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Situatedness: The interrelation of factors impacting the educational pathway to degree attainment among Black and White doctoral students

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**Situatedness: The Interrelation of Factors Impacting the Educational Pathway to
Degree Attainment among Black and White doctoral students**

A Dissertation

Presented to

The Faculty of the School of Education

The College of William and Mary in Virginia

In Partial Fulfillment

Of the Requirements for the Degree

Doctor of Philosophy

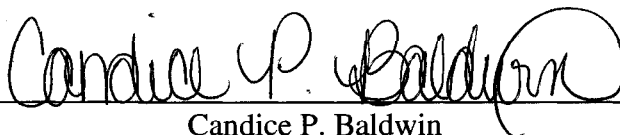
by

Candice P. Baldwin

April 2009

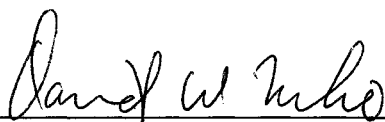
Situatedness: The Interrelation of Factors Impacting the Educational Pathway to Degree
Attainment among Black and White doctoral students

By

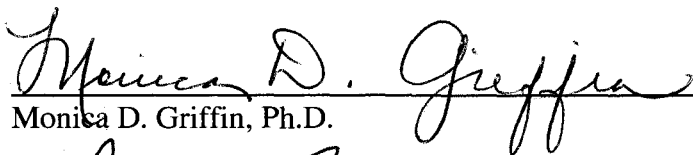


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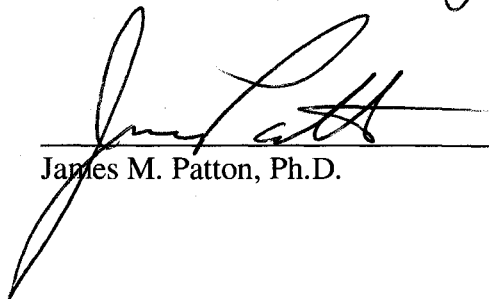
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ABSTRACT

Given the absence of a comprehensive theory of doctoral student persistence within the current literature base, the purpose of this study was to propose and test a model that would predict doctoral degree completion using an integrated scheme of background, financial support, and experience variables between Black and White students. The impact and interaction of these variables was explored individually and collectively to describe a concept defined as *situatedness*. The situatedness model illustrates that a student's background is related to the financial support they receive in doctoral programs; in turn, these factors are connected to a student's departmental and personal experiences, which are all directly related to doctoral degree completion.

The situatedness model was found to be useful in conceptualizing doctoral degree completion, but it illustrated that there are other variables that cause disparities in completion among Black and White doctoral students. The situatedness model indicated that financial support factors affect doctoral degree completion among Black and White students. For Whites, the situatedness model indicated that the total amount of grant aid, the amount borrowed for education, teaching assistantships, and private/outside sources of aid were independent and significant predictors of doctoral degree completion. For Blacks, the situatedness model indicated that income and outside sources of aid were predictive of degree completion. The findings of this study suggest that finances are the most important predictor of degree completion for both groups. The disparity in sources of funding for Blacks and Whites highlight many of the differences in experiences and outcomes between the groups.

DEDICATION

This dissertation is dedicated in loving memory of my grandmother, Marian Eloise McLean. I would not have ever made it to college or persist to the doctoral level without her unwavering love, support, and encouragement. She made countless personal and financial sacrifices for me to achieve my dreams. Her love was unconditional and limitless. She has truly been my inspiration and her memory will continue to motivate me to reach new heights.

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I would also like to acknowledge the role my family played in this process. My grandparents, Louis and Elouise McLean, who supported and believed in me throughout my life as well as showed me the importance of hard work, sacrifice, and grace. Their words of encouragement have always helped me through the more difficult times of this process. My parents, who encouraged me to reach my full potential; and Aunt Roz and Uncle Toe, who gave me the strength and confidence to pursue and obtain this degree.

“A man’s place should be measured, not by the heights to which he attained, but by the depths from which he has come”. ~Fredrick Douglass

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Chapter 1

Introduction

High attrition and disparities in degree conferral rates among students plague doctoral education. In 1993, approximately eighteen percent of college students aspired to receive a doctoral degree, yet only 1.6 percent of these students were able to bring this goal to fruition. Many never attempted enrollment, but for those who did, some failed to complete the doctoral program. It is currently estimated that the attrition rate in doctoral education is fifty percent (Golde, 2000). For Black students, this rate is considerably higher despite the increased recruitment efforts by graduate programs and a greater percentage of Black college undergraduates. Of the 48,378 doctoral degrees awarded in 2003-2004, Black doctoral students received five percent as opposed to fifty-four percent received by Whites (Writ, Rooney, Choy, Provasnik & Tobin, 2004). Among all doctoral degree recipients, timely completion was also an issue. The median time between completion of the bachelor' degree and doctoral degree has risen from 7.1 years in 1993 to currently about 11 years (Ferrer de Valero, 2001).

Considering the importance of doctoral education, to both personal success and the health of the nation's scientific enterprise, a systematic and comprehensive examination of factors influencing the doctoral experience was necessary. Although several researchers (Golde, 2000; Lovitts, 2001; Nettles & Millet, 2005) have tried to expand the knowledge base, research in this area is deficient. This is often due to the difficulty associated with conducting research beyond the undergraduate level. For example, the decentralization of doctoral education presents many challenges for researchers to conduct research beyond specific institutions, departments, or academic fields (Ferrer de Valero, 2001). More complex studies attempting to investigate beyond

the scope of individual departments or institutions are often limited by incomplete, obsolete, and/or limited data sources.

As a result, some researchers have chosen to concentrate on graduate education in general, rather than focus on the distinct issues of doctoral education (Andrieu & St John, 1993; Ethington & Smart, 1986; Jennings & Gumport, 1998), while other researchers prefer to focus on the factors that influence students' decision to pursue doctoral education (Elkstrom, Goertz, Pollack, & Rock, 1991; Heller, 2001; Isaac, Malaney, & Karras, 1992; Murphy, 1994; Perna, 2004; Weiler, 1991). This often produces findings that are unrepresentative of doctoral students and doctoral education on a whole (Bowen & Rudenstine, 1992). Thus, one's ability to draw conclusions about factors that affect degree progress and predict completion is diminished.

Another trend is to consider students who acquired doctoral degrees and factors that influenced their completion (Gillingham, Seneca, & Taussig, 1991; King & Chepyator, 1996; Maher, Ford, & Thompson, 2004; Seagram, Gould, & Pyke, 1998), while less emphasis has been placed on *noncompleters* and those determinants that influenced their decisions to abandon their studies. These students are often referred to as *dropouts*, often signifying the failure of a student to meet the demands of doctoral education (Lovitts, 2001; Tinto, 1993). This limited term ignores the impact of the entire doctoral experience. Therefore, this term is not used in this study. This study sought to gain an accurate understanding of the factors that deter or facilitate degree completion. As the identification of dropouts or failures is not the purpose of this investigation, the terms *completer* and *noncompleter* was used for descriptive and comparative purposes. Completers are students who start and finish doctoral programs while as described by Lovitts (2001), noncompleters are students who start but do not finish doctoral programs.

Theoretical Background

Many of the established models and theories used in the analysis of doctoral education derive from undergraduate models of persistence and retention. The model of student attrition developed by Tinto (1975, 1993) is often cited in studies regarding graduate degree progress. The earlier model (1975) describes the relationship among students' background characteristics, educational expectations, and institutional factors in students' dropout behavior. Tinto found that these attributes influenced students' academic and social integration within the institution.

Academic integration refers to involvement with faculty and classroom activities, while *social integration* refers to the level of participation in extracurricular activities as well as forming relationships with peers (Tinto, 1975).

Tinto (1975) concluded that those who are less integrated in or committed to an institution are more likely to withdraw prior to completion of a degree. Several years later, Bean (1980) expanded upon Tinto's earlier model to link academic and social integration with concepts of student motivation and ability. Bean (1980) concluded that academic integration is a more reliable predictor in the first two years of college, while social integration is necessary during the last two years.

Girves and Wemmerus (1988) constructed a model of graduate student progress based on knowledge gained through the aforementioned undergraduate retention models. Recognizing the differences in undergraduate and graduate experiences, Girves and Wemmerus included the amount of financial support offered to graduate students and the nature of student/advisor relationships as factors fundamental to the graduate education experience. Although this model provided a foundation upon which to investigate the graduate experience, it did little to advance the knowledge specific to doctoral education.

Tinto (1993) expanded his model to elaborate on concepts of academic and social integration to apply to doctoral education. Instead of stressing the students' academic and social integration at the institution as a whole, Tinto (1993) emphasized the importance of the academic department. The academic department is often the community for doctoral students and a students' only connection to the broader institutional community (Bowen & Rudenstine, 1992; Golde, 2000). In doctoral education, academic integration refers not only to taking courses, but also to the production of papers for both presentation and publication. Conversely, the building of peer and faculty relationship as well as fitting into the departmental culture describes the level of social integration (Golde, 2000; Tinto, 1993).

In addition to integration, Golde (2000) found that *organizational socialization theory* could also be useful in investigations of doctoral student attrition. "Organizational socialization theory describes the process in which an individual gains the skills and knowledge necessary to be successful in a given organization" (Van Maanen & Shein, 1979, p. 279 as cited in Golde, 2000, p.199). This theory is applicable to doctoral education considering the main purpose of a doctoral program is to prepare its students to become highly trained professionals. The entire experience consists of socializing students to fit certain norms through emulation of faculty, professional development opportunities, and research guidance (Golde, 2000). The ability or inability of students to conform to these socialization practices often explains their outcomes.

Conceptual Framework

Given the absence of a comprehensive theory of doctoral student persistence within the current literature base, the conceptual framework used in this study derives from the factors identified in previous literature as possible causes of attrition in doctoral education and the differences in completion rates among students. Researchers have shown that a complex set of

Background characteristics are important factors in doctoral student outcomes (Cooke et al., 2000; Ferrer de Valero, 2001; Isaac et al., 1991; Maher et al., 2004; Perna, 2004). Background characteristics related to age, sex, and socioeconomic status have all shown to influence students' decisions and experiences in doctoral education are included in the framework for this study. Although race has not been shown to be significant predictor of degree completion, the difference in conferral rates illustrate that the doctoral experience presents different challenges and outcomes among Black students and their White counterparts. In this study, race was included separately to examine the effects of these factors on the two groups.

Additionally, the intrinsic and/or extrinsic values, beliefs, and attitudes that prompt students to enroll and persist in doctoral programs assess motivation. *Intrinsic motivation* describes the internal need to increase competence or resiliency through the accomplishment of daunting tasks, while *extrinsic motivation* refers to seeking challenges or accomplishing goals for the purpose of receiving rewards, recognition, or further advancement (Deci & Ryan, 1992 as cited in King & Chepyator-Thomson, 1996, p. 171-172). *Ability* refers to the failure or capacity to meet performance standards of the doctoral program.

The level of financial support is cited as a determinant of enrollment, withdrawal, or completion of doctoral programs in the literature (Cooke, Sims, & Peyrefitte, 1995; King & Chepyator-Thomson, 1996; Perna, 2004). While financial support and financial aid are often used synonymously in literature, financial support had a more explicit meaning for the purposes of this study. *Financial support* is defined as the total amount of financial contributions that a student can reasonably expect to cover school-related costs. This includes money received from financial aid, family contribution, assets, and outside jobs.

Student experiences in the doctoral program are shown to be an important predictor of student outcomes (Bowen & Rudenstine, 1992; Gillingham et al., 1991; Golde, 2000; Jennings & Gumpert, 1998; King & Chepyator-Thomson, 1996; Valero, 200; Waldeck et al., 1997). Within this study, student *experiences* described the amount of support and obligations students have outside of their doctoral programs.

All of these factors have been used to determine success, retention, persistence, attrition, time to degree, degree progress, or degree completion in doctoral education. These concepts are often used interchangeably, but within this study, they have specific meanings to illustrate a specific purpose. As defined by Girves and Wemmerus (1988), *degree completion* is the actual completion of the doctoral degree. *Attrition* is defined as students who leave their programs permanently and do not attend another institution, while *retention* describes the ability to retain students in their program from one semester to the next until the completion of the degree. Attrition and retention are dichotomous acts and are more useful concepts when explaining the current doctoral situation, not student behavior. *Persistence*, defined as the continuous act of students to meet the requirement of degree completion, is useful in capturing the behaviors of students who complete doctoral programs and those who do not (Lovitts, 2001).

Statement of the Problem

The existing research base offers evidence to suggest that problems exist within doctoral education. However, this research not only fails to explore the individual influence, but the collective influence that identified factors have on the disparities in conferral rates noted among student groups. Although knowledge about the interaction of these factors is unknown, there is no denying the implications. These problems make it more or less likely that students will see

returns on their psychological and economic investment in graduate education. Plus, the broader social returns on investment may be reduced when extraneous factors interrupt graduate study.

These factors impact the attractiveness of doctoral education and contribute to the shortages of PhDs among underrepresented groups in various academic fields (Fox, 1992; King & Chepyator-Thomson, 1996; Maher et al, 2004; Manzo, 1994; Price, 2004; Seagram et al., 1998). As conferral rates decline, so does the pool of PhDs widely needed inside and outside of academe (Lovitts, 2001). PhD shortages not only become a problem in education, but in other industries such as business, science, and government.

A diminished supply of faculty also contributes to current lack of diversity in academe and decreased opportunities for mentoring and advisement of current doctoral students, which currently contribute to the aforementioned problems (Cooke et al., 1995; Ferrer de Valero, 2001; Golde, 2000; Magner, 1999; Waldeck et al., 1997). For example, it has been shown that college students need appropriate role models and mentors in academe to encourage them to enroll in doctoral programs and motivate them to persist to completion in various fields (King & Chepyator-Thomson, 1996). Many Black and/or female graduate students do not have sufficient access to appropriate faculty mentors in their areas of study (King & Chepyator-Thomson, 1996; Maher et al., 2004; Seagram, Gould & Pyke, 1998). Low conferral rates among Blacks and other minorities may perpetuate the lack of diversity that persists within the doctoral ranks.

Furthermore, the reoccurrence and continuation of this cycle often puts many doctoral programs at financial risk. The increased competition among departments for funding and the increasing measures of accountability puts allotment of funding in jeopardy, which affects the academic department, the faculty, and the students. Without funding, it will be hard for departments to attract high quality and diverse students to their programs. For students,

decreased funding puts more of the financial burden on them whether they complete or not. For completers, the trend in longer completion times can be costly in terms of money and time spent as well as earnings lost (Choy, 2002; Bair & Haworth, 1999). For noncompleters, they may not see a return on their investment in a doctoral degree (Bair & Haworth, 1999).

Consequently, there is little theory about the extent to which factors affect doctoral degree completion progress or how those factors differ among students (Ferrer de Valero, 2001). As previously stated, many of the previous studies have identified various factors that influence attrition, persistence, and completion. Some of these factors are related to the departmental culture such as program size, diversity of faculty, and funding capacity. Other factors are student-related and focus on various academic, personal, and social dimensions. It is apparent from these works that there is a relationship between these factors and students' likelihood of degree completion; however, these studies also demonstrate that one group of factors is not sufficient to explain or predict doctoral degree completion (Ferrer de Valero, 2001).

For example, higher conferral rates are often associated with greater levels of financial support (Seagram, Gould, & Pyke, 1998); but lack of financial support has also shown to motivate students' to complete their degree programs more quickly (King & Chepyator-Thomson, 1996). Background characteristics also play a varied role in persistence decisions. For instance, Black doctoral students are often extrinsically & intrinsically motivated to enroll in doctoral programs, but differences in their doctoral experiences from their White counterparts can serve as a catalyst or deterrence to completion (Cooke et al, 2000; King & Chepyator-Thomson, 1996).

Statement of Purpose

The purpose of the study was to present a model that determined the factors that predict doctoral degree completion. The overarching assumption behind this approach was that it is important to examine how students make situated decisions based on their own individual circumstances (Paulsen & St John, 2002). The conceptual model of situatedness achieved this by investigating the interrelationship of financial, individual, and experience factors on doctoral degree completion. The impact and interaction of variables related to these factors was explored individually and collectively to describe a concept defined as *situatedness*.

Using the situatedness model, this study was designed to examine the effect of background, financial support, and experience variables on doctoral degree completion. Specifically, I determined whether there was a relationship between each of the variables and degree completion. Then, I explored the overall ability of the interrelation of background, financial support, and experience variables to predict degree completion. Next, I explored differences in the likelihood of the model to predict degree completion for Black and White doctoral students.

Research Questions

The study addressed the primary research question: What factors facilitate progression to degree completion among Black and White doctoral students? More specifically, this study focuses on several research questions:

- What is the relationship between background characteristics and degree completion? Do they differ by race?
- What is the relationship between financial support and degree completion of doctoral students? Do they differ by race?
- What is the relationship between program experiences and degree completion of doctoral students? Do they differ by race?

- Does the situatedness model predict doctoral degree completion? Does it differ by race?

Degree completion was defined as the conclusion of the doctoral experience through the awarding of the degree by June 2004. Background variables were defined using items drawn from the *2004 National Postsecondary Aid Survey (NPSAS: 04)*. These variables were defined by race, gender, income, age, and parent education level. Financial support variables were also taken from *NPSAS: 04*. These variables included loans, research assistantships, teaching assistantships, grants, and private/outside sources. Experience variables were defined as those factors relating to enrollment status and number of hours worked per week.

Participants included a national sample of doctoral students. A total of 156,700 Black and Whites students who were enrolled in a doctoral program in the 2003-2004 school year were included in the sample. This consisted of 53,200 completers and 103,500 noncompleters.

Definition of Terms

Degree completion: actual completion of the doctoral degree in the 2003-2004 academic year.

Background characteristics: traits or circumstances that are present among students prior to entry into doctoral programs, but influence students' decisions to attend, persist in, and complete doctoral programs. The background characteristics consist of demographic information including race, gender, income, age, and parent education level.

Financial Support: the different funding mechanisms available to doctoral students, including the amount of loans, research and teaching assistantships, grants, and private/outside sources.

Experiences: students' perceptions about the amount of support and obligations they have outside of their doctoral programs.

Situatedness: the interrelation of background, financial support, and background variables used in a model to predict doctoral degree completion.

Significance of the Study

Researchers have focused on the factors that influence graduate student persistence, but little is known about the factors that affect doctoral degree completion. Much of the research related to degree completion has focused on undergraduates or graduate education in general, rather than solely on doctoral education. This has limited the ability of current research to draw conclusions about factors that predict doctoral degree completion.

In theory, some critical ratio of background, financial, and experience factors may differentially affect students' degree progress toward completion of a doctoral degree. Based on previous research as outlined in Chapter 2, it was evident that one set of these factors could not solely explain the differences in conferral rates among groups of doctoral students. Therefore, it was necessary to understand how all of these factors interrelate to impact different outcomes among Black and White doctoral students.

Findings from the present study should provide the catalyst for future research related to the factors that affect doctoral degree completion. The area of interest is a fairly new topic and data specifically relating to doctoral students is scarce, so this study provides a foundation for future studies to examine the ability of these and other factors to explain completion or attrition among doctoral students. This research would expand the literature base related to doctoral education.

Additionally, the study was significant in terms of future doctoral program practices. The results showed the significant impact of financial support in predicting degree completion, and thus may challenge the “one size fits all” approach to doctoral program admissions. Financial aid and admissions counselors may consider these results when reviewing current financial aid awards and deciding distribution amounts among different racial groups.

Finally, the challenges and limitations that arose in the execution of this study may change the methods for data collection for doctoral education as well as increase the scope of doctoral studies. For example, future studies may focus on specific types of institutions, particular racial, gender, or age groups, and specific fields of study.

Delimitations of the Study

This study had a number of delimitations. Despite the delimitations, the study was useful because it focused on doctoral students. There has not been a thorough investigation of doctoral students and degree completion. Furthermore, it provided information about the relationship between background, financial support, and experiences and doctoral degree completion.

The first delimitation was the set of challenges in use of the national dataset, *2004 National Postsecondary Aid Survey* (NPSAS: 04). First, due to dependence on individual and institution responses, there are instances of missing values and possibly inaccurate and/or biased reporting on behalf of the respondent. Additionally, the study was limited to the factors that could be defined or operationalized using the NPSAS: 04, which may not have included all the variables need to explain the variance in doctoral degree completion. There is a whole range of factors that may be involved in doctoral completion, which could not be investigated using the variables available through NPSAS: 04, especially those representing experience factors. Additionally, the

low number of Black respondents in the survey limited the amount of data available for statistical analysis.

Another delimitation was the restrictions on the statistical analysis of the data. The analysis of NPSAS: 04 data was limited to Data Analysis System (DAS), which does not allow the user to access the raw data for confidentiality reasons. The limitations of DAS necessitated the use of the Statistical Package for Social Science (SPSS) for the regression analysis. The transfer of data over two statistical platforms created more challenges in addition to those caused by the use of a national data set.

This study examined the ability of the factors used in the situatedness model to predict doctoral degree completion among a national sample of doctoral students; however, the decentralization of doctoral education affected the generalization of the conclusions. It was difficult to predict with complete certainty which factors will facilitate degree completion as degree requirements, financial aid policies, and departmental cultures vary significantly across doctoral programs and disciplines.

Additionally, qualitative methods are often best to capture student perceptions' and experiences, but this study used quantitative means that are not able to measure or operationalize these constructs. This limited the scope and interpretation of doctoral students' perceptions of and experiences in their doctoral programs.

Organization of the Study

The study was organized in five chapters. The first chapter described the statement of the problem, the purpose of the study, the conceptual framework, the research questions, the definition of terms, the significance of the study, and the delimitations of the study. The second chapter reviews the literature that is relevant to the study including previous research that has

explored the impact of background, financial support, and experience variables on degree completion or attrition. Chapter 3 describes the methodology that guided the study including the description of the dataset and sample, the situatedness model, and the data analysis procedures. Chapter 4 reports the descriptive and regression results of the research questions that guided the study. Chapter 5 discusses the major findings, implications, and areas for future research.

Chapter 2

Review of Literature

Introduction

This chapter provides the rationale for the inclusion of various factors that have been shown to impede or advance degree progress among students. These factors will be tested for their power to predict degree progress among Black and White doctoral students. More importantly, this review serves as a rationale for the concept of situatedness as well as the basis for the creation of a more complex model of degree completion. Building upon previous research, the conceptual framework for this study suggests that persistence to doctoral degree completion is initially influenced by one's background and unique characteristics (Ethington & Smart, 1986; Girves & Wemmerus, 1988; King & Chepyator-Thomson, 1996; Maher et al, 2004; Manzo, 1994; Murphy, 1994; Nettles, 1989; Seagram et al., 1998), moderated by an individual's financial support and capacity (Andrieu & St John, 1993; Ferrer de Valero, 2000; Jennings & Gumport, 1998; King & Chepyator-Thomson, 1996; Maher et al., 2004; Manzo, 1994;), and affected by experiences within and obligations outside of their program (Cooke et al., 1995; Golde, 2000; Mabokela & Green, 2001; Maher et al., 2004; Manzo, 1994; Waldeck et al., 2001).

The first part of the chapter will examine what is known from the current literature base about the relationship between degree completion and the three factors used in the conceptual model: background characteristics, financial support, and experiences. The dearth of literature particular to doctoral education warrants the inclusion of literature examining factors that affect degree completion among undergraduate students. Furthermore, the undergraduate degree is a stepping stone to an advanced degree, so the information gained about the role of these factors in

undergraduate and doctoral education will be useful in answering the research questions that guide this study.

- What is the relationship between background characteristics and degree completion? Do they differ by race?
- What is relationship between financial support and degree completion of doctoral students? Do they differ by race?
- What is the relationship between program experiences and degree completion of doctoral students? Do they differ by race?
- Does the situatedness model predict degree completion for students in doctoral education? Are there differences by race?

These sections will be followed by a summary, which will highlight the overall findings from the literature as well as what has not been learned from the literature.

The Relationship between Background Characteristics and Degree Completion

Students enter doctoral programs with a variety of background characteristics that often define their experiences and outcomes. These traits are determined by the students' family background, individual attributes, motivation and values, and educational background. Previous research has shown students' background characteristics affect the way they experience doctoral education beginning with aspirations for attendance until withdrawal from or completion of the program. For example, Andrieu and St John (1993) found that persistence decisions of graduate students are greatly influenced by the education level of their parents. Similarly, Dongbin (2003) found that background variables such as socioeconomic status as well as race, gender, parent education level, and achievement is significant in determining degree completion.

Race

Racial differences are present in students' persistence patterns. St. John et al. (2005) conducted a comparative analysis of the college choice and persistence decisions of Black and

White college students using a national database. In general, the findings of the study indicate that White and Black students' aspirations to complete some college coursework are positively associated with persistence while aspirations toward master's or advanced degrees are negatively associated with persistence to enrollment. However, St John et al noted chief differences in Black and White students' reasons for not persisting to enrollment in graduate school. Black students' reported short-term financial needs while White students indicated changes in future goals as the main reason for not enrolling in a graduate program despite previous aspirations.

Similarly, several researchers (Kaltenbaugh et al., 1999; Price, 2004; St John, 1991) determined that Blacks have higher aspirations than Whites for advanced degree completion, but are less likely to enroll due to financial reasons (Kaltenbaugh et al 1999; St. John et al., 2005; St John, 1991). These studies concluded that the persistence decisions of Blacks are related to their sensitivity to costs and perceptions of affordability rather than aspirations. On the other hand, these studies indicate that White students are more likely to persist, regardless of prices or financial aid awards (Kaltenbaugh, 1999; St John et al., 2005). Baum and O'Malley (2003) reached similar conclusions. Their study showed that more than ten percent of Blacks reported leaving their programs without completing a degree based on financial reasons as compared to one percent of Whites.

Racial differences are also present in students' motivation for enrollment and commitment to the institution. Cooke et al (1995) surveyed 230 graduate students at an urban university to assess students' motivations and subsequent outcomes. Black students were found to enter doctoral programs with a higher affective commitment than White doctoral students did. Despite higher affective commitments, Black student scored significantly lower than White students in satisfaction with program and expectations of completion.

Similarly, King and Chepyator-Thomson (1996) conducted a survey of 106 Black doctoral recipients to identify factors that influenced completion of their doctoral programs. Motivation emerged as the most significant individual characteristic in their success in their programs. Black doctoral students reported that hopes of career advancement motivated them to enroll in a doctoral program. Despite being extrinsically motivated to pursue doctoral education, the respondents credited intrinsic motivation as the chief factor in completion. Strength, desire, and focus emerged as the chief motivators to complete their programs and overcome negative external factors present with their programs, such as a socially inhospitable climate and lack of faculty mentoring.

Achievement has also been used to explain racial differences in completion rates at the doctoral level. Girves and Wemmerus (1988) analyzed the relationship between student characteristics and degree progress using a sample of 948 graduate students at a major Midwestern university. Prior to the study, it was believed that achievement as measured by grade point average (GPA) is a strong predictor of completion of graduate programs. However, Girves and Wemmerus determined that Black and White students enter doctoral programs with similar GPAs, despite differences in conferral rates.

Similarly, Nettles (1989) conducted an examination of 953 doctoral students using the Doctoral Student Survey (DSS) that elicited information relating to students' demographic backgrounds, undergraduate education, and grades. Although Black doctoral students were found to attend less selective undergraduate institutions, Nettles determined that no significant differences existed in the achievement as measured by the undergraduate GPAs of Black and White doctoral students. Undergraduate GPAs do not predict likelihood for degree completion

for either Black or White students. These findings suggest that factors, other than ability, affect degree completion between racial groups.

Gender

Gender differences are apparent in the completion rates at the doctoral level.

Interestingly, more degrees were awarded to women in 2003-04 than to men at every level except the doctoral level. Knapp, Kelly-Reid, Whitmore, Cong, Levine, & Berzofsky (2005) found that men represented 52 percent of earned doctorates in 2003-04 as opposed to the 48 percent earned by women. In an examination of doctoral students at York University, Seagram et al (1998) found that gender did not have a significant impact on completion, but observed gender differences in expected completion time. Women expected to complete their programs more quickly than males, but took more than a year longer to complete their degrees.

In a later study, Maher et al (2004) reported similar findings. Maher et al (2004) discovered that there was a link between timely degree completion and financial concerns among women. Longer completion times and attrition among women were found to be related to the distribution of assistantships and the necessity to hold outside employment. Conversely, Girves & Wemmerus (1988) investigated the role of gender on degree completion and found that gender was not a significant predictor of degree completion. However, the researchers did not analyze whether the interaction effects between gender and other background variables were significant.

In a later study, Nettles (1989) found that Black doctoral students were more likely to be female than White doctoral students. The overrepresentation of Black female doctoral students illustrates that in addition to race, degree completion of Black doctoral students is often further impacted by gender. In later studies, Black female doctoral students reported that they had to overcome both racial and gender disadvantages to persist to degree completion (Garcia, 1994;

King & Chepyator-Thomson, 1996; Mabokela & Green, 2001; Maher et al., 2004). For example, Maher et al (2004) reported that women are less likely to have female faculty mentors or opportunities to participate in meaningful research projects. In addition to these gender-related issues, Black woman also report dealing with socially inhospitable climates as well as the absence of racially-diverse mentors, faculty, and peers in their programs (Garcia, 1994; Mabokela & Green, 2001). This can explain the differences in conferral rates between White and Black women. Of the 23,005 doctoral degrees awarded to women in 2003-04, White women accounted for 60 percent of these degrees, while only 8 percent were conferred to Black women.

Parent Education Level

Although parent education level has not been shown to predict doctoral degree completion, it has been shown to be predictive of students' aspirations for advanced study and educational choices (Choy, 2002; Isaac et al., 1992; Paulsen & St John, 2002; Steelman & Powell, 1993; Weiler, 1991). From the research, it is evident that parents with a college degree are better able to guide their children along the higher education pathway to a doctoral degree (Choy, 2002; Ethington & Smart, 1986; Isaac et al., 1992; Paulsen & St John, 2002; Steelman & Powell, 1993; Weiler, 1991). The researchers of these studies conclude that higher parental education resulted in higher degree completion, while lower parental education resulted in lower degree completion. These results were similar to those of Zhang (2005) who found that being a first-generation college student¹ lowers the probability for completing graduate study.

Hahs-Vaughn (2004) and Choy (2002) found that first generation college students are more likely to aspire to lower levels of postsecondary education than non-first generation college students throughout their college career. On the other hand, other studies (Murphy, 1994; Paulsen & St John, 2002; Weiler, 1991) have shown that students whose parents have advanced

¹ Students, whose parents have not received a college degree, are often referred as first-generation college students.

degrees were less likely to pursue graduate study than those whose parents had received a college degree or less. Particularly, Weiler (1991) ascertained that higher levels of parent education negatively influence decisions to enter a doctoral program.

Socioeconomic Status

Although billions in federal financial aid are provided to help students pay for college, there is still a degree completion gap between lower and higher income students (Price, 2004). Several studies (DesJardins et al., 2002; Paulsen & St John, 2002; St John et al., 2005) indicate a strong positive correlation between socioeconomic status (SES) and degree completion. This relationship emerged as a trend regardless of race (St. John et al., 2005). Researchers conclude students from affluent backgrounds are more likely to persist and graduate from college than are students with low SES backgrounds (Baker & Velez, 1996).

Working while enrolled in college is one reason for the disparity (Choy, 2002; DesJardins et al., 2002; Dongbin, 2003; Paulsen & St John, 2002). Paulsen and St John found that lower-income students are more likely to work than higher income individuals. Likewise, Dongbin (2003) asserts that upper-income students have a choice in whether to work or not, but lower-income students may be forced to work in order to persist. Working while pursuing a degree, especially more than 15 hours a week has shown to slow progress towards a degree or decrease retention among students (Choy, 2002).

Researchers also suggest that students with higher incomes have more advantages in higher education than their low-income counterparts (Ethington & Smart, 1986; Paulsen & St. John, 2002; Price, 2004). Paulsen and St John (2002) as well as Price (2004) concluded that students from wealthier families are more likely than those from low-income families to attain a doctoral degree despite equal pre-college aspirations. Similarly, Zhang (2005) found that higher

family income is associated with higher probability of graduate school attendance and completion. DesJardins et al (2002) also found that higher-income students are more likely to have aspirations that promote persistence to degree completion, while low-income students are significantly less likely to persist despite aspirations.

An earlier study conducted by Ethington & Smart (1986) indicated significant positive indirect effects of SES on graduate school attendance, although they did not find a direct link between SES and decision to attend graduate school. Socioeconomic status was found to influence the type of institutions that students' attended as undergraduates, which ultimately influenced their ability to or aspirations to enroll in a graduate program. Ethington and Smart confirmed that higher SES gives students an initial advantage to attend more selective undergraduate institutions that those of less SES can not overcome during the undergraduate experience. Thus, concluding that students' SES indirectly impacted the enrollment in an advanced degree program by limiting their institutional choices as undergraduates

In several studies (Dongbin, 2003; Hahs-Vaughn, 2004; Paulsen & St John, 2002), parent education level was combined with socioeconomic status to discuss the relationship between social class and degree completion. The findings indicate that these variables often combine to jointly affect variation in experiences and outcomes among various groups of students. However, Cabrera et al. (1992) asserts that by incorporating parent education level into SES, researchers make it difficult to clearly separate the independent effect of SES from the effects shaped by other background characteristics.

Regardless, findings offered by Dongbin (2003) suggest that mother's education level is more significant among Blacks and low-income individuals, while father's education is more significant among Whites and higher income individuals. Furthermore, Dongbin (2003)

concluded that Blacks are more likely than Whites to come from families with lower levels of education and SES, which dictates the lower probabilities for degree completion.

Similarly, a relational investigation conducted by Nettles (1989) showed differences in the SES and parent education level of Black and White doctoral students. The educational completion of the parents' of Black doctoral students was significantly lower than the parent education level of White doctoral students. Over 50 percent of Black doctoral students' had parents, who completed a high school degree or less as opposed to the majority of Whites reporting parents with college degrees or higher. Additionally, Nettles reported that the mean income of White doctoral students was substantially higher than Black doctoral students.

The Relationship between Financial Support and Degree Completion

Overview of Financial Aid in Undergraduate and Doctoral Education

Student financial aid is delivered through a complex structure of federal, state, and institutional policies that determines the financial aid packages offered to students. Financial aid for undergraduate and doctoral students take various forms: (1) grants, which are non-repayable financial assistance in the forms of scholarships and/or fellowships, (2) loans, which must be repaid upon completion of the higher education experience, and (3) assistantships or work-study, which are funds allocated through federal, state, or institutional programs that provide students with a paycheck, stipend and/or tuition waiver for part-time employment (Moline, 1987). Student financial aid packages may include some or all of these forms of aid.

Doctoral education is typically financed through the use of research and teaching assistantships by the institution. Research assistantships are designed to enable students to engage in research activity with faculty, while teaching assistantships provide experience and preparation for the professoriate (Jennings & Gumport, 1998). These assistantships often cover

tuition and insurance, but the amount and type of funding varies across programs and individuals. In an examination of graduate and professional students in 1999-2000, Choy (2002) ascertained that average assistantship amount awarded to a doctoral student was \$11,711. Those students with teaching assistantships typically received less than \$15,000 while those with research assistantships typically received more than \$15,000.

Grants, whether provided through institutional or federal initiatives, have been thought of as the best and most desirable form of financial aid for students. These grants provide students with “no strings” funding based on merit or need. The amount of grant aid allocated to graduate education has declined significantly since the 1970s. Currently, only about 22% of grant aid is received by graduate students (College Board, 2003-04). Choy (2002) reported that over 62% of doctoral students receive grant aid. On average, doctoral students receive about \$9000 in grants although it varies across disciplines. These awards and amounts are common in the hard sciences, yet students majoring in the social sciences and education receive substantially less.

Decreases in grant allotments as well as the insufficiency of assistantships increases doctoral students’ dependency on loans to finance their education (King & Chepyator-Thomson, 1996; Maher et al., 2005). The federal government provides over \$81 billion in financial aid; student loans comprise about 77 % of this aid (College Board, 2004). These federal loans are offered to students as unsubsidized and/or subsidized loans. Unsubsidized loans accrue interest from disbursement until debt satisfaction as opposed to subsidized loans in which government assumes responsibility for subsidizing interest payments while the student is enrolled in a program. Subsidized loans are offered to students based on need; however, all students regardless of financial situation qualify to receive unsubsidized loans.

The adequacy, relevancy, and stability of these financial aid sources seem to affect students' educational decisions and outcomes. For example, St John et al. (2005) found that eight-three percent of Blacks believed that college is not affordable and chose degree programs based on financial aid offers and lower tuition. Additionally, students who perceive financial aid as adequate are more willing to enroll and persist in a program than those who do not (Magner, 1999; Manzo, 1994; Millet, 2003; Perna, 2004). Students, who do not receive sufficient offers of financial aid, are more likely to delay enrollment or work (Choy, 2002; King & Chepyator-Thomson, 1996; Maher et al., 2004; Price, 2004a; Seagram et al., 1998).

Among doctoral students, researchers suggest that awards of financial aid minimize financial concerns, but do not necessarily increase probability of degree completion (Jennings & Gumport, 1998; King & Chepyator-Thomson, 1996; Maher et al, 2004; Seagram et al., 1998). Further examinations of findings indicate that whether or not financial aid is offered is not the issue among doctoral students. The type of financial aid offered is the predominant influence on degree completion rates (Ferrer de Valero, 2001; Jennings & Gumport, 1998; King & Chepyator-Thomson, 1996; Maher et al., 2004; Seagram et al., 1998). Nevertheless, it is important to examine the relationship between degree completion and all forms of financial aid as well as other sources of financial support.

Loans

As federal student loans became the primary source of financial aid distributed to and accepted by students, it has been the main focus in the literature when discussing the pipeline to degree completion. Numerous studies (Price, 2004; Baum & O'Malley, 2003; Kaltenbaugh, St John, & Starkey, 1999; Baum & Saunders, 1998; Baker & Velez, 1996) examined the relationship between loans and access, particularly noting enrollment patterns among

underrepresented groups. Subsequent studies (Cabrera et al., 1992; Desjardins et al., 1992; Dongbin, 2003; Moline, 1987; Murdock, 1987; Paulsen & St John, 2002; St John et al., 2005; St John, 2004; St John et al., 1991) shifted focus to the relationship between loans and persistence to degree completion. The changing economic returns of a college degree generated additional studies assessing the relationship between undergraduate loan debt and persistence to and in graduate education (Ekstrom et al., 1991; Millet, 2003; Murphy, 1994; Weiler, 1994; Fox, 1992).

Loans and Access. The overall findings from undergraduate studies suggest that loans have a positive influence on enrollment in college among all academically-prepared students. In a review of research examining access to higher education since the 1970s, Baker and Velez determined that loans encourage more students regardless of background to attend college. However, this review suggested that the positive effects of loans on enrollment were weaker than grants or scholarships.

Baum and Saunders (1998) reviewed the results of three National Student Aid Longitudinal Study (NASLS) surveys that capture the perceptions of college graduates concerning the role of loans in their access to higher education. The findings showed that the majority of respondents credited loans with their ability to enroll in college (Baum & Saunders, 1998). Analyzing a fourth NASLS survey more than five years later, Baum and O'Malley (2003) presented data further supporting these findings. Two-thirds of new respondents of the survey believed loans significantly increase access to higher education.

Since loans provide support to pay for college for those individuals without financial capacity, it is not surprising that varying effects are also present among socioeconomic groups. Several studies concluded that loans had no effect on enrollment for upper-income students, while presenting evidence that loans have a positive effect on low and middle income students.

Baum and O'Malley (2003) reported that loans have a positive impact on enrollment among low-income students; while Paulsen and St John (2002) found that upper-income students are likely to attend college regardless of the financial aid package. These findings are consistent with NCES data of 1999- 2000 college graduates, which report that seventy-two percent of low-income students as opposed to forty-six percent of upper-class students borrowed to attend college (Wirt, et al., 2004).

Taking into consideration racial groups, these findings showed varying relationships between perceptions about loans and access. Baker and Velez (1996) learned that perceptions about loan aid differed among racial groups. Black high school students are more likely than White high school students to perceive loans negatively, and they are more likely to delay enrollment when borrowing was the main financing option to attend college (Baker & Velez, 1996). Often, Black students fear that they will be unable to repay the cost incurred from loan indebtedness.

Current borrowing trends (College Board, 2004; Writ et al., 2004) indicate that Black and White students borrow similar amounts as undergraduates, which support the findings of Baum and Saunders (1998). National Center of Educational Statistics (NCES) data indicate that in 1999-2000, Black graduates borrowed, on average, about \$19,800 while White graduate, on average, borrowed about \$19,700 (Wirt et al., 2004). Yet, the difference in the percent of Blacks (80%) compared with Whites (64%), who borrowed money for school attendance, indicates disparities exist among the groups (Wirt, et al., 2004). However, Baum and Saunders (1998) found that Black and White Masters' degree recipients responded similarly and positively about the role loans played in their access to higher education in a study. Both groups indicated that

they would not have been able to complete their undergraduate studies without the use of loans or enroll in their graduate programs.

Loans and Enrollment in Graduate School. While the federal student loan programs were not specifically designed for the purpose of boosting persistence from undergraduate to graduate school, several researchers examined the role of debt and the educational decisions and outcomes following graduation. Using 1980 and 1982 High School and Beyond data, Elkstrom et al. (1991) concluded that undergraduate debt does not discourage enrollment in graduate school. Additionally, Elkstrom et al. also found that undergraduate borrowers are more likely to persist to graduate school than those who did not borrow. Similarly, Millet (2003) examined debt and decisions to apply to graduate school and found that undergraduate debt does not deter application among college graduates.

Conversely, Choy and Carroll (2000) determined the use of loans negatively impact persistence to graduate school the year immediately following undergraduate graduation. Similarly, Choy (2002) presented data indicating that there was a relationship between educational debt and persistence to graduate school. An examination of ten years of longitudinal research on undergraduate students demonstrated that undergraduates who do not take out loans are slightly more likely to persist to graduate education than those who took out loans. The differences in these conclusions can be explained by the variance in the amount of loans taken out by the students and/or students' perceptions about debt.

For example, Heller (2001) investigated the relationship between the amount of loans taken out by students and persistence decisions among 1993 college graduates and concluded that there is not a significant relationship between loan level and graduate school enrollments. Yet, descriptive data of the study indicated that students who borrow more than \$10,000 are less

likely to persist to graduate education than those who borrow less than \$10,000 as undergraduates (Heller, 2001). Similarly, Millet (2003) found these conclusions applicable to 1993 college graduates who borrow as much as \$5,000 when looking at persistence to graduate school the year following graduation.

Racial and SES differences may also explain inconsistency in findings about the relationship between loans and enrollment. Weiler (1991) examined the effect of loan burdens on persistence decisions of 1980 and 1986 college graduates using High School and Beyond data. Weiler sampled college graduates with a GPA of 3.0 or above to eliminate differences in student ability as an impacting factor. Among this cohort of students, Weiler found that relationship between debt and persistence decisions is insignificant and concluded that undergraduate debt does not discourage persistence to post-baccalaureate degree programs. In a later study Weiler (1994) reached the same conclusions, but he found income and race play a critical role in explaining differences in persistence decisions regarding post-baccalaureate education among borrowers.

Loans and Persistence to Degree Completion. Cabrera et al. (1992) created a persistence model incorporating variables that measured student satisfaction with loans in addition to the amount of loans available to students. Applying the model to a sample of freshman at a large urban institution, Cabrera et al. found that loans promote persistence by removing economic barriers to equalize opportunities between students from different income groups to persistence. Additionally, Cabrera et al concluded that loans encourage persistence among students by raising the level of engagement in social and academic activities on campus, which is analogous to later findings of Choy (2002) and Baker and Velez (1996). Specifically, Choy (2002) determined that loans allow students time to attend college on a full-time basis, and engage in more campus

activities by reducing the time needed to work (Baker & Velez, 1996), thus increasing satisfaction with the college experience and retention rates.

Using 1987 NPSAS data, St John et al. (2005) found that loans are positively related to the persistence decisions of Blacks and low-income students only when the loan is sufficient to cover school-related costs. St John et al. suggested that loans are negatively associated with persistence among middle and upper-class Whites. For these groups, loans do not increase likelihood of completion, but often, loans are linked to longer completion times. Paulsen and St John (2002) and Kaltenbaugh et al. (1999) reached similar conclusions in their analysis. Their findings suggested that, on average, low-income groups are more dependent on loans for degree completion than other income groups, who can persist to completion without loans.

The introduction of race often influences the level of impact loans have on student outcomes. When race was included in the degree completion model developed by Dongbin (2003), considerable differences were noted between the racial groups. Dongbin discovered that borrowers were typically Black and were not likely to complete a degree without loans. Similar to Dongbin's conclusions, other studies (St John et al., 2005; Price, 2004a; Paulsen & St. John, 2002; St John, 1991b) have shown that Blacks are more dependent on loans than Whites. Blacks are more likely to persist with loans than without (Price, 2004; Baum & O'Malley, 2003; Paulsen & St. John, 2002); however, they are more likely to regret borrowing after degree completion (Baum & O'Malley, 2003).

Conversely, Kaltenbaugh et al. (1999) still concluded that loans were not negatively associated with persistence for Blacks despite evidence of higher loan burdens following graduation. Donhardt (2004) suggested that loan debt causes many students to suffer long-term consequences across all racial groups. Donhardt argued that high levels of debt adversely affect

the quality of life following graduation from undergraduate and graduate programs. Conversely, Choy (2002) found that most students who stay in school and earn a graduate degree do not experience much trouble repaying their student loans.

Although the long-term impact of loans on doctoral students is unknown, loans have shown to increase rates of degree completion in doctoral education. Choy (2002) showed that 36% of all doctoral degree recipients in 2000 used loans to complete their graduate studies. In a survey of Black doctoral recipients, King and Chepyator-Thomson (1996) found that the rising costs of doctoral education and decrease in grants necessitated the use of loans to finance students' persistence to degree completion. More than 77% percent of Black doctoral recipients recount that financial aid, particularly loans was an important factor affecting their ability to persist to completion (King-Chepyator-Thomson, 1996). Nettles (1989) noted that Black doctoral students were more heavily reliant on loans than White doctoral students to persist to completion; however, Black and White doctoral degree recipients reported borrowing similar amounts.

Assistantships

The sufficiency and type of assistantships offered to doctoral students is an important factor in the outcomes of doctoral students. Assistantships, particularly teaching assistantships, are correlated with attrition and/or longer completion times among doctoral students (Ferrer de Valero, 2001; Jennings & Gumport, 1998; Maher et al., 2004; Seagram et al., 1998). These assistantships are found to require longer time commitments and invoke feelings of dissatisfaction of students due to perceptions that the position is irrelevant to their professional goals. On the other hand, assistantships are also shown to positively influence students' involvement within their programs, which is often linked to higher probability of degree

completion. For example, assistantships increase opportunities for socialization and interactions with faculty, which have shown to influence degree completion (Jennings & Gumport, 1998).

Using the results of an interview of eighteen graduate students, Jennings and Gumport (1998) explained the relationship produced between assistantships and persistence. Jennings and Gumport assert students' perception about the relationship of the assistantship to their future career goals or preparation influence outcomes. As a result, research assistantships are linked to higher program satisfaction, greater financial stability, and higher overall completion rates. On the other hand, teaching assistantships were found to precipitate longer degree completion times, program dissatisfaction, and longer work hours (Jennings & Gumport, 1998; King & Chepyator, 1996; Maher et al., 2005; Seagram et al., 1998).

Racial and gender differences in the distribution and acceptance of assistantships necessitate further exploration in doctoral education; however, several studies provide information highlighting disparities. Nettles (1989) found that Black doctoral students were less likely to receive assistantships than their White counterparts. Manzo's (1994) critique of doctoral assistantships also revealed that Blacks are less likely than White students to receive research assistantships. Additionally, Maher et al (2004) reported that women doctoral students are also less likely than men to benefit from relevant and sufficient assistantships.

Grants

Research investigating the relationship between grants and degree completion has yielded mixed results. Generally, it seems that need-based grants are positively associated with persistence to completion (St. John, 2004; Moline, 1987), while merit aid can negatively influence persistence among undergraduates (St. John, 2004; Kaltenbaugh, 1999; Moline, 1987). Researchers conclude that often students who receive merit grants often do not need the aid, and

may use the money on other opportunities that may steer students' focus away from timely degree completion. On the other hand, students who receive need-based grants usually lack other sources of financial support, so they are overly reliant on the grants for completion. Thus, they are more motivated to perform better academically in order to remain eligible for the grant awards, which increase the likelihood of timely degree completion.

The differing impact of grants on Black and White students is less pronounced than other forms of financial aid. Overall, it seems that Black undergraduates are more likely than White undergraduates to receive need-based grants and in higher amounts due to their higher financial need. However, White undergraduates are more likely to receive merit-based grants than Black undergraduates (Heller, 2001). Interestingly, the distribution of need-based grants has declined in relation to the increase in the distribution of merit-based grants (Heller, 2001; St John et al., 2005; Wirt et al., 2004).

Several researchers (Maher et al., 2004; Price, 2004; King & Chepyator-Thomson, 1996; Manzo, 1994) indicate that additional grant support will help Blacks and women finish their doctoral degrees more quickly and in greater numbers. In 1999-2000, 34.8 percent of female doctoral students received grant aid as opposed to 41.0 percent of male doctoral students. Additionally, White doctoral students received more grant aid than Black doctoral students, 38.3 percent as compared to 33.5 percent respectively (Choy, 2002).

Personal Sources of Financial Support

Doctoral students report that they supplement or forgo financial aid with monies received from family, outside employment, and savings (King & Chepyator, 1996). Little is known about doctoral student's use of income from family, outside employment, and other personal resources. Any conclusions about these sources resulted from studies comparing students who received

financial aid and those who did not. Nevertheless, these findings provide insight on the relationship. From these studies, researchers concluded attrition is often caused by a lack of financial resources.

In a comprehensive study of doctoral education, Bowen & Rudenstine (1992) found that completion rates are lower for students who use their own resources than those students with institutional funding. These doctoral students often deplete their personal resources earlier than those who receive aid and eventually withdraw from doctoral programs. Bowen & Rudenstine reasoned that students forced to rely primarily on their own resources are less likely to complete doctorates than those who receive institutional funding.

Later studies found that among doctoral recipients, students who used personal financial means complete their degrees at a faster rate than those who use financial aid as their primary funding source (King & Chepyator-Thomson, 1996; Maher et al, 2004; Seagram et al., 1998). These researchers also reported differences in the use of personal resources among Blacks and women. Seagram et al. (1998) found that women are more likely to rely on financial support from families than men. Similarly, Blacks were found to rely more on personal resources and loans to support their doctoral experiences than their White counterparts (Nettles, 1988).

The Relationship Between Experiences and Degree Completion

Mentoring, Advising, and Climate

Previous researchers (Cooke et al., 1995; Ferrer de Valero, 2001; Waldeck et al., 1997) indicate that several factors: departmental practices, mentoring, and climate affect the completion rates in doctoral programs. In relation to departmental climate, previous studies indicate that students' perception of a cooperative or alienating environment often determines the rates of completion or attrition (Ferrer de Valero, 2001). For example, Black students on White

campuses withdraw at higher rates than their White counterparts often citing an unwelcoming campus climate as the primary reason (Cooke et al, 1995).

Successful doctoral experiences are frequently tied to mentoring relationships with faculty. Mentoring provides the means for students to establish productive connections with professors as well as guidance in achieving their professional and educational goals. Without the guidance of a good mentor, the graduate students' road to an advanced degree becomes unnecessarily anxious and difficult (Waldeck et al., 1997).

Conducting an investigation of the 1438 graduate students at a public, land grant research institution, Ferrer de Valero (2001) determined that advising style also influence mentoring relationships. Students who have positive relationships with faculty have higher completion rates and lower times to degrees. As illustrated in an earlier study conducted by Bowen and Rudenstine (1992), Ferrer de Valero reiterated that lack of mentoring or advising impede student degree progress.

Additionally, students' perceptions of relationships with faculty are an important aspect of successfully completing doctoral programs. Waldeck et al. (1997) investigated mentoring relationships among 145 doctoral students across a dozen institutions and found doctoral students report feeling intimidated to initiate mentoring relationships with faculty. Consciously or unconsciously, faculty were found to exhibit behaviors that students' interpreted as disinterest in working closely with them. Waldeck et al. attributed the misconception to students' inexperience or unfamiliarity with doctoral departmental climates. Often, professors' cited preoccupation with tasks and other responsibilities at work as the reason for the behavior (Waldeck et al., 1997).

Golde (2000) conducted interviews with three doctoral non-completers. Among the cases, Golde found that problems with advisors as well as dissatisfaction with faculty are referred to as the main reasons for withdrawal. Pivotal in each story and confirming previous research findings is the importance of supportive advising relationships (Golde, 2000). From these interviews, Golde suggests that the beneficial advising relationships are distinguished by the amount of time spent with the student, the quality of the interactions, as well as the sense of care from the advisor. The component of caring described not only meeting the needs of the student, but attempting to understand who they are as individuals.

Often, the lack of advising, mentoring, or quality relationships is the reason for the differences in experiences reported by Black and White doctoral students. In his study, Nettles (1989) found significant differences between Blacks and Whites in areas of social involvement and perceptions of racial discrimination. Black students reported feeling alienated and dissatisfied with their graduate institutions. More than 10 years later, Black doctoral students often report similar experiences (Harrison, 1997; King & Chepyator-Thomson, 1996; Mabokela & Green, 2001).

A study conducted by Harrison (1997) of Black doctoral students at a predominantly White university revealed that one third of the graduates experienced racial difficulties in their program. Harrison reported that these students are exposed to unfair treatment, underestimation of their abilities, exclusions, insults, and denial of opportunities. King and Chepyator-Thomson (1996) also indicated that Blacks enrolled in doctoral programs have more negative experiences and higher attrition rates as compared to their White counterparts. For some Black doctoral students, these experiences serve as a catalyst for completion, for others it plays an important role in their decisions to depart from the institution or pursue other options.

Conducting a study of 122 full-time graduate students, Waldeck et al (1997) found that Blacks remain noticeably underrepresented in mentoring experiences. Interestingly, Black students indicated that it was relatively easy to obtain a mentor. This finding indicates that something prevents Black students from seeking out mentoring experiences. One reason could be the type of mentors available to the students. The typical mentor was described as a white, middle-age, male fully tenured professor.

Among women, Seagram et al (1998) found longer completion times were related to experiences within the doctoral program. Women report issues with committees, internal conflicts, slow feedback, and lack of mentoring as critical to their delay in completion (Seagram et al., 1998). Similarly, Maher et al. (2004) argued female students are at a greater disadvantage than male students due to the lack of mentoring, appropriate role models, and outside commitments

Personal Obligations and Support Systems

Experiences and obligations aside from their doctoral program also influence students' degree progress. The literature indicates that support systems, family, and professional associations are important factors in career and educational success. Specifically, parenthood, marriage, and strong familial ties have shown to influence success in graduate programs (Girves & Wemmerus, 1988).

Conversely, these factors can also become a reason for non-completion. External demands of family, work, health, and financial stability have all been cited by doctoral students as impediments to timely degree progress. There is a dearth of literature examining these external factors, but several examinations (Crayton, 2005; Girves & Wemmerus, 1988; Maher et al., 2004) noted that these factors often impact women and men differently and influence

students' level of involvement in doctoral programs. Although there are no findings specifically related to Blacks, these findings may be relevant because many Black doctoral students are female.

The available literature reports that women have different experiences than men while pursuing their doctorates. For women, family responsibilities, lack of financial support, or support systems often impact their doctoral experience and outcomes. In an examination of doctoral students in social work, Crayton (2005) found that women face more challenges than males and rely more on spouses, parents, friends, and professional association as support systems.

Maher et al (2004) also investigated the factors that facilitate and constrain degree progress among women doctoral students. The survey responses of 160 female doctoral recipients indicated external experiences impact degree completion rates among respondents. Female students who completed their degrees in less than 4.25 years were considered early-finishers, while those who took 6.75 years or longer are considered late-finishers. Among both groups, respondents reported receiving various types of emotional and financial support from family. Early-finishing women are more likely to report family support than late-finishing women. For late finishers, child-care responsibilities, marital problems, or family related obstacles are often cited for deterrents to degree progress (Maher et al., 2004).

Summary

What has been learned from the literature?

Background characteristics. Background characteristics represent various personal traits that influence students' decisions to attend and persist through doctoral programs. The studies included in this review suggest that the diversity of individuals impact the way they experience

higher education in relation to enrollment, financial packages, and educational choice. For example, a variety of studies suggest that the education level of a parent is an important factor in the educational decisions made by students (Choy, 2002; Dongbin, 2003; Ethington & Smart, 1986; Isaac et al., 1992; Murphy, 1994; St John et al., 2005; Weiler, 1991). Research on first-generation college students suggest that these students find it more difficult to enroll in postsecondary education (Baker & Velez, 1996; Millet, 2003; Price, 2004b; Steelman & Powell, 1993) and are less likely to attain a degree than non-first generation peers (Hahs-Vaughn, 2004; Gillingham, 1991). The variation present between doctoral students in terms of background, especially along racial and gender lines suggest that clear differences exist between the groups and can combine to create advantages and disadvantages along the pathway to doctoral degree completion.

Furthermore, these background characteristics have also shown to define students' values and motivation for enrolling in advanced degree programs. These values sometimes conflict with the culture of the academic department or the institution. Yet, departments or institutions expect students to adapt to the established norms of the department rather than embracing the values of students. Several researchers have shown that students' willingness to accept changes or conform to departmental norms often explains their attrition or completion within the programs (Golde, 2000; Lovitts, 2001).

Financial Support. The research suggests that there is a relationship between financial support and persistence to completion of a doctoral degree. Studies seem to suggest financial aid is the most significant determinant in students' persistence. Forms of financial aid have shown to motivate students to enroll in (Fox, 1992; Magner, 1999; Manzo, 1994; Millet, 2003; Perna, 2004), persist in (Andrieu & St. John, 1993; Choy, 2002; King & Chepyator-Thomson, 1996), or

complete a doctoral program (Jennings & Gumpert, 1998; Maher et al., 2004; Seagram et al., 1998). Overall, it seems that the receipt of financial aid has a positive association with enrollment, persistence, and degree completion among undergraduates and doctoral students especially in comparisons to the effects of receiving no financial aid.

Furthermore, the type of financial aid rather than the amount is considered an important factor in degree progress among researchers (Andrieu & St. John, 1993; Bowen & Rudenstine, 1992; Choy, 2002; Cooke, Sims, & Peyrefitte, 1995; Ethington & Smart, 1987; Fox, 1992; Maher et al., 2004; King & Chepyator-Thomson, 1996; Magner, 1999; Manzo, 1994; Perna, 2004; Seagram et al., 1998). The presence of financial aid provides access for those who could not consider graduate degrees, yet some forms of aid may ultimately cause withdrawal from the institution. For example, the offers of loans and assistantships often encourage enrollment in programs among students; however, dissatisfaction with assistantships or concern about increasing debt levels are often cited as reasons for withdrawal. This suggests that doctoral students will not persist to degree completion if they do not see a positive relationship between the type of financial support and their expectations of the benefits from a doctoral degree. It seems financial support must be evaluated based on its availability, attractiveness, and sufficiency.

Experiences. Mentoring relationships, advising style, and departmental climate often impact students' perceptions and satisfaction, which ultimately determines completion rates. Additionally, outside experiences and obligations have been found to affect levels of involvement in programs as well as persistence decisions. Within the available literature, family responsibilities and support systems are equally been linked to completion and attrition in higher

education. Family and friends have shown to provide support for students, while negativity or obstacles within these relationships trigger attrition.

What are the gaps in the literature?

Researchers have focused on race differences in attrition and completion rates, while others have investigated other background factors that may be operating; however, it is apparent that race by itself may not be the chief cause of attrition. Researchers failed to investigate the interaction effects among students' background variables, when it seems that these interactions may explain the disparities between the groups. For example, the differences in conferral rates among Blacks and their White counterparts may be caused by the overrepresentation of Black female students present in doctoral education, rather than race. An analysis of the interaction effects of individual demographic characteristics will increase understandings of how degree progress differs across students and will help the creation of appropriate retention strategies necessary for these different groups. Specifically, an analysis of the interrelation of factors will highlight the unique challenges to degree completion among both groups.

The amount and type of financial support can negatively or positively impact degree completion. This inconsistency in outcomes warrants further examination of the influence of certain types of financial support on outcomes for different types of doctoral students. For example, there is little research on student perceptions about loans and persistence decisions on the doctoral level. The prospect of debt may not deter students from entering graduate programs, but the effects of accumulating high levels of debt while persisting to completion has yet to be fully analyzed. The relationship between grants and doctoral student outcomes as well as the differential effects of Blacks and Whites also necessitates additional examinations. Studies have

focused on problems with the decrease in grant funding in doctoral education, generally rather than investigating the impact of grant aid on completion among students.

Additionally, the impact of other forms of financial support aside from financial aid has not been investigated within the current literature base. Students' solvency often determines their persistence decisions; therefore, it is necessary to investigate the sufficiency of financial support from all sources, not just financial aid packages. The number of doctoral students reporting using other personal resources to finance their education confirm that it is worthy of further investigation. These results may change current understandings of the role of financial support in degree progress, and more importantly, change the way financial aid is distributed among doctoral students.

Personal experiences related to family, employment, health, were common threads within the literature when describing students' level of involvement and experiences in doctoral education. Currently, the connection between these factors coupled with other individual and financial factors has not been evaluated. Nevertheless, it is evident that doctoral students' personal experiences play a role in the matriculation process and warrants further examination.

Conclusion

Findings across studies indicate that students' background characteristics, the availability of viable and stable funding sources, the presence of an involved and supportive advisor, and outside obligations and experiences all critically impact degree progress. In essence, doctoral students' background characteristics, their undergraduate socialization, as well as their external commitments and responsibilities impact their understanding of doctoral education as well as their ability to adapt and persist to completion (Lovitts, 2001).

It is apparent that the number, timing, and combination of factors will most likely dictate degree completion rates. However, possible relationships between race and these factors, individually and collectively, have yet to be elucidated in the research on doctoral students. This study attempted to resolve many of the unanswered questions in the current literature base by determining which factors, or combination thereof, facilitate degree completion in doctoral education. This study hypothesized that the identification and analysis of situatedness as defined by the interrelatedness of individual, financial, and environmental (as identified by student experiences) factors will help to further explain disparities between Black and White doctoral students.

Chapter 3

Methodology

Introduction

Previous research suggests that many students aspire to attain an advanced degree, but for various reasons do not persist to completion. These reasons are cited as relating to a student's backgrounds, the level of financial support they receive, and the internal and external experiences they encounter while in doctoral programs. Past research on doctoral education has shed light on the issues, but more effort is needed to further our current understanding. Several studies identified various factors that influence attrition, persistence, and completion outcomes among doctoral students, but the focus was narrow and the methodology varied. These investigations did not examine the possible interrelation of several factors with doctoral a student's outcomes.

Additionally, these studies did not identify causes of the disparity in completion rates and times among Black and White doctoral students. It is important to understand and examine factors that affect Black and White a student's ability to complete their degree requirements in a timely manner and considering the implications of these factors is important. As long as the relationships between these factors are unknown, steps can not be taken to address the disparities in completion rates in doctoral education. This study used a situatedness model explored the interaction of factors identified to influence student retention and completion among Black and White doctoral students.

This chapter provides an overview of the methodology that guided the study. First, it describes the model used to assess the impact of various individual, financial, departmental, and

personal factors that impact timely doctoral degree completion. The model derives from factors identified in previously cited studies that have an impact on degree completion on the undergraduate and/or graduate level. These factors were outlined in Chapter 2 and the overall inclusion of these variables in the model as outlined in Chapter 4 reflect findings from studies on graduate student persistence. The model represents a way to look at the impact of these variables solely on doctoral degree completion, and it guided the research methods and questions used in the study. Secondly, a description of the national dataset used in the study as well as the data collection methods will be introduced. Third, the statistical analyses used to answer specific research questions are discussed in detail.

The Conceptual Model

The basic model can be defined as:

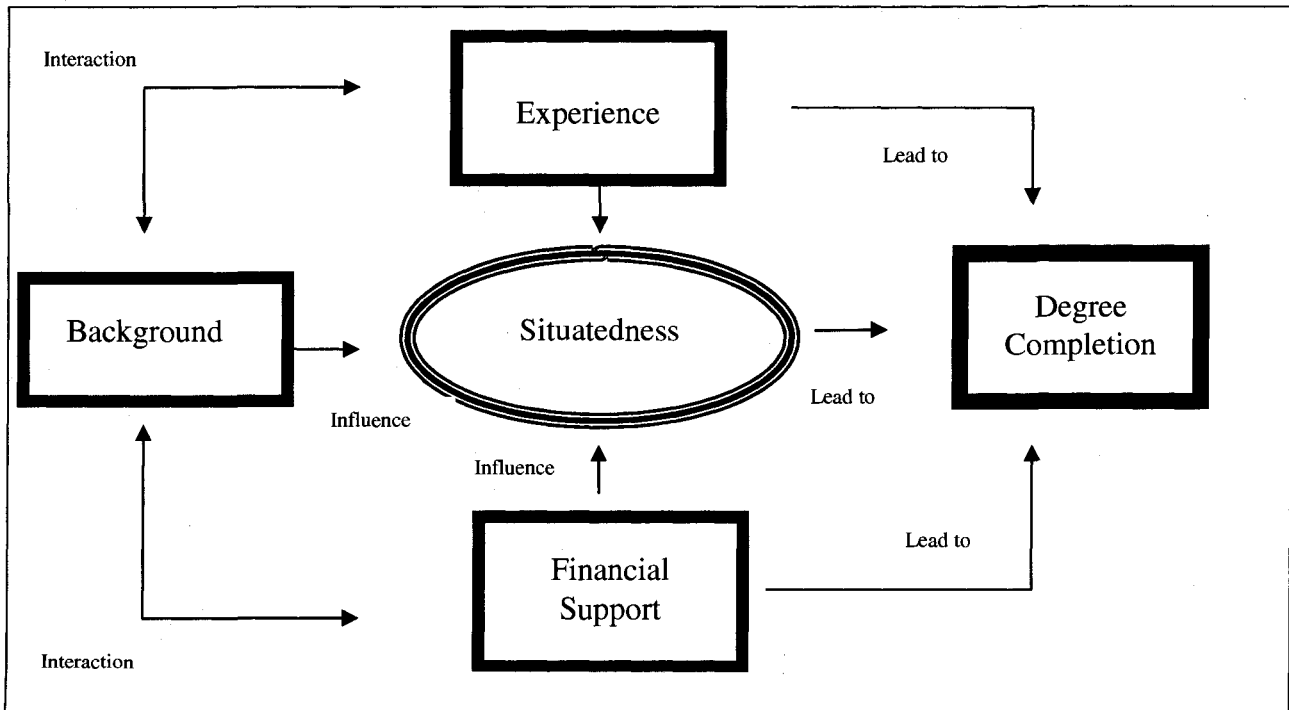


Figure 1
Situatenedness Model of Degree Completion

The conceptual model illustrates that it is assumed that a student's individual background is related to the financial support they receive in doctoral programs, in turn, these factors are connected to a student's departmental and personal experiences. The interrelation of these factors determines a student's situatedness. Finally, it asserts that a student's situatedness is directly related to doctoral student outcomes.

1st Stage Predictor Variables

The variables used in the study were selected based on relevancy in answering the research questions that guided the study. The literature review indicated that race, parent education level, socioeconomic status, financial aid, student experiences', and a student's involvement in their doctoral programs were important in degree completion. Other individual, financial, and environmental variables were also included to test the significance of the interrelation of these factors.

Individual Background. Individual background represents the traits or circumstances that are present among students prior to entry into doctoral programs, but influence students' decisions to attend, persist in, and complete doctoral programs. Earlier research has shown that the diversity present among the background of a student's as represented by these characteristics impact their financial capacity and the way they experience higher education (Dongbin, 2003; Ethington & Smart, 1986; Heller, 2001; Kaltenbaugh et al, 1999; King & Chepyator-Thomson, 1996; Maher et al., 2004; Manzo, 1994; Murphy, 1994; Perna, 2004; Price, 2004a; Paulsen & St John, 2002; Thomas, 2000; Seagram et al., 1998; Steelman & Powell, 1993; St. John et al, 2005). Five variables related to a student's demographics were included in this study: 1) race, 2) gender, 3) age, 4) income, and 5) parent education level.

Financial Support. Financial support encompasses the different funding mechanisms available to doctoral students. The amount and type of loans, grants, and assistantships received by doctoral students measured institutional, state, federal, or private sources of financial support. Income received from parents, spouses, outside jobs, assets, or in-kind described personal sources of financial support. Research has shown that doctoral students rely on some or all of these forms of support and it often determines involvement in and satisfaction with their schools or programs (Andrieu & St John, 1993; DesJardins et al, 2002; Dongbin, 2003; Heller, 2001; Jennings & Gumport, 1998; Kaltenbaugh et al., 1999; Manzo, 1994; Moline, 1987; Paulsen & St. John, 2002; Price, 2004; St. John et al., 2005; St John, 2004). Five variables measured types of institutional support: 1) total assistantships amount (all types), 2) total research assistantship amount, 3) total teaching assistantship amount 4) total grant aid amount (fellowship/scholarship), and 5) total received from outside sources amount. Three variables measured financial indebtedness: 1) cumulative amount borrowed for all education levels, 2) cumulative amount borrowed for undergraduate education, and 3) cumulative amount borrowed for graduate education.

Experiences. Student departmental and personal experiences were measured by a student's responses to the *National Postsecondary Student Aid Survey (NPSAS)* survey. A student's perceptions of their doctoral program and the amount of support and obligations they have outside of their doctoral programs has been cited as an important predictor of attrition or completion (Bowen & Rudenstine, 1992; Ferrer de Valero, 2001; Gillingham et al., 1991; Golde, 2000; Jennings & Gumport, 1998; Waldeck et al., 1997; King & Chepyator-Thomson, 1996). Two variables measured experiences: 1) enrollment status (part-time or full-time) and 2) number of hours worked per week.

2nd Stage Predictor Variable: Situatedness

In theory, some critical ratio of these variables may differentially affect doctoral a student's degree progress toward completion of a doctoral degree. The interplay of these variables will determine a doctoral student's situatedness. Situatedness hypothetically influences the choices of doctoral students. The overarching assumption of this study was that students make decisions based on their own, situated circumstances. Thus, hypothesizing that a student's situatedness predicts degree completion or noncompletion. Situatedness is a composite of the variables identified previously under the individual background, financial support, and experience categories.

Outcome Variables

The outcome variable used in this study is degree completion in 2003-04. This variable does not only predict completion, but also noncompletion which was omitted in previous studies. Degree completion is the conclusion of the doctoral experience through the awarding of the degree during the 2003-2004 academic year; while noncompletion defined by starting a doctoral degree program, but not finishing by the 2003-2004 academic year.

Procedures

Instrumentation

National data for this study was taken from the 2004 National Postsecondary Student Aid Survey (NPSAS: 04). NPSAS: 04 is a comprehensive national study designed to provide information about the distribution of financial aid, characteristics of students and their families, as well as the individual student's perspective of their higher education experience. The NPSAS: 04 student instrument was designed to conduct self-administered "interviews" via the Web and via telephone. This design accommodated for the mixed mode data-collection and ensured the

highest quality of data. The instrument consisted of six topics: 1) student eligibility for the NPSAS:04 study and enrollment history, 2) student expenses, financial aid, and employment at the NPSAS institution (all types), 3) employment and finances, 4) educational experiences, 5) background and demographic data, and 6) contact information for BPS (Beginning Postsecondary Students) Longitudinal Study respondents. This was the best dataset to use because the NPSAS: 04 provided extensive background, financial, and experience data for graduate and first-professional students, which related to the areas of focus for this study (Cominole, Siegel, Dudley, Roe, & Gilligan, 2006).

The evaluation of the NPSAS:04 survey data focused on the newly introduced data collection methods, such as the timeline of data collection from CADE and students' responses, tracing and locating procedures as well as the length of the student interview. Data quality was assessed through the examination of items with high rates of missing data, the use of online help text, item-level nonresponse conversion efforts, data entry, and question delivery (Cominole et al., 2006).

Data Collection

Student-level data for the NPSAS:04 survey was collected using a variety of sources, including student records (using computer-assisted data entry [CADE], student interviews, and extant federal and private databases (CPS and National Student Loan Data System [NSLDS] (Cominole et al., 2006). Training programs were developed for all project staff in the collection of data for the study. Institution contractor were trained to notify institutional staff about the nature of the study and encourage participation, while field data collectors were trained to use the various systems necessary for monitoring and transferring data. Help desk-operators received

specific training to answer instrument and technical issues about using the web-based interview, and they were trained to conduct the student interview over the phone.

The initial sample was attained by providing students with the opportunity to complete the self-administered interview via the Web. This resulted in 90,750 respondents among the 101,010 eligible sample members. Of those respondents, 62,220 completed the student interview, with a weighted response rate of 71 percent. 53 % (weighted) of these interviews were completion with a telephone interviewer and 47% (weighted) were completed via self-administration over the Web (Cominole et al., 2006). The institutional and student-level weighted response rate of 92% was gained through the use of the web-based CADE software system. This system allowed for the abstraction of students records from institutions, which consisted of three sections focusing on eight topics: 1) locating information, 2) demographic characteristics, 3) admissions tests, 4) enrollment, 5) tuition, 6) financial aid awards, 7) needs analysis, and 8) institutional student information records (Cominole et al., 2006).

Sample

NPSAS: 04 is based on a national representative sample of eligible students (aided and nonaided) enrolled in a postsecondary institution between July 1, 2003 and June 30, 2004. These institutions represented all types and levels of postsecondary institutions in the United States. The original sample of students consisted of 109,210 undergraduate, graduate, and first-professional students, however, 8,200 were ineligible for the study, resulting in 101,010 eligible sample members. 90,450 of the 101, 010 eligible sample students had sufficient data across all sources to be classified as study respondents, for a weighted response of 91 percent. All of the variables included in the study are gathered from NPSAS and manipulated using the Data Analysis System (DAS). DAS allows users to create analysis tables using the NPSAS: 04 data.

Data Analysis

Given the substantive and methodological limitations of prior research, this study combined multiple stages of data analysis in order to better answer questions regarding the role of the aforementioned variables on doctoral student outcomes. This study included a subsample of the students included in the NPSAS: 04. To be included in this research, a student must have met two requirements. First, the student must have been currently enrolled in a program in 2003-04 academic year. Second, the student must have identified his/her race as White or Black. If the students met these conditions, those who had attained a degree by 2004 were coded a “completer” and those who had not attained a degree by 2004 were coded as a “noncompleter”. Due to the low numbers of students that fit these conditions, the sample was weighted to include a 156,700 Black and White doctoral students; of the 156,700 students 53,200 were completers and 103,500 were noncompleters.

Descriptive Analysis. Descriptive statistics were used to describe the sample of the present study, differences between Black and White doctoral students, differences between completers and noncompleters, and the variables included in the situatedness model. A descriptive analysis of Black and White doctoral students was conducted using the Data Analysis System (DAS) online system using Table Perimeter Files (TPFs). DAS generated table percentage estimates, standard errors, and weighted sample sizes for the estimates. The total sample size was presented as a (n/1000s). The actual N was computed by multiplying the percentage estimate by the total number of the sample size and multiplying by 1,000. Once the actual N was determined for each variable, percentage estimates and sample sizes were completed for each variable by race and completion status.

Regression Analysis. The variables used in the model were not conceptually complex, but the analysis of these variables required a thorough and deliberate use of available statistical methods using the DAS online system and the Statistical Package for Social Science (SPSS). For correlations, the DAS will create a correlation matrix that can be used as input for SPSS or other statistical software to conduct multivariate analyses, including regressions. Since the outcome variable, doctoral degree completion is dichotomous; a multiple regression was used to analyze the data. Multiple regressions allow the simultaneous testing and modeling of multiple independent variables. Multiple regressions not only predict the likelihood of a dependent outcome based on independent variables, they also help the research understand the functional relationships between the dependent and independent variables, by seeing what might be causing the variation in the dependent variable.

The research questions of this study focused on the relationship of each of the factors with degree completion and notable differences by race. In order to investigate these questions, multiple regressions were used to predict the probability of a student completing a doctoral degree using the factors in the model. Background factors were analyzed first, followed by financial variables, and then experience variables were entered into the regression model. The results were then analyzed to explore the ability of these factors to predict doctoral degree completion. In addition, the researcher observed each independent variable's effect on the dependent variable by testing the null hypothesis. The main null hypothesis for this study is that there is no relationship between the situatedness variables and degree completion

Summary

This chapter provides an overview of the research methodology used in this study. The research design involved a quantitative analysis of a series of logistic regressions. Descriptive

statistics were used to describe the sample of the present study, differences between completers and noncompleters, and the variables included in the situatedness model of doctoral degree completion. Background, financial, and environmental data was retrieved from the *National Postsecondary Student Aid Survey* (NPSAS: 04). The data analysis involved descriptive and inferential statistical analysis. The descriptive analysis provided means and frequencies of the predictor variables for Black and White doctoral students as well as completers and noncompleters. The methodology described in this chapter was sufficient to address the questions posed in the study. Chapter 4 details the findings of the data analysis.

Chapter 4

Results

Introduction

This chapter presents the primary findings of the study. The purpose of this study was to explore the interaction of factors hypothesized to influence student retention and completion among Black and White doctoral students using a situatedness model. The premise of this model originates from the presumption that the journey to doctoral degree completion is influenced by many factors including personal background characteristics, and students' level of financial indebtedness and financial support, as well as students' personal and departmental experiences.

The study addresses the following research questions:

1. How do factors used in the model differ between Black and White doctoral students?
2. What is the relationship between background characteristics and degree completion? Do they differ by race?
3. What is the relationship between financial support and degree completion of doctoral students? Do they differ by race?
4. What is the relationship between program experiences and degree completion of doctoral students? Do they differ by race?
5. Does the situatedness model predict degree completion for students in doctoral education? Are there differences by race?

Sample

Descriptive statistics are presented for measures of background characteristics, financial support, and experiences. National data for this study was taken from the 2004 National Postsecondary Student Aid Survey (NPSAS: 04). The study sample was filtered to include only Black and White students, who were enrolled in a doctoral program except in education, a doctoral education program, or other doctoral degree program. It was necessary to use two different statistical software packages for analysis in the study. Percentage estimates and sample sizes were calculated separately for White and Black students enrolled in doctoral programs and by completion status using the Data Analysis System (DAS) online system. The sample sizes are rounded to the nearest whole number, while the percentage estimates are rounded to the nearest tenth. The weighted sample size included 156,700 doctoral students; of the 156,700 doctoral students, 53,200 were completers and 103,500 were noncompleters. The sample used for the correlation and multiple regression analysis included 3,012 White students and 332 Blacks, which was analyzed using the Statistical Package for Social Science (SPSS).

Question 1: How do factors used in the model differ among Black and White doctoral Students?

Descriptive Statistics: Background Characteristics

The influence of an individual's background on persistence is a consistent theme in research focusing on undergraduate students (Dongbin, 2003; Paulsen & St John, 2002). Among these background characteristics, race emerges as a predominant influence in determining persistence patterns (Baum & O'Malley, 2003; Heller, 2001). These studies established a link between race and degree completion, likelihood to borrow, and persistence decisions (Price, 2004; Baum & O'Malley, 2003; Dongbin, 2003; Paulsen & St John, 2002; Manzo, 1994; Murphy, 1994).

Background represents the traits or circumstances that are present among students prior to their entry into doctoral programs as well as influence students' decisions to attend, persist in, and complete doctoral programs. In this study, background consists of demographic information including race, gender, income, age, and parent education level. The *race* variable is self-reported by the respondent using U.S. census categories. The *gender* variable identifies the sex of the student. The *income* variable includes the total income reported by respondents regardless of dependency status. The *age* variable identifies the age of respondents as of December 31, 2003. The parent *education* variable identifies the education level of the more educated of the respondents' two parents.

Table 4.1 summarizes the background characteristics of the sample. The majority of the sample was White, female, noncompleters, over the age of 30, with an income of under \$30,000, and enrolled in a doctoral program for less than five years. The main racial difference between the groups is that the majority of the Whites sampled had parents with an advanced degree, while the majority of the Blacks sampled had parents with a high school diploma or less. Several studies (Dongbin, 2003; Hahs-Vaughn, 2004; Paulsen & St John, 2002) suggest that socioeconomic status and parent education level jointly affect the variation in experiences among racial groups. Table 4.2 highlights the mean age and income of the sample. Interestingly, we find that income is not synonymous with parent education level. The mean income and age of the Blacks in the study was higher than those of Whites.

Table 4.1 Distribution of Sample across Background Characteristics (N=156700)

	White		Black	
	N	(%)	N	(%)
Total	137583	87.8	19117	12.2
Completion Status				
Noncompleter	91183	66.3	12317	64.4
Completer	46497	34.7	6703	36.6
Gender*				
Male	64938	47.2	7862	41.1
Female	72741	53.8	11159	58.3
Age groups				
Under 30	58149	42.3	4851	25.4
30 or above	79458	58.7	14242	74.6
Total Household Income *				
Under \$30,000	68467	49.8	8033	42
\$30000-\$49,999	22757	16.5	3643	19.1
Over \$50,000	46376	33.7	7424	33.8
Parent Education Level*				
HS or below	31126	22.6	8274	43.3
Some College	14754	10.7	2146	11.2
College Degree	32538	23.7	3062	16.0
Advanced Degree	58899	42.8	5401	28.3
Enrollment in Doctoral Program				
Over 5 years ago	54450	39.6	7849	41.1
Less than 5 years	83166	51.4	11234	58.8

* Due to the weighted sample sizes, percentage estimates, and missing values, some percentages do not equal 100%.

Source: U.S. Department of Education, National Center for Education Statistics, 2003-04 National Postsecondary Student Aid Study (NPSAS: 04)

Table 4.2 Mean Income and Age among Black and White Students

	White	Black
Mean Household Income	\$41,944	\$49,187
Mean Age	33.9	37.5

Source: U.S. Department of Education, National Center for Education Statistics, 2003-04 National Postsecondary Student Aid Study (NPSAS: 04)

The differences between Black and White doctoral students become more apparent in the distribution of the background variables when separated by completion status. Tables 4.3 highlight the difference in age and income based on completion status among Black and White students. This table highlights that the mean income of noncompleters are comparable for both groups, about \$41,000; however, the mean income of Black completers is much higher than

White completers (\$64,000 vs. \$43,000, respectively). Research has shown that the intersection of race and class can produce cumulative advantages and disadvantages in the pursuit of an advanced degree (Price, 2004). We can also note differences in the mean age suggesting that Black doctoral students are typically older than White doctoral students. Black completers were found to be older than noncompleters, while the mean age for Whites is comparable between completers and noncompleters.

Table 4.3 Mean Income and Age between Completers and Noncompleters

	White	Black
Mean Income		
Noncompleter	\$41,440	\$40,911
Completer	\$42,933	\$64,425
Age		
Noncompleter	34.1	35.9
Completer	33.6	40.4

Source: U.S. Department of Education, National Center for Education Statistics, 2003-04 National Postsecondary Student Aid Study (NPSAS: 04)

The distribution of Black and White noncompleters is shown in Table 4.4. Overall, most of background characteristics of noncompleters were similar to the findings of the overall sample. However, there were some differences noted between and within each group. First, a greater percentage of Black and White noncompleters were enrolled in the doctoral program for less than five years at the time of the survey. Additionally, we find that the majority of Black noncompleters make less than \$30,000, while the majority of White noncompleters have a parent with an advanced degree.

Table 4.4 Distribution of Background Characteristics among Noncompleters (N=103500)

	White		Black	
	N	%	N	%
Total	91184	88.1	12316	11.9
Gender				
Male	42697	46.8	4903	39.8
Female	48465	53.2	7435	60.2
Age groups				
Under 30	39571	43.4	3629	29.5
30 or above	51557	56.6	8743	70.5
Total Household Income				
Under \$30,000	45821	50.3	5779	46.9
\$30,000-\$49,999	15922	17.5	2678	21.7
Over \$50,000	29404	32.2	3896	31.6
Parent Education*				
HS or below	20838	22.9	4762	38.7
Some College	10164	11.1	1836	14.9
College Degree	22656	24.8	1344	10.9
Advanced Degree	37315	40.9	4285	34.8
Enrollment in Doctoral Program				
Over 5 years ago	28700	31.5	4100	33.3
Less than 5 years	62428	68.5	8272	67.7

* Due to the weighted sample sizes, percentage estimates, and missing values, some percentages do equal 100%.

Source: U.S. Department of Education, National Center for Education Statistics, 2003-04 National Postsecondary Student Aid Study (NPSAS: 04)

Previous research has focused on the noncompleters, but little is known about completers, especially at the doctoral level. Table 4.5 summarizes the background characteristics of completers. We have already shown that among Blacks, completers usually have a higher income and are older than their White counterparts as well as Black noncompleters (see Table 4.3)/ however, we find a greater percentage of Black completers have parents with a high school diploma or less as compared to White completers. Similar to White noncompleters, the majority of White completers have a parent with an advanced degree. Additionally, greater percentages of Black and White completers were enrolled in the doctoral program for longer than five years at the time of the survey. The percentage estimates highlight differences in length of enrollment between completers and noncompleters as well as income differences among Black completers and noncompleters.

Table 4.5 Distribution of Background Characteristics among Completers (N=53200)

	White		Black	
	N	%	N	%
Total	46497	87.4	6703	12.6
Gender				
Male	22226	47.8	2974	44.4
Female	24276	52.2	3724	55.6
Age groups				
Under 30	18592	40	1208	18
30 or above	28006	60	5494	82
Total Household Income		*		*
Under \$30,000	22750	48.9	2250	33.6
\$30,000-\$49,999	6833	14.7	967	14.4
Over \$50,000	16995	36.6	3505	52.3
Parent education		*		*
HS or below	10220	22	3480	51.9
Some College	4685	10.1	315	4.7
College Degree	9787	21.4	1713	22.6
Advanced Degree	21706	46.7	1094	16.3
Enrollment in Doctoral Program				*
Over 5 years ago	25754	55.4	2746	41
Less than 5 years	20761	44.6	2939	43.8

* Due to the weighted sample sizes, percentage estimates, and missing values, some percentages do equal 100%.

Source: U.S. Department of Education, National Center for Education Statistics, 2003-04 National Postsecondary Student Aid Study (NPSAS: 04)

Descriptive Statistics: Financial Support

Previous studies illustrated that students make decisions about their continuing education based on perceptions about current or future financial circumstances (Maher et al., 2004; Perna, 2004; Dongbin, 2003; Baum & O'Malley, 2002; DesJardins et al., 2002a; DesJardins et al., 2002b; Paulsen & St John, 2002; Thomas, 2000; Kaltenbaugh et al, 1999; Jennings & Gumport, 1998; Chepyator-Thomson, 1996; Manzo, 1994; Murphy, 1994; Weiler, 1994; Andrieu & St John, 1993; Steelman & Powell, 1993; Weiler, 1991; Moline, 1987). Among doctoral students, researchers suggest that awards of financial aid minimize financial concerns, but do not necessarily increase the probability of degree completion (Jennings & Gumport, 1998; King & Chepyator-Thomson, 1996; Maher et al, 2004; Seagram et al., 1998). Further examination of findings indicate that the issue among doctoral students isn't whether or not financial aid is offered, rather the type of financial aid offered is the predominant influence on degree

completion rates (Ferrer de Valero, 2001; Jennings & Gumpert, 1998; King & Chepyator-Thomson, 1996; Maher et al., 2004; Seagram et al., 1998). Nevertheless, it is important to examine the relationship between degree completion and all forms of financial aid, as well as other sources of financial support.

In this study, financial support variables not only consider amounts, but the outcomes associated with these amounts in behaviors, attitudes, and educational choices. Financial support encompasses the different funding mechanisms available to doctoral students. The amount and type of loans, grants, and assistantships received by doctoral students will measure institutional, state, federal, or private sources of financial support. Income received from parents, spouses, outside jobs, assets, or in-kind donations will describe personal sources of financial support.

For purposes of this study, the *research assistantship* variable refers to a student who received a research assistantship while enrolled in doctoral program as of 2003- 2004 academic year. The *teaching assistantship* variable refers to a student who received a teaching assistantship while enrolled in a doctoral degree program as of 2003- 2004 academic year. The *total assistantship* variable refers to the total amount received from an assistantship, including research and teaching assistantships. The *total grant* variable refers to the total amount of grants and scholarships received during the 2003-04 academic year, including federal, institutional, state, and outside grants. The *borrowed as an undergraduate* variable refers to all loans that were borrowed for undergraduate education. The *amount borrowed as a graduate* variable refers to all the loans ever borrowed for graduate education in prior years including the 2003-04 academic year. The *amount borrowed for education* variable includes all loans borrowed for both graduate and undergraduate for 2003-2004 academic year and prior years. The *private/outside sources* variable refers to any gifts from a student's family, employer, or other individuals.

Table 4.6 Distribution of Mean Amount of financial support variables among Sample (N=156700)

	White	Black
Types of Financial Support		
Total Assistantship Amount	\$5,075	\$2,512
Research Assistantship Amount	\$2,851	\$1,368
Teaching Assistantship Amount	\$1,873	\$871
Private/Outside Sources	\$1,079	\$1,114
Total Grant Aid	\$4,866	\$3,998
Level of Indebtedness		
Amount Borrowed as Undergraduate	\$24,911	\$44,493
Amount Borrowed as Graduate	\$7,277	\$7,154
Amount Borrowed for Education	\$32,188	\$51,647

Source: U.S. Department of Education, National Center for Education Statistics, 2003-04 National Postsecondary Student Aid Study (NPSAS: 04)

Level of Financial Support of Black and White Doctoral Students

Descriptive statistics are presented for types of financial support that are received by doctoral students including loans, research assistantships, teaching assistantships, all assistantships (including research and teaching assistantships), and private/outside sources. Doctoral education is typically financed through the use of research and teaching assistantships by the institution. Research assistantships are designed to enable students to engage in research activity with faculty, while teaching assistantships provide experience and preparation for the professoriate (Jennings & Gumpert, 1998). These assistantships often cover tuition and insurance, but some students receive these benefits in addition to their assistantship stipend (Choy, 2002). Choy (2002) found that the sufficiency and type of assistantships offered to doctoral students may be an important factor in the outcomes of doctoral students. In a 1994 study, Manzo concluded that Blacks were offered lower paying teaching assistantships rather than higher paying research assistantships, and were often less likely than Whites to receive an assistantship while in their doctoral program.

Consistent with the literature (Manzo, 1994; Choy, 2002), Table 4.6 shows that Whites received higher paying assistantships regardless of type of assistantship in addition to grant aid. On average, White doctoral students were paid almost twice as much as Black doctoral students

for teaching assistantships, research assistantships, and the total amount of assistantships.

Moreover, Whites also received \$4,866 in grant aid as compared to \$3,998 received by Blacks .

This may be attributed to the disparities in the representation of Black and Whites across doctoral fields of study (see Table 4.7). We see the majority of Blacks are found in education doctoral programs which typically have lower-paying assistantships, while a larger representation of Whites are found in programs that offer higher-paying assistantships and grant aid, such as science and engineering. A further examination of the differences in the distribution of aid between Black and White doctoral students by field of study is shown in Table 4.8.

Table 4.7 Percentage of Blacks and Whites in Doctoral Programs (N =156700)

	White %	Black %
PhD program	91	9
Ed.D program	67	33
Science or Engineering Program	93	6.9
Psy.D program	97	3.3
Other Doctoral Program	83	16.6

Source: U.S. Department of Education, National Center for Education Statistics, 2003-04 National Postsecondary Student Aid Study (NPSAS: 04)

Table 4.8 Mean Amount of Financial Support across Field of Study by Race

	Research assistantship		Teaching Assistantship		Total Grants		Outside Aid		Total Cumulative Loan Debt	
	Black	White	Black	White	Black	White	Black	White	Black	White
Humanities	\$471.80	\$447.60	\$962.54	\$3,371.50	\$1,511.07	\$570.71	\$5,206.79	\$4,839.63	\$3,8786.77	\$24,305.17
Social/Behavioral sciences	\$2,581.63	\$1,523.14	\$1,494.48	\$2,335.57	\$964.49	\$1,398.60	\$6,575.53	\$5,346.28	\$45,759.56	\$38,318.97
Life sciences	\$4,183.15	\$6,449.49	\$2,335.68	\$2,439.81	\$875.60	\$565.54	\$8,701.27	\$10,017.20	\$19,829.05	\$15,225.68
Math/Engineering/Computer science	\$3,531.99	\$5,774.98	\$1,194.17	\$3,299.78	\$1,087.11	\$858.79	\$6,435.45	\$8,960.51	\$12,218.33	\$11,856.50
Education	\$600.51	\$695.61	\$480.45	\$602.54	\$950.10	\$968.81	\$1,698.33	\$2,097.28	\$52,978.59	\$19,147.03
Business/Management	*	\$877.84	*	\$972.75	*	\$806.83	*	\$1,797.42	*	\$19,059.41
Health	\$303.92	\$1,390.74	\$875.73	\$341.12	\$1,829.79	\$2,642.11	\$6,519.92	\$3,833.26	\$58,257.77	\$53,688.32
Law	*	\$440.82	*	0.00	*	\$3,488.39	*	\$3,919.52	*	\$58,501.54

* Reporting standards were not met for inclusion.

Source: U.S. Department of Education, National Center for Education Statistics, 2003-04 National Postsecondary Student Aid Study (NPSAS: 04)

Several studies (St John et al., 2005; Price, 2004a; Paulsen & St. John, 2002; St John, 1991b) have shown that Blacks are more dependent on loans than Whites for their degree completion. Research suggests that Blacks are more likely to persist with loans than without (Price, 2004; Baum & O'Malley, 2003; Paulsen & St. John, 2002); but, they are more likely to regret borrowing after degree completion (Baum & O'Malley, 2003). Although debt levels have not been shown to deter students from enrolling in doctoral programs (Elkstrom et al., 1991; Weler 1991; Heller, 2001), concerns about high debt levels have shown to impact persistence decisions in doctoral programs (Donhardt, 2004; Price 2004).

Consistent with the research, Black doctoral students borrowed more to finance their education than White doctoral students. On average, Blacks borrowed a cumulative amount of \$51,647 as compared to \$32,188 borrowed by Whites throughout all levels of higher education as of 2003-2004 academic year. The data suggests that most of the debt accrued by Black doctoral students was at the undergraduate level, as Blacks borrowed almost twice as much as Whites to finance their undergraduate education. At the graduate level, we find that Blacks and Whites borrowed a similar amount.

Previous research has shown that doctoral students rely on substantial amounts of financial support beyond what is awarded through financial aid to persist towards graduation (Geiger, 1997; King & Chepyator-Thomson, 1996; Maher et al, 2004; Seagram et al.). Consistent with these sources, both Black and White students reported receiving money from private outside sources to fund their doctoral education amounting to approximately \$1,100 for the 2003-2004 academic year (see Table 4.6), which was similar among both groups.

Table 4.9 summarizes the differences among completers and noncompleters regarding Black and White students. Among Whites, we see that noncompleters received higher paying

assistantships, additional grant aid, had lower levels of indebtedness as compared to Blacks. In looking at the within group differences of Blacks, the amount of grant money received among Black completers and noncompleters were similar. Additionally, a greater percentage of Black completers received higher paying teaching assistantships than Black noncompleters. Conversely, Black completers received less money from private outside sources than Black noncompleters. Black completers also had a lower level of indebtedness than Black noncompleters suggesting that financial indebtedness may play a role in the probability of completion among Blacks.

Table 4.9 Distribution of Mean Amount of Financial Support among Noncompleters and Completers

	White		Black	
	Noncompleter	Completer	Noncompleter	Completer
Types of Financial Support				
Total Assistantship Amount	\$5,424	\$4,391	\$3,194	\$5,034
Research Assistantship Amount	\$2,959	\$2,641	\$1,697	\$3,217
Teaching Assistantship Amount	\$2,147	\$1,336	\$1,148	\$1,379
Private Sources of Aid	\$1,086	\$1,065	\$1,335	\$947
Total Grant Aid	\$5,117	\$4,373	\$4,294	\$4,267
Level of Indebtedness				
Amount Borrowed as Undergraduate	\$22,662	\$29,316	\$48,487	\$26,228
Amount Borrowed as Graduate	\$7,534	\$6,774	\$7,481	\$6,448
Amount Borrowed for Education	\$30,196	\$36,090	\$55,768	\$44,059

Source: U.S. Department of Education, National Center for Education Statistics, 2003-04 National Postsecondary Student Aid Study (NPSAS: 04)

Descriptive Statistics: Experiences

Experiences were measured by students' responses to the *NPSAS:04* survey regarding departmental experiences. Students' perceptions of their doctoral program and the amount of support and obligations they have outside of their doctoral programs has been cited as an important predictor of attrition or completion (Bowen & Rudenstine, 1992; Ferrer de Valero, 2001; Gillingham et al., 1991; Golde, 2000; Jennings & Gumpert, 1998; Waldeck et al., 1997; King & Chepyator-Thomson, 1996).

The *enrollment status* variable refers to the enrollment status of the students since they first started working on a doctoral degree. The *number of jobs* variable refers to the number of jobs for pay excluding work-study and assistantships that the student had in 2003-04 academic year. The *role of the student* variable refers to the primary role of the student while enrolled in their doctoral program.

Table 4.10 Distribution of Experience across Sample (N=156700)

	White		Black	
	N	%	N	%
Total	137583	87.8	19117	12.2
Number of Jobs (excluding work-study/assistantship)				
None	59762	43.4	5338	27.9
1	60001	43.6	11599	60.7
2	13499	9.8	1601	8.4
More than 2	4430	3.2	470	2.5
Enrollment Status				
Full-Time	103370	75.1	14230	74.4
Part -Time	25367	18.4	4233	22.1
Mix of Full-time and Part-time	8873	14.4	627	3.3
Role of Student (exclude work-study/assistantship)				
No Job	59672	43.4	5338	27.9
Work to Meet Expenses	39294	28.6	5006	26.2
Employee enrolled in school	38644	28	8656	45.3

Source: U.S. Department of Education, National Center for Education Statistics, 2003-04 National Postsecondary Student Aid Study (NPSAS: 04)

Experiences of Black and White Doctoral Students

Overall, we find several differences between Black and White doctoral students. A greater percentage of Whites were full-time students without outside employment, while Blacks were enrolled full-time with an outside job (see Table 4.10). Additionally, the primary role of Whites was as a student, while the primary role of Blacks was as an employee, which could attribute to the longer completions times of Blacks as compared to their White counterparts as found in previous studies.

Table 4.11 summarizes the percentage estimates of Black and White completers and noncompleters. We do not find much within group differences between completers and

noncompleters in the sample. Regardless of completion status, the majority of Whites were full-time students, who do not hold an outside job. Among Blacks, regardless of completion status, a greater percentage are enrolled full-time, but hold at least one job and see their primary role as an employee rather than a student. This suggests that among Blacks, employment may be necessary for doctoral degree completion.

Table 4.11 Distribution of Experience among Noncompleters and Completers

	White		Black	
	Noncompleter	Completer	Noncompleter	Completer
	%	%	%	%
Total	88.1	87.4	11.9	12.6
Number of Jobs (excluding work-study/assistantship)				
None	42.1	46.1	28.5	27.5
1	44.9	40.9	60.4	62.4
2	9.8	9.9	0.89	7.5
More than 2	3.2	*	2.2	*
Enrollment Status				
Full-time	72.8	79.5	77.5	70
Part-time	21.9	11.4	18	29.9
Mix of Full-time and Part-time	5.2	9.1	4.5	0.1
Role of Student(exclude work-study/assistantship)				
No Job	42.1	46.1	28.5	27.4
Work to Meet Expenses	26.8	32	30.1	19.3
Employee enrolled in school	42.1	21.9	41.2	53.3

Source: U.S. Department of Education, National Center for Education Statistics, 2003-04 National Postsecondary Student Aid Study (NPSAS: 04)

Situatedness Model

In this study, I developed a conceptual model of situatedness for predicting doctoral degree completion using background, financial, and experience data from a nationally representative sample of Black and White doctoral students. The situatedness model assumed that students' individual background is related to the financial support they receive in doctoral programs, in turn, these factors are connected to students' departmental and personal experiences. The interrelation of these factors determines a students' situatedness. Finally, it asserts that a students' situatedness is directly related to doctoral student outcomes.

Considering the central hypothesis, data was analyzed to determine whether there was a relationship between background characteristics and doctoral degree completion among these groups. Table 4.12 and 4.13 presents descriptive statistics of the mean, multiple deviation, and number of observations for all variables for Black doctoral students and White doctoral students.

Table 4.12 Descriptive Statistics for Blacks based on Situatedness Model

Variable	M	S.E
Degree Completion	0.226	0.049
Age	37.576	0.837
Gender	0.433	0.040
Income	\$49607.96	\$3974.14
Amount Borrowed for Education	\$45218.91	\$5055.70
Research Assistantship Amount	\$1219.39	\$230.65
Teaching Assistantship Amount	\$986.94	\$176.66
Total Grant Aid	\$4343.33	\$669.37
Private/Outside Source	\$1248.10	\$338.96
Number of Hours Worked	25.107	1.799
Enrollment Status: Part-time	0.308	0.035
Parent Education Level: Graduate Degree	0.266	0.054

Source: U.S. Department of Education, National Center for Education Statistics, 2003-04 National Postsecondary Student Aid Study (NPSAS: 04)

Table 4.13 Descriptive Statistics for Whites based on Situatedness Model

VAR	M	SE
Degree Completion	0.232	0.013
Age	33.1	0.5811
Gender	0.483	0.0164
Income	\$42000.07	\$1950.34
Amount Borrowed for Education	\$28733.10	\$1318.90
Research Assistantship Amount	\$2517.44	\$184.54
Teaching Assistantship Amount	\$1971.31	\$130.019
Total Grant Aid	\$5377.129	\$268.53
Outside/ Private Sources	\$1285.84	\$132.98
Number of Hours Worked	17.800	0.8202
Enrollment Status: Part-time	0.257	0.0178
Parent Education Level: Graduate Degree	0.428	0.0143

Source: U.S. Department of Education, National Center for Education Statistics, 2003-04 National Postsecondary Student Aid Study (NPSAS: 04)

The results of correlations between background, financial and experience variables are presented in Table 4.14 for Blacks and Table 4.15 for Whites. A correlation matrix allows the researcher to see how each measured variable correlates with all the other variables in the model (Gall et al., 2003). Since a variable correlates perfectly with itself (1.00), those results are not shown in the matrix and are signified with a dash. A “0” correlation indicates that there is no linear relationship between the variables, a “1” correlation indicates that there is a perfectly positive relationship between the variables, and a “-1” correlation indicates that as once variable increases, the other decreases (Gall et al., 2003).

Table 4.14 Correlations among Situatedness Variables among Blacks

	Degree Completion	Age	Gender	Income	Cumulative Amount Borrowed	Research Assistantship amount	Teaching Assistantship Amount	Total Grants	Private Outside Sources of Aid	Number of Hours Worked	Enrollment Status	Parent Education Level
Degree Completion	1											
Age	0.1261	1										
Gender	0.0371	0.047	1									
Income	0.1761	0.399	0.0182	1								
Amount Borrowed for Education	-0.033	-0.06	-0.092	0.1073	1							
Research Assistantship Amount	-0.0766	-0.11	0.0645	0.1676	-0.1268	1						
Teaching Assistantship Amount	-0.0753	-0.17	0.0482	0.1744	-0.1134	0.124	1					
Total Grant Aid Outside/Private Sources	-0.0798	-0.31	0.0002	0.1688	-0.1527	0.1082	0.1274	1				
Number of Hours Worked	-0.105	-0.01	0.1181	0.0391	0.1	-0.1105	-0.0947	0.2379	1			
Enrollment Status	0.0917	0.413	-0.035	0.4232	0.0641	-0.2549	-0.2212	-0.403	0.0245	1		
Parent Education Level	0.0125	0.4	0.0446	0.3232	-0.1517	-0.1705	-0.1285	-0.175	0.1188	0.4157	1	
	-0.062	-0.28	-0.097	0.1128	0.099	0.073	-0.0193	0.1057	-0.0543	-0.072	-0.1605	1

Source: U.S. Department of Education, National Center for Education Statistics, 2003-04 National Postsecondary Student Aid Study (NPSAS: 04)

Table 4.15 Correlations among the Situatedness Variables among Whites

	Degree Completion	Age	Gender	Income	Amount Borrowed for Education	Research Assistantship amount	Teaching Assistantship Amount	Total Grants	Private Outside Sources	Number of Hours Worked	Enrollment Status	Parent Education Level
Degree Completion	1											
Age	0.0316	1										
Gender	-0.0225	-0.02	1									
Income	0.0353	0.489	-0.014	1								
Amount Borrowed for Education	0.0788	-0.17	-0.107	0.2026	1							
Research Assistantship Amount	-0.0265	-0.18	0.0475	0.1004	-0.1292	1						
Teaching Assistantship Amount	-0.0712	-0.17	0.0748	0.1199	-0.0774	-0.0076	1					
Total Grant Aid	-0.0805	-0.26	0.0491	0.1637	-0.1536	0.1038	0.0923	1				
Outside/Private Sources	-0.026	-0.08	-0.017	0.1041	0.1906	-0.091	-0.0931	0.0483	1			
Number of Hours Worked	0.0067	0.492	-0.008	0.4485	-0.0622	-0.293	-0.2445	-0.282	-0.025	1		
Enrollment Status	-0.0048	0.443	0.0009	0.3583	-0.1892	-0.2064	-0.198	-0.226	-0.0474	0.5383	1	
Parent Education Level	0.0147	-0.2	-0.017	0.1142	-0.0379	0.0816	0.0404	0.1122	-0.0333	-0.1664	-0.1325	1

Source: U.S. Department of Education, National Center for Education Statistics, 2003-04 National Postsecondary Student Aid Study (NPSAS: 04)

Table 4.16 Standard Multiple Regression of Situatedness Model for Blacks

Predictor Variables		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
Model		B	Std. Error	Beta		
1	(Constant)	.145	.034		4.276	.000
	Income	.000	.000	.176	3.250	.001
2	(Constant)	.164	.035		4.687	.000
	Income	.000	.000	.180	3.345	.001
	Private/Outside Sources	.000	.000	-.112	-2.077	.039

Excluded Variables		Beta In	t	Sig.	Partial Correlation
1	Age as of 12/21/03	.066 ^a	1.123	.262	.062
	Gender=Male	.034 ^a	.625	.532	.034
	Amount Borrowed for Education	-.014 ^a	-.261	.794	-.014
	Research assistantship amount	-.048 ^a	-.881	.379	-.049
	Teaching assistantship amount	-.046 ^a	-.835	.404	-.046
	Total Grants	-.052 ^a	-.937	.349	-.052
	Private/Outside Sources	-.112 ^a	-2.077	.039	-.114
	Hours worked per week (excluding work-study/assistantship)	.021 ^a	.349	.727	.019
2	Age as of 12/21/03	.063 ^b	1.076	.283	.059
	Gender=Male	.048 ^b	.879	.380	.048
	Amount Borrowed for Education	-.002 ^b	-.045	.964	-.003
	Research assistantship amount	-.061 ^b	-1.112	.267	-.061
	Teaching assistantship amount	-.057 ^b	-1.030	.304	-.057
	Total Grant Aid	-.025 ^b	-.440	.660	-.024
	Hours worked per week (excluding work-study/assistantship)	.022 ^b	.369	.712	.020
	Graduate enrollment status (all years)=Part-Time	-.037 ^b	-.641	.522	-.035
Parents Education Lebrl	-.048 ^b	-.892	.373	-.049	

Note: a. Predictors: (Constant) Income; b. (Constant) Income and Private/ Outside sources of aid

Table 4.17 Standard Multiple Regression of Situatedness Model for Whites

Predictor Variables

Model		Unstandardized Coefficients		Standardized	t	Sig
		B	Std. Error	Coefficients		
1	Total Grants	.000	.000	-.081	-4.240	.000
2	(Constant)	.228	.012		19.529	.000
	Total Grants	.000	.000	-.070	-3.653	.000
	Amount Borrowed for Education	.000	.000	.068	3.549	.000
3	(Constant)	.239	.012		19.684	.000
	Total Grant Aid	.000	.000	-.065	-3.389	.001
	Amount Borrowed for Education	.000	.000	.064	3.344	.001
	Teaching assistantship amount	.000	.000	-.060	-3.164	.002
4	(Constant)	.242	.012		19.820	.000
	Total Grants	.000	.000	-.061	-3.186	.001
	All Cumulative Education Debt	.000	.000	.073	3.713	.000
	Teaching assistantship amount	.000	.000	-.064	-3.346	.001
	Private/Outside Sources of Aid	.000	.000	-.043	-2.208	.027

Model		Beta In	t	Sig.	Partial Correlation
1	Income	.023 ^a	1.181	.238	.022
	Amount Borrowed for Education	.068 ^a	3.549	.000	.067
	Research assistantship amount	-.018 ^a	-.961	.337	-.018
	Teaching assistantship amount	-.064 ^a	-3.379	.001	-.064
	Outside/Private Sources of Aid	-.022 ^a	-1.166	.244	-.022
	Hours worked per week (excluding work-study/assistantship)	-.017 ^a	-.877	.380	-.017
	Graduate enrollment status (all years)=Part-Time	-.024 ^a	-1.245	.213	-.024
2	Parents	.024 ^a	1.258	.208	.024
	Age	.028 ^b	1.395	.163	.027
	Gender=Male	-.012 ^b	-.624	.533	-.012
	Income	.041 ^b	2.071	.038	.039
	Research assistantship amount	-.011 ^b	-.558	.577	-.011
Teaching assistantship amount	-.060 ^b	-3.164	.002	-.060	

	Outside/Private Sources of Aid	-.037 ^b	-1.920	.055	-.037
	Hours worked per week	-.010 ^b	-.487	.626	-.009
	Graduate enrollment status =Part-Time	-.009 ^b	-.433	.665	-.008
	Parents Education Level: Graduate Degree	.025 ^b	1.336	.182	.025
3	Age	.018 ^c	.878	.380	.017
	Gender=Male	-.008 ^c	-.422	.673	-.008
	Income	.034 ^c	1.690	.091	.032
	Research assistantship amount	-.012 ^c	-.638	.524	-.012
	Outside/Private Sources of Aid	-.043 ^c	-2.208	.027	-.042
	Hours Worked Per Week	-.026 ^c	-1.277	.202	-.024
	Graduate enrollment status =Part-Time	-.022 ^c	-1.101	.271	-.021
	Parents Education Level: Graduate Degree	.027 ^c	1.431	.153	.027
4	Age	.016 ^d	.784	.433	.015
	Gender=Male	-.008 ^d	-.407	.684	-.008
	Income	.031 ^d	1.551	.121	.030
	Research assistantship amount	-.016 ^d	-.813	.416	-.015
	Hours worked per week	-.027 ^d	-1.301	.193	-.025
	Graduate enrollment status =Part-Time	-.023 ^d	-1.120	.263	-.021
	Parents Education Level: Graduate Degree	.026 ^d	1.359	.174	.026

Note: a. Predictors in the Model: (Constant) Grants; b. (Constant) Grants and Amount Borrowed for Education; c. (Constant) Grants, Amount Borrowed for Education, Teaching Assistantship Amount; d. (Constant) Grants, Amount Borrowed for Education, Teaching Assistantship Amount, Private/Outside Sources of Aid

Question 2: What is the relationship between background characteristics and degree completion? Do they differ by race?

Setting an alpha level of .05, a standard multiple regression was used to analyze how well a set of background variables, including age; gender, income, and parent education level predict doctoral degree completion among Black students. Multiple regressions provide information about the complete model and the relative input of each of the variables that form the model (Gall, Gall, & Borg, 2003).

Hypothesis 1: There is a relationship between background characteristics and degree completion among Black doctoral students.

Hypothesis 1₀: There is no relationship between background characteristics and degree completion among Black doctoral students.

Results show that age, gender, and parent education level do not have an independent relationship with doctoral degree completion among Blacks, but income has a significant relationship, $p < .000$ (see Table 4.16). The null hypothesis is rejected.

Hypothesis 2: There is a relationship between background characteristics and degree completion among White doctoral students.

Hypothesis 2₀: There is no relationship between background characteristics and degree completion among White doctoral students.

Setting an alpha level of .05, a standard multiple regression was used to analyze how well a set of background variables, including age, gender, income, and parent education level predict doctoral degree completion among White doctoral students. Results show that age, gender, income, and parent education level do not have an independent relationship with doctoral degree completion among Whites (see Table 4.17). The null hypothesis is retained.

Question 3: What is the relationship between financial support and degree completion of doctoral students? Do they differ by race?

Considering the central hypothesis, data was analyzed to determine whether there was a relationship between financial support and doctoral degree completion among Black and White doctoral students.

Hypothesis 1: There is a relationship between financial support and degree completion among Black doctoral students.

Hypothesis 1₀: There is no difference between financial support and degree completion among Black doctoral students

Setting an alpha level of .05, a standard multiple regression was used to analyze how well a set of financial support variables, total cumulative amount of education debt, research assistantship, teaching assistantship, grant aid, and outside aid predict doctoral degree completion among Black doctoral students. Results show outside sources of aid, $p < .001$ has a significant independent relationship (see Table 4.16). The null hypothesis is rejected.

Hypothesis 2: There is a relationship between financial support and degree completion among White doctoral students.

Hypothesis 2₀: There is no relationship between financial support and degree completion among White doctoral students

A standard multiple regression was used to analyze how well a set of financial support variables, amount borrowed for education, research assistantship, teaching assistantship, grant aid, and outside aid predict doctoral degree completion among White doctoral students. Results indicate that grants, amount borrowed for education, teaching assistantships, and outside aid have a significant independent relationship with doctoral degree completion among Whites (see Table 4.17). Outside sources were significant at the .05 level and grants, amount borrowed for education, and teaching assistants were significant at the .01 level. The null hypothesis is rejected.

Question 4: What is the relationship between program experiences and degree completion of doctoral students? Do they differ by race?

Considering the central hypothesis, data was analyzed to determine whether there was a relationship between program experiences and doctoral degree completion among Black and White doctoral students.

Hypothesis 1: There is a relationship between program experiences and degree completion among Black doctoral students.

Hypothesis 1₀: There is no relationship between program experiences and degree completion among Black doctoral students

A multiple regression was used to further investigate the relationships between program experiences and doctoral degree completion among Blacks. Results indicate that the number of hours worked and part-time enrollment status do not have a significant independent relationship with degree completion. The null hypothesis is accepted.

Hypothesis 2: There is a difference between program experiences and degree completion among White doctoral students.

Hypothesis.2₀: There is not a difference in the relationship between program experiences and degree completion among White doctoral students

A multiple regression was used to further investigate the relationships between program experiences and doctoral degree completion among Blacks. For Whites, results indicate that the number of hours worked and part-time enrollment status do not have a significant independent relationship with degree completion. The null hypothesis is retained.

Question 5: Does the situatedness model predict degree completion for students in doctoral education? Are there differences by race?

In this study, I developed a situatedness model for predicting doctoral degree completion using background, financial, and experience data from a nationally representative sample of Black and White doctoral students. Considering the central hypothesis, data was analyzed to determine whether the background, financial support, and experience variables used in this model predict degree completion among these groups. A multiple regression was used to assess the predictive nature of the situatedness model based on race.

Table 4.18 Standard Multiple Regression Summary for Blacks

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.176 ^a	.031	.028	.4179072
2	.209 ^b	.044	.038	.4158253

Note: a. Predictors: (Constant) Income; b. (Constant) Income and Private/Outside sources of aid

Table 4.19 Standard Multiple Regression Summary for Whites

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.080 ^a	.006	.006	.4219031
2	.105 ^b	.011	.010	.4210186
3	.121 ^c	.015	.014	.4203318
4	.128 ^d	.016	.015	.4200364

Note: a. Predictors: (Constant) Grants; b. (Constant) Grants and Amount Borrowed for Education; c. (Constant) Grants, Amount Borrowed for Education, Teaching Assistantship Amount; d. (Constant) Grants, Amount Borrowed for Education, Teaching Assistantship Amount, Private/Outside Sources of Aid

Hypothesis 1: The situatedness model predicts doctoral degree completion among Black doctoral students.

Hypothesis 1₀: The situatedness model does not predict of doctoral degree completion among Black doctoral students

Results show that the predictor variables, income ($\beta = .00$, $t(332) = 3.25$, $p < .001$) and outside sources of aid ($\beta = .00$, $t(332) = -2.077$, $p < .001$) are statistically significant and independent contributors to explaining doctoral degree completion among Black students (see Table 4.16). Income [$r(332) = .176$] explains about 3% of the variance in degree completion among Black doctoral students. The null hypothesis is rejected for this model.

Hypothesis 2: The situatedness model predicts doctoral degree completion among White doctoral students.

Hypothesis 2₀: The situatedness model does not predict of doctoral degree completion among White doctoral students

Results show that the predictor variables total grant aid ($\beta = .00$, $t(3012) = -4.240$, $p < .001$), cumulative education debt ($\beta = .00$, $t(3012) = 3.549$, $p < .001$), teaching assistantships ($\beta = .00$, $t(3012) = -3.164$, $p < .01$) and outside sources of aid ($\beta = .00$, $t(3012) = -2.208$, $p < .05$) are statistically significant and independent contributors to explaining doctoral degree completion among White students (see Table 4.17). The null hypothesis is rejected for this model.

Conclusions

The purpose of the study was to examine if relationships existed between the variables used in the situatedness model and doctoral degree completion. The study also examined whether the situatedness model could predict doctoral degree completion among Black and White doctoral students. Testing the hypothesis for each research question using a regression analysis was useful to explore how well each set of variables as well as the interrelation of these variables predict doctoral degree completion among Black and White students. Among Whites, results from the regression analysis indicated that the total amount of grant aid, the cumulative amount

of debt, and teaching assistantships were independent and significant predictors of doctoral degree completion. Among Blacks, the regression analysis indicated that income and outside sources of aid were predictive of degree completion. The information gained from the description of the variables seemed to illustrate more differences between both groups and will be discussed in detail in Chapter 5. Chapter 5 discusses summary of the major findings, implications, and areas for future research.

Chapter 5

Discussion and Conclusions

Introduction

The purpose of the study was to propose and test a situatedness model's ability to predict doctoral degree completion using an integrated scheme of background, financial support, and experience variables. The other purpose of this study was to explore differences by race among Black and White students. This chapter is organized into five sections. The first section summarizes the results of the study and its relationship to prior research. The second section discusses implications for future practice and research. The third section discusses the limitations and complications of the study. Finally, the chapter presents general conclusions about the factors that influence doctoral degree completion among Black and White students.

Summary of the Results and Relationship to Prior Research

This research contributes to our understanding of doctoral degree completion among Black and White doctoral students. Researchers have focused on the factors that influence graduate student persistence in general, but prior to this study, little was known about the factors that influence doctoral student completion in particular. The results of this study indicate that the factors that influence doctoral degree completion are different from those identified for graduate students in general, and cannot totally be explained by the variables used in the situatedness model.

The Situatedness Model

The situatedness model tested by a multiple regression analysis indicated that financial support factors affect doctoral degree completion among Black and White students. For Whites, the model indicated that the total amount of grant aid, amount borrowed for education,

private/outside sources of aid, and teaching assistantships were independent and significant predictors of doctoral degree completion. For Blacks, the regression analysis indicated that income and outside sources of aid were predictive of degree completion.

The vast majority of variance in completion rates is unaccounted for by the situatedness model for Black and White doctoral students even though it was found to be statistically significant for both races. The model was found to be useful in conceptualizing doctoral degree completion, but it illustrated that there are other variables that cause disparities in completion among Black and White doctoral students. From the descriptive statistics, these factors could include, but are not limited to the field of study, individual motivation, the doctoral program climate, and the commitment of social support networks and faculty.

Background Factors

The regression analysis indicated that background factors do not have statistically significant independent relationship with doctoral degree completion among White students, but income has a statistically positive and independent relationship with degree completion among Black students. Correlations indicated that as income increases for Blacks, so does the likelihood of completion.

The descriptive data from this study was more helpful in terms of gaining a broader perspective on the completion status of Black and White doctoral students based on background differences. Interestingly, among Black students, parent education level was not synonymous with socioeconomic status. Several studies (Dongbin, 2003; Hahs-Vaughn, 2004; Paulsen & St John, 2002) suggest that socioeconomic status and parent education level jointly affect the variation in experiences among racial groups. The majority of Black completers has an income of over \$50,000 and come from households with parents with a high school diploma or less (see

Table 4.4). Perhaps, having parents with lower levels of education motivates Blacks to pursue an advanced degree, and they work harder to pay for it.

There is not much of a difference between background characteristics of White completers and noncompleters. For both completion groups, the majority of Whites makes less than \$30,000 and has parents' with an advanced degree. This supports earlier research that parents of White doctoral students were found to have significantly higher levels of education than the parents of Black doctoral students (Choy, 2002; Paulsen & St John, 2002; Steelman & Powell, 1993; Isaac et al., 1992; Weiler, 1991).

The premise that a student's background influences the financial support they receive is also not fully supported by the correlations in this study (see Table 4.14 and 4.17). For Blacks and Whites, the relationship between the background variables and financial support variables was small. Among Blacks, there is a negative relationship between age and grants. Grant aid decreases as age increases among Black doctoral students. For whites, income and grant aid have a positive relationship. As grant aid increases, so does income. This seems to suggest that the income of Whites is dependent on how much grant money they receive while in their doctoral program.

Financial Support Factors

It is evident from the regression analysis that financial support has a significantly independent relationship with doctoral degree completion. For Blacks, outside sources of aid had a statistically significant relationship with degree completion that was independent of other variables in the situatedness model. Correlations indicate that there is a negative relationship between outside sources of aid and degree completion, which would instinctively seem contrary to previous research on the reliance of Blacks on funding for completion (Magner, 2004).

However, several researchers (Maher et al, 2004; Seagram et al., 1998; King & Chepyator-Thomson, 1996) did indicate that Blacks who take a financial risk by funding their education through personal savings are more motivated to finish than those who did not. Perhaps, the negative relationship could be explained in that increased outside sources of aid, such as outside employment, may negatively influence motivation, which in turn, influences success or completion.

However, it is important to note that Black completers in this study had a mean income of over \$60,000, which made them more equipped to pay for their doctoral education using their own personal savings. Interestingly, even among Black completers, on average, their loan debt was \$44,059 as compared to \$36,090 borrowed by Whites across all levels of education (see Table 4.9). The King & Chepyator-Thompson (1996) study also indicated that students without sufficient income or financial aid usually exhaust their personal resources earlier and may eventually withdraw from the doctoral program. The indebtedness of Black noncompleters is more than twice the amount of White noncompleters (see Table 4.9). Regardless of completion status, on average, Blacks borrowed \$51,647 for their postsecondary education, while Whites borrowed \$32,188 (see Table 4.6). This supports earlier research that suggests that Blacks are more dependent on loans for completion for undergraduate and graduate degree completion (Nettles, 1989).

Among Whites, several measures of financial support had a statistically significant relation to degree completion including outside sources of aid, teaching assistantships, grant aid, and the cumulative amount they borrowed throughout their postsecondary education. As outside sources of aid, teaching assistantships, and grant aid decreases, there is an increase in the likelihood of completion. Additionally, the correlations indicate that the higher the educational

debt, the more likely Whites are to persist to completion. Financial support appears to have the opposite effect on Whites than it does for Blacks. Increased sources of financial support seem to negatively influence Whites' motivation to complete the doctoral degree. This conclusion is supported by findings that White noncompleters received a higher amount of financial support than White and Black completers did (see Table 4.9).

Although teaching assistantship was shown to predict degree completion, descriptive statistics for both groups indicated that the mean amount of assistantships are similar among Black and White doctoral students (see Table 4.9). This is contrary to previous research that found that assistantship funding for Black doctoral students is insufficient (Maher et al., 2004; Price, 2004b; Manzo, 1994). A further examination of the results of the study indicated that field of study may have an impact on the disparities in teaching assistantships and their effect on degree completion between the two groups. The largest number of Blacks are concentrated in Education doctoral programs which offer less paying assistantships than the disciplines in which the majority of Whites are enrolled, which offer higher paying assistantships (see Table 4.7 & 4.8). This may partially explain the differential impact on degree completion for Blacks and Whites.

The premise that a students' background and level of financial support influence the program experiences is somewhat supported by the correlations (see Table 4.14 and 4.15). Older blacks with higher incomes are more likely to work more hours (excluding work-study/assistantships). Additionally, we find that Blacks that receive less money from grants and assistantships have higher incomes and enroll on a part-time basis. This finding suggests that Blacks must work more hours and enroll on a part-time status to compensate for the lack of institutional funding received in their doctoral program. Conversely, research assistantships

decrease the number of hours they worked a week and decrease the likelihood of being a part-time student (see Table 4.15). This finding suggests that institutional funding benefits Whites by allowing them to enroll on a full-time basis and decreases the need for them to hold an outside job in addition to work-study or an assistantship.

Experience Factors

The regression analysis indicated that program experiences do not have a statistically significant relationship with doctoral degree completion among Black or White doctoral students. However, the descriptive statistics indicate that Black completers are more likely to be an employee enrolled in school, while the majority of Whites are full-time students without a job. Although these findings do not have a direct impact on degree completion, they may shed light on the other experience factors that seem to cause disparities between the groups. Research has shown that lack of mentoring or advising negatively affects Black doctoral degree completion (Ferrer de Valero, 2001; Waldeck et al., 1997; King-Chepyator-Thomson, 1996; Cooke et al., 1995). The findings of this study seem to show that these perceptions may be a result of the amount of hours they work, which limits the frequency and quality of interactions with faculty. Conversely, being a full-time student without having a job outside of work-study or assistantship allows for more meaningful and frequent interactions with faculty, a pattern that may benefit Whites who are more likely to be enrolled full-time.

Implications and Suggestions for Future Research

Given the significant findings as indicated by the situatedness model, the study has several implications that are worthy of consideration as well suggestive of areas for future research.

One of the major findings of this study regarding the relationship between assistantships and degree completion showed that there was another element that may have explained the disparities. The situatedness model did not take into consideration the different enrollment patterns of Blacks and Whites in different disciplines and fields of study. Blacks seem to enroll in more of the softer disciplines, such as education, humanities or other social sciences, while Whites are more likely to enroll in the harder sciences, such as science and engineering. The assistantships in the softer disciplines are typically less than those in the harder ones. This has several implications for Blacks. It means that Blacks will have to finance their degrees using their own personal resources or borrow at higher levels, and be burdened high educational debt. Traditionally, the softer disciplines do not yield the levels of income that the harder fields do, which means Blacks who do not have their own personal means and must rely heavily on loans will find it harder to pay off the loans. Ultimately, they may not reap the financial benefits of holding an advanced degree.

From a public policy point of view, the difference in more subsidies for doctoral study for Whites contrasted with the more self-supported nature of Blacks' pursuit of advanced degrees is an area for further research. An explanation of the results indicates that there has been an expansion of access to doctoral education for Blacks, but they are not receiving the same amount of institutional funding as Whites. The structure of doctoral education seems to not only provide access for Whites, but actively subsidizes their pursuits of degrees.

A further investigation of these disparities in funding should determine whether Black doctoral students are able to persist without the use of personal funds. Additionally, it will determine if current institutional funding practices facilitate doctoral degree completion and success for Whites by alleviating their need to work to finance the degree. These studies should

also investigate the relationship between enrollment status and employment status, and if the individual or collective impact of these statuses influence degree completion for both groups.

The title of this study reflects the main hypothesis that stood to be tested: what factors affect degree completion among Black and White doctoral students? The results of this study suggest that other factors impact doctoral degree completion besides those included in the situatedness model. The model seemed to emphasize the importance of financial support to doctoral completion, but may have masked the impact of other factors. In theory, some critical ratio of various factors may differentially affect doctoral students' progress toward completion of a doctoral degree. The question remains unanswered. Future studies should continue to explore the individual and interrelationships among variables not included in the model as well as the interrelation of these factors with other factors to determine what elements of situatedness will increase the likelihood of completion for both groups. These factors include, but are not limited to the field of study, individual motivation, the doctoral program climate, and the commitment of social support networks and faculty.

The findings in this study should be a catalyst for future research. The scarcity of data related to doctoral students and the novelty of this topic necessitates further exploration and expansion of the existing knowledge base. The challenges and limitations that arose in the execution of this study seem to illustrate the need for new approaches to data collection as well as the expansion of the range of research regarding doctoral studies. Future studies may focus on specific types of institutions, particular racial, gender, or age groups, specific fields of study and collect the data that allows for analysis of qualitative variables. For example, perceptions about program climate, mentoring and faculty interaction could be measured used a Likert scale or via qualitative methods, which would contribute to the broader understanding of doctoral education.

Limitations and Complications of the Study

This study had a number of limitations. The first limitation was the set of challenges in use of the national dataset, *2004 National Postsecondary Aid Survey* (NPSAS: 04). First, due to dependence on individual and institution responses, there are instances of missing values and possibly inaccurate and/or biased reporting on behalf of the respondent. Additionally, the study was limited to the factors that could be defined or operationalized using the NPSAS:04, which may not have included all the variables need to explain the variance in doctoral degree completion. There is a whole range of factors that may be involved in doctoral completion, which could not be investigated using the variables available through NPSAS: 04, especially those representing experience factors. Additionally, the low number of Black respondents in the survey limited the amount of data available for statistical analysis.

Another limitation was the restrictions on the statistical analysis of the data. The analysis of NPSAS: 04 data was limited to Data Analysis System (DAS), which does not allow the user to access the raw data for confidentiality reasons. The limitations of DAS necessitated the use of the Statistical Package for Social Science (SPSS) for the regression analysis. The transfer of data over two statistical platforms created more challenges in addition to those caused by the use of a national data set.

This study examined the usefulness of the factors used in the situatedness model to predict doctoral degree completion among a national sample of doctoral students; however, the decentralization of doctoral education affected the generalization of the conclusions. It was difficult to predict which factors will facilitate degree completion as degree requirements, financial aid policies, and departmental cultures vary significantly across doctoral programs and disciplines.

Additionally, qualitative methods, such as those used by Gardner (2009) are often best to capture student perceptions and experiences, but this study used quantitative means that are not able to measure or operationalize personal and individual experiential constructs. This limited the scope and interpretation of doctoral students' perceptions of and experiences in their doctoral programs and may have limited the effectiveness of the model to explain degree completion and the relative impact of other variables on doctoral degree completion. These attitudinal and experiential data might supersede the data collected in NPSAS: 04 in explaining degree completion.

Conclusions

The findings of this study suggest that finances are the most important predictor of degree completion between both groups. The disparity in sources of funding for Blacks and Whites highlight many of the differences in experiences and outcomes between the groups. Whites receive more institutional funding than Blacks, while Blacks tend to be more reliant on their own resources and have higher levels of indebtedness. Additionally, Blacks are more likely to be working prior to and during enrollment in doctoral programs, which makes their income higher than Whites.

The results also indicated that most of the variables used in the situatedness model were not statistically effective in predicting doctoral degree completion. Furthermore, those variables that were significant were not powerful enough to explain the majority of variance in completion rates. The results of this study should be generalized cautiously considering the limitations of the data and the complications with utilizing several statistical software packages.

Nevertheless, the investigation of the factors that influence doctoral degree completion remains an important issue in higher education. What should be taken away from this study is

that there are factors that come into play when predicting doctoral degree completion, such as the unequal distribution of Blacks and Whites across fields of studies as well as the unequal distribution of subsidies for doctoral students across disciplines. Understanding the different patterns of subsidy among racial groups, as well as the differing levels of social investment in the advancement of disciplines, such as education are important to the nation's future.

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