggested that the gender gap may have been reduced relative to graduation rates; however, the gap continues to exist in the hard sciences. She suggested that future research address the low numbers of women in the hard sciences in relationship to professional identity, socialization in the discipline, and the low number of women faculty in the hard sciences. Although the gender gap may have lessened in more recent years, traditionally completion rates have been lower for women than men, with financial factors and marital status (Hagedorn, 1993) continuing to play a role in female attrition.

Financial Factors

Of all the demographic factors studied, financial issues seem to have the most consistent report of impact on time to degree and degree completion. Researchers have reported that increases in financial assistance have a positive impact on time to degree and degree completion (Baird, 1990; Bowen & Rudenstein, 1992; Lee, 2000; Seagram, Gould, & Pyke, 1998). As reported above, lower rates of attrition, shorter time to degree, and higher financial support in the form of research and assistantship dollars are often associated with the natural sciences (Baird, 1990; Bowen & Rudenstein, 1992; Lee, 2000; Seagram et al., 1998). Further, studies have shown that shorter time to degree and higher completion rates are found for students receiving research fellowships as opposed to the typically lower-paying teaching assistantships (Breneman, 1970).

At the same time, some researchers have argued that the financial support provided by fellowships and assistantships results in doctoral students becoming more

involved with the faculty, other doctoral student colleagues, and the program as a whole. Therefore, the shorter time to degree and the higher completion rate may also reflect more than financial support; they may reflect the integration and socialization of the student into the program (Baird, 1990; Bowen & Rudenstein, 1992; Seagram et al., 1998). Gonzales (1996) suggested that further research is needed to determine if financial support toward the beginning of study or late in the student's doctoral program is of more help and if research or teaching assistantships are more valuable than scholarships, in that they help the student become more involved in the life of the school.

Race

Attrition rates have been estimated at 40% to 50% nationwide for all graduate students (Stuckey, Sims, Tisdell, & Walters, PSU presentation), with an estimated rate of 60% to 70% for African American and Latino students (Boyle & Boice, 1995). The National Research Council (1989) reported that minority students experienced the same time to degree of approximately 8 years. Cooke, Sims, and Peyrefitte (1995) found that minority students did not report higher levels of alienation and scored significantly higher on affective commitment and locus of control, but scored lower on met expectations and satisfaction.

Although race has been considered a significant factor in test performance, studies have been inconclusive relative to doctoral degree persistence and completion. Clewell (1987) and Zwick (1991) found that minorities are not adequately represented in doctoral programs and have the lowest completion rates. Furthermore, studies have consistently demonstrated that blacks are highly underrepresented in the doctoral programs in the natural sciences (Journal of Blacks in Higher Education, 2005). Also noteworthy is the

fact that black women have held a large lead over black men in doctoral awards, earning 65.1% of degrees earned by African Americans in 2003 (Journal of Blacks in Higher Education, 2005). Other studies (Clewell, 1987; Presley, 1996) have demonstrated that mentoring, advisor support, faculty involvement, and socialization are all important components in supporting minority student success. These same factors have been reported to be highly influential in degree completion for nonminority students as well.

Personality Traits and Personal Characteristics

Research on the psychological and psychosocial factors that contribute to attrition has indicated that key factors in degree completion were persistence, self-motivation, and self-direction (Tinto, 1998; Kluever et al., 1997; Green, 1997; Wright, 2003). Interestingly, all three of these are addressed by Bandura (1996) in his discussion of self-efficacy. Butler (1995) found that the two most important individual factors in degree completion were personal commitment and personal motivation. Barriers to earning the degree included lack of a support system, isolation, poor relationships with faculty and/or major advisor, and misalignment between expectations and experience in the program (Adams, 1992; Butler, 1995; Dinham & Scott, 1999; Golde, 2005).

Individual personality-related factors that often result in attrition include student issues with locus of control, met expectations, attitudes of satisfaction, alienation, goal commitment, and need for social support (Cooke et al., 1995). Wagner (1986), in studying completion and locus of control and fear of success, found no difference between completers and noncompleters in relationship to locus of control and fear of success. However, differences were found in students' perceptions of the importance and priority of a number of factors, including advisors, committee chairs, research topic, the

doctoral degree, and statistics. Wagner also found that students had similar perceptions regarding committee members, peer group support, and the importance of family and friends.

Smith (1985) used Rotter's Internal-External Locus of Control Scale as a personality measure with doctoral students in clinical psychology over a 21-year period at Adelphi University. No significant relationship was found between locus of control and degree completion or any of the other factors studied, including relationship with dissertation chair and attitude toward dissertation. However, Smith reported that students viewed the dissertation experience as a rite of passage and 40% of students said that they would eliminate the dissertation, as they did not feel it was valuable for practitioners.

There is very little literature on the relationship between personality type or personality preference and doctoral degree completion. Shaw (2006) found that a determined personality and a high level of motivation were needed for degree completion in six semesters. Less than 10% of students at the University of La Verne are able to complete in six semesters. She recommended continued research to determine the relationship between personality factors and degree completion and attrition and between task-specific personality factors and dissertation persistence. Similarly, Hassan-Shahriari (1983) recommended, among other things, that students and their major professors have compatible personalities, values, and interests and that student personality characteristics need closer understanding relative to degree completion and attrition. Hales (1998) found that there was no significant relationship between personality type as a predictor of degree completion; however, student perception of faculty support was significantly

related to degree completion. Student perception of stressors was also related to degree noncompletion.

Although little research is available on the relationship between Singer-Loomis personality type and degree completion; Watters (1994), in addressing the increasingly critical role that small group work teams have in Western business organizations, found a significant relationship between superior task performance and Singer-Loomis personality type. In task execution where there is no definitive solution and management of ambiguity is required, the Singer-Loomis extroversion personality type was significantly related to participants' understanding of how they were impacting the world through the perceiving and judging modes and to superior performance on some tasks. Watters indicated that the importance of personality in small group work decision making needs further research. Watters found that there was also a significant relationship between personality and how small groups develop. He recommended that personality should be considered in the formulation of groups, in that certain personality traits may augment group performance.

The Myers-Briggs Type Indicator has been studied in relationship to degree completion. Rosser (2007) studied Myers-Briggs and doctoral degree success with 223 students at Texas A&M University. Of the 71% or 159 students who earned the doctoral degree, the highest personality type frequency (18%) was ISTJ (introverted, sensing, thinking, judging), who are characterized by being “practical, matter of fact, dependable, responsible and well-organized” (p. 45). The second highest type who completed the degree was INTJ (introverted, intuitive, thinking, judging), which is characterized by personality types who seek to find patterns and relationships in information and are

decisive and logical in decision making. In this study, introversion, thinking, and judging personality types with both sensing and intuition characteristics were associated with degree completion. Interestingly, Rosser found that ISTJ was also the most frequent personality type of noncompleters. Finally, when looking at only two of the personality traits by excluding introversion and extroversion, Rosser found that 73.62% of successful degree completion was represented by SJ (sensing/judging); 71.23% was represented by NT (intuiting/thinking); 70.45% was represented by IF (intuiting/feeling); and 60.0% was represented by SP (sensing/perceiving). The most underrepresented personality in degree completion and noncompletion was SP (sensing/perceiving). Rosser recommended that the Myers-Briggs may be more useful in understanding learning styles than in predicting degree completion.

Cohort Experience

For the purpose of this study, a cohort is defined as a group or band of people who are partners in an endeavor. A cohort-based educational program is one that follows a sequenced program of study, where students take the majority of their classes together and their interaction is a key component of the program. Cohorts have also been described as purposefully selected and grouped students pursuing a program of study that is characterized by social processes, shared experiences, collective efforts, and mutual commitment to an educational goal (Horn, 2001; Maher, 2001; Norris & Barnett, 1994; Yerkes, Basom, Barnett, & Norris, 1995).

In an effort to positively impact retention and completion, graduate programs have increasingly adopted an educational cohort model characterized by group admissions and lock-step curricular progression (Basom, Yerkes, Norris, & Barnett,

1996). Although cohort programs had their early roots in the 1960s (Achilles, 1994), they began to flourish again in the 1980s in response to calls for higher education reform that included concern regarding the high rate of doctoral student attrition (Norton, 1995; Hresko, 1998). Norton (1995) also reported the need for improvements in higher education in areas such as a concentrated period of study, improved curriculum, relevance to practice, meaningful faculty/student interaction, and a less authoritarian structure. The structure of cohort programs enabled university programs to begin to address these higher education reform needs in a more integrated manner.

Benefits of a Cohort Structure

Barnett, Basom, Yerkes, and Norris (2000) conducted a large-scale survey of educational administration faculty to understand faculty perception of cohort-based programs. Results of the study indicated that both organizational efficiency and specific learner benefits resulted from cohort-based programs. Weise (1992) found that the cohort structure also facilitated the development of a more highly integrated and coherent curriculum.

The value of cohorts was also explored by Norris and Barnett (1994) in a qualitative study of 51 students enrolled at four universities in educational administration graduate programs. The authors reported: “Individuals are supported, affirmed, and inspired by groups—they are transformed. In turn, individuals transform groups through their collective efforts and commitment to meaningful purpose. Groups empower individuals; individuals empower groups” (p. 2). Their findings were divided into two categories: group development and individual development. Key group findings included the importance of interdependence and interaction. Through focus on group projects, in-

depth discussion, face-to-face interaction, and minimization of lectures and instructor-directed learning, students gained “a greater sense of individual and collective accountability while developing trust and confidence in the diverse talents of the different group members” (p. 29). The cohort was viewed as a climate for individual development. The authors reported that the cohort format also seemed to mediate behaviors that often block the development of interdependence. Specifically, passive or introverted members who are often reluctant to contribute and members who are dominant and controlling tend to be balanced by the group.

Norris and Barnett (1994) also found that individual participants in the study reported that the cohort structure resulted in them feeling supported, connected, and not isolated. They found solutions together and pulled together to see one another through difficult tasks. Students reported feeling secure, validated, and able to take risks. They developed personal feelings of tolerance and care for one another. Individual development was nurtured by emotional security and trust. Norris and Barnett (1994) related this to Kouzes and Posner’s (1987) belief that “trust is at the heart of fostering collaboration” (p. 148) and that collaboration is a foundation of one’s willingness to consider the viewpoints of others.

In addition to the significant role that socialization can play in student persistence and degree completion, Harris (2006) found that “creating a sense of community” in a “closed” cohort of students is significant in supporting students in earning a degree. Reporting on the work of the Danforth Foundation, Corderio, Krueger, Parks, Restine, and Wilson (1991) concluded, “The effective use of cohort groups encourages students to become critical thinkers” (p. 20). The Danforth Foundation, through the 22 school

leadership programs it has funded, seeks to link practice, knowledge, and theory with the use of cohorts as a core element (Hresko, 1998).

Similarly, Basom and Yerkes (2001) discussed cohorts of learning communities in leadership preparation that promote enhancement of individuals through group interaction, focus on reflection, self-discovery, and cooperative learning. Finally, Gardner (1989), in discussing the value of community, stated: “Where community exists it confers on its members identity, a sense of belonging and a measure of security” (p. 73). As in Gardner’s intent for community, it would appear that the potential in cohorts is the balance of individual freedom and group obligation, shared leadership and culture, realization of individual potential, and focus on participation, communication, caring, and trust.

Students enrolled in cohort programs also reported increased appreciation for the diverse ideas, skills, and experiences of their colleagues and experienced improved academic performance (Barnett & Muse, 1993). They experienced the desire to set higher expectations for themselves (Bratlien, Genzer, Hoyle, & Oates, 1992), and one student reported that her cohort sisters were a “source of unlimited emotional support, and for a long time the source of energy that fueled my determination to finish my doctorate” (Pemberton & Akkary, 2006, p. 3). Yerkes et al. (1995) summarized the reports of representatives of 23 different universities who indicated that typical students reported that cohorts provided a “sense of belonging and social bonding, new collaboration and networking opportunities, enhanced professional confidence and a strengthened ability to reflect on practice” (p. 7).

Finally, Harris (2007) reported that the results of a study involving 39 adult students in a graduate cohort program demonstrated that the creation of a sense of a caring community in a closed cohort program was a significant factor in degree completion. Positive peer group interaction, division into small, three- to four-member support groups to call and check on one another, calls from the instructor during the first 8 weeks of the program, weekly devotions or intimate and open personal sharing, and the unified cohort goal of completing the degree contributed to student degree completion. Over 90% of the students indicated that the “support, encouragement, friendship, closeness, affection, cohesiveness, camaraderie, motivation, love or wisdom that they received from their fellow classmates were significant in assisting them obtain their degree” .

Drawbacks of a Cohort Structure

Cohort program drawbacks include reports of inter- and intra-group competition, the negative impact of individual personal issues on group morale and experience, and occasional reports of elitism (Barnett & Muse, 1993; Barnett et al., 2000; Yerkes et al., 1995). Yerkes et al. (1995) also reported that those who were against the use of cohorts could not support the rigidity of the curriculum and sequenced program that they believed to result in personal cost to students in the lack of an individually designed interest-based curriculum.

Summary

In summary, the cohort literature (Barnett & Muse, 1993; Bratlien et al., 1992; Cesari, 1990; Dorn & Papalewis, 1997; Horn, 2001; Morris, Rogers, & Ketelhut, 2004;

Norris & Barnett, 1994; Pemberton & Akkary, 2006; Yerkes et al., 1995) provides substantial support that positive cohort experiences not only support student persistence and doctoral degree completion, but also have the potential of augmenting student learning and increasing student respect for diverse views and abilities. In the words of Albert Einstein, “What a person thinks on his own, without being stimulated by the thoughts of others, is, even in the best case, rather paltry and monotonous” (2009, p. 9).

Having established that doctoral students can contribute to the quality of one another’s educational experience and to one another’s persistence to degree completion, we must now turn to the role of the faculty, the student’s relationship with his or her dissertation advisor, and the research preparation and environment provided by the program. We must ask: What are the program variables that influence doctoral degree completion?

Program Factors That Influence Degree Completion

Inherent in the issues of attrition and retention statistics, the United States is experiencing a lack of Ph.D. professionals in fields such as business, nursing, speech pathology, engineering, and communication sciences (Strauss, 2006). Research also suggests that the vast majority of doctoral students, including minority students, have the academic ability to complete the degree; however, *program* and institutional issues often emerge as the key variables in student success (CGS, 2006). A comprehensive study completed at Berkeley (Nerad & Cerny, 1991) also demonstrated that program variables had a significant impact on degree persistence and completion, particularly in the social sciences and humanities. Students consistently reported that they lacked *faculty involvement* and support in key aspects of the doctoral program, particularly following

completion of comprehensive exams. Many students spent 1 to 2 years searching for a dissertation topic without faculty guidance and support. They also wrote their dissertations in isolation, felt lost in the process, and “completely withdrew from department activities . . . [because] no one on the faculty knows about my topic so why should I meet with them” (p. 4).

The study identified two major contributors to attrition and extended time to degree: *student personal factors* and *program/institutionally based factors*. Key among the nine institutional factors were (1) lack of a research apprenticeship or partnership with faculty; (2) a program structure that did not require an early start on dissertation research and prospectus development; (3) lack of meaningful advising, including the dissertation advisor as a mentor and advising by faculty outside the dissertation; and (4) lack of a departmental environment supportive of all students rather than an impersonal environment or one that promotes stars and favorites.

Reiff (1992), in a study of adults in doctoral programs, reported that “only one out of three advanced graduate students persist to earn the doctoral degree” (p. 1). This qualitative study of 12 doctoral students over the age of 25 found six categories of differences between students who persisted and those who did not: (1) student match with faculty, (2) clarity of student self, (3) perception of worth of the doctoral experience, (4) activeness with other students, (5) attention to academic tasks, and (6) activeness in problem solving. Nonpersisters found the doctoral experience to be debilitating, while the key factor for persisters seemed to be the “extent to which they are socialized into the organization” (p. 1).

While early historical studies on student degree completion focused predominantly on student demographics and intellectual ability, during the past two decades the focus has been on issues such as the quality of research preparation and training offered by the program, the extent of faculty involvement with students, the quality of the dissertation advisor/advisee relationship, and the extent of student socialization in the program. The implication appears to be that there is a two-pronged basis of responsibility for doctoral student persistence and degree completion: both the doctoral program and the student share responsibility. The following subsections discuss significant components of the doctoral program: the academic environment, faculty involvement, dissertation advisor/advisee relationship, and research preparation and environment.

The Academic Environment

For the purposes of this discussion, the academic environment is defined as the “knowledge, values and mores that distinguish one discipline from another” (Becher, 1989, p. 75) and the “attitudes, activities and cognitive styles of groups of academics representing a particular discipline” (p. 20). More simply, it is the attributes that may be unique to a particular discipline and the attributes and relationships of specific faculty within a specific program. The academic environment, which is very diverse across universities and within universities across academic programs, is believed to influence student attrition and completion (Lipschutz, 1993; Tierney, 1998; National Academy Press, 1996).

Researchers interested in increasing graduate retention believe that learning about different faculty practices and understanding the environment of different academic

departments will help them create new policies and plans for the future that “will decrease student frustration and attrition and increase degree completion” (Lipschutz, 1993, p. 69). Lipschutz (1993) indicated that doctoral requirements can differ very significantly within a university and be quite similar across universities within the same discipline. For example, the dissertation requirements for history departments across the nation are often viewed as the basis for writing and publishing a first book, whereas in science the summary of a series of brief research articles may serve as the equivalent of the dissertation. Thus, there appears to be merit in delimiting a study of attrition and retention to the academic department level, as was done in this study.

Faculty Involvement

The report of the National Policy Board for Educational Administration (1989), *Improving the Preparation for School Administrators: An Agenda for Reform*, included in its recommendations that cohort programs contribute to a long-term relationship between students and faculty. Cooke, Sims, and Peyrefitte (1995) reported that the lack of a relationship between faculty and students can result in feelings of alienation in the student. The authors described alienation as feelings of normlessness, meaninglessness, powerlessness, and social estrangement that often result in student attrition. The same researchers found that affective commitment to the university could be enhanced by opportunities for students to interact with faculty in discussions related to their field of study.

Baird (1993) discussed the importance of the role of the faculty in the socialization process of the student, and she advocated the role of student colleagues and peers in the acculturation of students to the doctoral program.

Building on the work of Bandura, Ford (1992) emphasized the role of personal agency beliefs in students' beliefs about not only their capacity to achieve the doctoral goal, but also their confidence in the responsiveness of the environment to them and to their efforts. Ford presented a "systems model" for facilitating doctoral student development that includes physical, social, and psychological systems in which the faculty and department play a critical role.

The faculty/student relationship is also believed to be key to developing the "community of scholars" and collegial relationships (Parent, 2005) that are integral to doctoral student degree completion. Coplin (2005) advocated an apprenticeship program for doctoral students following the first year of rigorous academic studies that serves to weed out students. In this apprenticeship relationship, the faculty and students would partner to focus study and begin dissertation work early.

The student/faculty relationship has also been viewed in terms of the dissertation process. As mentioned, there is considerable variance across universities and disciplines. One key difference is the relationship between dissertation and time to degree. Kerlin (1997), in a study of female doctoral students, shared one woman's view: "I had originally thought that the process was set up to help me learn as much as possible, but I now realize that the process is mostly political and has very little to do with helping students learn. I feel pretty disillusioned." The most debilitating experience for students is when faculty use and misuse power in their relationships with students (Kerlin, 1995).

Finally, Bair (1999) found that the "degree and quality of the relationship between doctoral student and advisor or faculty has a strong, positive relationship to successful completion of the doctorate" (p. 114). Her research demonstrated that "the most

frequently occurring finding in the meta-synthesis” was that positive faculty/student relationships resulted in higher persistence. Faculty availability to students, faculty coaching and nurturing of students, and faculty reputation for research were identified by students as key to the relationship. Yet Bair (1999) advocated that more research is needed in this area and that research regarding the student attributes that contribute to the faculty/student relationship should also be studied.

Dissertation Advisor/Advisee Relationship

Long viewed as the largest stumbling block to completing the doctoral degree, contributing an original piece of research to the literature through a dissertation has been the attrition “fait accompli” for many students. Moore (1985) described this process as follows:

Of all the sacred cows of academia, the Ph.D. dissertation is the most holy. The idea that to attain academia’s crown jewel you must make an original contribution to knowledge in your field is an unquestionable item of faith. That the dissertation process should be a long, ego threatening, gut wrenching experience goes without saying. That a dissertation is not acceptable until a committee of professors who could not agree on the time of day, all agree to accept our complex work is academia’s most unshakable rubric. (p. 127)

The dissertation advisor plays a unique role in the doctoral student’s program. Isaac, Quinlan, and Walker (1992) reported that in fields such as the humanities, “there seems to be a press to perfect the dissertation” (p. 266), resulting in increased time to degree. In fields such as the natural sciences, the dissertation is a culmination of the student’s work and does not lengthen time to degree. The authors suggested that expectations of the doctoral-level scholar may be in need of reexamination. In fact, a key question might be posed of all dissertation advisors: “How far down the scholarly road is

the doctoral sign post supposed to be located?”(Isaac et al., 1992, p. 20). Faculty expectations can go far beyond university expectations and can contribute significantly to student attrition or degree completion. Parent (2005) suggested that with the average time of 9 years to degree completion in the humanities, there is a need for reevaluation of program and dissertation goals.

O’Bara (1993), in studying factors that affect Ph.D. completion, found that those who completed the degree rated their advisors higher relative to research. Further, O’Bara also found that males consistently rated their advisor higher than did females, and females more often said that if they had to do it over, they would select a different advisor. Campbell (1992) found that those who earned the doctoral degree perceived a strong relationship with their dissertation advisor, and those who were unsuccessful perceived a lack of a strong relationship with their advisor; both groups believed that the relationship with the advisor was critical during writing the position papers. Further, “both groups also perceived a lack of direction throughout the program regarding the actual writing of executive position papers” (p. 1).

In studying factors that affect degree completion and noncompletion, Lee (2003) found that statistically significant differences existed between ABD students and those who completed the degree in their perception of research preparation, faculty advisor, and dissertation chair. In fact, she found that “statistically, the majority of ABD respondents were dissatisfied with faculty availability, departmental advising, their relationship with the advisor, advisor selection of courses, support from department members and personal support from their advisor” (p. 171). She recommended that the selection of the dissertation chair and the dissertation committee members is crucial to degree completion

and that a dissertation manual should provide students the right to select a different chair without fear of recrimination.

Lentz (1995) also found that advisors have “a great deal of influence on doctoral students” (p. 36) and that degree completers reported that the dissertation advisor needed to be “kind and caring” (p. 35) as well as being knowledgeable about the dissertation process. Campbell (1992) found a lack of a strong relationship between the dissertation advisor and the ABD students. In reporting that only one in every three students earn the doctoral degree, Foote (1988) found that the most significant finding in degree completion and attrition was the relationship between students and faculty members.

A healthy relationship between the doctoral student and dissertation committee members, and especially the dissertation chair, was hailed by Dreyer (1993) as critical to successful degree completion. Good (2002) found that research skills and the dissertation advisor/advisee relationship were significant in degree completion and that there was a relationship between efficacy, research training and environment, and the dissertation advisor/advisee relationship. Flores (1984) reported that “graduates reported a significantly higher rate of ability to talk to their advisors about problems encountered” (p. 102) and that successful students reported that their advisors were able to help them resolve their problems. On the other hand, Berg and Ferber (1983) found that nonpersisting students reported “unavailability of their advisor or faculty, inadequate advising, a negative relationship with faculty or conflict with advisor or faculty and a lack of interest, involvement or attention by the advisor or faculty” (p. 20).

In time to degree, Ferrer de Valero (1996) found that 88% of students in the study reported that the student/advisor relationship was the most important factor in overall

success. Similarly, Negi (1974) found that “the greater the contact with faculty, the better the chances are of completing the doctorate” (p. 3). Finally, Bair (1999) demonstrated the importance of the relationship between the doctoral student and his or her advisor by providing a summary of research across 50 studies. She also provided summaries of the characteristics of student/advisor and student/faculty relationships that support completion and those that contribute to attrition (pp. 68-72) (see Appendix K).

Research Preparation and Environment

Doctoral students’ perceptions of their research training and environment were found to have a significant relationship to their dissertation progress (Faghihi, 1998). Specifically, Faghihi found that doctoral students who believed that they had received adequate research preparation were more advanced in their dissertation progress than those who were less confident in their training. Similarly, Sproul (1959) found that the more research training and preparation students had, the shorter the time period it would take them to complete the degree. Other researchers also found that confidence in research preparation resulted in more positive attitudes toward the dissertation process (Cash & Sanches-Huches, 1992). In fact, Steinberg (1981) reported that 25% to 50% of all doctoral student attrition occurs after the completion of coursework and oral and written comprehensive exams.

Numerous research studies (Faghihi et al., 1999; Garcia, Malott, & Brethower, 1988; Moore, 1985) have demonstrated that one of the foremost reasons students do not complete the doctoral degree is being stalled in the dissertation process. Faghihi et al. (1999) projected that by the late 1990s there would be over 500,000 ABDs in the United

States. They based those projections on the work of Steinberg (1981), who estimated that 50,000 ABDs were generated every year in the United States.

The literature (Bowen & Rudenstine, 1992; Kerlin, 1995, 1997; Nerad & Cerny, 1993; Steinberg, 1981) has documented the alienation, frustration, loneliness, withdrawal, self-doubt, and negative attitudes expressed by doctoral students lost in the process of conducting original research and contributing to the knowledge of scholarly communities. Research has shown that self-efficacy plays an important role in the perception of one's capabilities and suggests that perception of one's capabilities influences perception of the self as a learner and may influence one's pursuit of learning in adulthood (Bandura, 1989a). "A major theme in the contemporary study of human development across the life span is that people have the capacity for personal agency" (Cervone et al., 2006). The premise is that strong self-efficacy beliefs influence the pursuit of new skill development, personal agency, and adult learning.

Using the Self-Efficacy in Research Measure (SERM), Phillips and Russell (1994) found that research efficacy was positively correlated with the training environment. Royalty and Reisling (1986) also hypothesized a relationship between research efficacy and research training. Faghihi, Rakow, and Ethington (1999) found that positive research self-efficacy made a significant positive impact on dissertation progress.

Erikson (1950) clearly delineated the critical importance of the psychosocial environment in his description of the eight stages of human development. In the first stage, the infant establishes the beginnings of trust in interaction with and dependence on the environment. Throughout a person's growth and development, the human organism is learning through continuous interaction with others and the environment and is forming

the bases of self-control, autonomy, initiative, competence, intimacy, etc. (Erikson, 1950). It appears important then to consider whether a trusting, stimulating, challenging, responsive research environment and the freedom to actively engage in it have been available to students.

Bandura (1997) distinguished between efficacy expectations and outcome expectations. An efficacy expectation is a belief that one can successfully perform a particular action. An outcome expectation is an estimate that a given action will lead to a certain outcome. The former is a belief about one's competence; the latter is a belief about one's environment. The importance of this distinction is that negative feelings may result either from low self-efficacy (or low research efficacy) or negative perceptions regarding the environment or social system response to one's action. To alter or raise low self-efficacy requires development of competencies and expectations of personal effectiveness. However, modifying outcome-based futility, or one's feelings that the environment is not responsive and not supportive, depends on changes in environmental contingencies that could serve to restore the expectancies that people possess (Bandura, 1997). Thus, Bandura differentiated perceptions of self from perceptions of self in relation to the environment. This distinction seems particularly relevant to the doctoral student's feelings of research efficacy and efficacy relative to the doctoral program environment (training and support). One might inquire then whether an individual with strong positive self and/or research efficacy beliefs can overcome environmental circumstances in a doctoral program that the individual believes is not instructive, supportive, and nurturing.

Hoare (2005) reported that two new additions to the concept of self-efficacy require consideration. They are role-breadth self-efficacy and means self-efficacy. The former refers to individuals' belief in their ability to expand the breadth of their responsibilities and to do so in an independent, proactive manner (Parker, 1998), as is required for completing original doctoral-level research. Role breadth and means efficacy beliefs might involve working conditions and environment, expanding roles, integrating various functions, problem solving, decision making, or conflict management, to name a few (Hoare, 2005; Parker, 2003).

Means efficacy also provides a bridge to collective efficacy. A critical part of adult development is the efficacious belief of the self as a worker. Key to positive worker efficacy is the individual's perception of having the resources and tools to be successful (Eden, 2001). Workers can feel defeated, unproductive, and unable to be successful, resulting in lower self-efficacy, when they believe that the environment will prevent the execution of their work (Hoare, 2005). Means efficacy can contribute to collective efficacy in groups, teams (cohorts), or whole organizations as well. If the individual or the collective does not believe that it has the environmental supports (involved faculty, supportive dissertation advisor, quality research training and involvement) essential for success, negative efficacy can result (Bandura, 1997). Low individual and/or collective efficacy can lead to job dissatisfaction, morale issues, burnout, and high turnover (attrition) (Bandura, 1997; Jex & Bliese, 1999). Clearly, it seems that the development of strong research efficacy and a supportive research environment are key pieces to the puzzle of developing programs and curricula that promote doctoral research efficacy persistence and degree completion.

Relationship Between Student Factors and Program Factors

The basis of social learning theory (Bandura, 1989a; Cervone, 2004) and constructivism (Basom & Yerkes, 2001) is the belief that knowledge is constructed by the individual rather than the individual being an empty vessel into which knowledge is poured. Constructivism is often discussed in terms of active learning, with hands-on experiences, active reasoning, reflection, and sensemaking. Dewey (1916) and Piaget (1970) were both early advocates of the construction of knowledge from experience. Curriculum and practices considered integral to the facilitation of knowledge creation by the student include student-teacher dialogue and interaction, empowerment of the learner, interaction with other students, individual reflection and journaling, problem-based learning with practical application, student choice in assignments, and the professor as a facilitator and active participant with the student.

Merriam and Caffarella (1999) stressed that the facilitator's role is to allow group members to feel accepted, important, and worthwhile. Often, facilitators of learning communities and cohorts participate with students in social gatherings, seminars, and activities that result in the faculty being able to better understand the skills and abilities of the student. Tinto (1993) demonstrated that the process of student persistence in doctoral programs involves a nesting process of overlapping community membership, is *“primarily shaped by the specific local student and faculty communities that frame department life,”* and is also influenced by the intersecting of external communities of which the student is a member.

The interaction and the relationship between the student and the faculty, the student and cohort colleagues, the student and the doctoral program environment, and the

student and his or her dissertation advisor would all appear to contribute to the student's efficacy beliefs and persistence in doctoral degree completion. The faculty, the research curriculum, the student, the student's cohort colleagues, and the dissertation advisor all appear to play a potentially significant role in the doctoral student's persistence and degree completion. It is the interaction of these factors that are of interest in this study.

Should we also view our doctoral programs as learning organizations? Schwandt (2005), in discussing organizational learning, indicated that "the importance of our ability to know [these] things about our organizations is becoming overwhelmingly apparent" (p. 1). Although his discussion is in the context of failures to "know" in major incidents like the Challenger and Enron, he clearly indicated that beyond the first level of technical or mechanical failures, we often find "patterns of actions that organizations [individuals and groups] take that point to our inability as a collective to learn" (p. 1). Schwandt quoted Sean O'Keefe, administrator of NASA, as having said in relationship to the Columbia disaster: "We found that the culture we had created over time allowed us to characterize a certain risk as normal, . . . to grow accustomed to, . . . to accept the qualified judgments of those in positions of authority."

The literature indicates that the failure of doctoral students has been considered par for the course, not the program's responsibility—a matter of survival of the fittest (Steinberg, 1981), and thus the student was not fit. Should we only be concerned about major failures and disasters in our society, or is the failure of an individual important? What about the failure of over 700,000 ABDs in our nation and an individual failure rate of up to 50% at our most prestigious universities in the United States?

As previously indicated, this study is grounded in a constructivist philosophy that learning is socially constructed and is the result of continuous interaction of the individual and the environment. In this view, the doctoral student, the faculty, the curriculum, the advisors, and the program are all interrelated and interdependent. Student success is a function of the interaction and interdependencies of this socially constructed system. With over 50 years of research indicating unacceptably high rates of attrition, what are the implications for collective or organizational learning in higher education doctoral programs? Schwandt (2005) indicated that organizational learning is “a system of actions, people, symbols and processes that enable an organization to transform information into valued knowledge which in turn increases its long-run adaptive capacity” (p. 2). He further stated that in organizations, “The location of the learning process is contained within the complexity of the interacting social components of the organization” and that “structuring is present in all interactions and may include acts of “reflection, dialogue, inquiry, language, and of sustaining diversity, as well as traditional acts of direction and control” (p. 10).

This researcher concurs and theorizes that understanding the various attributes of students and various attributes of doctoral programs and how they interact with one another could be an important key in understanding doctoral degree failure and how we might facilitate renewed learning in our higher education institutions. Is this not, in our centers of esteemed learning and knowledge, one of the foremost places that organizational learning should prevail?

Systems-Level View

In this light, the view of doctoral degree completion moves from an individual focus and level of analysis—the problem inherent in the doctoral student—to a collective or meso level of inquiry: how our students and doctoral programs co-evolve and succeed in a nonlinear, complex environment. By studying both student and program attributes, we place value on the dynamic human interaction and social system that evolves among all components of the system (Anderson, 1999; Schwandt, 2006; Smith, 1986). Schwandt (2006) stated, “The outcomes of the social interaction is a continuing emergent structure that defines future interactions of the agent” (p. 4) (e.g., the student’s decision to stay or leave a doctoral program). Schwandt described interactions as including “reflection, dialogue, inquiry, language, sustaining diversity” (p. 3).

Important in this meso-level view of the organization (university research department) and the individual (doctoral student) is the implication for understanding and possibly building cross-level structures that take into account the role of the ongoing dynamic interaction of individuals and the environment. Here we return to the basic philosophical underpinnings of this research, social cognitive theory (Bandura, 1999), personal agency (Bandura, 1989a), self-efficacy (Bandura, 1989b, 1994, 1997), personality (Jung, 1971; Mischel & Shoda, 1995; Olson, 2006; Singer & Loomis, 1996) and constructivist philosophy. Hazy (2004) and Smith (1986) discussed the importance of this distributed view of evolving social structures on the adaptation of the organization, particularly in terms of its facilitation of the emergence of continued learning and distributed intelligence throughout the organization.

The conceptual framework of this research (see Figure 1-1 on p. 10) recognizes the attributes of both the individual (demographics, personality, and cohort experience) and the program (faculty involvement, research preparation and environment, dissertation advisor/advisee relationship—based in this study on a measure of student perception), theorizing that it is at this intersection, the meso level, that social system construction takes place between the individual and the collective and that this juncture may be the most significant source of information about doctoral student degree completion. The ongoing, continuous interaction and co-evolution can “change personal life courses, future interactions with other actors, and influence collective norms and values” (Schwandt, 2006) and in this researcher’s view result in determining the future adaptability, success, and longevity of the organization and individual.

In summary, degree persistence is believed to be a function of the interaction between the individual and the institutional environment (Pascarella, Duby, & Iverson, 1983). This researcher believes that its representation requires a dynamic, multifaceted, complex, and evolving model that includes student demographic and personal characteristics; program, faculty, and advisor characteristics; research and academic characteristics; and the interaction of these factors in the social integration of students in the institution and department (see Figure 1-1, p. 10).

CHAPTER 3:

METHODS

“Carry this with you on your journey,” he said softly, “for there is much worth noticing that often escapes the eye. Through it you can see everything from the tender moss in a sidewalk crack to the glow of the farthest star—and, most important of all, you can see things as they really are, not just as they seem to be.”
—Juster, 1961

This research analyzed factors that may influence dissertation persistence and degree completion among the students enrolled in the 17 U.S.-based student cohorts in the Executive Leadership Doctoral Program (ELDP) in a large East Coast university.

Four research questions were addressed:

1. What is the relationship between doctoral degree completion and student perceptions of three doctoral program factors: research preparation, faculty involvement, and dissertation advisor/advisee relationship?
2. What is the relationship between doctoral degree completion and student perception of a cohort experience?
3. What is the relationship between doctoral degree completion and doctoral student scores on the Singer-Loomis Type Deployment Inventory (SL-TDI)?
4. What is the relationship between the cohort experience and SL-TDI scores?

Participants

This study used a census of all students accepted and enrolled full-time in the ELDP from 1990 to 2006. A census is defined as “a one by one count of an entire population” (Salant & Dillman, 1994, p. 6). The 17 student cohorts had an average enrollment of 21 students and a total population of 364 students.

A census approach was chosen based on a number of factors. A census is frequently not completed due to the high cost, the unwieldy amount of data collected in a large population, and the enormous effort and time needed to reach all members of a large population (Alreck & Settle, 1995; Salant & Dillman, 1994). Further, Salant and Dillman (1994) reported that some researchers believe that a census is a myth, in that it is nearly impossible to reach all members of a population. Although these were important considerations, it was believed that these issues would not adversely affect this study. The population size in this study was 364 students. The population is unique in that it has been subjected to the same program. Relative to the issue of cost, Alreck and Settle (1995) discussed “project cost elasticity” (p. 62) and the fact that there is a fixed cost structure regardless of the size of the population. In this study, the additional cost required for a census in comparison to a sample of the population was marginal compared with the fixed costs.

Sponsorship and access to lists of members of the population and access to necessary data are also important when using a census (Salant & Dillman, 1994). The approval and commitment of the director of the program and the assistant dean of the Graduate School of Education and Human Development were obtained, and access to the cohort data was granted. Both individuals also acknowledged the potential value of the study for the doctoral program and the school. This greatly enhanced access to every member of the population.

The population also had demonstrated skills, knowledge, and access to technology in their pursuit of the doctoral degree, thereby reducing typical researcher concern about computer literacy of participants and the computer processing power required for

successful completion of web surveys. The higher-level technological skills of participants were also expected to enhance opportunities for communication and data collection. Anticipating data analysis for subsamples—such as demographic variables, life cycle stages, and personality style—also warranted the use of a census.

Finally, sample bias must be considered in surveying a census. Research has shown that multiple types of bias can influence survey results. Of particular concern to census surveys are respondents who typically refuse to participate in surveys so that they are underrepresented and result in nonresponse bias. Second, termination bias may be created by certain types of respondents who prematurely withdraw their participation, resulting in the survey being underrepresented by this type of respondent and resulting in incomplete data collection. Finally, some respondents are geographically more difficult to contact or are more costly to contact, resulting in accessibility bias or underrepresentation of these respondents. The potential of nonresponse, termination, and accessibility bias was not anticipated to be a significant issue in this study in light of the ongoing communication between program staff and members of the population.

Design

The design for this research was a quantitative associational study using a survey instrument developed by this researcher to provide information related to the perceptions, attitudes, preferences, practices, and data available about individual students, the faculty, the program, or specific groups within the population. The research design consisted of descriptive parameters for independent variables in relationship to the dependent variable, doctoral degree completion. The conceptual framework for the study (see Figure

1-1, p. 10) depicts the factors and relationships that may influence doctoral degree completion.

Research Variables

This research sought to identify potential relationships among several types of data and the dependent variable of degree completion. The independent variables were selected demographic data, the SL-TDI personality data, student perception of cohort experience, and student perception of program factors as measured by research preparation, faculty involvement, and dissertation advisor/advisee relationship.

Demographic Information

Demographic data maintained by the ELDP on all students in the 17 cohorts from 1990 through 2006 were included. These data, treated as independent variables, included gender, age, race, ethnicity, marital status, country of citizenship, research or teaching assistantship, sibling status, and reason for entering the program. Data were also available related to the current status of student coursework, comprehensive exams, dissertation persistence, and degree completion. Additional demographic data were also collected through the survey administered as a part of this research.

Personality Data: The Singer-Loomis Type Deployment Inventory

All students admitted to the program beginning in 1990 were given the SL-TDI, an instrument designed to assess psychological type and personality functioning (Singer & Loomis, 2000). Dugan and Wilson (2002) reported that the SL-TDI enables people to develop a better understanding of challenges they may face in interpersonal relationships and in teams and provides a tool for helping individuals learn competencies that will

enable them to align their skills and strengths with future goals. Based on Carl Jung's (1923) personality type theory, Singer and Loomis (1984) developed the SL-TDI, expanding Jung's typology of eight personality types to measure what a person actually does in 20 different specific situations. The SL-TDI does not measure aptitude or intelligence, pathologies, or emotional stability; its primary purpose is a tool for self-understanding and enlightening one's perceptions of one's interactions with others and the environment.

Olson discussed the value of understanding one's SL-TDI in terms of integrity and leadership (Olson, 1996) and in using Jungian psychology and the "archetypal forces" in understanding the images and symbols present in the self-organizing of internal thoughts, particularly within a nonlinear complexity science perspective (Olson, 2005). Understanding one's psychological type and personality functioning appears to be significant in understanding one's participation in shaping the culture of a group (cohort) or organization (Olson, 2005; Singer & Loomis, 1996; Jung, 1971).

The SL-TDI was administered and analyzed each of the 17 years through a contract with an outside expert, Edwin E. Olson, Ph.D., professor at The University of Maryland, University College. Individual data were available for all students in 12 of the 17 cohorts. (For five cohorts, the data were lost due to damaged data storage files.) Dr. Olson consented to share the data and to serve as a consultant to the study.

The SL-TDI has been widely tested for internal consistency with over 1,500 individuals. Reported Cronbach's alphas have ranged from .65 to .91 (Arnau, Rosen, & Thompson, 2000; Singer & Loomis, 2000). Based on a sample of 1,534 cases, alpha coefficients of reliability for the orientations and attitudes were .90 for perceiving (P), .89

for judging (J), .90 for extraversion (E), and .89 for introversion (I). Reliability of the four function scores were .80 for sensation (S), .84 for intuition (N), .84 for thinking (T), and .77 for feeling (F). Reliability for the eight type mode scaled scores were as follows: ES = .68; IS = .67; EN = .79; IN = .73; ET = .72, IT = .74; EF = .76; IF = .59.

Student Perceptions of the Cohort Experience

The third type of data was student perception of the cohort experience, as measured by the research instrument discussed later in this chapter. Recent research has demonstrated that human factors may have a greater impact on student attrition and completion than the historical focus in the literature on the doctoral student's prior academic performance and demographic factors (Campbell, 1992; Parent, 1999; Tinto, 1997a). Research has also demonstrated that learning is a social process and that dialogue, group reflection, and processing of information as well as support from cohort members can improve doctoral student persistence and degree completion (Tinto, 1997a) (Wesson, Holman, Holman, & Cox, 1996).

Student Perceptions of the Doctoral Program

Student perception of three attributes of the doctoral program—research preparation, faculty involvement, and dissertation advisor/advisee relationship—were collected through the administration of the research instrument (discussed in the next section) and served as independent variables.

In addition to studies that support the value of cohort member interaction and relationships in improving persistence and degree completion, recent research has looked at retention and attrition through the lens of the culture of the doctoral program. A large

number of studies (Bair, 1999; Council of Graduate Schools, 1990; Ducette, 1990; Hales, 1998; Lawson, 1985; Parent, 1999) have clearly demonstrated that faculty involvement with students and a mentoring dissertation advisor/advisee relationship have a positive impact on both persistence and time to degree. These studies have also purported that the lack of these important program attributes contribute to the student's decision to leave the program. In addition, the student's perception of his or her preparation for conducting research, the research training environment, and opportunities for student participation in research work with faculty all contribute to the development of the student's research efficacy and persistence in the dissertation process (Faghihi et al., 1999; Phillip & Russell, 1994; Royalty & Reisling, 1986).

The Research Instrument

The Executive Leadership Doctoral Program Survey, a 68-item self-report questionnaire composed of Likert-type and fill-in-the-blank questions, was developed for this study. The instrument was intended to identify and analyze potential relationships, both linear and causal, between the independent variables—selected demographics, SL-TDI profiles, cohort experience, research preparation and training, program environment, faculty involvement and support, and dissertation advisor/advisee relationship—and the dependent variable of dissertation persistence and degree completion.

Over 90% of the ELDP survey was based on the Dissertation Questionnaire and the Doctoral Student Experience Questionnaire, and the ELDP survey was administered to a similar population in a similar manner; therefore, it was anticipated that the validity and reliability reported for the Dissertation Questionnaire (Faghihi et al., 1999) and the Doctoral Student Experience Questionnaire (Stallone, 1996) would be similar. Open-

ended questions were also part of both the Dissertation Questionnaire and the Doctoral Student Experience Questionnaire.

Permission was granted to utilize the Dissertation Questionnaire with minimal revisions. The Dissertation Questionnaire is based on three inventories, each of which has evidence of both construct validity and reliability. The Survey of Research Training, developed by Royalty and Reisling (1986), measures participants' perceptions of the influence of their graduate program on the development of research skills and served as the basis for the Self-Efficacy in Research Measure (SERM). The SERM, developed by Phillips and Russell (1994), identifies four principal factors critical to research: design skills, practical research skills, quantitative and computer skills, and writing skills. Reliability scales of .90, .83, .93, and .94, respectively, were reported by Phillips and Russell (1994, p. 632). The Dissertation Questionnaire is also based on Gelso's (1979) Research Training Environment Scale. This instrument measures nine factors key to conducting effective research and reports reliability data indicating a Cronbach's alpha of .92 (Phillips & Russell, 1994). Construct validity was supported and reported by Mallinckrodt, Gelso, and Royalty (1990) and Royalty, Gelso, Mallinckrodt, and Garrett (1986).

Permission was also granted to utilize questions from the Doctoral Student Experience Questionnaire (Stallone, 1996) relating to individual perceptions of cohort attributes and cohort experience. Stallone reported that a coefficient alpha was conducted on each item in the questionnaire, resulting in a range of .66 to .73, which was deemed satisfactory for the size of the sample. She also reported that a panel of experts "verified the content and construct validity of the instrument" (Stallone, 1996, p. 59).

Pretesting

The Executive Leadership Doctoral Program Survey was pretested with three different groups of participants using both the Internet and hard copies.

Review by Doctoral Students in a Statistics Class

Doctoral students across several disciplines enrolled in an advanced statistics course took the survey and indicated that the survey was “clear, concise, succinct, easy to read, easy to take” and could be taken in 15 minutes. Recommendations included adding questions to address the following issues:

1. A greater focus on the extent to which managing family, work, and school responsibilities influenced program success and timeliness of work completion
2. A means of indicating the value of previous professional experience in succeeding in the program
3. A means to indicate that some cohorts experienced more relationship difficulty within their cohort than did other cohorts
4. A means to evaluate the appropriateness of course workload and program expectations
5. Restructuring questions to enable participants to respond that “most” faculty (some, few) were timely or supportive, etc.

Review by an Expert Panel

The survey was distributed to 11 individuals with acknowledged expertise in the field. They included two professors on the researcher’s dissertation committee who were not part of the ELDP staff; the chair of the Special Education Department, Edinboro State

University; the director of academic services at Pennsylvania State University; three professors in the ELDP program; two statistics professors at George Washington University; and two research assistant doctoral students at George Washington University. As a group, they commended the clarity, comprehensiveness, presentation, content, and ease in completion.

Suggestions included rewording the research questions to indicate “adequately prepared” rather than “facilitated” to require a more definitive answer and the possible addition of a new section specific to the Singer-Loomis data with questions such as, “My high score on intuitiveness (extroversion, etc.) helped me succeed in the program.” Finally, one reviewer suggested that questions relative to “emotional awareness” factors be included, and two strongly suggested that open-ended questions be eliminated.

Review by Noncohort Individuals in the Program

The survey was also administered to three ELDP administrative staff and two doctoral students who were not in one of the 17 cohorts but had taken electives with the cohorts. They rated the questionnaire as clear, concise, and easy to complete. No significant revisions were suggested. A category of “not applicable” was recommended for every question.

Summary

The pretesting procedures resulted in improving how several questions were stated, in reordering the sequence of the major sections of the survey, in adding several additional questions, and in guiding thinking for the inclusion and content of open-ended questions. Content and construct validity were supported by each pretest group.

Data Collection

Participants were provided the opportunity to complete the Executive Leadership Doctoral Program Survey through either a web-based instrument or a hard copy. If the latter, the survey was mailed and returned via U.S. mail. The ELDP survey was developed so that it could be completed in less than 20 minutes. Up to five attempts to encourage participation were used. The standard letters sent to participants are included in Appendix D.

Several methods were used to maximize the response rate (Dillman, 2000):

- A letter was e-mailed that provided the members of the census advance notice that the ELDP survey would be e-mailed to them and that their participation would be appreciated and was considered very important to the results of the study. Members were provided an opportunity to request a hard copy of the survey through the mail.
- A cover letter and the ELDP survey were e-mailed (or mailed, if requested) to all participants.
- One week later, a postcard was mailed to all members expressing appreciation for their response, with a note to those who had not responded indicating that their response had not been returned and that we hoped to receive it soon.
- A second copy of the survey was e-mailed to nonrespondents approximately 2 weeks later with another letter politely urging a response and sharing the importance of their participation.
- For participants for whom a response had still not been received, a follow-up e-mail was used as a final effort to secure participation.

- Throughout the communication, participants' anonymity was assured and they were reminded how the information was of value to them, the program, and the university.
- A clear, concise, attractively presented questionnaire was sent that assured a minimum time commitment and had a clear response format choice.
- Incentives such as Starbucks gift certificates were planned if needed to encourage participation.

Throughout the process, the interests and concerns of respondents were considered. It was anticipated that most members of the population would be interested in the study and in learning of the results. It was also anticipated that members might be concerned about confidentiality and would want assurance that their responses would not be individually identified to the ELDP staff or other university faculty and staff. Participants might also be interested in how the data would be used to inform various aspects of the program as well as how the data might be used by prospective students in assessing the program relative to their personal attributes. Students in the process of completing the dissertation and students currently enrolled in coursework might be interested in comparing their SL-TDI profile with that of those who have successfully completed the program. It was also anticipated that with the high cost of university education to both society and the individual, it would be perceived as important for the individual to better understand those variables and attributes that contribute to successful completion of the program.

Data Handling

Storage of Data

Data were stored and maintained on computers at two different sites. Codes that protect the confidentiality and anonymity of participants were stored in locked files separate from the actual data. Access to cross-file information was limited to the researcher. Data were manipulated using duplicate data sets that were labeled and coded separately from the research data set.

Data Edits

Data editing is fundamentally important to accurate data analysis and the prevention of erroneous results, interpretations, and recommendations. Data editing for the ELDP survey was assisted by the parameters set by the researcher through the web-based survey software available through Survey Monkey. For example, the program flagged incomplete surveys and skipped items. However, all surveys were recorded and dated as received, and then sorted and coded with notations made as necessary. Surveys were visually reviewed for completeness, with a standard having been set for maximum number of items per section or per survey that must be completed. A permissible range of responses was established for each survey item.

No participants chose to participate via a mailed survey. Branching or exclusion of whole sections of the survey was not necessary. Postcoding data was an important part of the ELDP survey where questions provided an answer option of “other.” Criteria were established for all postcoding.

Data Entry

Data were electronically transferred by the web-based survey service to SPSS and Excel. Once entered in SPSS and Excel, the data were reviewed for missing or extra records, duplicate records, and records that deviated from the prescribed format, as well as variables or values that contained the wrong type of data or that exceeded or did not meet the specified range for an item. Checking for missing data—e.g., identifying blank rows, rows partially filled, and blank cells—was also an important part of data cleaning procedures.

Data Transformations

The data collected for this research were meaningful and informative when processed and summarized in order to reveal important findings. Recoding of data to fewer and more meaningful categories was completed for more accurate description and analysis.

Data Analysis

The survey data collected were first analyzed to describe the parameters or characteristics of the population. Frequency distributions and histograms were used to describe data such as age ranges, gender, ethnicity, race, or citizenship for the population and relative to degree completion. Exploratory data analysis was conducted to provide descriptive parameters for identified test variables. Each item in the survey was assigned a value. Questions in each section of the survey that were stated in the negative were reverse-scored.

Data analysis for the research questions consisted of a correlational analysis and both linear and logistic regression. The intent of the research was to measure the degree of relationship among variables delineated in each research question. Correlational analysis can be completed without assuming causality. A Spearman Rho was completed for ordinal data, and a Pearson's PM for interval or ratio data.

Finally, all variables were measured for the degree or strength of influence they had on degree completion. A logistical regression analysis was completed, with degree completion as the dependent variable and SL-TDI, cohort experience, research preparation, faculty involvement, and dissertation advisor/advisee relationship serving as independent variables.

The data analysis approach for each research question is summarized in Table 3-1.

Table 3-1
Data Analysis Approach for Each Research Question

Research question	Analysis
1. What is the relationship between doctoral degree completion and student perceptions of three doctoral program factors: research preparation, faculty involvement, and dissertation advisor/advisee relationship?	A one-way ANOVA was completed to determine if completers and noncompleters varied on their mean ratings for each of the subscales. A linear regression was conducted for background information to determine the strength of influence on items on the dependent variable, degree completion. Finally, a logistical regression, which is the appropriate analysis for a dichotomous dependent variable, was completed to determine the extent to which each item could predict the dependent variable.
2. What is the relationship between doctoral degree completion and student perception of a cohort experience?	A linear regression was conducted for background information to determine the strength of influence of items on the dependent variable, degree completion. Finally, a logistical regression, which is the appropriate analysis for a dichotomous dependent variable, was used to determine the extent to which each item could predict degree completion or noncompletion.
3. What is the relationship between doctoral degree completion and doctoral student scores on the SL-TDI?	A logistical regression was conducted in three parts to determine the degree to which personality type preference could predict degree completion or noncompletion: (1) using all 8 scaled scores for all participants in the personality sample; (2) using high-scaled scores for all participants in the personality sample; and (3) using low-scaled score for all participants in the personality sample.
4. What is the relationship between the cohort experience and SL-TDI scores?	A one-way ANOVA was conducted to test the difference between groups to determine if there was a significant difference in the means. Cross-tabs were used to determine the degree of relationship with each personality trait preference..

Limitations of the Study

This study involved students from one program in a single university; therefore, findings are limited to this program, and generalizations of findings beyond this setting must be made with caution. The independent variables cannot be manipulated; thus, causation inference is limited. The research instrument is a self-report survey, which is limited to the extent subjects report true data and beliefs. The demographic data and the SL-TDI data were collected at the time of student enrollment in the doctoral program. These data were not considered to have serious limitations based on current knowledge.

Other limitations of the study were the potential complications and interpretation difficulties of implementing a survey retrospectively. For example, would participant responses relative to research preparation and environment, dissertation advisor/advisee relationship, and cohort experience reflect changes in the participants over time or represent their perceptions during their participation in the program? Because there has been regular communication from the program with participants over 17 years and because many graduates and “persisting” students have ongoing involvement with the program, it was anticipated that the limitations of the study would be minimal. The staff estimated that approximately 90 to 100 students were actively involved in coursework or the dissertation process and that another 80 to 90 students, or nearly 50% of the population, remain in ongoing reciprocal contact with the program.

Ethics and Human Subjects Considerations

This research was approved by the George Washington University institutional review board, and all university policies were followed. During the course of this research, the researcher adhered to the five ethical principles established by the American

Psychological Association (2002): (1) beneficence and nonmaleficence, (2) fidelity and responsibility, (3) integrity, (4) justice, and (5) respect for people's rights and dignity.

First, the researcher took care to do no harm to participants during this research. Because the participants involved in this study were familiar with and often participated in surveys, it was not likely that they would feel the survey was objectionable. The nature of this ex post facto survey ensured that the participants were protected from physical and psychological harm, as the researcher sought to safeguard the welfare and rights of participants.

Second, this researcher upheld the highest professional standards in relationship to participants and when working with all university staff in relationship to the study.

Third, the data and results of this study were reported accurately, with honesty and truthfulness. The review of the literature, the design and implementation of the survey, and the presentation of the results and conclusions of the study were carried out conscientiously and with integrity.

Fourth, all participants in the study were treated in a fair and just manner. Participation in the study was voluntary, the reason for the study was clearly communicated, and there were no negative ramifications if one chose not to participate. There were equal benefits in terms of knowledge gained from the study to those who participated and to those who chose not to participate.

Finally, this researcher fully respected the rights of the participants to privacy and confidentiality. There was no identifying information on the survey other than demographic information, and information could not be traced back to specific individuals.

The following information was provided to participants to communicate the above ethical considerations:

You will be provided the following rights and confidentiality as a participant:

- Your participation is completely voluntary, and your participation or lack of participation will not affect your academic standing with the university or your standing or participation in any part of the ELDP. The ELDP professors and staff will not know who participated in the study and who chose not to participate.
- Your answers will be strictly confidential, and the information you provide will be anonymous.
- Your name and individual data will not appear in any document or report.
- The information for this study will not be collected on site in the ELDP program, and no one in the ELDP program or university will have access to individual responses.
- Your response will be assigned a numerical identifier.
- Your university records will be confidential.
- You will not be identified (e.g., name, Social Security number, etc.) in any reports or publications of this study. It is possible that representatives acting on behalf of the university and/or regulatory agencies may come to GWU to review your information. With the exception of these entities, research study records will be kept confidential unless you authorize their release or if the records are required by law (e.g., court subpoena).
- If you have questions about the procedures of this research study, please contact Elizabeth Ross, by telephoning 703-669-9021 during the workday.
- If you have questions about the informed consent process or any other rights as a research subject, please contact the Assistant Vice President for Health Research, Compliance and Technology Transfer at 202-994-2715. This is your representative.

Summary

This research was conducted to develop a better understanding of the factors associated with doctoral degree completion. As demonstrated in chapter 2, there are many reasons why students enroll in a doctoral program, yet it is often unclear why 50% or fewer complete the degree. It is also less likely that students will complete the doctoral degree the longer they remain in the program. This research studied selected demographic factors, SL-TDI profiles, cohort experience, and doctoral program attributes

in relationship to degree completion with the intent of providing students with more comprehensive information when deciding to pursue the doctoral degree and the intent of developing a better understanding of doctoral degree program strengths and opportunities for improvement.

CHAPTER 4:

RESULTS

This study explored the extent to which specific identified factors may contribute to degree completion among doctoral students in a large East Coast nontraditional doctoral program. This chapter presents analysis of the data collected in the context of the four posed research questions:

1. What is the relationship between doctoral degree completion and student perceptions of three doctoral program factors: research preparation, faculty involvement, and dissertation advisor/advisee relationship?
2. What is the relationship between doctoral degree completion and student perception of a cohort experience?
3. What is the relationship between doctoral degree completion and doctoral student scores on the Singer-Loomis Type Deployment Inventory (SL-TDI)?
4. What is the relationship between the cohort experience and SL-TDI scores?

The results are organized into four parts. Part 1 presents a summary of the population and subsamples, with frequency distributions and descriptive statistics. The response rate to the survey and descriptive parameters for the identified test variables are included. Part 2 presents reliability tests and correlational analyses measuring the degree of relationship among the variables: research preparation, faculty involvement, dissertation adviser/advisee relationship, cohort experience, and SL-TDI personality trait preference. Part 3 presents the degree or strength of influence of the total mean score for each of the subsets of data (research preparation, faculty involvement, dissertation advisor/advisee relationship, cohort experience, and SL-TDI personality trait preference)

on the dependent variable, doctoral degree completion. An analysis demonstrating the degree or strength of influence of the SL-TDI score in relationship to cohort experience is also presented. Part 4 summarizes the findings for each of the four research questions.

Part 1: Study Participants

Population, Sample, and Response Rate

The study population included all doctoral students enrolled in a nontraditional doctoral program over a period of 17 years from 1990 to 2006. The instruction was offered in a cohort-based format, with meetings one weekend per month for a 2-year period and a 10-day residency each summer. The total population was 364 students. E-mail and home or last known addresses were provided by the program. Of the 364 students, correct contact information was available for 326. Of the 326 students, 198 responded to the survey, resulting in a 61% response rate. This group of respondents was labeled the survey sample.

As might be expected, more recent cohorts had higher numbers of respondents. This researcher was impressed by the e-mail contacts made by individuals from the early cohorts, expressing interest in and appreciation that a study was being conducted with the doctoral program. Many requested the results of the research. The survey appeared to trigger a desire to reconnect with cohort members and the doctoral program community. Table 4-1 presents cohort frequency data for the population and the survey sample.

Table 4-1
Cohort Frequency for Population and Survey Sample

Cohort (year)	Population		Survey sample	
	Frequency	Percentage	Frequency	Percentage
1 (1990)	13	3.6	2	1.0
2 (1991)	14	3.8	5	2.5
3 (1992)	25	6.9	8	4.0
4 (1993)	25	6.9	6	3.0
5 (1994)	17	4.7	6	3.0
6 (1995)	19	5.2	7	3.5
7 (1996)	19	5.2	8	4.0
8 (1997)	23	6.3	2	1.0
9 (1998)	17	4.7	9	4.5
10 (1999)	21	5.8	13	6.6
11 (2000)	23	6.3	14	7.1
12 (2001)	21	5.8	14	7.1
14 (2002)*	28	7.7	21	10.6
15 (2003)	25	6.9	18	9.1
16 (2004)	29	8.0	28	14.1
17 (2005)	23	6.3	20	10.1
18 (2006)	22	6.0	17	8.6
Total	364	100.0	198	100.0

*No cohort was given the label 13.

In addition to the survey sample, a second sample of the population was identified as the SL-TDI personality trait preference sample. Due to damaged data storage files, SL-TDI data were not available for five of the cohorts. Data were available for 206 students, or 57% of the total population. These data were not believed to be biased, as the cohort data files that were not retrievable were random and dependent on individual tape quality. Therefore, interpretation of the SL-TDI data is limited in that only 57% of the data were available. In summary, 61% of the members for whom contact information was available responded to the survey, and personality trait preference scores were available for 57% of the population.

Demographics

Population demographic data, including age, gender, country of origin, cohort membership, degree completion, and dissertation status, were obtained from program records. In addition, respondents provided additional demographic information in the surveys, including marital status, family rank, number of children living in the home during doctoral studies, ethnicity, and financial support. To facilitate an estimation of the extent to which the survey sample data paralleled or was reflective of the population, the data available for both groups are presented together for comparison. Similarly, the demographics have been tabulated with the independent variable of completion.

Completion and noncompletion were used as the independent variable, as the primary focus of this study is degree completion and factors that may be related to degree completion or noncompletion. Time to degree is another factor that was included in the literature review; however, it was not a primary focus of this study.

Gender

Among the total population, 48.6% were male and 51.4% were female, a nearly even distribution of men and women over the 17 years of the program (see Table 4-2). Male and female participation for the survey sample was nearly identical in gender, with 47.5% male and 52.5% female.

Table 4-2
Gender Frequency for Population and Survey Sample

Gender	Population		Survey sample	
	Frequency	Percentage	Frequency	Percentage
Male	177	48.6	94	47.5
Female	187	51.4	104	52.5
Total	364	100.0	198	100.0

Age

For both the population and the sample, the age range was 30 to 74 years, with a mean age of 51, median age of 52, and mode of 52 (see Table 4-3). If the respondent who was 74 years old (and nearly 10 years older than the next oldest respondent) was removed, the mean age became 51, indicating that the outlying age 74 did not significantly impact data analysis for age. The frequency of age is indicative of one of the program eligibility considerations, that candidates have a prerequisite number of years of professional experience prior to entering the program. The average age of women was 50.5 years, and of men, 49.5 years.

Table 4-3
Age Frequency for Population and Survey Sample

Variable		Population	Survey sample
N	Valid	196	188
	Missing	168	10
Mean		50.89	50.90
Median		52.00	52.00
Mode		52.00	52.00

Country of Origin

The United States was the country of origin for over 93% of the students in the population and sample, but all of the major continents except Australia were represented (see Table 4-4). Two Asian cohorts, who completed all of the coursework in Singapore and Hong Kong, were not included in this study because they did not experience the same program factors and their cohorts were half the size of the U.S.-based cohorts. The exclusion of these cohorts may reduce the overall rate of doctoral degree completion, as 100% of the students in the four Asian cohorts completed the doctoral degree.

Table 4-4
Country of Origin for Population and Survey Sample

Country	Population		Survey	
	Frequency	Percentage	Frequency	Percentage
United States	346	95.1	185	93.4
Europe	5	1.4	3	1.5
Asia	2	0.5	1	0.5
Middle East	6	1.6	5	2.5
South America	1	0.3	1	0.5
Central America	1	0.3	0	0
Other	3	0.8	3	1.5
Total	364	100	198	100

Degree Status of the Population and Survey Sample

A total of 167 students—nearly 46% of the population—earned the doctoral degree, with another 34% of students working toward degree completion (see Table 4-5). Therefore, approximately 80% of students earned the doctoral degree or were working toward degree completion. Thirty-nine students (11%) opted out of the doctoral program, earning a master’s degree or Educational Specialist Certificate, and 33 (9%) dropped out of the program (broken enrollment), for a total of 20% who would not earn the doctoral degree at this institution at this time. Finally, a total of 91% of the population either earned the doctoral degree, earned a master’s degree, earned an Educational Specialist Certificate, or was actively enrolled and persisting to degree completion.

Survey sample data in general paralleled the population data (see Table 4-5), with nearly the same degree completion rate (44.4%) and an expected larger percentage of students with the dissertation in process, as there was a larger response rate from more recent cohorts. The survey sample group had fewer students in the master’s, Ed.D., and

broken enrollment groups. Nearly 100% of survey respondents (98.5%) reported that they had completed a terminal degree or were still pursuing the doctoral degree.

Table 4-5
Degree Frequency for Population and Survey Sample

Degree	Population		Survey sample	
	Frequency	Percentage	Frequency	Percentage
M.A.	12	3.3	5	2.5
Ed.D.	167	45.9	88	44.4
Educational Specialist Certificate	27	7.4	4	2.0
Dissertation in process	125	34.3	98	49.5
Broken enrollment	33	9.1	3	1.5
Total	364	100.0	198	100.0

Dissertation Status of the Population and Survey Sample

Table 4-6 presents a more detailed analysis of the current status of the population and survey sample. Twenty-five students (13%) in the survey sample and 33 students (8%) in the population had successfully defended their proposal. This may be indicative of the higher level of response rate to the survey by those students more actively involved in the dissertation process. Seventy-two students (36%) in the survey sample and 101 (27%) in the population had not yet defended their proposal.

Table 4-6
Dissertation Status Frequency for Population and Survey Sample

Dissertation status	Population		Survey sample	
	Frequency	Percentage	Frequency	Percentage
MA/Educational Specialist Certificate	41	11.3	10	5.1
Not started	19	5.2	15	7.7
Talked with advisor	13	3.6	10	5.1
Chosen topic	7	1.9	7	3.6
Approved topic	2	0.5	2	1.0
Writing proposal	40	11.0	25	12.8
Completed introduction	4	1.1	4	2.0
Written methodology	4	1.1	4	2.0
Completed proposal	5	1.4	5	2.6
Defended proposal	3	.8	4	2.0
Implemented study	4	1.1	4	2.0
Collected data	15	4.1	10	5.1
Analyzed data	2	0.5	1	0.5
Written discussion	2	0.5	1	0.5
Written entire dissertation	4	1.1	5	2.6
Completed	167	45.9	85	43.4
Broken enrollment	32	8.8	4	2.0
Total	364	100.0	196	100.0

Completion Rates by Gender and Country of Origin

For the population and survey sample, the degree completion rate was approximately 43% for men and 47% to 49% for women (see Table 4-7). For both groups, women completed at a higher rate than men. Chi-square tests resulted in no significant difference between male and female completion rates (see Appendix F). Completion rates for the population are also shown by country of origin in Table 4-8.

Table 4-7

Gender Completion and Noncompletion for Population and Survey Sample

Gender	Population				Total	Survey Sample				Total
	Noncompletion		Completion			Noncompletion		Completion		
	N	%	N	%		n	%	n	%	
Male	101	57.0%	76	42.9%	177	54	57.4%	40	43.6%	94
Female	96	51.3%	91	48.7%	187	55	52.9%	49	47.1%	104
Total	197		167		364	109		89		198

Table 4-8

Completion/Noncompletion by Country of Origin for the Population

Country	Noncompletion	Completion	Total
United States	186	160	346
Europe	3	2	5
Asia	2	0	2
Middle East	1	5	6
South America	1	0	1
Central America	1	0	1
Other	3	0	3
Total	197	167	364

Additional Demographic Information for the Survey Sample

Additional demographic information was available for those who responded to the survey. The response rate per variable differed, since not all respondents answered every question. In summary, 53% of the survey sample were married, 32% were the oldest of their siblings, and 43% had no children living in their home during doctoral work. In terms of ethnicity, 63% were Caucasian; 8%, African American; 3%, Hispanic; 1%, Asian; and 1%, Native American (see Table 4-9). Table 4-10 shows the degree completion frequency for each of the demographic areas.

Table 4-9
Demographic Frequency for Survey Sample

Variable		Frequency	Percentage
Number of children living at home	0	84	42.9
	1	26	13.3
	2	32	16.3
	3	10	5.1
	Total responses	152	77.6
	Missing	44	22.4
	Overall total	196	100.0
Ethnicity	African American	15	7.7
	Asian	2	1.0
	Caucasian	123	62.8
	Hispanic	6	3.1
	Native American	2	1.0
	Total responses	153	78.1
	Missing	48	24.5
	Overall total	196	100.0
Marital status	Single	19	9.7
	Married	103	52.6
	Divorced	17	8.7
	Partnered	7	3.6
	Other	6	3.1
	Total responses	153	78.1
	Missing	44	22.4
	Overall total	196	100.0
Family rank	Oldest	63	32.1
	Youngest	39	19.9
	Middle	39	19.9
	No siblings	11	5.6
	Total responses	153	78.1
	Missing	44	22.4
	Overall total	196	100.0

Table 4-10
Degree Completion Statistics by Demographics

Variable		Noncompletion	Completion
Financial assistance	None	94	70
	Teaching assistantship	3	5
	Research assistantship	4	2
	Both teaching and research assistantship	5	4
	Graduate assistantship	1	7
	Total	107	88
Number of children	0	21	40
	1	6	15
	2	7	17
	3	0	6
	4	1	0
	6	0	1
	Total	35	79
Ethnicity	African American	6	6
	Asian	2	0
	Caucasian	23	70
	Hispanic	3	2
	Native American	2	1
	Total	36	79
Marital status	Single	6	12
	Married	33	59
	Divorced	6	10
	Partnered	2	2
	Other	0	6
	Total	47	89
Family rank	Oldest	21	28
	Middle	8	23
	Youngest	5	20
	No siblings	1	8
	Total	35	79

Singer-Loomis Personality Trait Preference

The SL-TDI provides personality trait preference data across eight categories. The categories represent four type functions (sensation, intuition, thinking, and feeling) and two psychological forms of energy expression (extroversion and introversion). The four functions and two means of expression are combined to form the eight primary

personality type functions: introverted sensation (IS), extroverted sensation (ES), introverted intuition (IN), extroverted intuition (EN), introverted thinking (IT), extroverted thinking (ET), introverted feeling (IF), and extroverted feeling (EF). Each personality archetype is described in Appendix B.

The extent to which individuals use each of the eight personality types is measured by their response to questions based on 20 different situations in a wide variety of environments. Unlike the Myers-Briggs Inventory, the SL-TDI is not a forced-choice inventory. Rather, it is intended to reflect real-life experiences and individual choice *preferences*. SL-TDI scaled scores for all students in the personality trait preference sample were analyzed for high-scaled score (HSS) and low-scaled score (LSS) frequency and were also analyzed in relationship to degree completion (see Table 4-11).

Table 4-11
Completion or Noncompletion for SL-TDI High- and Low-Scaled Scores

Score	Type	Noncompletion	Completion	Total	Percent completion
High-scaled	Introverted sensation	10	13	23	56.5
	Extroverted sensation	11	5	16	31.2
	Introverted intuition	7	5	12	41.6
	Extroverted intuition	0	3	3	100.0
	Introverted thinking	43	33	76	43.4
	Extroverted thinking	12	8	20	40.0
	Introverted feeling	14	9	23	39.1
	Extroverted feeling	17	16	33	48.4
	Total	114	92	206	
Low-scaled	Introverted sensation	7	6	13	46.1
	Extroverted sensation	17	21	38	55.2
	Introverted intuition	35	23	58	39.6
	Extroverted intuition	23	19	42	45.2
	Introverted thinking	6	2	8	25.0
	Extroverted thinking	7	5	12	41.6
	Introverted feeling	13	9	22	40.0
	Extroverted feeling	8	7	15	46.6
	Total	116	92	208	

It is interesting to note that despite the large representation of HSS IT in the population and personality sample, only 43.4% completed the degree and that 100% of HSS EN completed the degree, although they had extremely low representation in the doctoral program. With the exception of EN, the percentage of completion ranged from 31.2% to 56.6% across all personality types. Therefore, the percentage of IT completion was consistent with completion rates across all types, despite their large representation in the population.

Analysis of the LSS of all members of the personality sample resulted in two findings. First, an LSS of IT resulted in the lowest overall completion rate (25%) even when compared to HSS for all members; second, with the exception of IT, all other LSS completed at a rate of 39.6% to 55.2%, which is very similar to completion rates for HSS. Therefore, IT enrolled at the highest frequency rate but graduated at a frequency similar to other HSS personality type preferences. However, doctoral students with IT as their LSS completed with the lowest frequency rate. Finally, there was an underrepresentation of HSS EN in the personality sample; however, 100% of EN graduated.

This researcher found the similarity of completion rate percentage ranges across all personality types of particular interest in light of the recent focus in the literature on the important role that the doctoral program and faculty play in doctoral degree completion. The data indicate that regardless of personality type, only 30% to nearly 60% of students complete the degree. This researcher must ask if the data imply that program variables and cohort relationship outweigh the significance of personality in degree completion.

Analysis of Survey

Descriptive Statistics for Five Main Categories of Inquiry

Descriptive statistics are presented to describe survey sample doctoral students' perceptions and ratings of each of the three program subscales (research preparation, faculty involvement, dissertation advisor/advisee relationship), cohort experience, and personality trait preference. For the program and cohort subscales, mean, median, mode, and standard deviations are reported for each item within each subscale. All subscale items are scored on a 5-point Likert scale, ranging from "strongly disagree" to "strongly agree." The mean ratings of each subscale were examined, rather than the mean total score (the average sum of each respondent's ratings for every item in a subscale) due to the unequal number of items across the subscales. The highest mean rating was that for the cohort experience subscale, and the lowest mean rating was for the dissertation advisor/advisee relationship subscale. Except for the dissertation advisor/advisee relationship subscale, the standard deviations of ratings were all less than .75, which, considering that the ratings are on a scale of 1 to 5, indicates that there is little variability in the range of responses within four of the five subscales.

Overall, students rated each of the items positively, with the mean scores across all variables ranging from 3.38 to 4.13 and a mean score across all five subscales of 3.79. Cohort experience had the most highly positive rating (4.1), with research efficacy scoring nearly the same at 4.0 (see Table 4-12).

Table 4-12
Mean Ratings of Survey Subscales

Subscale	N	Mean	Standard deviation
Research preparation	196	3.384	0.715
Faculty involvement	197	4.052	0.681
Dissertation advisor/advisee relationship	159	3.975	1.445
Cohort experience	194	4.129	0.635

Table G-1 in Appendix G lists all survey items in the order of *descending mean score*. Table G-2 lists the variables in the order in which they appeared in the survey, and Tables G-3 to G-6 list them by subscale, permitting a snapshot view of mean subscale response. In Table G-1, negatively worded questions are recoded and listed by their recoded value in bold red. The original value is listed immediately below in parentheses. “I spend an adequate amount of time with my advisor,” was rated the lowest rated (2.448) of all items, indicating that students disagreed and did not feel that their dissertation advisor spent adequate time with them. Interestingly, the highest mean rated item in the survey was “My advisor is very supportive of my work” (4.341). Of the 12 questions regarding the dissertation advisor, eight were rated positively and above 4.0.

Three other items rating student perception of the doctoral program warrant specific notation. These items were the lowest-rated mean scores of the 51 items and were below the 3.5 neutral rating on the Likert scale. The three items were *lack of opportunity to participate with faculty in their research*, *early research involvement*, and *lack of opportunity to participate on a research team*. Further, of the 19 items that had mean scores of 3.9 or less (the highest possible neutral rating), 16, or 84%, were questions related to research. (see highlighted items in Appendix G.)

Part 2: Verification of Survey Scales and Reliability

Reliability may be defined as the extent or degree to which a scale or test consistently measures an item (Traub, 1994). One type of reliability is internal consistency, or the extent to which items on a test are highly intercorrelated. This is indicated by the proportion of total variance in the observed score attributable to true score on the latent variable. For example, in this study, the internal consistency of the faculty involvement subscale can be understood as the proportion of the total variance among the responses that is accounted for by the variance in the true levels of faculty involvement (as perceived by the respondents). It is a measure of how well the items in the survey and in each of the subscales cluster together.

Cronbach's alpha is the most commonly used indicator of a scale's internal consistency. The value of alpha falls between 0 and 1, with a higher value indicating a higher level of consistency within the scale. Reliability can be affected by the length of a test or survey and also by the homogeneity of the population. Reliability can also be affected by multidimensionality, in that a subscale can measure more than one construct.

In this research, reliability was not expected to be affected by the length of the survey instrument, in that there were a total of 66 questions, and longer tests tend to have higher levels of reliability. The population in this study was homogeneous to the extent that all members were graduate students in the same doctoral program sharing similar experiences; however, the population was not homogenous in age, ethnicity, race, marital status, professional fields, type of employment, and other areas. Therefore, it was expected that homogeneity could affect reliability only if the majority of students perceived the majority of their experiences similarly. Finally, the survey administered

was based on two surveys reported in the literature with Cronbach's alphas ranging from .67 to .94 for their survey factors (Faghihi et al., 1999; Stallone, 1996). Although several questions were added to the original surveys based on pilot trials, it was anticipated that reliability would be within an acceptable range.

Cronbach's coefficient alpha, as an estimate of reliability, is presented in Table 4-13 for each of the subscales. Nunnally (1978) reported that a reliability coefficient of 0.7 is the minimal acceptable. All of the subscales had an alpha above 0.7, with only one subscale, research preparation, falling below the 0.8 mark. Therefore, the five subscales can be said to be consistently measuring the perceptions of survey respondents.

Table 4-13
Reliability Estimates for Survey Subscales

Subscale	Items	Cronbach's alpha
Research preparation	7	0.794
Faculty involvement	7	0.820
Dissertation advisor/advisee relationship	12	0.948
Cohort experience	12	0.866

To verify the five scores, a factor analysis was completed using a rotated component matrix (see Appendix H) to determine the strength of correlation among the items. Factor analysis is most often used to reduce a large number of observable instances to measure an unobservable construct(s) and/or to represent unobservable relationships among interrelated variables (George & Mallery, 2003). The factor analysis using .50 as a cut point resulted in recategorization of survey sample item subgroups from four into eight factors, as delineated in Table 4-14 with their corresponding Cronbach's alpha scores.

Table 4-14
Recategorization of Variables Based on Factor Analysis

Original factor	N	Cronbach's alpha	New factor	N	Cronbach's alpha
Research preparation	7	.794	Research preparation	3	.716
Faculty involvement	7	.820	Faculty involvement in research	4	.768
			Faculty interest in student research	4	.826
Dissertation advisor relationship	12	.948	Nature of dissertation advisement	8	.773
			Process of dissertation advisement	7	.725
Cohort experience	12	.866	Evaluation of cohort experience	9	.911
			Cohort experience and diversity	3	.653
			Cohort contribution to success	3	.621

Research preparation was recategorized to include three items with a .716 Cronbach's alpha. Student perceptions of faculty involvement were divided into two areas: faculty interest in student research, with a Cronbach's alpha of .826, and faculty involvement in research, with a Cronbach's alpha of .768. A distinction was also drawn for dissertation advisor/advisee relationship, resulting in two categories: nature of dissertation advisement and process of dissertation advisement. Both were reliable with Cronbach's alphas of .773 and .725, respectively. Items in the final category, cohort experience, were clustered into three categories: evaluation of cohort experience, cohort experience and diversity, and cohort contribution to success. Evaluation of cohort experience was reliable with a Cronbach's alpha of .911. The other two areas, cohort contribution to success and cohort experience and diversity, were below the acceptable level of reliability for this study. The factor analysis and Cronbach's alphas on the new factors were not believed to contribute greater reliability overall than the original subscales and were therefore not used in further analysis. However, chapter 5 addresses

suggestions for survey revisions based on the factor analysis. The complete factor analysis can be seen in Appendix I.

Part 3: Research Question Analysis

Research Questions 1 and 2

Research Questions 1 and 2 sought to determine if there was a relationship between degree completion and student perception of three program variables (Question 1) and cohort experience (Question 2). The relationship between degree completion and student perception of each of the four subscales is presented in Table 4-15. The mean ratings of each subscale were examined, rather than the mean total score (the average sum of each respondent's ratings for every item in a subscale) due to the unequal number of items across the subscales. The highest mean rating was that for the cohort experience subscale, and the lowest mean rating was for the dissertation advisor/advisee relationship subscale. Except for the latter, the standard deviations of ratings were all less than .785, which, considering that the ratings were on a scale of 1 to 5, indicates that there was little variability in the range of responses within 3 of the 4 subscales.

A one-way analysis of variance (ANOVA) was performed to determine if noncompleters and completers differed significantly in their mean rating for each of the subscales. The differences were tested at an alpha level of .05. Results showed that completers had higher overall mean ratings on two subscales: dissertation advisor/advisee relationship ($P = .011$) and cohort experience ($P = .028$). Therefore, it can be inferred that the completers had a significantly higher satisfaction perception of their dissertation advisor/advisee relationship as well as their cohort experience.

Table 4-15

Relationship Between Completion and Noncompletion Across Three Program Variables and Cohort Experience

Subscale	Completion status	N	Mean	Std. deviation	F	Sig. (2-tailed)
Research preparation	Noncompletion	35	3.322	.710	.466	0.496
	Completion	77	3.429	.785		
Faculty involvement	Noncompletion	36	3.968	.721	.156	0.693
	Completion	77	4.028	.757		
Dissertation advisor/ advisee relationship	Noncompletion	31	3.282	1.392	6.749	0.011*
	Completion	76	3.885	.940		
Cohort experience	Noncompletion	35	4.017	.6258	4.990	0.028*
	Completion	74	4.287	.5729		

*Significant at the alpha = .05 level.

A linear regression was conducted on all 38 items comprising the four subscales to determine the degree of relationship or strength of influence of items on the dependent variable, degree completion/noncompletion. Five items were found to be statistically significant at .001: (1) coursework on research in my content area adequately prepared me for writing my dissertation, (2) faculty encourages me to pursue my research ideas, (3) early research involvement was encouraged, (4) dissertation advisor spends adequate time with me, and (5) dissertation advisor provides timely feedback. However, the total maximum contribution of the five items to degree completion/noncompletion was .30 and therefore not considered significant overall. It is noteworthy that the five items represented the three primary program subscales identified in this study and the literature.

A linear regression was also completed using all variables including demographics. The results indicated that financial assistance was significant (.015) but did not have significant contribution to degree completion. The linear regressions were completed for general background information, since the more appropriate analysis when

using a dichotomous dependent variable such as degree completion/noncompletion is a logistical regression (Cabrera, 1994).

Logistical regression analysis provides a significance value between 0 and 1 that represents a probability or likelihood of the independent variable predicting the dependent variable, degree completion/noncompletion. A logistical regression was conducted in four steps to satisfy Questions 1 and 2. First, the regression was conducted using the 26 items in three program subscale variables—research preparation, faculty involvement, and dissertation advisor/advisee relationship—listed in Question 1. Second, the logistical regression was conducted with 12 items in the cohort experience subscale for Question 2. Third, the analysis was conducted including all 38 items in all four subscales for a combined analysis. Fourth, the logistical analysis was conducted using a mean total score for each item in each subsection (variable) for each member of the subsample. For each subscale, a mean was calculated for each member, and then a logistical regression was conducted on the means for each participant for each subscale.

Research Question 1: What is the relationship between doctoral degree completion and student perceptions of three doctoral program factors: research preparation, faculty involvement, and dissertation advisor/advisee relationship?

Data analysis using the 26 items in the three subscale variables (research preparation, faculty support, and dissertation advisor/advisee relationship) resulted in three significant items: “41. My dissertation committee members experienced problems that hindered by dissertation progress” (.000); “26. Faculty members have encouraged me to pursue research questions that are of interest to me” (.008); and “14. Required coursework in my doctoral program prepared me for writing my dissertation” (.005).

These three items accounted for 75.2% of influence on the dependent variable. “My dissertation committee members experienced problems that hindered by dissertation progress” independently accounted for 70% of the influence on degree completion and noncompletion, with 77% on completion and 57% contributing to noncompletion. “Required coursework in my doctoral program prepared me for writing my dissertation” and “My dissertation committee members experienced problems that hindered by dissertation progress” together contributed 87% to degree completion. The results are presented in Table 4-16.

The classification section of Table 4-16 compares the predicted values for the dependent variable with the actual observed values in the data and classifies it into the two categories possible for the dependent variable: degree completion or noncompletion. The overall value of the measure is to determine at what rate this model can predict completion, negating all other items. This model demonstrated that for “My dissertation committee members experienced problems that hindered by dissertation progress,” there was a 77.3% prediction rate for completion, 57% prediction rate for noncompletion, and a 70.1% overall correct prediction rate. In step 2—combining “My dissertation committee members experienced problems that hindered by dissertation progress” with “Faculty members have encouraged me to pursue research questions that are of interest to me”—there was an increase to 86.7% prediction of completion and a slight decrease to 50.0% prediction of noncompletion. Overall, 73.5% of the predictions were accurate. Finally, in step 3, “Required coursework in my doctoral program prepared me for writing my dissertation” was added to the table, and the overall prediction rates decreased to 82.7% for completion, 61.9% for noncompletion, and 75.2% overall.

Table 4-16

Logistical Regression with Three Program Variables and Degree Completion

a. Variables in the equation

Step	Question	B	Sig.
1 ^a	41. Committee problems	1.515	.000
	Constant	-.345	.277
2 ^b	26. Faculty encourage	-1.918	.008
	41. Committee problems	1.837	.000
	Constant	1.100	.095
3 ^c	14. Adequate prep	1.683	.005
	26. Faculty encourage	-2.390	.004
	41. Committee problems	1.665	.001
	Constant	.293	.694

a. Variable(s) entered on step 1: Q41. Committee problems .

b. Variable(s) entered on step 2: Q26. Faculty encourage.

c. Variable(s) entered on step 3: Q14. Adequate prep.

b. Classification^a

Step	Observed	Predicted		Percentage correct
		Noncompletion	Completion	
1	Noncompletion	24	18	57.1
	Completion	17	58	77.3
	Overall percentage			70.1
2	Noncompletion	21	21	50.0
	Completion	10	65	86.7
	Overall percentage			73.5
3	Noncompletion	26	16	61.9
	Completion	13	62	82.7
	Overall percentage			75.2

a. The cut value is .500

Research Question 2: Is there a relationship between doctoral degree completion and student perception of a cohort experience?

With logistical regression of the 12 items in the cohort experience variable, only one item, “51. I relied a great deal on the other students in my cohort,” demonstrated significant (.017) influence on degree completion (59%) (see Table 4-17). The classification section, comparing the predicted values for the dependent variable with the actual observed values in the data, indicated that the dependent variable could be

predicted accurately 59% of the time for degree completion and 58.5% of the time for noncompletion. Overall, the item “I relied a great deal on other students in my cohort” predicted the dependent variable accurately 58.7% of the time.

Table 4-17
Logistical Regression for Cohort Experience and Degree Completion

a. Variables in the equation

Step	Question	B	S.E.	Wald	df	Sig.	Exp(B)
1 ^a	52. Rely on students	.708	.298	5.659	1	.017	2.031
	Constant	-.601	.213	7.925	1	.005	.548

a. Variable(s) entered on step 1: Q52. Rely on students.

b. Classification^a

Step	Observed	Predicted		Percentage correct
		Noncompletion	Completion	
1	Noncompletion	62	44	58.5
	Completion	34	49	59.0
	Overall percentage			58.7

a. The cut value is .500

Research Questions 1 and 2: What is relationship between doctoral degree completion and 38 items in all four subscale variables?

The analysis indicated four significant survey items. The first three were the same variables found significant in the first logistic regression with slightly different significance levels: “My dissertation committee members experienced problems that hindered by dissertation progress” (.001); “Faculty members have encouraged me to pursue research questions that are of interest to me” (.004); and “Required coursework in my doctoral program prepared me for writing my dissertation” (.003). The fourth variable of significance in this regression was “The cohort small group work was beneficial to me.” Overall, the four variables contributed 76.1% influence on degree

completion/noncompletion. Most significantly, “My dissertation committee members experienced problems that hindered by dissertation progress” contributed 78.9% of influence toward degree completion and 57.1% to noncompletion. When combined with “Faculty members have encouraged me to pursue research questions that are of interest to me,” the percentage of influence was 88.7% on degree completion and 50% on noncompletion. In the third step, the addition of “Required coursework in my doctoral program prepared me for writing my dissertation,” slightly decreased the influence to 84.5% on completion and increased the prediction for noncompletion to 61.9%. The fourth step included “The cohort small group work was beneficial to me” and further reduced the influence on completion to 77.5% and increased the influence on noncompletion to 73.8% (see Table 4-18).

The two cohort experience variable items that were significant were different for the two regressions—linear and logistic. However, it would appear that they are interrelated, in that both reference the influence of group support. Overall, the results indicate that within the parameters of this study analyzing 38 survey items in the four subset variables, four items (interestingly one in each of the four variables) will accurately predict degree completion/noncompletion 76.1% of the time.

Table 4-18

Logistical Regression with All Four Subscales and Degree Completion

a. Variables in the equation

Step	Question	B	Sig.
1 ^a	41. Committee problems	1.605	.000
	Constant	-.470	.153
2 ^b	26. Faculty encourage	-2.109	.004
	41. Committee problems	2.015	.000
	Constant	1.066	.107
3 ^c	14. Adequate prep	1.920	.003
	26. Faculty encourage	-2.743	.002
	41. Committee problems	1.886	.000
	Constant	.182	.811
4 ^d	14. Adequate prep	1.951	.004
	26. Faculty encourage	-3.309	.001
	41. Committee problems	2.053	.000
	45. Group work good	1.820	.007
	Constant	-.944	.307

a. Variable(s) entered on step 1: Q41. Committee problems.

b. Variable(s) entered on step 2: Q26. Faculty encourage.

c. Variable(s) entered on step 3: Q14. Adequate prep.

d. Variable(s) entered on step 4: Q45. Group work good.

b. Classification^a

Step	Observed	Predicted		Percentage correct
		Noncompletion	Completion	
1	Noncompletion	24	18	57.1
	Completion	15	56	78.9
	Overall percentage			70.8
2	Noncompletion	21	21	50.0
	Completion	8	63	88.7
	Overall percentage			74.3
3	Noncompletion	26	16	61.9
	Completion	11	60	84.5
	Overall percentage			76.1
4	Noncompletion	31	11	73.8
	Completion	16	55	77.5
	Overall percentage			76.1

a. The cut value is .500

Fourth and finally, a logistical regression was conducted on the mean scores for each member for each of the four variables. This resulted in a total mean score for each member for each of the four variables. The analysis indicated that the variables research preparation and dissertation advisor had a significant influence on degree completion and noncompletion. Table 4-19 demonstrates that using the total means in this study with this population, research preparation had a 100% influence on degree completion and the overall percentage of influence on completion and noncompletion was 62.8%. The limitation of this analysis is that the individual items documented in the literature and in this study as valid were eliminated when using the means for each member of the sample. The contribution of this analysis is that when eliminating the significance of individual items, research preparation was supported as influential to degree completion and noncompletion 100% of the time.

Table 4-19

Logistical Regression Using Total Mean Scores for Each of the Four Variables: Research Preparation, Faculty Support, Dissertation Advisor, and Cohort Experience

a. Variables in the equation

Variable	Noncompletion	Completion
Research preparation	3.34	3.44
Faculty involvement	4.09	4.01
Dissertation advisor	3.81	4.08
Cohort experience	4.03	4.26

b. Classification^{a,b}

Step	Observed	Predicted		
		Noncompletion	Completion	Percentage correct
0	Noncompletion	0	42	.0
	Completion	0	71	100.0
	Overall percentage			62.8

a. Constant is included in the model.

b. The cut value is .500

Research Question 3

Research Question 3: What is the relationship between doctoral degree completion and SL-TDI scores?

For the purpose of this analysis, SL-TDI HSS and LSS were tabulated for each doctoral student to determine if a relationship existed between personality type preference HSS and degree completion. This was presented previously in Table 4-11. The analysis of this data is limited by the fact the only the HSS and LSS were used, rather than analysis with all eight scaled scores for each participant. In some cases, student-scaled scores across all eight personality trait preferences did not vary substantially in the spread of the scores, or two high scores may have been the same. In that case, the participants' scores were analyzed for "introverted" or "extroverted" preference across all eight types to determine the strongest overall preference.

It is interesting to note that despite the large representation of introverted thinking, only 43.4% of that type (33 of 76) completed the degree, and that 100% (3 of 3) of those with extraverted intuition HSS completed the degree, although they have extremely low representation in the doctoral program. With the exception of the extraverted intuition type, the percentage of completion ranged from 31.2% to 56.5% across all personality types. Therefore, the percentage of introverted thinking completion is consistent with completion rates across all types.

A logistic regression analysis was conducted for all eight SL-TDI scores for all personality subsample members and the dichotomous dependent variable of degree completion/noncompletion. Two variables, extroverted sensation and extroverted feeling, had significant prediction probability for degree completion/noncompletion (.002 and

.006, respectively) and together accurately predicted degree completion/noncompletion 64.5% of the time (see Table 4-20). Extroverted sensation predicted degree completion at 31.5% and noncompletion at 83.8%. Extroverted feeling predicted degree completion at 45.2% and noncompletion at 78.8%. Introverted thinking was also significant in the regression but was not significant in predicting degree completion.

Table 4-20

SL-TDI Personality Trait Preference for All Eight Scaled Scores for All Participants and Completion/Noncompletion

a. Variables in the equation

Step	Trait preference	B	Sig.
1 ^a	Extroverted sensation	-.041	.002
	Constant	2.099	.008
2 ^b	Extroverted sensation	-.084	.000
	Extroverted feeling	.057	.006
	Constant	1.093	.203
3 ^c	Extroverted sensation	-.111	.000
	Introverted thinking	.053	.033
	Extroverted feeling	.051	.016
	Constant	-.313	.772

a. Variable(s) entered on step 1: Extroverted sensation.

b. Variable(s) entered on step 2: Extroverted feeling.

c. Variable(s) entered on step 3: Introverted thinking.

b. Classification^a

Step	Observed	Predicted		Percentage correct
		Noncompletion	Completion	
1	Noncompletion	83	16	83.8
	Completion	50	23	31.5
	Overall percentage			61.6
2	Noncompletion	78	21	78.8
	Completion	40	33	45.2
	Overall percentage			64.5
3	Noncompletion	77	22	77.8
	Completion	35	38	52.1
	Overall percentage			66.9

a. The cut value is .500

Two additional regressions were conducted to analyze the influence of HSS only and LSS only on the dependent variable, degree completion/noncompletion. HSS resulted in extroverted sensation (.001) and extroverted feeling (.005) being significant and predicting 65.3% of degree completion/noncompletion (Table 4-21). LSS resulted in extroverted sensation and extroverted feeling being significant, predicting 64.5% of degree completion/noncompletion (Table 4-22). Introverted thinking was also significant (.030) but was not significant in predicting degree completion. It is important to note that unlike the results for Question 1 and 2, where the prediction for degree *completion* was higher with the program variables, for Question 3 the prediction value for personality traits was higher for *noncompletion*, with extroverted sensation contributing 84.4% influence on noncompletion and extraverted feeling contributing 78.1% to noncompletion.

Table 4-21
Personality Trait Preference for High-Scaled Score and Degree Completion

a. Variables in the equation

Step		B	S.E.	Wald	df	Sig.	Exp(B)
1 ^a	Extroverted sensation	-.045	.014	10.674	1	.001	.956
	Constant	2.312	.814	8.070	1	.005	10.091
2 ^b	Extroverted sensation	-.089	.021	17.122	1	.000	.915
	Extroverted feeling	.060	.021	7.868	1	.005	1.062
	Constant	1.201	.898	1.790	1	.181	3.323

a. Variable(s) entered on step 1: ES.

b. Variable(s) entered on step 2: EF.

b. Classification

Step	Observed	Predicted		Percentage correct
		Noncompletion	Completion	
1	Noncompletion	81	15	84.4
	Completion	48	23	32.4
	Overall percentage			62.3
2	Noncompletion	75	21	78.1
	Completion	37	34	47.9
	Overall percentage			65.3

a. The cut value is .500

Table 4-22

Personality Trait Preference for Low-Scaled Score and Degree Completion

a. Variables in the equation

Step		B	S.E.	Wald	df	Sig.	Exp(B)
1 ^a	Extroverted sensation	-.041	.013	9.539	1	.002	.960
	Constant	2.081	.785	7.035	1	.008	8.012
2 ^b	Extroverted sensation	-.083	.021	15.430	1	.000	.921
	Extroverted feeling	.056	.021	7.115	1	.008	1.057
	Constant	1.104	.859	1.654	1	.198	3.017
3 ^c	Extroverted sensation	-.110	.025	19.230	1	.000	.896
	Introverted thinking	.054	.025	4.694	1	.030	1.055
	Extroverted feeling	.049	.021	5.417	1	.020	1.050
	Constant	-.328	1.083	.092	1	.762	.720

a. Variable(s) entered on step 1: ES.

b. Variable(s) entered on step 2: EF.

c. Variable(s) entered on step 3: IT.

b. Classification^a

Step	Observed	Predicted		Percentage correct
		Noncompletion	Completion	
1	Noncompletion	81	16	83.5
	Completion	49	23	31.9
	Overall percentage			61.5
2	Noncompletion	76	21	78.4
	Completion	39	33	45.8
	Overall percentage			64.5
3	Noncompletion	76	21	78.4
	Completion	34	38	52.8
	Overall percentage			67.5

a. The cut value is .500.

Research Question 4

Research Question 4: What is the relationship between cohort experience and SL-TDI scores?

The SL-TDI personality data were also analyzed in relationship to doctoral student perception of cohort experience. A one-way ANOVA was conducted to test the difference between groups by comparing the means to see if there was sufficient evidence

to infer that the means of the groups differed. In Research Question 2, it was demonstrated that “The cohort small group work was beneficial to me” was the only significant (.000) cohort experience subscale survey item in analyzing the relationship between cohort experience and degree completion/noncompletion. Therefore, in answering Question 4, only “The cohort small group work was beneficial to me” was correlated to SL-TDI personality trait preference to determine the degree of relationship with cohort experience. The results indicated that “The cohort small group work was beneficial to me” was not significantly correlated with SL-TDI HSS (.538) or LSS (.280) (Table 4-23).

Table 4-23
ANOVA of SL-TDI and Cohort Experience

a. ANOVA: Small Group Work Was Beneficial and SL-TDI HSS

	Sum of squares	Df	Mean square	F	Sig.
Between groups	.971	7	.139	.864	.538
Within groups	15.907	99	.161		
Total	16.879	106			

b. Test of Homogeneity of Variances: Small Group Work Was Beneficial

Levene statistic	Df1	df2	Sig.
7.338	7	98	.000

c. ANOVA: Small Group Work Was Beneficial and SL-TDI LSS

	Sum of squares	Df	Mean square	F	Sig.
Between groups	1.284	7	.183	1.256	.280
Within groups	14.311	98	.146		
Total	15.594	105			

d. ANOVA: HSS

	Groups	Sum of squares	df	Mean square	F	Sig.
42. The cohort structure created a supportive environment.	Between	.346	7	.049	.434	.879
	Within	11.045	97	.114		
	Total	11.390	104			
43. I feel like I was treated differently because of my race.	Between	.676	7	.097	1.408	.211
	Within	6.720	98	.069		
	Total	7.396	105			
44. The cohort structure made the program more difficult for me.	Between	.567	7	.081	.644	.718
	Within	12.311	98	.126		
	Total	12.877	105			
45. The cohort small group work was beneficial to me.	Between	1.284	7	.183	1.256	.280
	Within	14.311	98	.146		
	Total	15.594	105			
46. Working with students in a cohort made the program easier for me.	Between	.706	7	.101	.612	.745
	Within	16.134	98	.165		
	Total	16.840	105			
47. I would rather have classes without student cohorts.	Between	1.273	7	.182	1.192	.315
	Within	14.954	98	.153		
	Total	16.226	105			
48. I was never treated differently based solely on my ethnicity.	Between	1.131	7	.162	1.336	.242
	Within	11.727	97	.121		
	Total	12.857	104			
49. The cohort structure was beneficial in studying for comprehensive exams	Between	.512	7	.073	.708	.665
	Within	10.129	98	.103		
	Total	10.642	105			
50. My cohort made the program more difficult for me.	Between	.275	7	.039	.289	.957
	Within	13.310	98	.136		
	Total	13.585	105			
51. Working in groups made it easier for me to get things done.	Between	.907	7	.130	.524	.815
	Within	24.235	98	.247		
	Total	25.142	105			
52. I relied a great deal on the other students in my cohort.	Between	1.802	7	.257	1.025	.419
	Within	24.613	98	.251		
	Total	26.415	105			
53. I was not treated differently because of my gender.	Between	.524	7	.075	.594	.759
	Within	12.353	98	.126		
	Total	12.877	105			

e. ANOVA: LSS

	Groups	Sum of squares	df	Mean square	F	Sig.
42. The cohort structure created a supportive environment.	Between	.694	7	.099	.907	.504
	Within	10.711	98	.109		
	Total	11.406	105			
43. I feel like I was treated differently because of my race.	Between	.428	7	.061	.775	.610
	Within	7.815	99	.079		
	Total	8.243	106			
44. The cohort structure made the program more difficult for me.	Between	1.291	7	.184	1.574	.152
	Within	11.606	99	.117		
	Total	12.897	106			
45. The cohort small group work was beneficial to me.	Between	.971	7	.139	.864	.538
	Within	15.907	99	.161		
	Total	16.879	106			
46. Working with students in a cohort made the program easier for me.	Between	1.667	7	.238	1.491	.179
	Within	15.810	99	.160		
	Total	17.477	106			
47. I would rather have classes without student cohorts.	Between	1.383	7	.198	1.315	.251
	Within	14.879	99	.150		
	Total	16.262	106			
48. I was never treated differently based solely on my ethnicity.	Between	.434	7	.062	.488	.841
	Within	12.443	98	.127		
	Total	12.877	105			
49. The cohort structure was beneficial in studying for comprehensive exams.	Between	1.226	7	.175	1.700	.118
	Within	10.195	99	.103		
	Total	11.421	106			
50. My cohort made the program more difficult for me.	Between	1.244	7	.178	1.423	.204
	Within	12.363	99	.125		
	Total	13.607	106			
51. Working in groups made it easier for me to get things done.	Between	1.113	7	.159	.645	.717
	Within	24.401	99	.246		
	Total	25.514	106			
52. I relied a great deal on the other students in my cohort.	Between	1.162	7	.166	.644	.719
	Within	25.530	99	.258		
	Total	26.692	106			
53. I was not treated differently because of my gender.	Between	.671	7	.096	.825	.568
	Within	11.497	99	.116		
	Total	12.168	106			

Summary of Results

This research studied four questions in relationship to doctoral student degree completion in a large East Coast university. The research involved 17 years of a cohort-based doctoral program. Both program data on file and a survey instrument were used in the study.

The program variables used in the research were supported by the literature, and the survey used was tested and found to be reliable. Factor analysis did not support reducing the number of variables in the analysis of the data. Of the total population, 61% completed the survey, and the survey participant demographics closely paralleled the demographic makeup of the total population. The study also included a personality trait preference sample, which represented 57% of the population.

This research demonstrated that of the 38 survey items in the four survey subscale variables measured, there was a significant relationship between doctoral degree completion and three program items. “My dissertation committee members experienced problems that hindered by dissertation progress” (.000), “Faculty members have encouraged me to pursue research questions that are of interest to me” (.008), and “Required coursework in my doctoral program prepared me for writing my dissertation” (.005), as well as one cohort experience variable, “The cohort small group work was beneficial to me” together contributed 85% influence on degree completion. In regard to program variables, it is also important to note that the lowest mean response across all variables in the survey was “In general, I spend an adequate amount of time with my advisor,” and the highest mean rated item was “My advisor is very supportive of my

work.” These were the most positively and negatively rated items in the survey, but they did not significantly contribute to degree completion.

The second finding involved student perception of the cohort experience. Of the 12 variables measured, two variables, “The cohort small group work was beneficial to me” and “I relied a great deal on the other students in my cohort,” were significantly related to degree completion. If cohort experience was analyzed separately from program variables, “I relied a great deal on other students in my cohort” was significant. If cohort experience was analyzed together with program variables, “Small group work” was a significant contributor to degree completion. In both cases, the significant variables were related to peer/group work interaction. The three questions relative to diversity (gender, ethnicity, and race) were not significant.

The third finding of the research was that when using three measures—all eight SL-TDI scaled scores for each member of the personality subsample, SL-TDI HSS for each member of the personality subsample, and SL-TDI LSS for each member of the personality subsample—extroverted sensation and extroverted feeling predicted degree completion and noncompletion with a probability of 64.5%. Individually, extroverted sensation had a probability of 83.5% prediction of degree noncompletion, and extroverted feeling had a probability of 78.8% prediction of degree noncompletion.

This differs from the findings in the three program variables, in that they had the highest percentage of probability of prediction for degree completion rather than noncompletion. It appears that personality preference has less prediction potential or relationship to degree completion and more prediction potential for degree noncompletion in this study. Finally, no significant relationship was identified between

cohort experience and personality preference. “The cohort small group work was beneficial to me” was significant in relationship to degree completion but was not significant when measured against each SL-TDI personality trait preference.

Ad Hoc Analyses

In addition to the above data, two ad hoc studies were completed. The first analyzed student perception of personal research efficacy in relationship to 13 competency steps in dissertation persistence. A 5-point Likert scale ranging from “no confidence” to “highly confident” was used. This analysis was not part of this study; however, the analysis can be found in Appendix J and includes descriptive statistics, reliability data, and correlation among research efficacy and SL-TDI personality trait scores. Research efficacy is also discussed in chapter 5.

The second ad hoc analysis consisted of measuring the extent of the relationship between SL-TDI personality trait preference and the four subscales of the survey. The results demonstrate no significant relationship between personality trait preference and any of the 38 program variables.

The results of a one-way ANOVA indicate that the mean ratings for the faculty involvement subscale differed significantly across personality types ($P = 0.038$) (see Table 4-24). That is, people of different personality types had significantly varying mean ratings for that subscale. The other three subscale mean ratings did not significantly differ across personality type.

Table 4-24
ANOVA Results for the Analysis of Subscale Means Across Personality Types

Subscale	Sum of squares	df	F	Sig.
Research preparation	4.994	7	1.185	0.318
Faculty involvement	7.377	7	2.223	0.038*
Dissertation advisor/advisee relationship	13.018	7	1.133	0.349
Cohort experience	2.606	7	0.918	0.496

*Significant at the alpha = .05 level.

The relationship between personality type and subscale mean ratings is presented in Table 4-25. Eta and Eta squared are analogous to Pearson's r for interval-by-interval correlations but are appropriate to use with data that have a continuous dependent variable (in this case, subscale mean rating) and a nominal independent variable (personality type). Eta squared can be interpreted as the percentage of variance in the dependent variable that is explained by the categories of the independent variable. For example, in the current study, the only subscale with significantly different means across personality types was faculty involvement. Eta squared for this relationship is 0.137 (see Table 4-26). Therefore, 13.7% of the variability in responses to faculty involvement was due to the personality type of the respondent. While this is statistically significant, the eta squared value indicates a practical significance of only 13.7%.

Table 4-25

Means and Standard Deviations of Subscale Mean Ratings by High-Scaled Score

High SS	Descriptive statistics	Mean rating			
		Research preparation	Faculty involvement	Dissertation advisor	Cohort experience
Introverted sensation	Mean	3.592	4.286	3.594	4.321
	N	7	8	8	7
	Std. deviation	0.291	0.397	1.375	0.615
Extraverted sensation	Mean	3.200	4.114	2.958	4.204
	N	10	10	10	9
	Std. deviation	0.636	0.752	1.662	0.586
Introverted intuition	Mean	2.929	4.071	3.236	4.111
	N	6	6	6	6
	Std. deviation	1.013	0.738	0.918	0.630
Extraverted intuition	Mean	2.643	4.714	3.500	4.333
	N	2	2	2	2
	Std. deviation	0.101	0.202	0.236	0.118
Introverted thinking	Mean	3.226	3.795	3.183	4.061
	N	38	37	36	38
	Std. deviation	0.862	0.783	1.424	0.707
Extraverted thinking	Mean	3.600	4.371	3.842	4.275
	N	10	10	10	10
	Std. deviation	0.631	0.618	1.029	0.579
Introverted feeling	Mean	3.495	4.296	3.827	4.077
	N	13	14	14	14
	Std. deviation	0.832	0.647	0.809	0.659
Extraverted feeling	Mean	3.556	4.398	3.958	4.481
	N	19	19	16	18
	Std. deviation	0.734	0.603	1.236	0.530

Table 4-26

Effect Size of Relationship Between Subscale Mean Ratings and Personality Type

Subscale	Eta	Eta squared
Research preparation	0.281	0.079
Faculty involvement	0.370	0.137
Dissertation advisor/advisee relationship	0.279	0.078
Cohort experience	0.250	0.063

Perception of cohort experience was correlated with personality trait preference for HSS. The results of both descriptive statistics and Pearson correlation were not significant, indicating that particular personality trait preferences as measured by the SL-TDI were not highly correlated with cohort experience (see Tables 4-27, 4-28, 4-29).

Table 4-27
Descriptive Statistics: Cohort Experience and High-Scaled Score

Dependent Variable: Total Cohort Experience

High-scaled score	Mean	Std. deviation	N
Introverted sensation	36.5000	3.08221	6
Extraverted sensation	35.5556	2.69774	9
Introverted intuition	36.2000	3.27109	5
Extraverted intuition	37.0000	1.41421	2
Introverted thinking	36.9333	4.23396	30
Extraverted thinking	36.0000	2.92770	8
Introverted feeling	35.6667	4.61880	12
Extraverted feeling	38.0714	2.89467	14
Total			86

Table 4-28
Group Statistics: Cohort Experience and High-Scaled Score

	High-scaled score	N	Mean	Std. deviation	Std. error mean
Total cohort experience	Introverted thinking	30	36.9333	4.23396	.77301
	Extraverted feeling	14	38.0714	2.89467	.77363

Table 4-29
Correlations: Cohort Experience and High-Scaled Score

Variable	Test	Cohort experience	High-scaled score
Cohort experience	Pearson correlation	1	.104
	Sig. (2-tailed)		.342
	N	156	86
High-scaled score	Pearson correlation	.104	1
	Sig. (2-tailed)	.342	
	N	86	206

The findings, interpretations, and conclusions of this study are discussed in chapter 5.

CHAPTER 5:

DISCUSSION

This chapter presents a discussion of the key findings of this study. The primary purpose of this research was to determine factors that may influence doctoral degree completion and to measure relationships among selected variables that may affect degree completion. Data for the study were obtained through a survey instrument and through data on file in the doctoral program. In addition, personality trait preference data were analyzed in relationship to degree completion and cohort experience. Four research questions guided this study:

1. What is the relationship between doctoral degree completion and student perceptions of three doctoral program factors: research preparation, faculty involvement, and dissertation advisor/advisee relationship?
2. What is the relationship between doctoral degree completion and student perception of a cohort experience?
3. What is the relationship between doctoral degree completion and doctoral student scores on the Singer-Loomis Type Deployment Inventory (SL-TDI)?
4. What is the relationship between the cohort experience and SL-TDI scores?

The data were analyzed using descriptive statistics, correlational analysis, and linear and logistical regression. In summary, results indicated a significant relationship between one item in each of the three doctoral program variables (research preparation, faculty involvement, and dissertation advisor/advisee relationship) and degree completion; one item in the cohort experience variable and degree completion; and two personality preference types and degree completion. This chapter interprets the results,

suggests conclusions, and draws implications for practice, theory, and research. The findings are reviewed in relationship to the conceptual framework. Limitations of the findings are also discussed.

Interpretation of Key Findings and Conclusions

The following summary interprets the findings of this research and draws conclusions and makes recommendations where appropriate. The first four findings directly answer the research questions. Additional findings are then reviewed relating to demographics, the reliability of the survey, usefulness of the conceptual framework, and the overall findings of the study. Negatively worded questions were recoded for analysis of data.

Research Question 1: Effect of Doctoral Program Factors on Degree Completion

The first finding was that three survey items were significantly related to degree completion. Each of the three survey items represented one of the three program subscales: research preparation, faculty involvement, and dissertation advisor/advisee relationship. The power of their combined analysis was remarkable, as the three survey items together had an 82.7% prediction for degree completion. Two variables, “My dissertation committee members experienced problems that hindered by dissertation progress” and “Faculty members have encouraged me to pursue research questions that are of interest to me,” together had a prediction rate of 86.7% for degree completion.

These factors are well represented in the literature (Bair, 1999; Baird, 1993; Cooke et al., 1995; Coplin, 2005; Tinto, 1987). Difficulty with dissertation committee members is often cited by students as a major setback in their dissertation progress (Bair,

1999; Campbell, 1992; Faghihi et al., 1999; Lee, 2001). The importance of the role of the dissertation chair has been discussed in terms of managing the committee members' roles and responsibilities and in providing sound guidance in the selection of members (Lee, 2001). The role of the dissertation chair and the relationship that is established between the doctoral student and committee members is also discussed in the literature in relationship to building the student's efficacy in being able to complete the dissertation (Good, 2002). The development of a good positive working relationship with both the dissertation advisor and the dissertation committee was found to be instrumental in dissertation progress (Bair, 1999; Lee, 2001; Presley, 1996), and may have a relationship to personality (Bair, 1999).

Of 38 items in this research, participants perceived this survey item, "My dissertation committee members experienced problems that hindered by dissertation progress" as having the most influence on doctoral degree completion. The result of this study with this specific population would support a recommendation that doctoral degree program staff need to reassess how committee members are selected, establish parameters for a coaching and mentoring relationship between the student and the committee members, and closely monitor committee member interaction with the intent of interceding before problems arise. The literature (Lee, 2001) clearly establishes this as a responsibility of the chair and not the doctoral student—although it is most often left in the lap of the student. The chair should also play a key role in fostering a good working relationship among committee members. Too many studies of doctoral student failure state that students report they were given little attention and guidance during the dissertation process (Renetzky, 1966); they experienced lack of guidance and support;

they experienced loneliness, self-doubt, and anxiety (Steinberg, 1981); and power struggles among committee members hindered their progress.

Lack of *meaningful* advising was also a key finding in the literature (Nerad & Cerny, 1991). Based on the survey and comments offered by students, future use of this survey should consider a question such as, “My committee chair effectively managed roles and relationships among my committee members.” This subscale would then address not only problems among committee members but the effectiveness of the chair in resolving them. Finally, an additional survey question could address whether the program provides an easy means of changing dissertation chairs and/or committee members without negative implications for the doctoral student.

Possibly related to the discussion of the role of the dissertation advisor, in this study the lowest rated of the 38 items across the four subscale variables was “In general, I spend an adequate amount of time with my advisor.” This supports students’ concern for the relationship they have with their dissertation advisor. However, one potential explanation for the low rating for this item is that the doctoral program in this study meets once monthly, and most students travel significant distances to the weekend-based program. The majority of students do not have regular on-campus interaction with faculty and dissertation advisors. Faculty and program administration should review potential new means of communicating with students, particularly during the dissertation process when they are not meeting with faculty once a month. Monthly videoconferencing might keep students on track and facilitate regular communication and accountability for meeting timelines. Boyle and Boice (1995) recommended four steps in facilitating graduate school success: (1) early immersion in research; (2) academic regimen and

planning; (3) socialization of students and faculty; and (4) self-management. Steps three and four would be enhanced by videoconferencing and scheduled accountability.

The second program variable that significantly influenced degree completion was “Faculty members have encouraged me to pursue research questions that are of interest to me.” The literature clearly portrays the critical role that faculty play in building a relationship between faculty and students (Cooke et al., 1995); socializing and facilitating the acculturation of students in the doctoral program (Baird, 1993); building communities of scholars among students (Parent, 2005); and mentoring and advising students (Bair, 1999). The literature also shows the debilitating effect faculty misuse of power has on degree persistence (Kerlin, 1995). In fact, Tinto (1993) indicated that persistence in degree completion may largely depend on the behavior of a specific faculty member. This study demonstrated that students rated “Faculty members have encouraged me to pursue research questions that are of interest to me” as the second most significant and positive determiner of degree completion, indicating that faculty involvement and doctoral student/faculty relationships were a critical component of research efficacy and degree completion in this study.

The third item with significant influence on degree completion was “Required coursework in my doctoral program prepared me for writing my dissertation.” This item is part of the research preparation subscale variable. The literature clearly demonstrates that students who believed that they had adequate research preparation were more advanced in their degree progress (Lee, 2001; Faghihi, 1998; Sproul, 1959) and that there was a significant relationship between degree completion and quality of research training (Faghihi, 1998). In this study, research preparation was positively correlated with degree

completion. The implication for doctoral programs is that they provide high-quality research training and student research experience throughout doctoral studies so that students are well prepared to conduct their own research.

Faghihi et al. (1999) found that student experience was a predictor of their degree completion success. Phillips and Russell (1994) also found that research coursework and research involvement or experience was related to research production and efficacy for research. Finally, the Council of Graduate Schools Ph.D. Project reported two recommendations: (1) Research experience needs to begin in the early stages of the doctoral program, and selection of the dissertation topic should be completed early in doctoral studies; and (2) An intensive summer session should be held on development of the dissertation proposal.

Conclusion 1

Student success in doctoral degree completion is positively correlated with three doctoral program factors. First, quality interpersonal working relationships and professional exchange of expertise among dissertation committee members is positively correlated with degree completion. This includes the pivotal role of the dissertation chairperson in managing committee member roles and relationships. Second, faculty interest in student research, faculty mentoring, and inclusion of students in their research and the quality of relationships built between students and faculty are positively related to degree completion. Third, the quality of research coursework content and the extent of student research experience provided by the doctoral program are positively correlated with degree completion.

Research Question 2: Effect of Cohort Experience on Degree Completion

The relationship between cohort experience and degree completion was limited to two survey items. The question “I relied a great deal on the other students in my cohort” had a 59% likelihood of predicting both completion and noncompletion. Of the 12 items in the cohort experience subscale variable, only this item and “The cohort small group work was beneficial to me” demonstrated a significant positive relationship to doctoral degree completion. Student rating of “The cohort small group work was beneficial to me” demonstrated a 77% positive prediction likelihood for doctoral degree completion when cohort experience was combined with the other three subscales in a logistical regression. The significance of this finding is that students rated the value of their group work and the opportunity to rely on their cohort peers as significant in completion of their degrees.

The descriptive statistics in this study support positive student perception of the cohort experience, as this subscale variable had the highest overall mean rating (4.13) of the four survey subscales. “The cohort structure created a supportive environment” (4.34) was the most highly rated of the items, closely followed by “The cohort structure was beneficial in studying for comprehensive exams” (4.24), although these items did not have a significant influence on degree completion.

These findings would indicate that doctoral program faculty should research and plan the best use of group work to achieve high levels of student interaction to support and enrich learning. A measure such as the SL-TDI that helps students understand their personality trait preferences and could also be used to organize small groups composed of different personality type preferences should be beneficial to individual and group learning and degree completion.

Conclusion 2

Cohort-based doctoral programs can provide a significant support system for doctoral student degree completion through the use of small group work and work that provides students the opportunity to interact with and rely on one another. Cohort member interaction may support persistence and degree completion. Cohort members may benefit from a personality preference measure that helps them better understand the dynamics of their personality preferences and those of others within the context of group work, interaction and degree completion.

Research Question 3: Effect of Personality Type on Degree Completion

Personality trait preferences as measured by the SL-TDI predicted degree completion/noncompletion. Whether analyzing all eight scaled scores of each of the 206 personality sample members, high-scaled scores (HSS) only, or low-scaled scores (LSS) only, the extroverted sensation (ES) personality preference had an 84% influence on degree noncompletion, and the extroverted feeling (EF) personality preference had a 79% influence on noncompletion, meaning that an HSS or LSS of ES or EF could accurately predict noncompletion over 76% of the time.

The introverted thinking (IT) personality preference type had the largest representation across all cohorts, representing 76% of the total membership. IT was significant when looking at LSS but was not significant in predicting degree completion or noncompletion. However, of those students with LSS for IT, there was only a 25% completion rate. This information could provide considerable insight. IT personality types are typically characterized as having the “capacity to be analytical, define and evaluate a situation, the ability to develop rational, logical order, to organize and plan and

to work independently” (Singer-Loomis, 1986). Therefore, a very low preference for, or ability to use, these skills may be indicative of a more difficult time completing the dissertation. Finally, the disproportionately high enrollment rate of IT in this sample did not result in a similar high rate of completion for this type. The other extreme in this study was the disproportionately low number ($n = 3$) of extraverted intuition (EN) personality preference types enrolled in the program over 17 years, yet all EN types completed the degree.

Preference for ES and EF personality types is often exemplified by individuals who are fully engaged in interaction with others and with their environment. The sensation type tends to be tolerant, patient, and risk taking, while the feeling type often forms strong attractions to others, attempts to meet the needs of others, and seeks approval from others. The literature indicates that extroverted social personality types can become so socialized in the program and enjoy the interaction with the faculty and students that they lose sight of degree persistence. In programs where personality type indicators are available, ES and EF types might be guided to increase their awareness of the potential delay or derailment of persistence as a result of the potential prioritization of socialization and caring for others. It may be inferred that ES and EF can become so involved in supporting, interacting, and communicating with others that their own work, in this case degree completion, is placed on the backburner.

Although it was not a part of this study, Bair (1999) has indicated the need to study student attributes and personality in relationship to what students contribute to building positive faculty/student and dissertation advisor/advisee relationships. The literature supports the importance of relationships between faculty and students and

dissertation advisors and advisees in degree completion. The results of this study would indicate the need for additional research in the contribution of student personality to doctoral degree success. Administration of a personality style measure at the beginning and end of doctoral work could be highly beneficial to students in understanding their personal style in relationship to the requirements of doctoral work and the personality styles of department members and other doctoral students. Cohort programs could make high-quality use of the personality data by allowing students to form small groups that incorporate a variety of styles that could potentially benefit the group as a whole.

Conclusion 3

Personality types ES and EF were significant items in this model with this population in predicting degree completion; however, a cause-and-effect relationship was not determined. Further study is needed in the area of personality, persistence, and degree completion. It is important that these data be viewed as a “snapshot” of a brief point in time. As students who are currently persisting in degree completion graduate, the personality preferences of these students may significantly alter not only the percentage of degree completion but also the extent to which any one personality preference type predicts completion and noncompletion. It is the intent of this researcher to update completion rates and the personality preference data in an ad hoc study at the end of this research, as many students have graduated since the inception of the study.

Research Question 4: Relationship Between Personality Type and Cohort Experience

There was no significant relationship between personality type and student perception of cohort experience. Of the four subscales, cohort experience was the most

highly rated scale across all personality types. Therefore, the majority of students found cohort experience to be beneficial to them regardless of personality type. Personality traits were also not found to be significantly correlated with the other three program subscales. Personality traits appear to be more influential in deciding to enter a doctoral program and in degree completion/noncompletion. They may also be more influential in what they contribute to building successful relationships with faculty and dissertation advisors.

Conclusion 4

There was no relationship between cohort experience and personality type in this study.

Demographics and Degree Completion

In this study, demographics did not have a significant influence on degree completion. The limitation to the summary of demographic data is that up to 40% of participants did not respond to some of the demographic questions such as ethnicity, country of origin, and age. The literature is conflicting in regard to demographics: some studies support the contribution of various demographic factors to degree completion, and others find that the exact same demographic factors are not significant in degree completion (Renetzky, 1966; Benkin, 1984, 1987; Bratrud, 1999; Lunneborg & Lunneborg, 1973; Lee, 2000; Cook & Swanson, 1978; Bowen & Rudenstine, 1992; Breneman, 1970; Baird, 1990; Boyle & Boice, 1995; Clewell, 1987; Zwick, 1991). The results of this research study support the literature (Bair, 1999; Council of Graduate Schools, 2006; Nerad & Cerny, 1991; Kerlin, 1995; Tierney, 1998; Lipschutz, 1993) that

looks beyond demographics to program factors and other personal attributes that contribute to degree completion and noncompletion.

Conclusion 5

Demographics were not significantly related to degree completion in this study.

Reliability of the Survey and Use of Conceptual Framework

This research verified that the constructs used in the survey were reliable and that the four main subscale variables in the survey each contributed a factor that had significant influence on degree completion. Although questions were added to the original surveys and other minor changes were made, this research reflected the reliability of the survey items in the previous studies conducted by Faghihi (1998) and Stallone (1996). The implications of the response rate to the survey, critiques of the survey by pilot populations and survey participants, and the reliability and data analyses indicate that the survey constructs and items in the survey subscales measured key factors that have the potential to influence degree completion. Comments from survey participants that the three diversity questions (race, ethnicity, and gender) should apply to the program in general and not exclusively to cohort experience should be considered in future use of the survey. Finally, factor analysis did not indicate the need to reduce the number of items in the survey.

The conceptual framework for this study was supported in part by the results of the study. The influence of SL-TDI personality type preference on degree completion could be exemplified by the revision of the conceptual framework as demonstrated in Figure 5-1. Although demographics were not significant in degree completion in this

study, this researcher would continue to include demographics, as they are also valuable in describing the population.

Conclusion 6

The survey used in this research and all four subscales were reliable, and each subscale contributed a least one factor that had a significant influence on degree completion, thus increasing the validity of the factors in the study. It would appear that the constructs, survey subscales, and survey items may have future utility in similar research endeavors and in application to practice.

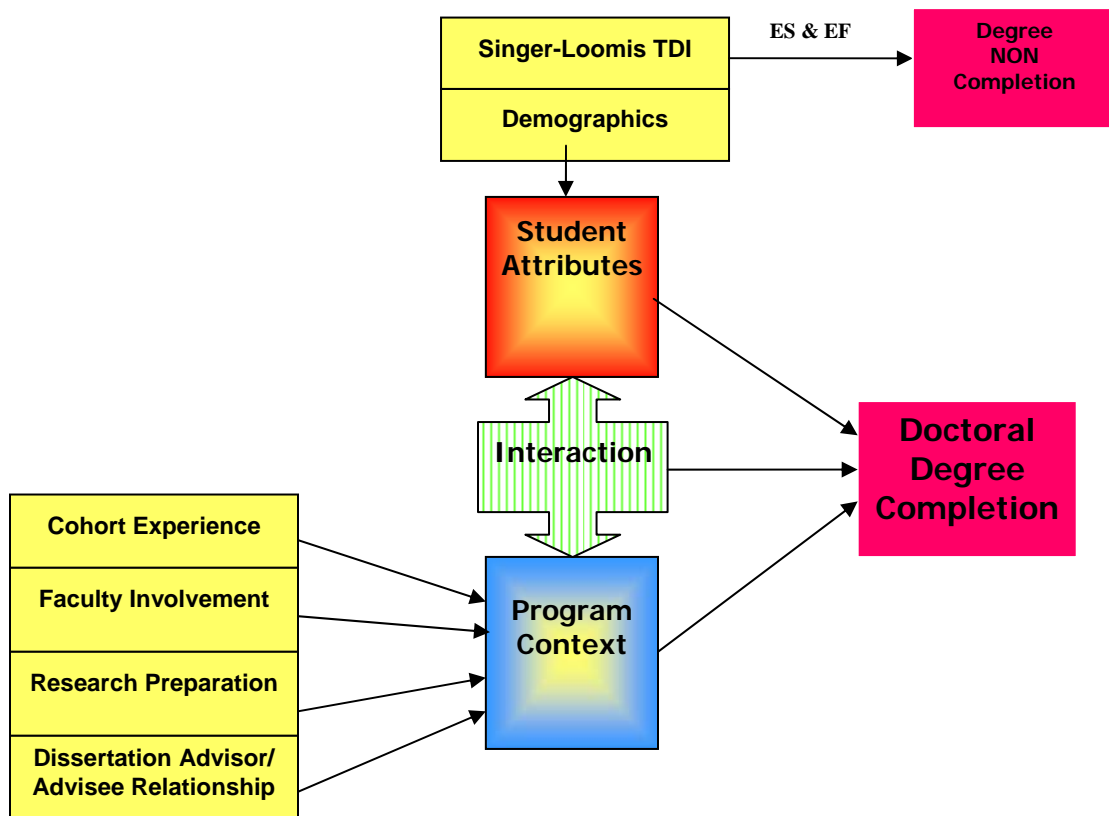


Figure 5-1. Modified conceptual framework, based on results of the study.

Study Summary: Factors Contributing to Degree Completion

The results of this study support the findings of numerous research studies (Bair, 1999; Baird, 1990; Bowen & Rudenstine, 1992; Boyle & Boice, 1995; Campbell, 1992; Faghihi, 1998; Golde, 1996; Kerlin, 1995; Kleuver, 1995; Nerad & Cerny, 1991; Tierney, 1998; Tinto, 1993) that demonstrate that doctoral degree completion and attrition is not the result of a single factor, but is the result of complex dynamic factors that include program factors, interpersonal relationship factors, and individual personal characteristics of faculty, advisors, and students. Improvement in degree completion and the reduction of attrition is dependent on linking institutional, program, and faculty, staff, and student interaction factors to inform practice.

Conclusion 7

The dynamic interaction of program structure, research environment, faculty involvement, dissertation committee functioning, student/advisor relationships, cohort support, and personal characteristics contribute to degree completion and attrition.

Study Limitations

There were several limitations to this research. First, the correlational nature of the study does not provide evidence for causation. Second, the population provided limited diversity, the survey sample had less representation from students who did not complete the program, and the personality subsample did not include all members of the population due to damaged tape files.

Additionally, students self-select into the program, so the personality types represented reflect self-selection. The study did not look at when the students who did not

complete the program left and what specific personality types left at different *stages* in their doctoral program. This information might be of value in understanding attrition and completion in relationship to personality type. The very low representation of EN types in the program over 17 years and the high representation of IT types and high attrition of IT types are reflective of this. Knowledge of the stage at which ITs and other personality types left the program could provide additional insight.

Another limitation of the findings is that most students' perceptions were retrospectively reported and therefore may have been influenced by the accuracy of their recollections over time. Finally, the data represented only one doctoral program over a 17-year period, and therefore generalizations beyond this population must be guarded.

Recommendations

1. This survey and study should be repeated with a larger population of cohort-based doctoral programs to further study the program variables in relationship to degree completion. The limitation in replicating this study is that the personality data would most likely not be available.
2. During the last 10 years, The Leadership Profile (TLP) (Sashkin & Sashkin, 2003) has been administered to all students in addition to the SL-TDI. Using that source, subsequent research might determine whether there is a relationship between SL-TDI personality preference and TLP leadership style, research efficacy and SL-TDI personality preference, and research efficacy and TLP leadership style to measure the interaction of personality, efficacy, and leadership.
3. The qualitative data collected through the two final survey questions should be analyzed in relationship with degree completion and noncompletion to glean

additional insights provided by students. Those questions are: “If you did not complete your degree, please tell us why:” and “ What other factors do you feel are important in doctoral degree completion?”

4. Doctoral programs should consider establishing criteria for selection of dissertation committee members; adopting guidelines for the roles, responsibility, and authority of committee members; adopting procedures for replacing committee members and/or chairpersons; and developing procedures for monitoring dissertation progress with timelines and sunset clauses for each of the 17 steps of the dissertation process. This should be completed as a part of the dissertation “topic” approval and “proposal defense” steps.
5. Doctoral students should be assigned a faculty “mentor” or coach with responsibility for facilitating their socialization in the department and for assuring their involvement in research dialogue and experience early in their doctoral program. The intent of this process would be to build the doctoral students’ research efficacy throughout their program of studies. Inherent in this recommendation is that a brief seminar should be provided for all faculty in coaching and mentoring students, in the responsibilities inherent in chairing doctoral dissertations, and in factors that are barriers to student persistence.
6. Universities should initiate an accountability system to monitor doctoral degree progress and attrition. More than a decade of research demonstrates unacceptable rates of doctoral degree attrition and an apparent total lack of accountability. The system should hold departments and faculty responsible for high attrition rates and extended time to degree. This would not be dissimilar from the accountability

now being required by the No Child Left Behind Act for student outcomes in K-12 education. This study reported literature indicating that the dropout rates are similar for U.S. high school students and U.S. doctoral students, and both dropout rates are costly to society and a waste of human intellectual capital. An attrition prevention panel should be in place that reviews student progress and incorporates an exit survey that is part of the university's research base on attrition.

Departments and faculty with high attrition rates should be put on probation and required to develop a strategic plan to reverse the rate of attrition.

7. Further research should be conducted to determine the relationship between research environment, faculty/student relationships, and student research efficacy. Research (Good, 2002) indicates that there is a correlation between research environment and advisor/advisee relationship and research training and advisor/advisee relationship. It is reasonable to assume that faculty involvement in student research and faculty/student relationships would be positively correlated with student research efficacy and degree completion.
8. University doctoral programs should consider innovative alternatives to the single-author dissertation, which "is simply foreign to the actual way research in 'big science' is now conducted" (Monaghan, 1989, p. 1). Journal articles, faculty/student and student/student research projects, experiments, etc., may be far more beneficial to the field of knowledge than "one massive work on a single topic" (p. 1). This also has implications for a review of the requirements for faculty research in the social sciences and humanities, in that the university and college must support joint faculty and student research.

9. There is insufficient research on the role of cohorts in doctoral degree completion. This study in part supports the research of Bascom et al. (1995) that faculty would benefit from professional development in mentoring, in effective characteristics of small group learning, and in using cohorts to build well-functioning communities of learners.
10. Doctoral programs should consider the value of adding a provision in the application for admission that would require the doctoral applicant to identify a cognate study area, a research focus topic, scholarly activity, and/or research experiences prior to doctoral program admission. The objective would be to better identify those students who have a particular research interest and potentially a greater research commitment prior to entering a doctoral program. Further, this type of application component may also help students focus early in their studies on the content of their research. The literature on high doctoral program attrition following completion of comprehensive exams may reflect students who self-select into doctoral programs as “academic types”; however, that may not mean that they have a high interest in or commitment to conducting research. (In this study, 76% of enrolled students were high-scaled score IT personality type; however, only 43.4% of high-scaled scored IT students earned the doctoral degree. Further, only 25% of students with IT as their lowest personality score completed the degree.) An application process that helps the student identify skills needed to succeed and better understand the requirements of the program may provide more competency-based selection by the university and better informed

student self-selection into the program. Both should positively influence degree completion.

11. In this study 19 items had mean scores below 3.9, the highest possible neutral rating. Of these 19, 84% were research-related questions. The three lowest research-rated items were lack of opportunity to participate on a research team, lack of early research involvement, and lack of opportunity to participate with faculty in their research. It is recommended that the program administrators reconsider ways of involving students in meaningful research with faculty and other students early in their doctoral studies. Research experience and interaction and collaboration with colleagues on research teams can build research efficacy, which in turn can positively influence dissertation progress and degree completion.
12. A future similar study might benefit from a qualitative component to complement the quantitative survey employed in this study. The limitations of this study include an atypical doctoral cohort-based program where students travel once monthly from great distances across the U.S. and from multinational locations. Qualitative data might reveal why more EN personality types were not enrolled in the program, why a large percentage of IT students do not complete the degree, why students select or decide to deselect a cohort-based program, and geographical, personal, and other factors that may have implications for completion and attrition.

Although we never achieve perfect objectivity, through quality research and the quest for objectivity, we can strive for confirmability of our research (Eisner, 1991; Lincoln & Guba, 1985).

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APPENDIX A:
DEFINITION OF TERMS

ABD: “All but the dissertation” refers to doctoral students who have successfully completed all requirements for the doctorate except for the writing and defense of the dissertation.

Academe: The academic community; the world of higher education scholarship; a place in which instruction is given to students.

Academic culture: The accepted model of working relationships between faculty and students (Bowen & Rudenstine, 1992).

Academic factors: Those factors that include such things as the student’s undergraduate and graduate GPA (grade-point average), GRE (graduate record exam) score, MAT (Miller’s analogy test) score, and other relevant measures of student academic performance.

Attrition: The discontinuance of a student’s progress toward completion of a doctoral degree.

Cohort: A subgroup of students sharing a common time of entry into doctoral studies.

Cohort experience summary: A summed score of the 12 survey items that address student perception of the cohort experience, that is, student-to-student interaction, communication, and social and academic relationships.

Degree completion: A student’s completion of all the requirements of the doctoral degree, including the dissertation and defense of the dissertation.

Degree recipient: A student who has successfully completed all requirements of a doctoral program and has received the doctoral degree.

Demographic factors: Those factors that describe individual student variables such as age, gender, race, ethnicity, citizenship, etc.

Dissertation advisor: Faculty member who provides guidance to the advisee in selection of a dissertation topic; assures accessibility of committee members; keeps advisee apprised of expectations throughout the dissertation process; provides timely return of materials, advice, and direction; and assists with emotional and intellectual support in keeping with the advisee's needs (Goode, 2002).

Doctoral candidate: A doctoral student who has successfully completed all required coursework, oral and written examinations, and residency requirements.

Doctoral student: A student who has officially enrolled in a program of doctoral studies at a college or university at some point in time.

Human factors: For the purpose of this study, those program attributes that are represented by cohort experience, personal perceptions, faculty/student relationships, dissertation advisor/advisee relationships, and program culture.

Persistence: The continuance of a student's progress toward the completion of the doctoral degree.

Personal perceptions: Those factors that describe an individual student's perception of his or her personal experience of and personal life situations during doctoral program participation.

Personal perception summary: A summed score of the 12 survey personal perception questions that describe the individual student's personal perceptions of experience of the doctoral program.

Research efficacy: The extent to which an individual believes he or she has the knowledge, skills, and ability to complete the research tasks necessary to successfully conduct the research for the dissertation and write the dissertation.

Research environment: Opportunities for doctoral students to conduct research, be a member of a research team, work with a faculty member on a research project, author a research proposal, author and/or present a paper at a professional society meeting, and subscribe to and/or have membership in a scholarly or professional society and/or journal.

Research training: Required coursework focusing on methodology and statistics that facilitates conducting the research for the dissertation and writing the dissertation.

Retention: The ability of a college or university to retain a student or students in the program.

Retention rate: The measured extent to which a college or university or a subunit of such retains its doctoral students to degree completion.

Time to degree: The number of years a student is enrolled in a college or university between entrance to the program and degree completion.

APPENDIX B:
SINGER-LOOMIS PERSONALITY TYPES

Perceiving Modes

Introverted Intuition is the capacity to perceive the variety and the possibility for development of our inner images. We assess our inner world of ideas and associate ideas with our experiences. Examples include generating alternative perspectives for viewing new situations; seeing underlying causes; working with metaphors and novel associations; identifying breakthrough opportunities; and seeing paths not obvious to others.

Extraverted Intuition is the capacity to perceive the variety and the possibilities for developing and working with things and people. We enjoy expressing ourselves with others, such as putting persuasive ideas on the table; building on the ideas of others; rethinking old ways; thriving on change; initiating a shared vision; and developing a stimulating environment where ideas are translated into action.

Introverted Sensation is the capacity to perceive the particular images and facts that need our attention, singling out one important meaning from the many. It is the capacity to deal with specific facts in our day-to-day environment without being stressed; being quiet, paying attention to our bodies, and doing what needs to be done; being efficient and in command of the many details of our life and work; and being particular and precise and striving for quality.

Extroverted Sensation is the capacity to put into context all that is happening in our environment. It is enjoyment of working with mechanical equipment, cooking, or sewing; taking risks and learning from our transactions; experiencing life fully; being tolerant and patient; and developing physical stamina and enjoying the outdoors.

Judging Modes

Introverted Feeling is the capacity to stand up for our values and beliefs, not bending to peer pressure and current trends. It is being loyal to a cause, being clear about what we like and don't like, being an advocate for principles and ideals, seeing through the arbitrary and committing to what is truly important, and using internal standards to evaluate things.

Extroverted Feeling is the capacity to form strong attraction and connection to others by being aware of and concerned about others. It is the ability to show feeling for others, support others, and bring about harmony in interpersonal relations. It is the capacity to create an atmosphere of trust and mutual support, to develop two-way communication and feedback, to attempt to meet the needs of others, and to seek approval from others.

Introverted Thinking is the capacity to be analytical and to understand, define, and evaluate a situation and the ability to develop rational, logical order and to organize and plan. It is the ability to develop theories and frameworks for unstructured situations; to weigh the pros and cons; to work independently and not be swayed by the opinions of others.

Extroverted Thinking is the capacity to be motivated to complete tasks with a focus on the bottom line. It is having the capacity to appreciate the need for complex systems to harness the energy of an entire organization, such as directing energy to results; helping others reach goals and deadlines; having a strong sense of what should be; treating others fairly; and supporting policies and rules. It is looking for meaning based on ideals.

APPENDIX C:

EXECUTIVE LEADERSHIP DOCTORAL PROGRAM SURVEY

Your identity will remain completely confidential. Results of this study will be reported as an aggregate so that individuals' responses cannot be identified.

Section I: Demographic Information

Please check or fill in the appropriate box below.

1. Gender: Male (1) Female (2)

2. Age: _____

3. Marital status: Single (1) Married (2) Divorced (3)
 Partnered (4) Other (5) Please specify: _____

4. Number of children living in your home during doctoral study: _____

5. Ethnicity: 1. African American
 2. Asian
 3. Caucasian
 4. Hispanic
 5. Native American
 6. Other (please specify) _____

6. Country of citizenship during doctoral program: _____

7. Rank in family. Are you:
 1. Oldest of your siblings
 2. Youngest of your siblings
 3. Somewhere in the middle of your siblings
 4. Do not have siblings

Section II: Executive Leadership Program

8. In what cohort did you begin your doctoral program? _____ (Cohort 1-18)
9. In what year did you begin the ELP doctoral program? Year: _____
10. In what year do you anticipate receiving your doctoral degree? Year: _____
11. If you have graduated, please indicate the year your doctoral degree was conferred.

12. Did you elect to receive a master's degree through the ELDP?
 Yes (1) No (2)
13. Please select the answer that MOST accurately represents your current doctoral program status. What is the current status of your dissertation?
1. I have not started working on the dissertation.
 2. I have talked with my advisor about a topic.
 3. I have chosen a topic.
 4. I have an approved topic.
 5. I have completed the literature review.
 6. I have started writing the proposal.
 7. I have completed the introduction section.
 8. I have written the methodology section.
 9. I have written a complete proposal.
 10. I have successfully defended my proposal.
 11. I have implemented the study.
 12. I have collected the data.
 13. I have analyzed the data.
 14. I have written the results section.
 15. I have written the discussion section.
 16. I have written the entire dissertation but I have not defended it.
 17. I have successfully defended the dissertation.
 18. Other: _____

Section III: Research Preparation & Environment

Please indicate the extent to which you *agree* with the following statements.

1 2 3 4 5
 Strongly Disagree Disagree Neutral Agree Strongly Agree

	1	2	3	4	5
14. Required coursework in my doctoral program adequately prepared me for writing my dissertation.					
15. Quantitative methodology and statistics courses adequately prepared me for writing my dissertation.					
16. Qualitative methodology and research courses adequately prepared me for writing my dissertation.					
17. Courses focusing on research in my content area adequately prepared me for writing my dissertation.					
18. In my doctoral program there are opportunities to be a part of research teams.					
19. I was encouraged to get involved in some aspects of research early in my doctoral program.					
20. Faculty members often invite students to be responsible collaborators in the faculty member's own research projects.					

Section IV: Research Involvement

21. Please indicate ALL items that apply to your research experience.

1. I have been a member of a research team.
2. I have worked with a faculty member on a research project.
3. I have become a member of a scholarly or professional society.
4. I have attended a scholarly or professional society meeting.
5. I have subscribed to a scholarly or professional journal.
6. I have conducted a research project with another student or faculty member.
7. I have authored or coauthored a paper presented at a scholarly or professional society meeting.
8. I have authored or coauthored a paper submitted for publication in a scholarly journal.
9. I have authored or coauthored a paper accepted for publication in a scholarly journal.
10. I have authored or coauthored a proposal for a research project.

22. Please indicate whether you have held teaching or research assistantships during your doctoral program.

1. None
2. Teaching Assistantship
3. Research Assistantship
4. Graduate Assistantship or Fellowship
5. More than one of the above
6. Other (please specify)

Section V: Faculty Involvement

Please indicate the extent to which you *agree* with the following statements.

1 2 3 4 5
 Strongly Disagree Disagree Neutral Agree Strongly Agree

	1	2	3	4	5
23. Faculty members show excitement about research and scholarly activities.					
24. Faculty members are involved in the conduct and publication of research.					
25. There is informal sharing of research ideas in my program.					
26. Faculty members have encouraged me to pursue research questions that are of interest to me.					
27. The faculty contributed to my success in the program.					
28. The faculty do NOT seem to really care if students are interested in research.					
29. A supportive learning environment was hindered by issues among faculty members.					

Section VI: Dissertation Advisor/Advisee Relationship

Please indicate the extent to which you *agree* with the following statements.

1 2 3 4 5
 Strongly Disagree Disagree Neutral Agree Strongly Agree

	1	2	3	4	5
30. My advisor assists me in developing my research design and in identifying appropriate research methodology.					
31. My advisor is available to meet with me.					
32. I experienced difficulty working with my dissertation chair.					
33. My advisor is interested in my topic.					
34. My advisor gives me feedback in a timely manner.					
35. My advisor gives concrete suggestions and feedback about my dissertation.					
36. My advisor gives me sufficient feedback on my progress.					
37. My advisor is very supportive of my work.					
38. In general, I spend an adequate amount of time with my advisor.					
39. If I had it to do over again, I would select a different advisor.					
40. My dissertation committee worked well together.					
41. My dissertation committee members experienced problems that hindered my dissertation progress.					

Section VII: Cohort Experience

Please indicate the extent to which you *agree* with the following statements.

1 2 3 4 5
 Strongly Disagree Disagree Neutral Agree Strongly Agree

	1	2	3	4	5
42. The cohort structure created a supportive environment.					
43. I feel like I was treated differently because of my race.					
44. The cohort structure made the program more difficult for me.					
45. The cohort small group work was beneficial to me.					
46. Working with students in a cohort made the program easier for me.					
47. I would rather have classes without student cohorts.					
48. I was never treated differently based solely on my ethnicity.					
49. The cohort structure was beneficial in studying for comprehensive exams.					
50. My cohort made the program more difficult for me.					
51. Working in groups made it easier for me to get things done.					
52. I relied a great deal on the other students in my cohort.					
53. I was not treated differently because of my gender.					

Thank you for completing this survey. If you would like a copy of the results, please indicate below. The results will be emailed to you.

I would like a copy of the results of this survey.

IRB 090618 November 20, 2006

APPENDIX D:

COMMUNICATIONS WITH PARTICIPANTS

I. Pre-Survey Introductory Letter

Dear ELDP colleague,

I am Elizabeth Ross, a fellow ELP classmate currently enrolled in cohort XVI. I am beginning the research for my dissertation: *Toward A Better Understanding of Doctoral Degree Persistence: A Seventeen-Year View of an Executive Leadership Doctoral Program*. I am very excited about the opportunity to work with our 17 Cohorts and the opportunity for all of us to learn more about our colleagues' perceptions and experiences in the ELP and to learn about our program strengths and opportunities.

Within the next two weeks, you will receive the Executive Leadership Doctoral Program Survey and cover letter requesting your participation in a study involving all members of all 17 cohorts. This is the first time this type of study has been conducted with our Executive Leadership Program, and your participation is very important to the results of the research.

The questionnaire and information sheet you will receive will be Web based; however, you may request that a hard copy be mailed to you for your completion and return via the US mail. Should you choose to participate by US mail, a prepaid, self-addressed envelope will be provided.

I look forward to working with you in the near future. I sincerely appreciate your time and your consideration of this request. I know together we can provide information that will inform student decision making in pursuing the doctoral degree and inform program strategies and student support systems.

Your contribution is much appreciated. Thank you.

Elizabeth Ross
Eaross42@aol.com
703-350-3222 mobile, 703-669-9021 home, 703-443-2566 Fax

Please complete the two questions below.

Check one and respond if needed.

This is the best email address for me

Please use this alternate email address: _____

I would prefer to receive the questionnaire via a link to the Internet.

I would prefer to receive the questionnaire by U.S. Mail to this address:

IRB 090618 November 20, 2006

II. Information Sheet

Dear GWU ELP colleague,

I am Elizabeth Ross, a student in The George Washington University Executive Leadership Program. The focus of my dissertation is factors that influence doctoral degree persistence among the members of 17 ELP cohorts.

The ELP program has been in existence from 1988 to 2006. Nearly 375 students have been enrolled in the program from across the world. Research has demonstrated that as enrollment in doctoral programs continues to increase, as finances become more limited for universities and individuals, and as life span and career projections for adults continue to lengthen, informed decision making in career and educational decisions has become ever more critical. In addition, research has shown that there is an increasing trend for longer time to degree completion of 6-12 years and that only 50% of all entering students in doctoral programs eventually obtain the degree. It is the intent of this study to inform student decision making when considering the Executive Leadership Program and to inform policy, student selection, and program support structures that facilitate student success in degree completion.

This survey asks you to share your experiences and insights during participation in the ELP doctoral program. You will be provided the following rights and confidentiality as a participant:

- Your participation is completely voluntary and your participation or lack of participation will not affect your academic standing with the university or your standing or participation in any part of the Executive Leadership Program. The ELP professors and staff will not know who participated in the study and who chose not to participate.
- Your answers will be strictly confidential, and the information you provide will be anonymous.
- Your name and individual data will not appear in any document or report.
- The information for this study will not be collected on site in the ELP program, and no one in the ELP program or university will have access to individual responses.
- Your response will be assigned a numerical identifier.
- Your university records will be confidential.
- You will not be identified (e.g., name, Social Security number, etc.) in any reports or publications of this study. It is possible that representatives acting on behalf of the university and/or regulatory agencies and from the study's sponsor may come to GWU to review your information. With the exception of these entities, research study records will be kept confidential unless you authorize their release or if the records are required by law (e.g., court subpoena).
- If you have questions about the procedures of this research study, please contact Elizabeth Ross, by telephoning 703-669-9021 during the workday.
- If you have questions about the informed consent process or any other rights as a research subject, please contact the Assistant Vice President for Health Research, Compliance and Technology Transfer at 202-994-2995. This is your representative.

You may request a copy of the results by indicating your request at the end of the survey. A summary will be sent by the same means that you received the survey.

This questionnaire will take approximately 20 minutes to complete. Your decision to complete the survey will indicate your decision to participate in this study. Should you have any questions, do not hesitate to contact me as listed below. Please complete and return the survey.

Respectfully,

Elizabeth Ross

eaross42@gwu.edu

703-669-9021 Home, 703-350-3222 Mobile, 703-443-2566 Fax

IRB 090618 November 20, 2006

III. Postcard

Dear Name,

I missed not hearing from you! Your participation is very important to this ELDP study! Every member of every cohort has valuable insights and experiences to contribute. Please share yours and allow us to benefit from your knowledge. Please return the survey this week! Thanks so much! You are appreciated!

Elizabeth Ross

Eaross42@aol.com

703-350-3222 mobile

703-669-9021 home

703-443-2566 Fax

IRB 090618 November 20, 2006

IV. Final Letter to Nonrespondents

Dear Name,

Your help is needed! Without you we are incomplete! We cannot provide the best possible information for student and program decision-making without your participation.

The results of a study of doctoral student persistence led by Kerlin (1995) state that with the high cost of graduate education to students, educational institutions and to society, “institutions and researchers have a profound obligation to improve understanding of the causes and consequences of high rates of doctoral student attrition and to pursue policy changes aimed at increasing student success and reducing doctoral student dropout” (p. 8).

Just 20 minutes of your time will make a difference. Help bridge the gap for those following in our footsteps. I have enclosed a favorite poem, *The Bridge Builder*, that I have shared often while serving as a school superintendent. It speaks to the importance of our efforts in building better systems for others. I hope you enjoy it, and thank you for reconsidering the help we need.

Sincerely,

Elizabeth Ross
Eaross42@aol.com
703-350-3222 Mobile
703-669-9021 Home
703-443-2566 Fax

IRB 090618 November 20, 2006

**APPENDIX E:
FREQUENCY TABLES FOR SURVEY SUBSCALES**

Table E-1
Frequencies for Survey Subscales

14. Required coursework in my doctoral program adequately prepared me for writing my dissertation

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	2	.5	1.0	1.0
Disagree	16	4.4	8.1	9.1
Neutral	30	8.2	15.2	24.4
Agree	87	23.9	44.2	68.5
Strongly agree	62	17.0	31.5	100.0
Total	197	54.1	100.0	
Missing	167	45.9		
Total	364	100.0		

15. Quantitative methodology and statistics courses adequately prepared me for writing my dissertation

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	13	3.6	6.7	6.7
Disagree	39	10.7	20.1	26.8
Neutral	69	19.0	35.6	62.4
Agree	56	15.4	28.9	91.2
Strongly agree	17	4.7	8.8	100.0
Total	194	53.3	100.0	
Missing	170	46.7		
Total	364	100.0		

16. Qualitative methodology and research courses adequately prepared me for writing my dissertation

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	4	1.1	2.1	2.1
Disagree	12	3.3	6.2	8.2
Neutral	47	12.9	24.1	32.3
Agree	92	25.3	47.2	79.5
Strongly agree	40	11.0	20.5	100.0
Total	195	53.6	100.0	
Missing	169	46.4		
Total	364	100.0		

17. Courses focusing on research in my content area adequately prepared me for writing my dissertation

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	4	1.1	2.0	2.0
Disagree	27	7.4	13.8	15.8
Neutral	43	11.8	21.9	37.8
Agree	91	25.0	46.4	84.2
Strongly agree	31	8.5	15.8	100.0
Total	196	53.8	100.0	
Missing	168	46.2		
Total	364	100.0		

18. In my doctoral program there are opportunities to be a part of research teams

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	18	4.9	9.1	9.1
Disagree	40	11.0	20.2	29.3
Neutral	45	12.4	22.7	52.0
Agree	65	17.9	32.8	84.8
Strongly agree	30	8.2	15.2	100.0
Total	198	54.4	100.0	
Missing	166	45.6		
Total	364	100.0		

19. I was encouraged to get involved in some aspects of research early in my doctoral program.

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	14	3.8	7.1	7.1
Disagree	39	10.7	19.9	27.0
Neutral	31	8.5	15.8	42.9
Agree	75	20.6	38.3	81.1
Strongly agree	37	10.2	18.9	100.0
Total	196	53.8	100.0	
Missing	168	46.2		
Total	364	100.0		

20. Faculty members often invite students to be responsible collaborators in the faculty member's own research projects

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	36	9.9	18.2	18.2
Disagree	75	20.6	37.9	56.1
Neutral	40	11.0	20.2	76.3
Agree	38	10.4	19.2	95.5
Strongly agree	9	2.5	4.5	100.0
Total	198	54.4	100.0	
Missing	166	45.6		
Total	364	100.0		

22. Type of financial assistance

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
None	164	45.1	84.1	84.1
Teaching assistantship	8	2.2	4.1	88.2
Research assistantship	6	1.6	3.1	91.3
More than one type	9	2.5	4.6	95.9
Graduate assistantship	8	2.2	4.1	100.0
Total valid	195	53.6	100.0	
Missing	169	46.4		
Total	364	100.0		

23. Faculty members show excitement about research and scholarly activities

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	3	.8	1.5	1.5
Disagree	9	2.5	4.6	6.1
Neutral	22	6.0	11.2	17.3
Agree	98	26.9	49.7	67.0
Strongly agree	65	17.9	33.0	100.0
Total	197	54.1	100.0	
Missing	167	45.9		
Total	364	100.0		

24. Faculty members are involved in the conduct and publication of research

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	3	.8	1.5	1.5
Disagree	3	.8	1.5	3.0
Neutral	30	8.2	15.2	18.3
Agree	92	25.3	46.7	65.0
Strongly agree	69	19.0	35.0	100.0
Total	197	54.1	100.0	
Missing	167	45.9		
Total	364	100.0		

25. There is informal sharing of research ideas in my program

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	1	.3	.5	.5
Disagree	14	3.8	7.2	7.7
Neutral	25	6.9	12.8	20.5
Agree	92	25.3	47.2	67.7
Strongly agree	63	17.3	32.3	100.0
Total	195	53.6	100.0	
Missing	169	46.4		
Total	364	100.0		

26. Faculty members have encouraged me to pursue research questions that are of interest to me

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	5	1.4	2.6	2.6
Disagree	9	2.5	4.6	7.1
Neutral	21	5.8	10.7	17.9
Agree	74	20.3	37.8	55.6
Strongly agree	87	23.9	44.4	100.0
Total	196	53.8	100.0	
Missing	168	46.2		
Total	364	100.0		

27. The faculty contributed to my success in the program

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	7	1.9	3.6	3.6
Disagree	10	2.7	5.1	8.6
Neutral	15	4.1	7.6	16.2
Agree	65	17.9	33.0	49.2
Strongly agree	100	27.5	50.8	100.0
Total	197	54.1	100.0	
Missing	167	45.9		
Total	364	100.0		

28. The faculty do NOT seem to really care if students are interested in research

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	4	1.1	2.0	2.0
Disagree	13	3.6	6.6	8.6
Neutral	24	6.6	12.2	20.8
Agree	73	20.1	37.1	57.9
Strongly agree	83	22.8	42.1	100.0
Total	197	54.1	100.0	
Missing	167	45.9		
Total	364	100.0		

29. A supportive learning environment was hindered by issues among faculty members

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	17	4.7	8.6	8.6
Disagree	24	6.6	12.2	20.8
Neutral	31	8.5	15.7	36.5
Agree	75	20.6	38.1	74.6
Strongly agree	50	13.7	25.4	100.0
Total	197	54.1	100.0	
Missing	167	45.9		
Total	364	100.0		

30. My advisor assists me in developing my research design and in identifying appropriate research methodology

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	4	1.1	2.4	2.4
Disagree	6	1.6	3.6	6.1
Neutral	17	4.7	10.3	16.4
Agree	61	16.8	37.0	53.3
Strongly agree	77	21.2	46.7	100.0
Total	165	45.3	100.0	
Missing	199	54.7		
Total	364	100.0		

31. My advisor is available to meet with me

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	8	2.2	4.7	4.7
Disagree	6	1.6	3.5	8.2
Neutral	19	5.2	11.2	19.4
Agree	65	17.9	38.2	57.6
Strongly agree	72	19.8	42.4	100.0
Total	170	46.7	100.0	
Missing	194	53.3		
Total	364	100.0		

32. I experienced difficulty working with my dissertation chair

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	11	3.0	6.9	6.9
Disagree	11	3.0	6.9	13.8
Neutral	15	4.1	9.4	23.3
Agree	39	10.7	24.5	47.8
Strongly agree	83	22.8	52.2	100.0
Total	159	43.7	100.0	
Missing	205	56.3		
Total	364	100.0		

33. My advisor is interested in my topic

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	5	1.4	3.0	3.0
Disagree	4	1.1	2.4	5.4
Neutral	11	3.0	6.6	12.0
Agree	67	18.4	40.4	52.4
Strongly agree	79	21.7	47.6	100.0
Total	166	45.6	100.0	
Missing	198	54.4		
Total	364	100.0		

34. My advisor gives me feedback in a timely manner

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	7	1.9	4.3	4.3
Disagree	12	3.3	7.3	11.6
Neutral	15	4.1	9.1	20.7
Agree	54	14.8	32.9	53.7
Strongly agree	76	20.9	46.3	100.0
Total	164	45.1	100.0	
Missing	200	54.9		
Total	364	100.0		

35. My advisor gives me concrete suggestions and feedback about my dissertation

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	5	1.4	3.1	3.1
Disagree	5	1.4	3.1	6.3
Neutral	10	2.7	6.3	12.5
Agree	58	15.9	36.3	48.8
Strongly agree	82	22.5	51.3	100.0
Total	160	44.0	100.0	
Missing	204	56.0		
Total	364	100.0		

36. My advisor gives me sufficient feedback on my progress

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	5	1.4	3.1	3.1
Disagree	6	1.6	3.7	6.7
Neutral	17	4.7	10.4	17.2
Agree	55	15.1	33.7	50.9
Strongly agree	80	22.0	49.1	100.0
Total	163	44.8	100.0	
Missing	201	55.2		
Total	364	100.0		

37. My advisor is very supportive of my work

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	4	1.1	2.4	2.4
Disagree	5	1.4	3.0	5.5
Neutral	14	3.8	8.5	14.0
Agree	49	13.5	29.9	43.9
Strongly agree	92	25.3	56.1	100.0
Total	164	45.1	100.0	
Missing	200	54.9		
Total	364	100.0		

38. In general, I spend an adequate amount of time with my advisor

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	38	10.4	23.3	23.3
Disagree	61	16.8	37.4	60.7
Neutral	28	7.7	17.2	77.9
Agree	25	6.9	15.3	93.3
Strongly agree	11	3.0	6.7	100.0
Total	163	44.8	100.0	
Missing	201	55.2		
Total	364	100.0		

39. If I had it to do over again, I would select a different advisor

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	12	3.3	7.2	7.2
Disagree	7	1.9	4.2	11.4
Neutral	22	6.0	13.3	24.7
Agree	35	9.6	21.1	45.8
Strongly agree	90	24.7	54.2	100.0
Total	166	45.6	100.0	
Missing	198	54.4		
Total	364	100.0		

40. My dissertation committee worked well together

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	10	2.7	7.6	7.6
Disagree	7	1.9	5.3	13.0
Neutral	29	8.0	22.1	35.1
Agree	42	11.5	32.1	67.2
Strongly agree	43	11.8	32.8	100.0
Total	131	36.0	100.0	
Missing	233	64.0		
Total	364	100.0		

41. My dissertation committee members experienced problems that hindered my dissertation progress

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	8	2.2	6.1	6.1
Disagree	13	3.6	9.9	16.0
Neutral	23	6.3	17.6	33.6
Agree	40	11.0	30.5	64.1
Strongly agree	47	12.9	35.9	100.0
Total	131	36.0	100.0	
Missing	233	64.0		
Total	364	100.0		

42. The cohort structure created a supportive environment

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	9	2.5	4.6	4.6
Disagree	6	1.6	3.1	7.7
Neutral	11	3.0	5.7	13.4
Agree	63	17.3	32.5	45.9
Strongly agree	105	28.8	54.1	100.0
Total	194	53.3	100.0	
Missing	170	46.7		
Total	364	100.0		

43. I feel like I was treated differently because of my race

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	2	.5	1.0	1.0
Disagree	4	1.1	2.1	3.1
Neutral	13	3.6	6.7	9.8
Agree	45	12.4	23.2	33.0
Strongly agree	130	35.7	67.0	100.0
Total	194	53.3	100.0	
Missing	170	46.7		
Total	364	100.0		

44. The cohort structure made the program more difficult for me

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	5	1.4	2.6	2.6
Disagree	14	3.8	7.2	9.7
Neutral	12	3.3	6.2	15.9
Agree	55	15.1	28.2	44.1
Strongly agree	109	29.9	55.9	100.0
Total	195	53.6	100.0	
Missing	169	46.4		
Total	364	100.0		

45. The cohort small group work was beneficial to me

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	3	.8	1.5	1.5
Disagree	4	1.1	2.1	3.6
Neutral	27	7.4	13.8	17.4
Agree	88	24.2	45.1	62.6
Strongly agree	73	20.1	37.4	100.0
Total	195	53.6	100.0	
Missing	169	46.4		
Total	364	100.0		

46. Working with students in a cohort made the program easier for me

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	3	.8	1.5	1.5
Disagree	14	3.8	7.2	8.8
Neutral	24	6.6	12.4	21.1
Agree	76	20.9	39.2	60.3
Strongly agree	77	21.2	39.7	100.0
Total	194	53.3	100.0	
Missing	170	46.7		
Total	364	100.0		

47. I would rather have classes without student cohorts

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	11	3.0	5.7	5.7
Disagree	14	3.8	7.2	12.9
Neutral	12	3.3	6.2	19.1
Agree	62	17.0	32.0	51.0
Strongly agree	95	26.1	49.0	100.0
Total	194	53.3	100.0	
Missing	170	46.7		
Total	364	100.0		

48. I was never treated differently based solely on my ethnicity

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	6	1.6	3.1	3.1
Disagree	7	1.9	3.6	6.7
Neutral	13	3.6	6.7	13.5
Agree	62	17.0	32.1	45.6
Strongly agree	105	28.8	54.4	100.0
Total	193	53.0	100.0	
Missing	171	47.0		
Total	364	100.0		

49. The cohort structure was beneficial in studying for comprehensive exams

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	9	2.5	4.6	4.6
Disagree	10	2.7	5.1	9.7
Neutral	17	4.7	8.7	18.5
Agree	48	13.2	24.6	43.1
Strongly agree	111	30.5	56.9	100.0
Total	195	53.6	100.0	
Missing	169	46.4		
Total	364	100.0		

50. My cohort made the program more difficult for me

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	2	.5	1.0	1.0
Disagree	14	3.8	7.2	8.2
Neutral	15	4.1	7.7	16.0
Agree	63	17.3	32.5	48.5
Strongly agree	100	27.5	51.5	100.0
Total	194	53.3	100.0	
Missing	170	46.7		
Total	364	100.0		

51. Working in groups made it easier for me to get things done.

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	6	1.6	3.1	3.1
Disagree	23	6.3	11.9	14.9
Neutral	48	13.2	24.7	39.7
Agree	76	20.9	39.2	78.9
Strongly agree	41	11.3	21.1	100.0
Total	194	53.3	100.0	
Missing	170	46.7		
Total	364	100.0		

52. I relied a great deal on the other students in my cohort

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	9	2.5	4.6	4.6
Disagree	29	8.0	14.9	19.6
Neutral	59	16.2	30.4	50.0
Agree	71	19.5	36.6	86.6
Strongly agree	26	7.1	13.4	100.0
Total	194	53.3	100.0	
Missing	170	46.7		
Total	364	100.0		

53. I was not treated differently because of my gender

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	5	1.4	2.6	2.6
Disagree	8	2.2	4.1	6.7
Neutral	14	3.8	7.2	13.9
Agree	68	18.7	35.1	49.0
Strongly agree	99	27.2	51.0	100.0
Total	194	53.3	100.0	
Missing	170	46.7		
Total	364	100.0		

Status of Dissertation:

54. Selecting a suitable topic for study

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
No confidence	0	0	0	0
Little confidence	5	1.4	2.6	2.6
Some confidence	27	7.4	14.1	16.7
Considerable confidence	71	19.5	37.0	53.6
Highly confident	89	24.5	46.4	100.0
Total valid	192	52.7	100.0	
Missing	172	47.3		
Total	364	100.0		

55. Reviewing the literature in an area of research

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
No confidence				
Little confidence	5	1.4	2.6	2.6
Some confidence	23	6.3	12.1	14.7
Considerable confidence	75	20.6	39.5	54.2
Highly confident	87	23.9	45.8	100.0
Total valid	190	52.2	100.0	
Missing	174	47.8		
Total	364	100.0		

56. Writing the introduction and literature review

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
No confidence	1	.3	.5	.5
Little confidence	8	2.2	4.2	4.7
Some confidence	33	9.1	17.4	22.1
Considerable confidence	69	19.0	36.3	58.4
Highly confident	79	21.7	41.6	100.0
Total valid	190	52.2	100.0	
Missing	174	47.8		
Total	364	100.0		

57. Formulating research hypothesis or foreshadowed questions

Response	Frequency	Percentage	Valid percentage	Cumulative Percentage
No confidence	1	.3	.5	.5
Little confidence	13	3.6	6.8	7.3
Some confidence	46	12.6	24.1	31.4
Considerable confidence	81	22.3	42.4	73.8
Highly confident	50	13.7	26.2	100.0
Total valid	191	52.5	100.0	
Missing	173	47.5		
Total	364	100.0		

58. Selecting an appropriate design to address a research question

Response	Frequency	Percentage	Valid percentage	Cumulative Percentage
No confidence	2	.5	1.0	1.0
Little confidence	15	4.1	7.9	8.9
Some confidence	55	15.1	28.8	37.7
Considerable confidence	68	18.7	35.6	73.3
Highly confident	51	14.0	26.7	100.0
Total valid	191	52.5	100.0	
Missing	173	47.5		
Total	364	100.0		

59. Determining the procedure to be used in gathering the data

Response	Frequency	Percentage	Valid percentage	Cumulative Percentage
No confidence	2	.5	1.0	1.0
Little confidence	16	4.4	8.4	9.4
Some confidence	40	11.0	20.9	30.4
Considerable confidence	71	19.5	37.2	67.5
Highly confident	62	17.0	32.5	100.0
Total valid	191	52.5	100.0	
Missing	173	47.5		
Total	364	100.0		

60. Selecting appropriate methods for the analysis of the data

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
No confidence	0	0	0	0
Little confidence	20	5.5	10.5	10.5
Some confidence	51	14.0	26.7	37.2
Considerable confidence	72	19.8	37.7	74.9
Highly confident	48	13.2	25.1	100.0
Total valid	191	52.5	100.0	
Missing	173	47.5		
Total	364	100.0		

61. Carrying out the analysis of the data

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
No confidence	0	0	0	0
Little confidence	16	4.4	8.5	8.5
Some confidence	47	12.9	24.9	33.3
Considerable confidence	69	19.0	36.5	69.8
Highly confident	57	15.7	30.2	100.0
Total valid	189	51.9	100.0	
Missing	175	48.1		
Total	364	100.0		

62. Selecting an appropriate sample of subjects to address the research question

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
No confidence	0	0	0	0
Little confidence	10	2.7	5.3	5.3
Some confidence	42	11.5	22.3	27.7
Considerable confidence	64	17.6	34.0	61.7
Highly confident	72	19.8	38.3	100.0
Total valid	188	51.6	100.0	
Missing	176	48.4		
Total	364	100.0		

63. Determining an appropriate sample size

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
No confidence	0	0	0	0
Little confidence	14	3.8	7.4	7.4
Some confidence	46	12.6	24.2	31.6
Considerable confidence	67	18.4	35.3	66.8
Highly confident	63	17.3	33.2	100.0
Total valid	190	52.2	100.0	
Missing	174	47.8		
Total	364	100.0		

64. Collecting the data

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
No confidence	0	0	0	0
Little confidence	11	3.0	5.8	5.8
Some confidence	29	8.0	15.3	21.2
Considerable confidence	76	20.9	40.2	61.4
Highly confident	73	20.1	38.6	100.0
Total valid	189	51.9	100.0	
Missing	175	48.1		
Total	364	100.0		

65. Writing the methods and results sections for a research paper

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
No confidence	1	.3	.5	.5
Little confidence	13	3.6	6.9	7.4
Some confidence	43	11.8	22.9	30.3
Considerable confidence	70	19.2	37.2	67.6
Highly confident	61	16.8	32.4	100.0
Total valid	188	51.6	100.0	
Missing	176	48.4		
Total	364	100.0		

66. Writing a discussion section for a thesis or a dissertation

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
No confidence				
Little confidence				
Some confidence				
Considerable confidence				
Highly confident				
Total valid				
Missing				
Total				

Cohort Number

Number	Frequency	Percentage	Valid percentage	Cumulative percentage
1	2	1.0	1.0	1.0
2	5	2.5	2.5	3.5
3	8	4.0	4.0	7.6
4	6	3.0	3.0	10.6
5	6	3.0	3.0	13.6
6	7	3.5	3.5	17.2
7	8	4.0	4.0	21.2
8	2	1.0	1.0	22.2
9	9	4.5	4.5	26.8
10	13	6.6	6.6	33.3
11	14	7.1	7.1	40.4
12	14	7.1	7.1	47.5
14	21	10.6	10.6	58.1
15	18	9.1	9.1	67.2
16	28	14.1	14.1	81.3
17	20	10.1	10.1	91.4
18	17	8.6	8.6	100.0
Total	198	100.0	100.0	

APPENDIX F:
CHI-SQUARE TESTS

Table F-1
Chi-Square Tests

Survey Sample	Value	Df	Asymp. sig. (2-sided)	Exact sig. (2-sided)	Exact sig. (1-sided)
Pearson Chi-square	.415 ^a	1	.519		
Continuity correction ^b	.251	1	.616		
Likelihood ratio	.416	1	.519		
Fisher's exact test				.568	.308
Linear-by-linear association	.413	1	.520		
N of valid cases	198				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 42.25.

b. Computed only for a 2x2 table.

Population	Value	df	Asymp. sig. (2-sided)	Exact sig. (2-sided)	Exact sig. (1-sided)
Pearson Chi-square	1.200 ^a	1	.273		
Continuity correction ^b	.981	1	.322		
Likelihood ratio	1.201	1	.273		
Fisher's exact test				.294	.161
Linear-by-linear association	1.197	1	.274		
N of valid cases	364				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 81.21.

b. Computed only for a 2x2 table.

APPENDIX G:

DESCRIPTIVE STATISTICS FOR SURVEY DATA

Table G-1
Descriptive Statistics for Items in Order of Descending Means

Survey Item	N	Min	Max	Mean	SD
My advisor is very supportive of my work.	164	1	5	4.341	0.936
I was never treated differently based solely on my ethnicity.	193	1	5	4.311	0.972
My advisor gives concrete suggestions and feedback about my dissertation.	160	1	5	4.294	0.949
The cohort structure created a supportive environment.	194	1	5	4.284	1.032
Confidence in reviewing the literature in an area of research.	190	2	5	4.284	0.779
I was not treated differently because of my gender.	194	1	5	4.278	0.952
Confidence selecting a suitable topic for study.	192	2	5	4.271	0.799
My advisor is interested in my topic.	166	1	5	4.271	0.917
The cohort structure was beneficial in studying for comprehensive exams.	195	1	5	4.241	1.107
The faculty contributed to my success in the program.	197	1	5	4.223	1.031
My advisor gives me sufficient feedback on my progress.	163	1	5	4.221	0.988
My advisor assists me in developing my research design and in identifying appropriate research methodology.	165	1	5	4.218	0.944
Faculty members have encouraged me to pursue research questions that are of interest to me.	196	1	5	4.168	0.97
The cohort small group work was beneficial to me.	195	1	5	4.149	0.846
Writing the introduction and literature review.	190	1	5	4.142	0.888
Faculty members are involved in the conduct and publication of research.	197	1	5	4.122	0.83
Confidence in collecting the data for a study	189	2	5	4.116	0.873
My advisor is available to meet with me.	170	1	5	4.1	1.047
My advisor gives me feedback in a timely manner.	164	1	5	4.098	1.109
Working with students in a cohort made the program easier for me.	194	1	5	4.082	0.973

Survey Item	N	Min	Max	Mean	SD
Faculty members show excitement about research and scholarly activities.	197	1	5	4.081	0.871
Confidence in selecting an appropriate sample of subjects to address the research question.	188	2	5	4.053	0.906
There is informal sharing of research ideas in my program.	195	1	5	4.036	0.887
Required coursework in my doctoral program adequately prepared me for writing my dissertation.	197	1	5	3.97	0.942
Confidence in determining an appropriate sample size.	190	2	5	3.942	0.933
Confidence in writing the methods and results for a research paper.	188	1	5	3.941	0.938
Confidence in writing the discussion for a thesis or a dissertation.	188	1	5	3.92	1.013
Confidence in collecting the data.	191	1	5	3.916	0.980
Confidence in analysis of the data.	189	2	5	3.884	0.938
Confidence in formulating research hypothesis or foreshadowed questions.	191	1	5	3.869	0.899
Confidence in selecting an appropriate study design to address a research question.	191	1	5	3.791	0.961
Qualitative methodology and research courses adequately prepared me for writing my dissertation.	195	1	5	3.779	0.912
Confidence in selecting appropriate methods for the analysis of the data.	191	2	5	3.775	0.944
My dissertation committee worked well together.	131	1	5	3.771	1.187
Working in groups made it easier for me to get things done.	194	1	5	3.634	1.041
Courses focusing on research in my content area adequately prepared me for writing my dissertation.	196	1	5	3.602	0.979
I feel like I was treated differently because of my race.	194	1	5	3.531 (1.469)	0.796
I was encouraged to get involved in some aspects of research early in my doctoral program.	196	1	5	3.418	1.206
I relied a great deal on the other students in my cohort.	194	1	5	3.392	1.044

Survey Item	N	Min	Max	Mean	SD
The cohort structure made the program more difficult for me	195	1	5	3.277 (1.723)	1.033
My cohort made the program more difficult for me.	194	1	5	3.263 (1.737)	0.954
In my doctoral program there are opportunities to be a part of research teams.	198	1	5	3.247	1.203
Quantitative methodology and statistics courses adequately prepared me for writing my dissertation.	194	1	5	3.129	1.048
I would rather have classes without student cohorts.	194	1	56	3.113 (1.887)	1.16
If I had it to do over again, I would select a different advisor.	166	1	5	3.108 (1.892)	1.221
The faculty do not seem to really care if students are interested in research.	197	1	5	3.107 (1.893)	0.0992
I experienced difficulty working with my dissertation chair.	159	1	5	3.082 (1.918)	1.232
My dissertation committee members experienced problems that hindered my dissertation progress.	131	1	5	2.802 (2.198)	1.205
A supportive learning environment was hindered by issues among faculty members.	197	1	5	2.594 (2.406)	1.232
Faculty members often invite students to be responsible collaborators in the faculty member's own research projects.	198	1	5	2.540	1.129
In general, I spend an adequate amount of time with my advisor.	163	1	5	2.448	1.197

Note: The negatively worded items were recoded for all analysis purposes. The recoding is shown in dark red, while the actual score for a negatively worded item is in parentheses. Therefore, to use the dark red scores on this table the statement must be read in the affirmative.

Table G-2
Descriptive Statistics for Items in Order of Appearance in Survey

Survey Item	N	Min	Max	Mean	SD
14. Required coursework in my doctoral program adequately prepared me for writing my dissertation.	197	1	5	3.970	0.942
15. Quantitative methodology and statistics courses adequately prepared me for writing my dissertation.	194	1	5	3.129	1.048
16. Qualitative methodology and research courses adequately prepared me for writing my dissertation.	195	1	5	3.779	0.912
17. Courses focusing on research in my content area adequately prepared me for writing my dissertation.	196	1	5	3.602	0.979
18. In my doctoral program there are opportunities to be a part of research teams.	198	1	5	3.247	1.203
19. I was encouraged to get involved in some aspects of research early in my doctoral program.	196	1	5	3.418	1.206
20. Faculty members often invite students to be responsible collaborators in the faculty member's own research projects.	198	1	5	2.540	1.129
23. Faculty members show excitement about research and scholarly activities.	197	1	5	4.081	0.871
24. Faculty members are involved in the conduct and publication of research.	197	1	5	4.122	0.830
25. There is informal sharing of research ideas in my program.	195	1	5	4.036	0.887
26. Faculty members have encouraged me to pursue research questions that are of interest to me.	196	1	5	4.168	0.970
27. The faculty contributed to my success in the program.	197	1	5	4.223	1.031
28. The faculty do not seem to really care if students are interested in research.	197	1	5	1.893	0.992
29. A supportive learning environment was hindered by issues among faculty members.	197	1	5	2.406	1.232
30. My advisor assists me in developing my research design and in identifying appropriate research methodology.	165	1	5	4.218	0.944
31. My advisor is available to meet with me.	170	1	5	4.100	1.047
32. I experienced difficulty working with my dissertation chair.	159	1	5	1.918	1.232
33. My advisor is interested in my topic.	166	1	5	4.271	0.917
34. My advisor gives me feedback in a timely manner.	164	1	5	4.098	1.109
35. My advisor gives concrete suggestions and feedback about my dissertation.	160	1	5	4.294	0.949
36. My advisor gives me sufficient feedback on my progress.	163	1	5	4.221	0.988

Survey Item	N	Min	Max	Mean	SD
37. My advisor is very supportive of my work.	164	1	5	4.341	0.936
38. In general, I spend an adequate amount of time with my advisor.	163	1	5	2.448	1.197
39. If I had it to do over again, I would select a different advisor.	166	1	5	1.892	1.221
40. My dissertation committee worked well together.	131	1	5	3.771	1.187
41. My dissertation committee members experienced problems that hindered my dissertation progress.	131	1	5	2.198	1.205
42. The cohort structure created a supportive environment.	194	1	5	4.284	1.032
43. I feel like I was treated differently because of my race.	194	1	5	1.469	0.796
44. The cohort structure made the program more difficult for me.	195	1	5	1.723	1.033
45. The cohort small group work was beneficial to me.	195	1	5	4.149	0.846
46. Working with students in a cohort made the program easier for me.	194	1	5	4.082	0.973
47. I would rather have classes without student cohorts.	194	1	5	1.887	1.160
48. I was never treated differently based solely on my ethnicity.	193	1	5	4.311	0.972
49. The cohort structure was beneficial in studying for comprehensive exams.	195	1	5	4.241	1.107
50. My cohort made the program more difficult for me.	194	1	5	1.737	0.954
51. Working in groups made it easier for me to get things done.	194	1	5	3.634	1.041
52. I relied a great deal on the other students in my cohort.	194	1	5	3.392	1.044
53. I was not treated differently because of my gender.	194	1	5	4.278	0.952
54. Selecting a suitable topic for study.	192	2	5	4.271	0.799
55. Reviewing the literature in an area of research.	190	2	5	4.284	0.779
56. Writing the introduction and literature review.	190	1	5	4.142	0.888
57. Formulating research hypothesis or foreshadowed questions.	191	1	5	3.869	0.899
58. Selecting an appropriate design to address a research question.	191	1	5	3.791	0.961
59. Determining the procedure to be used in gathering the data.	191	1	5	3.916	0.980
60. Selecting appropriate methods for the analysis of the data.	191	2	5	3.775	0.944
61. Carrying out the analysis of the data.	189	2	5	3.884	0.938

Survey Item	N	Min	Max	Mean	SD
62. Selecting an appropriate sample of subjects to address the research question.	188	2	5	4.053	0.906
63. Determining an appropriate sample size.	190	2	5	3.942	0.933
64. Collecting the data.	189	2	5	4.116	0.873
65. Writing the methods and results sections for a research paper.	188	1	5	3.941	0.938
66. Writing a discussion section for a thesis or a dissertation.	188	1	5	3.920	1.013

Note: While the negatively worded items were recoded for all comparison analysis purposes, they are not recoded in this table. That is, the mean of the original rating is displayed so that they may be compared to those that are positively worded.

Table G-3
Descriptive Statistics for Research Preparation Subscale

	N	Min	Max	Mean	SD
14. Required coursework in my doctoral program adequately prepared me for writing my dissertation.	197	1	5	3.97	.942
15. Quantitative methodology and statistics courses adequately prepared me for writing my dissertation.	194	1	5	3.13	1.048
16. Qualitative methodology and research courses adequately prepared me for writing my dissertation.	195	1	5	3.78	.912
17. Courses focusing on research in my content area adequately prepared me for writing my dissertation.	196	1	5	3.60	.979
18. In my doctoral program there are opportunities to be a part of research teams.	198	1	5	3.25	1.203
19. I was encouraged to get involved in some aspects of research early in my doctoral program.	196	1	5	3.42	1.206
20. Faculty members often invite students to be responsible collaborators in the faculty member's own research projects.	198	1	5	2.54	1.129
Valid N (listwise)	192				

Table G-4
Descriptive Statistics for Faculty Involvement Subscale

	N	Min	Max	Mean	SD
23. Faculty members show excitement about research and scholarly activities.	197	1.00	5.00	4.0812	.87102
24. Faculty members are involved in the conduct and publication of research.	197	1.00	5.00	4.1218	.83016
25. There is informal sharing of research ideas in my program.	195	1.00	5.00	4.0359	.88734
26. Faculty members have encouraged me to pursue research questions that are of interest to me.	196	1.00	5.00	4.1684	.96992
27. The faculty contributed to my success in the program.	197	1.00	5.00	4.2234	1.03058
28. The faculty do not seem to really care if students are interested in research.	197	1.00	5.00	4.1066	.99170
29. A supportive learning environment was hindered by issues among faculty members.	197	1.00	5.00	3.5939	1.23204
Valid N (listwise)	194				

Table G-5
Descriptive Statistics for Dissertation Advisor/Advisee Subscale

	N	Min	Max	Mean	SD
30. My advisor assists me in developing my research design and in identifying appropriate research methodology.	165	1.00	5.00	4.2182	.94400
31. My advisor is available to meet with me.	170	1.00	5.00	4.1000	1.04711
32. I experienced difficulty working with my dissertation chair.	159	1.00	5.00	4.0818	1.23231
33. My advisor is interested in my topic.	166	1.00	5.00	4.2711	.91718
34. My advisor gives me feedback in a timely manner.	164	1.00	5.00	4.0976	1.10891
35. My advisor gives concrete suggestions and feedback about my dissertation.	160	1.00	5.00	4.2938	.94899
36. My advisor gives me sufficient feedback on my progress.	163	1.00	5.00	4.2209	.98773
37. My advisor is very supportive of my work.	164	1.00	5.00	4.3415	.93624
38. In general, I spend an adequate amount of time with my advisor.	163	1.00	5.00	2.4479	1.19749
39. If I had it to do over again, I would select a different advisor.	166	1.00	5.00	4.1084	1.22115
40. My dissertation comm. worked well together.	131	1.00	5.00	3.7710	1.18688
41. My dissertation committee members experienced problems that hindered my dissertation progress.	131	1.00	5.00	3.8015	1.20524
Valid N (listwise)	119				

Table G-6
Descriptive Statistics for Cohort Experience Subscale

	N	Min	Max	Mean	SD
42. The cohort structure created a supportive environment.	194	1.00	5.00	4.2835	1.03164
43. I feel like I was treated differently because of my race.	194	1.00	5.00	4.5309	.79609
44. The cohort structure made the program more difficult for me.	195	1.00	5.00	4.2769	1.03308
45. The cohort small group work was beneficial to me.	195	1.00	5.00	4.1487	.84551
46. Working with students in a cohort made the program easier for me.	194	1.00	5.00	4.0825	.97290
47. I would rather have classes without student cohorts.	194	1.00	5.00	4.1134	1.15956
48. I was never treated differently based solely on my ethnicity.	193	1.00	5.00	4.3109	.97186
49. The cohort structure was beneficial in studying for comprehensive exams.	195	1.00	5.00	4.2410	1.10685
50. My cohort made the program more difficult for me.	194	1.00	5.00	4.2629	.95384
51. Working in groups made it easier for me to get things done.	194	1.00	5.00	3.6340	1.04066
52. I relied a great deal on the other students in my cohort.	194	1.00	5.00	3.3918	1.04368
53. I was not treated differently because of my gender.	194	1.00	5.00	4.2784	.95214
Valid N (listwise)	189				

APPENDIX H:

ROTATED COMPONENT MATRIX FOR FOUR SUBSCALES

Table H-1

Component Matrix for Four Subscales

	Research prep	Research involvement	Faculty interest in student research	Nature of dissertation advisement	Process of dissertation advisement	Cohort experience	Cohort and diversity	Cohort contribution to success
Required coursework in my doctoral program adequately prepared me for writing my dissertation	.573							
Quantitative methodology and statistics courses adequately prepared me for writing my dissertation.	.677							
Courses focusing on research in my content area adequately prepared me for writing my dissertation.	.633							
In my doctoral program there are opportunities to be a part of research teams.		.709						
I was encouraged to get involved in some aspects of research early in my doctoral program.		.707						
Faculty members often invite students to be responsible collaborators in the faculty member's own research projects.		.668						
Faculty members are involved in the conduct and publication of research.		.618						

	Research prep	Research involvement	Faculty interest in student research	Nature of dissertation advisement	Process of dissertation advisement	Cohort experience	Cohort and diversity	Cohort contribution to success
Faculty members show excitement about research and scholarly activities.			.782					
There is informal sharing of research ideas in my program.		.	.757					
Faculty members have encouraged me to pursue research questions that are of interest to me.			.769					
The faculty do not seem to really care if students are interested in research.			.798					
My advisor assists me in developing my research design and in identifying appropriate research methodology.				.706				
My advisor is interested in my topic.				.701				
My advisor gives me feedback in a timely manner.				.703				
My advisor gives concrete suggestions and feedback about my dissertation.				.680				
My advisor gives me sufficient feedback on my progress.				.677				
My advisor is very supportive of my work.				.683				
My advisor is available to meet with me.				.753				
I experienced difficulty working with my dissertation chair.					.621			
In general, I spend an adequate amount of time with my advisor.					.929			
If I had it to do over again, I would select a different advisor.					.606			

	Research prep	Research involvement	Faculty interest in student research	Nature of dissertation advisement	Process of dissertation advisement	Cohort experience	Cohort and diversity	Cohort contribution to success
A supportive learning environment was hindered by issues among faculty members.					.649			
The faculty contributed to my success in the program.					.635			
My dissertation committee worked well together.					.612			
My dissertation committee members experienced problems that hindered my dissertation progress.					.600			
The cohort structure created a supportive environment.						.892		
The cohort structure made the program more difficult for me.						.812		
Working with students in a cohort made the program easier for me.						.892		
I would rather have classes without student cohorts.						.894		
The cohort structure was beneficial in studying for comprehensive exams.						.902		
My cohort made the program more difficult for me.						.895		
Working in groups made it easier for me to get things done.							.516	
I relied a great deal on the other students in my cohort.						.	.355	

	Research prep	Research involvement	Faculty interest in student research	Nature of dissertation advisement	Process of dissertation advisement	Cohort experience	Cohort and diversity	Cohort contribution to success
Qualitative methodology and research courses adequately prepared me for writing my dissertation.							.670	
I feel like I was treated differently because of my race.								.455
I was not treated differently because of my gender.								.664
I was never treated differently based solely on my ethnicity								.552

APPENDIX I:
RELIABILITY OF THE NEW SURVEY CATEGORIES
BASED ON FACTOR ANALYSIS

Table I-1
Reliability: Research Preparation Following Factor Analysis

a. Reliability Statistics

Cronbach's alpha	Cronbach's alpha based on standardized items	N of items
.716	.719	3

b. Item-Total Statistics

	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's alpha if item deleted
14. Required coursework in my doctoral program adequately prepared me for writing my dissertation.	6.73	2.892	.583	.342	.573
15. Quantitative methodology and statistics courses adequately prepared me for writing my dissertation.	7.57	2.806	.498	.253	.677
17. Courses focusing on research in my content area adequately prepared me for writing my dissertation.	7.10	2.907	.530	.296	.633

Table I-2
Reliability: Faculty Involvement

a. Reliability Statistics

Cronbach's alpha	Cronbach's alpha based on standardized items	N of items
.768	.769	4

b. Item-Total Statistics

	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's alpha if item deleted
25. There is informal sharing of research ideas in my program.	9.1907	8.549	.484	.256	.757
19. I was encouraged to get involved in some aspects of research early in my doctoral program.	9.8041	6.739	.583	.341	.707
20. Faculty members often invite students to be responsible collaborators in the faculty member's own research projects.	10.6907	6.754	.650	.432	.668
18. In my doctoral program there are opportunities to be a part of research teams.	9.9794	6.735	.579	.373	.709

Table I-3
Reliability: Faculty Interest in Student Research

a. Reliability Statistics

Cronbach's alpha	Cronbach's alpha based on standardized items	N of items
.826	.827	4

b. Item-Total Statistics

	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's alpha if item deleted
26. Faculty members have encouraged me to pursue research questions that are of interest to me.	12.2359	5.253	.666	.456	.773
28. The faculty do not seem to really care if students are interested in research	12.2872	5.144	.666	.461	.774
23. Faculty members show excitement about research and scholarly activities.	12.3077	5.709	.649	.433	.782
25. There is informal sharing of research ideas in my program.	12.3692	5.698	.628	.409	.791

Table I-4
Reliability: Nature of Dissertation Advisement

a. Reliability Statistics

Cronbach's alpha	Cronbach's alpha based on standardized items	N of items
.773	.815	8

b. Item-Total Statistics

	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's alpha if item deleted
35. My advisor gives concrete suggestions and feedback about my dissertation.	27.7325	17.838	.876	.815	.680
36. My advisor gives me sufficient feedback on my progress.	27.8217	17.481	.872	.832	.677
37. My advisor is very supportive of my work.	27.6752	17.951	.863	.816	.683
33. My advisor is interested in my topic.	27.7580	18.736	.766	.679	.701
34. My advisor gives me feedback in a timely manner.	27.9490	17.792	.707	.642	.703
30. My advisor assists me in developing my research design and in identifying appropriate research methodology	27.7643	19.066	.749	.609	.706
31. My advisor is available to meet with me.	27.9172	20.294	.451	.641	.753
38. In general, I spend an adequate amount of time with my advisor.	29.6051	33.830	-.678	.674	.929

Table I-5
Reliability: Process of Dissertation Advisement

a. Reliability Statistics

Cronbach's alpha	Cronbach's alpha based on standardized items	N of items
.725	.728	7

b. Item-Total Statistics

	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's alpha if item deleted
40. My dissertation committee worked well together.	22.1405	18.705	.761	.719	.612
32. I experienced difficulty working with my dissertation chair.	21.8678	18.399	.701	.705	.621
41. My dissertation committee members experienced problems that hindered my dissertation progress.	22.1240	18.293	.801	.771	.600
39. If I had it to do over again, I would select a different advisor.	21.8182	18.217	.766	.738	.606
29. A supportive learning environment was hindered by issues among faculty members.	22.3306	19.473	.602	.391	.649
27. The faculty contributed to my success in the program.	21.6529	19.679	.682	.564	.635
38. In general, I spend an adequate amount of time with my advisor.	23.5702	37.447	-.730	.600	.910

Table I-6
Reliability: Cohort Experience

a. Reliability Statistics

Cronbach's alpha	Cronbach's alpha based on standardized items	N of items
.911	.911	9

b. Item-Total Statistics

	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's alpha if item deleted
44. The cohort structure made the program more difficult for me.	32.9845	38.380	.820	.740	.892
47. I would rather have classes without student cohorts.	33.1503	37.451	.788	.674	.894
42. The cohort structure created a supportive environment.	32.9741	38.525	.810	.728	.892
46. Working with students in a cohort made the program easier for me.	33.1710	39.070	.821	.695	.892
50. My cohort made the program more difficult for me.	33.0207	39.447	.777	.644	.895
49. The cohort structure was beneficial in studying for comprehensive exams.	33.0207	39.343	.676	.523	.902
45. The cohort small group work was beneficial to me.	33.1036	43.375	.530	.419	.911
27. The faculty contributed to my success in the program.	33.0415	41.280	.573	.458	.909
51. Working in groups made it easier for me to get things done.	33.6062	42.605	.465	.358	.917

Table I-7
Reliability: Cohort and Diversity

a. Reliability Statistics

Cronbach's alpha	Cronbach's alpha based on standardized items	N of items
.653	.663	3

b. Item-Total Statistics

	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's alpha if item deleted
43. I feel like I was treated differently because of my race.	8.6010	2.408	.556	.319	.455
48. I was never treated differently based solely on my ethnicity.	8.8187	2.139	.469	.268	.552
53. I was not treated differently because of my gender.	8.8497	2.368	.387	.163	.664

Table I-8
Reliability: Cohort Support

a. Reliability Statistics

Cronbach's alpha	Cronbach's alpha based on standardized items	N of items
.621	.617	3

b. Item-Total Statistics

	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's alpha if item deleted
52. I relied a great deal on the other students in my cohort.	7.4188	2.360	.536	.293	.355
51. Working in groups made it easier for me to get things done.	7.1780	2.642	.434	.232	.516
16. Qualitative methodology and research courses adequately prepared me for writing my dissertation.	7.0366	3.267	.331	.126	.647

APPENDIX J:

AD HOC ANALYSIS OF RESEARCH EFFICACY

An ad hoc analysis of student perception of their research efficacy was completed. Table J-1 presents the distribution of mean scores and Table J-2 presents the Cronbach's alpha scores demonstrating high internal reliability.

Table J-1
Mean Scores for Research Efficacy

	N	Min	Max	Mean	SD
54. Selecting a suitable topic for study.	156	2.00	5.00	4.2372	.82001
55. Reviewing the literature in an area of research.	154	2.00	5.00	4.2662	.80067
56. Writing the introduction and literature review.	154	1.00	5.00	4.1169	.89258
57. Formulating research hypothesis or foreshadowed questions.	155	2.00	5.00	3.8710	.90961
58. Selecting an appropriate design to address a research question	155	1.00	5.00	3.8581	.94963
59. Determining the procedure to be used in gathering the data.	155	2.00	5.00	3.9935	.92930
60. Selecting appropriate methods for the analysis of the data.	155	2.00	5.00	3.8258	.91983
61. Carrying out the analysis of the data.	153	2.00	5.00	3.8954	.94007
62. Selecting an appropriate sample of subjects to address the research question.	153	2.00	5.00	4.1111	.89263
63. Determining an appropriate sample size.	153	2.00	5.00	3.9542	.93429
65. Writing the methods and results sections for a research paper.	152	2.00	5.00	4.0329	.90193
66. Writing a discussion section for a thesis or a dissertation.	153	2.00	5.00	4.0131	.91757
Valid N (listwise)	146				

Table J-2
Cronbach's Alpha for Research Efficacy

a. Reliability Statistics

Cronbach's alpha	Cronbach's alpha based on standardized items	N of items
.960	.960	13

b. Item-Total Statistics

Perception of research efficacy	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's alpha if item deleted
54. Selecting a suitable topic for study.	48.1586	86.148	.725	.666	.965
55. Reviewing the literature in an area of research.	48.1172	86.299	.737	.708	.965
56. Writing the introduction and literature review.	48.2621	83.945	.800	.789	.963
57. Formulating research hypothesis or foreshadowed questions	48.5172	83.210	.820	.760	.963
58. Selecting an appropriate design to address a research question.	48.5034	81.752	.874	.867	.962
59. Determining the procedure to be used in gathering the data.	48.4069	81.840	.877	.854	.962
60. Selecting appropriate methods for the analysis of the data.	48.5724	82.052	.865	.888	.962
61. Carrying out the analysis of the data.	48.5034	82.196	.853	.828	.962
62. Selecting an appropriate sample of subjects to address the research question.	48.2897	83.304	.838	.769	.963
63. Determining an appropriate sample size.	48.4483	83.777	.770	.685	.964
64. Collecting the data	48.2276	85.399	.752	.648	.965
65. Writing the methods and results sections for a research paper.	48.3379	83.281	.832	.820	.963
66. Writing a discussion section for a thesis or a dissertation.	48.3724	83.305	.817	.798	.963

Table J-3
Factor Analysis for Five Subcategories of Survey

Factor analysis	Rotated component matrix								
Survey items	1	2	3	4	5	6	7	8	9
Determining the procedure to be used in gathering the data.	.868								
Selecting appropriate methods for the analysis of the data.	.864								
Selecting an appropriate design to address a research question.	.844								
Carrying out the analysis of the data.	.808								
Writing the methods and results sections for a research paper.	.808								
Formulating research hypothesis or foreshadowed questions.	.807								
Selecting an appropriate sample of subjects to address the research question.	.798								
Writing the introduction and literature review.	.775								
Selecting a suitable topic for study.	.741								
Determining an appropriate sample size.	.738								
Collecting the data	.728								
Writing a discussion section for a thesis or a dissertation.	.718								
Reviewing the literature in an area of research.	.694								
My advisor gives concrete suggestions and feedback about my dissertation.		.897							
My advisor gives me sufficient feedback on my progress.		.886							
My advisor is very supportive of my work.		.853							

Factor analysis	Rotated component matrix								
Survey items	1	2	3	4	5	6	7	8	9
My advisor is interested in my topic.		.797							
My advisor gives me feedback in a timely manner.		.784							
My advisor assists me in developing my research design and in identifying appropriate research methodology.		.763							
My advisor is available to meet with me.		.557							
In general, I spend an adequate amount of time with my advisor.		-.523		-.521					
The cohort structure made the program more difficult for me.			.895						
I would rather have classes without student cohorts.			.894						
The cohort structure created a supportive environment.			.873						
Working with students in a cohort made the program easier for me.			.826						
My cohort made the program more difficult for me.			.724						
The cohort structure was beneficial in studying for comprehensive exams.			.700						
The cohort small group work was beneficial to me.			.581						
My dissertation committee worked well together.				.728					
I experienced difficulty working with my dissertation chair.				.707					

Factor analysis	Rotated component matrix								
Survey items	1	2	3	4	5	6	7	8	9
My dissertation committee members experienced problems that hindered my dissertation progress.				.691					
If I had it to do over again, I would select a different advisor.				.670					
A supportive learning environment was hindered by issues among faculty members.				.598					
The faculty contributed to my success in the program.			.537	.541					
Faculty members have encouraged me to pursue research questions that are of interest to me.					.790				
The faculty do not seem to really care if students are interested in research.					.770				
Faculty members show excitement about research and scholarly activities.					.643				
There is informal sharing of research ideas in my program.					.529	.512			
I was encouraged to get involved in some aspects of research early in my doctoral program.						.781			
Faculty members often invite students to be responsible collaborators in the faculty member's own research projects.						.780			
In my doctoral program there are opportunities to be a part of research teams.						.695			
Faculty members are involved in the conduct and publication of research.									

Factor analysis	Rotated component matrix								
Survey items	1	2	3	4	5	6	7	8	9
Courses focusing on research in my content area adequately prepared me for writing my dissertation.							.647		
Quantitative methodology and statistics courses adequately prepared me for writing my dissertation.							.640		
Required coursework in my doctoral program adequately prepared me for writing my dissertation.									
I was never treated differently based solely on my ethnicity.								.796	
I feel like I was treated differently because of my race.								.718	
I was not treated differently because of my gender.								.663	
I relied a great deal on the other students in my cohort.									.822
Working in groups made it easier for me to get things done.			.532						.626
Qualitative methodology and research courses adequately prepared me for writing my dissertation.									.562

APPENDIX K:

SUMMARY OF CHARACTERISTICS OF STUDENT/ADVISOR

RELATIONSHIPS THAT SUPPORT COMPLETION OR ATTRITION

Table K-1

Descriptors of Student-Advisor and Student-Faculty Relationships That Are Positively Related to Successful Degree Completion in Research Studies

Quality of the relationship	Characteristics of the advisor
Positive relationships in quality and time Ability to talk about problems encountered Close, personal relationship Satisfactory interaction Good student-advisor relationship Value of student-faculty interaction Student is satisfied with relationships Student is treated as junior colleague Student knows one or more faculty quite well Frequent contacts Ease of interaction Opportunities to meet informally Characterized by trust	Easy to approach Accessible (faculty and chairperson) Personally supportive of students Cooperative Concerned for students as persons Supportive (major professor) Supportive (committee members) Supportive (general faculty) Encourages students Encourages student-faculty interaction Personally supportive of students Caring, patient, kind High amount of help Concern for student development Supportive mentor
High level of faculty/advisor expertise	
High quality of advising Quality as a teacher and scholar Usefulness in providing needed information Caring as an advisor National reputation as faculty Helpfulness on questions related to research Academic coaching Career sponsorship Provides valuable advice	Voice of care and power Concern for teaching Acceptance of students Confirmation of students Personal counseling of students Friendship with students

Note: From Bair, 1999.

Table K-2

Characteristics of the Student-Advisor and Student-Faculty Relationships That Are Related to Attrition in Research Studies

Concerns with program/department/school	Concerns with dissertation advisor/advisement
Community not nurturing Need to understand department structure Need to know who is in authority Need clarity on where to go with problems Need for useful information Insufficient guidelines/suggestions Lack of clarity on criteria for evaluation Extremely informal rules in the department Need career sponsorship	Problems with dissertation advisor Problems with dissertation committee Lack of advisor cooperation Lack of advisor understanding Advisor not caring Dissertation adviser not helpful Dissertation adviser not encouraging Mismatched expectations and working styles Number of advisor's current committees
Concerns regarding faculty	
Problems in faculty/student relationships Student not well acquainted with faculty Need faculty to serve as supportive mentors Insufficient active intervention by faculty Need to interact informally with faculty Ambiguity regarding faculty expectations Lack of encouragement from faculty Need more faculty concern for teaching Hesitant to approach faculty Need faculty concern for student development Need faculty voices of care and power	Insufficient support by major professor Inadequate advising during dissertation Difficulty finding a director Major faculty changes during dissertation Advisor left the institution or died More attention needed from director Need guidance from major professor Need better advice from chairperson Infrequency of contacts Student's standing with advisor unknown Support for stress during dissertation Inaccessibility of advisor

Note: From Bair, 1999.