

Abstract

EAGAN, JR., MARK KEVIN. Examining the Influence of Involvement on Degree Completion among Black Students by Gender. (Under the direction of Titus, Marvin A.)

Research has linked student involvement with a number of positive college outcomes, especially persistence and college degree completion. Astin (1984, 1993) suggests that involvement in a variety of campus activities positively predicts academic success and students' likelihood to complete a college degree. This study examines how the positive effects of academic and social involvement influence disparities in degree completion rates within and between races seen nationwide.

The most noticeable difference in completion rates is occurring between Black men and Black women, as Black women continue to outpace their male counterparts in earning a college degree. As the degree completion disparity between Black men and women increases, research does not account for how involvement affects the gender differentials in degree completion among Black students. Using fixed-effects logistic regression, this study examines how involvement in campus activities differentially affects Black men's and women's likelihood to complete a bachelor's degree. Findings from these analyses indicate that Black men and women do not experience differential effects based on their involvement in campus activities; however, Black students as a whole receive differential effects from academic performance in their first year of enrollment compared to White students.

**EXAMINING THE INFLUENCE OF INVOLVEMENT ON DEGREE
COMPLETION AMONG BLACK STUDENTS BY GENDER**

by
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Dedication

This thesis is dedicated in loving memory to Kathryn Louise Eagan for being courageous, strong, supportive, loving, and all that a son could ever hope to have in a mother.

Biography

Before moving to North Carolina in August of 2000, Kevin Eagan spent 18 years living in rural Southern Maryland. Greensboro College prompted Kevin's move to North Carolina, where he enrolled as a Presidential Scholar. While at Greensboro College, Kevin majored in math, ran cross country, and remained actively involved in various aspects of campus life, including working as editor of the student newspaper, participating in the Student Government Association as the Speaker of the Senate, serving as junior and senior class president, and working as both a Resident Advisor and a Residence Hall Director.

Following his graduation from Greensboro College in 2004, Kevin moved to Raleigh, North Carolina to pursue his master's of science degree in higher education administration. While at NC State, Kevin has worked as a Residence Director for University Housing and as a research assistant for Dr. Crystal Gafford Muhammad. Kevin's research interests have prompted him to pursue a Ph.D. in higher education administration with a focus in quantitative methodology.

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Chapter I.

Introduction

Background of the Problem

The economic importance of earning a bachelor's degree has increased substantially throughout the last three decades. Professional fields increasingly require a bachelor's degree as a minimum qualification for entry into the job market. With the need for college degree credentials, more individuals have decided to enroll in institutions of higher education with the expectation of earning a bachelor's degree (Wirt et al., 2002).

The importance of earning a bachelor's degree has led to a significant increase in minority student enrollment in higher education, particularly among Black students (McPherson & Schapiro, 1991). Black students have made significant strides in closing the college enrollment gap that they share with White students, yet researchers attribute much of this progress to Black women. During the last three decades, Black males' participation in higher education has declined while Black women have claimed a larger share of the overall Black enrollment in higher education (DeSousa, 2001; Ogbu, 2003). Statistics from the National Center for Education Statistics (NCES) show that Black women nearly double the number of Black men enrolled in postsecondary education, as Black women comprise 63.0% of the overall enrollment among Black students (NCES, 2005a).

Even with the progress that Black women in particular have made in regards to accessing higher education, Black students still fall far behind their White counterparts in

terms of college enrollment. In 1970, more than 27.0% of White students between the ages of 18 and 24 were enrolled in institutions of higher education compared to 15.5% of Black students (NCES, 2005b). More than 30 years later, in 2003, Black students (32.3%) had closed the gap but still fell more than 9 percentage points behind White students (41.6%) in college enrollment among individuals between 18 and 24 years old (NCES, 2005b).

This disparity in college enrollment rates between Black students and other racial/ethnic groups has prompted many studies about college access that have focused on between-group differences by race. Researchers (Cabrera & LaNasa, 2000; DeSousa, 2001; Freeman, 1997; Karraker, 1992; Perna, 2000) have documented that White students have substantially more success than their Black counterparts in enrolling in institutions of higher education. Using a social and cultural capital conceptual framework, Cabrera and LaNasa (2000) find that Black students' lack of knowledge about the benefits of postsecondary education leads to less interest in and commitment to pursuing a degree from a higher education institution. Freeman (1997) concludes that Black students with low levels of cultural and social capital do not understand the full benefits of investing in higher education.

As researchers continue to examine ways to improve access, college administrators have become more interested in practices and policies to retain minority students at their respective institutions. As Black students remain much more likely than White students to drop out of college (Wilson & Melendez, 1986), researchers have begun developing theories and models about minority student retention (Braxton,

Hirschy, and McClendon, 2004; Fleming, 1984; Giles-Gee, 1989; Hurtado & Carter, 1997; Rendon, Jalomo, and Nora, 2000; Smith, 1990; Tierney, 1999). Although researchers like Braxton, Hirschy, and Mclendon (2004), Hurtado and Carter (1997), and Rendon, Jalomo, and Nora (2000) incorporate in their studies a number of factors that influence minority student persistence, they focus their attention on the effects of student involvement on minority student retention.

As researchers include concepts of student involvement in studies related to persistence, gathering information about students' involvement and college-going behavior proves to be a challenging task. Students often transfer between institutions, and this movement makes their behavior difficult to track (Adelman, 2006). Adelman (2006) finds that, on average, more than half of the students who enter into higher education attend more than one institution. Additionally, advanced statistical methods are needed to take into account the varying institutional effects on degree completion as students transfer to other colleges and universities. Thus, the difficulty in tracking students coupled with the need for advanced methods limits the amount of research that considers effects of cross-institutional involvement.

Regardless of whether students transfer to other institutions, involvement on campus facilitates students' social, intellectual, and academic development, as students establish connections with peers, faculty, and staff at the institution. Joining campus organizations or assuming leadership positions on campus enables students to establish a personal identity and develop a sense of autonomy (Milem & Berger, 1997). Establishing a self-identity and fostering personal relationships represent critical

predictors of college success (Cooper, Watt, & Saunders, 1999). Organized extracurricular involvement leads to higher levels of academic performance among students (Holloway, 1999). Tinto (1993) suggests that student involvement in campus activities enables students to become socially integrated into the life of the campus. Similarly, Astin (1984) argues that involvement helps students to establish personal ties to the campus, and these connections facilitate positive outcomes, such as higher GPAs and greater persistence rates, for students. Emphasizing the importance of involvement in students' likelihood to persist in college, Bean (1990) utilizes constructs from Astin's involvement framework (1984) and Tinto's interactionist theory (1975) to describe how involvement in social and academic campus activities positively predicts persistence. Berger and Milem (1999) suggest that, as students become more socially involved on campus, they retain a greater likelihood to persist at the institution. As students remain connected to their institution through formal and informal social and academic ties, they remain more likely to feel as though they belong at their institution. This sense of belonging that students feel leads to a greater likelihood of persistence (Hurtado & Carter, 1997).

The sense of belonging described by Hurtado and Carter (1997) remains especially important for minority students. Hurtado and Carter (1997) suggest that minority students adjust to the college environment better and more fully when they maintain the integrity of their cultural and familial values. Though it highlights Hispanic students' sense of belonging, Hurtado and Carter's (1997) research can be extended to other minority groups. The authors suggest that minority students can remain true to

their culture by becoming involved in campus organizations outside of the dominant culture of campus life.

Although researchers have recognized the need to consider different factors when examining degree completion for minority students, many scholars do not disaggregate minority groups by gender. Prior research has reported differences in resiliency between Black men and women with regard to overcoming familial and societal challenges. Black women tend to demonstrate a stronger motivation to succeed and higher levels of independence that enables them to move through their educational paths with greater success (Reis & Diaz, 1999). Black men demonstrate less resiliency compared to Black women when faced with overcoming disadvantages at home, such as lack of parental encouragement and financial support. This resiliency of Black women enables them to respond differently than their male counterparts when faced with similar challenges from family and society (Clark, 1983; Reis & Diaz, 1999).

Purpose of Study

The resiliency that Black women demonstrate when faced with a variety of challenges from society and family underscores the need to examine Black men's and Black women's paths to college degree completion differentially. Using constructs from Bean's (1980, 1990) model of student attrition, Tinto's (1975, 1993) theory on student retention, and Astin's (1984) student involvement framework, this study seeks to determine how involvement differentially affects degree completion for Black men and Black women. Specifically, the study seeks to answer the following research questions:

1. Do Black men and women at four-year institutions differ in their levels of involvement in campus activities?
2. Taking into account pre-college characteristics, how does involvement in campus activities influence degree completion rates among Black men and women at four-year institutions?

This study addresses these research questions by analyzing data from the NCES-sponsored Beginning Postsecondary Students Longitudinal Study: 96/01 (BPS: 96/01). Use of a national dataset makes the findings from this study generalizable to a larger population of college students. Sampling students from institutions eligible to participate in the National Postsecondary Student Aid Study (NPSAS), the BPS: 96/01 study began collecting data from students entering postsecondary institutions for the first time in the 1995-1996 academic year. Base-year questions focused on students' entry characteristics and first-year college experiences.

After gathering base-year information on students and NPSAS institutions in 1996, the BPS study collected additional data from students in its first follow-up in 1998 (BPS: 96/98). The 1998 follow-up occurred during students' third academic year in postsecondary education and included questions about college experiences and persistence. Three years later, in 2001, NCES concluded the BPS study with the second follow-up (BPS: 96/01). This wave of questions focused on students' persistence, educational attainment, and employment following their departure or graduation from postsecondary education.

Because of its longitudinal focus from college entry to six years after initial enrollment, the BPS: 96/01 study limited its student sample to first-time beginning students in postsecondary education (NCES, 2002). Students were eligible for inclusion in the BPS: 96/01 study if they began postsecondary education for the first time between May 1, 1995 and April 30, 1996, were enrolled in an academic program, a credit-based course, or a vocational program, were not concurrently enrolled in high school, and were not solely in a high school completion program. NCES utilized a complex sample design for BPS: 96/01. First, NCES sampled NPSAS-eligible institutions. Within the selected institutions, NCES utilized a stratified, systematic sampling method to select students for the BPS: 96/01 study, and the resulting data comprise a clustered, multi-stage sample.

The complex sample design and binary outcome variable of degree completion requires the use of a number of statistical techniques. Descriptive statistics, including mean comparison tests and analyses of variance, provide necessary information to answer the first research question. Principal components analysis is used to create a single composite factor for variables describing academic involvement. Fixed-effects logistic regression, which takes into account unobserved institutional effects on degree completion (Allison, 1999), tests the second research question. Logistic regression is appropriate because of the dichotomous outcome variable of degree completion.

Significance of Study

Although research has given much attention to minority student retention in the last two decades, studies have not disaggregated the data by gender to determine how involvement in campus activities differentially affects degree completion between Black

men and women. This study focuses on differences in college completion rates between Black men and women. By investigating potential differences between Black men and Black women in their responses to various challenges from their family, institution, and society, this study can inform ways policymakers and administrators approach retention for Black students.

Limitations of Study

This study has several limitations. First, the use of a secondary dataset limits the selection and flexibility of variables in the overall model. Second, this study uses listwise deletion for missing data. Third, because this study focuses on degree completion from a system perspective within higher education, the analyses do not include institutional variables. The BPS: 96/01 includes institutional information for students' initial institution of enrollment; thus, longitudinally tracking institutional effects proves problematic if students transfer to one or more institutions. Lastly, use of fixed-effects logistic regression results in a slight reduction in the number of cases.

Chapter II.

Review of the Literature

Introduction

Scholars use varied approaches to examine the complex issues of student retention and college degree completion. Such approaches include sociological, psychological, and economic perspectives. For example, Tinto (1975, 1993), using constructs from theories on suicide and individuals' adaptation to new environments to underpin his theoretical framework, utilizes a sociological approach to study student retention. Drawing from Bordieu (1977), Berger (2000) and Tierney (1999) study the effects of gaining additional cultural capital on students' likelihood to persist and to complete their degrees. Becker (1993) offers an economic perspective of student persistence in the form of human capital theory.

Although a number of theoretical and conceptual perspectives provide important guidance to the study of persistence and college degree completion, this study draws from the work of Tinto (1975, 1993), Bean (1980, 1990), and Astin (1984), the most prominent frameworks in the literature. This review begins with a discussion regarding student retention theory and compares and critiques the theories of Bean (1990) and Tinto (1993). Highlighting important components of both Bean (1990) and Tinto (1993), the chapter moves into a review of the literature on the relationship between involvement in campus activities and persistence. Drawing from Astin's (1984) student involvement framework, the discussion focuses on how researchers have studied the effects of involvement on

college student retention but have ignored how the effects of involvement on persistence and degree completion are differentially impacted by gender within race.

Although he ignores the differential effects of involvement on Black students' persistence, Bean (1980, 1990) incorporates many of the same constructs as Tinto (1975); however, Bean (1980, 1990) considers student attrition from the perspective of turnover in work environments. One common thread in both Bean's (1990) and Tinto's (1993) frameworks is the role of student involvement in predicting students' likelihood to persist. Alexander Astin (1984) provides researchers with operational definitions of involvement. These definitions focus on students' observable behaviors in college, as Astin contends that researchers can more easily measure behaviors compared to perceptions.

While Tinto (1975, 1993), Bean (1980, 1990), and Astin (1984) provide important theoretical and conceptual guidance to the study of student retention and degree completion, other perspectives have emerged in the literature. Bordieu (1977) describes the concept of cultural capital as a symbolic reference to individuals' understanding and adaptation to the norms of the dominant class. Linking cultural capital to persistence, Berger (2000) concludes that institutions can improve students' likelihood of graduating from college by facilitating their acquisition of cultural capital. As students gain greater levels of cultural capital, they adapt to and assimilate into the campus culture.

While sociologists tend to utilize perspectives of Bordieu (1977), Tinto (1993), and Bean (1990), economists examine student retention from a financial and human capital standpoint and use frameworks by scholars like Becker (1993). Becker (1993)

suggests that students make decisions to enter and remain enrolled in college based on a cost-benefit analysis. Using constructs from Becker's (1993) human capital theory, Perna (2003) and Paulsen and St. John (2002) examine persistence from an economic perspective to determine how finances influence students' likelihood to persist.

Reviewing research that links finances and financial aid to persistence, Pascarella and Terenzini (2005) emphasize the mixed effects of financial aid on student persistence.

Bean and Eaton (2000) present a third alternative perspective to studying student retention in their psychological model. Combining constructs from attitude-behavior theory, coping-behavior theory, self-efficacy theory, and attribution theory, Bean and Eaton (2000) develop a new model that considers how a cycle of attitudes and behaviors affects students' likelihood to persist. Empirical tests of Bean and Eaton's (2000) psychological model have been limited, as researchers are more likely to use the more prominent retention theories of Tinto (1975, 1993) and Bean (1980, 1990).

Retention Theory

According to Braxton, Hirschy, and McClendon (2004), Tinto (1975, 1993) has provided researchers with a foundation for studying student retention in his interactionalist theory of student retention. Tinto's latest revision (1993) of his theory on student retention has expounded upon his original work (Tinto, 1975) by including external community factors as predictors of students' persistence in college. Grounded in sociology, Tinto (1993) draws from the work of Van Gennep (1960) and Durkheim (1951) to construct his theory of student retention. Durkheim developed a theory to explain differences in suicide rates within and between countries. Tinto (1993) focuses

on Durkheim's description of egotistical suicide, which illustrates an individual's inability to assimilate into a new community. According to Tinto (1993), Durkheim suggests that individuals need to integrate socially and intellectually into society, as these forms of integration remain paramount to human existence.

Extending this line of thought to college students, Tinto (1993) posits that college students need to become academically and socially integrated with campus life. Students can achieve this integration through formal and informal forms of involvement inside and outside the classroom. Integrating into the academic and social arenas of campus life requires minority students to find ways to conform to the dominant culture, as they attempt to separate themselves from cultural and familial values (Tinto, 1993).

Drawing from the work of Van Gennep (1960), Tinto (1993) argues that minority students need to separate themselves from their past. According to Tinto (1993), Van Gannep identifies rites of passage for individuals moving from membership in one group to membership in another. These rites of passage include separation from past associations, altering behavior to connect with members in the new group, and assimilating to the norms of the new group to solidify membership in the group (Tinto, 1993). Extending this to college students, Tinto (1993) asserts that students need to find ways to identify with the mainstream culture on campus in order to become fully integrated.

Tinto's (1993) theory of student retention focuses on attributes of the dominant student culture. With this focus on students in the majority, Tinto provides no framework to analyze differences in retention between or even within races and ethnicities. By

excluding constructs that take into account the differences across gender, racial, and ethnic lines, Tinto's theory of student retention is limited.

Because he emphasizes the need for all students to conform to the culture of dominant groups on campus, Tinto (1993) ignores the value that students in underrepresented groups place on their culture and family histories. Hurtado and Carter (1997) suggest that minority students engage in similar levels of social integration as students in the dominant culture through becoming involved in non-mainstream campus activities. The authors identify such activities as joining ethnic student organizations, participating in religious life activities, performing community service, or becoming involved in fine arts (Hurtado & Carter, 1997).

Like Hurtado and Carter (1997), Rendon, Jalomo, and Nora (2000) argue that minority students can become socially integrated in college life while maintaining the integrity of their cultural and familial values. The authors suggest that minority students endure biculturalism as they become socialized into two different ways of life upon college entry (Rendon, Jalomo, & Nora, 2000). Compared to students in the dominant culture on campus, minority students find greater difficulty integrating into the campus culture when they feel they face a choice of conforming or being alienated. Rendon, Jalomo, and Nora (2000) suggest that higher education institutions often present minority students with a number of obstacles to overcome in trying to adapt to campus culture. These obstacles include low expectations of minority students as well as inequities in funding students' education.

Consequently, minority students' satisfaction with their college experience depends largely on the overall campus culture as well as the obstacles that they face at their institution. Bean (1980, 1983, 1990) considers students' satisfaction with the college environment and parallels student attrition with turnover in work organizations. In a study of White students, Bean (1980) concludes that men and women drop out of college for different reasons. Bean's findings suggest that men leave higher education institutions even when they report being satisfied with their experience. In contrast, Bean finds that women who report higher levels of satisfaction with their college experience tend to demonstrate a stronger commitment to the institution that prompts them to persist.

Building upon his earlier findings (Bean 1980, 1983), Bean (1990) focuses on interactions between students and institutions as he attempts to explain reasons for student attrition. In his model of student attrition, Bean (1990) identifies student background characteristics, integration in various facets of the campus community, attitudes, and external factors as potential influences of student attrition. Student attrition represents a longitudinal process, as students do not make the decision to leave college in an instant in time (Bean, 1990). Thus, Bean's model illustrates a logical progression, as students enter college, interact with their environment, and develop attitudes and beliefs based on their experiences in the campus culture.

Bean's (1990) model of student attrition differs from Tinto's (1993) interactionist theory of student departure in several ways. First, Tinto's (1993) theory utilizes students' perceptions about their institution, whereas Bean's (1990) model focuses on students' behaviors. Bean (1990) uses behaviors such as study habits,

relationships with faculty, and absenteeism to measure students' integration into academic life on campus. To measure social integration, Bean (1990) suggests using indicators of students' ability to develop relationships with close friends, informal contact with faculty, and the development of a social support system. By providing specific ways to measure various phenomena, Bean's (1990) theory of student attrition offers researchers more direction in selecting and operationalizing variables.

In addition to including variables reflecting observable behaviors in his model, Bean (1990) also introduces a number of external variables representing external factors. Bean suggests that environmental pull factors, such as finances, off-campus work obligations, and family responsibilities, have a direct influence on students' decisions to remain enrolled in higher education. With the inclusion of environmental pull variables, compared to Tinto's (1993) theory of student retention, Bean's (1990) model of student attrition provides for a more complete framework.

Because he acknowledges differences in influences of departure for minority students, Bean's (1990) model of student attrition is more generalizable than Tinto's (1993) student retention theory. Although he contends that prior achievement often positively predicts persistence and degree completion for students, Bean (1990) suggests that this trend does not hold true for Black students. High-achieving Black students may leave an institution because of frustrating experiences with teachers who view them as inferior to their White counterparts. Additionally, Black students attending predominantly White institutions are more likely to drop out when they feel that the institution controls them through various rules and regulations (Bean, 1990).

Although he identifies the differential effects that pre-college characteristics have on Black student retention, Bean (1990) does not elaborate on the differences in the types of involvement among Black students. Bean describes how Black men respond differently from Black women in terms of satisfaction with the institution, but his framework does not provide constructs to examine involvement's differential effects on Black men's and women's likelihood to complete a college degree.

Involvement Theory

Astin's (1984) framework of student involvement provides an important parallel to Bean's (1990) student attrition theory in its focus on students' behavior. As discussed above, finding a place in the social environment at an institution has a significant influence on students' decisions to remain enrolled. Many of these social connections occur through students' formal and informal involvement in campus activities. Astin's framework of student involvement provides important insight into the study of student retention. Defining involvement as the amount of physical and psychological effort put forth by the student, Astin provides a way to measure student involvement quantitatively. Furthermore, Astin posits five postulates that define and describe the effects of involvement on student outcomes. The five postulates include:

1. Involvement refers to the investment of physical and psychological energy in various activities.
2. Involvement occurs on a continuum.
3. Involvement has both a quantitative and a qualitative feature.

4. The amount of student learning and personal development is directly proportional to the quality and quantity of student involvement.
5. The effectiveness of any educational policy or practice is directly related to the capacity to increase student involvement (Astin, 1984, 298).

Students' involvement on campus represents an investment in their personal development and learning. Astin recommends that students remain active in all aspects of college life in order to enhance their learning and their overall college experience. Institutions, administrators, and professors need to focus less on their daily activities and focus more on how the students involve themselves by investing physical and psychological thought (Astin, 1984).

Astin (1984) utilizes active, behavior-oriented terms to define student involvement. Students' feelings and thoughts remain secondary to their behaviors and actions (Astin, 1984). Involvement in campus activities enables students to believe that they belong to both the academic and social spheres of the institution (Milem & Berger, 1997). Socially, participation in campus activities enables students to establish a personal identity and develop a sense of autonomy.

Astin (1993) utilizes several constructs from his framework to determine how specific types of student involvement affect various college outcomes. Academic involvement contributes to a number of positive outcomes for college students, as Astin suggests that increased interaction between students and faculty leads to a greater likelihood of degree completion. Additionally, as students participate in study groups

outside of class, they become more likely to enjoy their college experience and graduate with honors (Astin, 1993).

In addition to the positive gains from their academic involvement, students derive several benefits from peer-to-peer social interactions. Astin (1993) finds that increased frequencies of student-student interaction improves students' likelihood of completing their degree and enhances their satisfaction with college life. Peer interaction also facilitates the development of leadership skills, public speaking abilities, and cultural awareness.

As students increase the frequencies of their interactions with faculty and with one another, they remain more likely to create connections between their academic and social lives (Light, 2001). In a qualitative study investigating how students optimize their college experiences, Light (2001) draws from Astin's (1984) involvement framework and finds that becoming involved in one or two social activities for as much as 20 hours per week positively affects students' satisfaction with their college experience. Additionally, spending 20 hours per week or less in extracurricular activities, including fine arts, does not negatively impact students' grades (Light, 2001). According to Light, students derive substantial benefits in terms of college satisfaction through their participation in the arts.

The arts represent one of several types of social involvement that Hurtado and Carter (1997) emphasize as important for undergraduate minority students. Hurtado and Carter highlight the importance of minority students' identity development, and their study finds a relationship between minority students' identity development and participation in fine arts. The authors suggest that more research is needed to explore

involvement in fine arts and similar non-mainstream activities, as many scholars continue to focus solely on traditional aspects of student involvement commonly associated with the dominant culture.

Considering social involvement in a more general sense to include all types of activities, Berger and Milem (1999) find that social involvement in college has significant implications for Black students. Studying 718 undergraduate students at a selective research university, Berger and Milem conclude that overall social involvement among students has a positive effect on students' likelihood to persist. Berger and Milem find that Black students felt unsupported by the institution and remained more likely to drop out of college before completing their degree. Although they examine how involvement affects Black students' likelihood to complete their degrees, Berger and Milem do not disaggregate their sample of Black students by gender. By not controlling for students' gender, researchers do not take into account the possible differential influences of involvement on degree completion within race by gender.

Living on Campus

Living on campus during their first year of college positively affects students' likelihood to complete their degree (Astin, 1993; Oseguera, 2005), become satisfied with faculty (Astin & Oseguera, 2003), and persist at the same institution (Titus, 2004). Though the decision to become involved ultimately rests with individual students, students who live on campus consistently have more opportunities to attend various campus programs and connect to their peers, faculty, and staff in formal and informal

ways. These connections provide students with additional support networks that enhance the likelihood of completing a four-year degree.

Students living on campus tend to take advantage of study group opportunities outside of class. As students spend more time doing homework or studying together, they increase their likelihood of persisting, graduating with honors, and matriculating into graduate school (Astin, 1993). Astin finds that increased interaction with faculty improves students' overall satisfaction with their college experience. Additionally, talking to and spending time with faculty increases the likelihood of students' degree completion and enhances students' personal and intellectual growth (Astin, 1993).

Pre-College Characteristics

Both Tinto (1993) and Bean (1990) assert that student retention represents a longitudinal process, as students' decisions to remain enrolled in higher education occur over time rather than at a single point in time. Students' pre-college characteristics represent important factors in predicting students' likelihood of persisting to degree completion. In a study utilizing the National Education Longitudinal Study (NELS) of 1988, Trusty and Niles (2004) conclude that a number of background characteristics significantly predict students' ability to complete a bachelor's degree. In a sub-sample of 3,116 students, the authors examine how influences of high school involvement, parent expectations, attendance rates, and curriculum strength affect students' likelihood of earning a bachelor's degree within eight years of completing high school. Trusty and Niles find that being female, having parents with high educational expectations, enrolling in a strong math and science curriculum, maintaining a high level of involvement, and

demonstrating good attendance behavior all lead to a greater likelihood of completing a bachelor's degree.

In addition to a strong academic curriculum, findings from other research emphasize the significance of high school grade point average (GPA) in predicting students' likelihood of persisting and completing degrees from four-year institutions. In a longitudinal study of 718 college students, Braxton, Milem, and Sullivan (2000) report that high school GPA positively impacts students' likelihood of persistence. Higher pre-college GPAs remain indicative of better-prepared students.

Research by Titus (2004) provides further support for the positive effects on persistence derived from students' pre-college ability. In a study of persistence that uses hierarchical modeling to analyze data from the Beginning Postsecondary Student Longitudinal Study (96/98), Titus examines the effects that background characteristics, college experiences, attitudes, and environmental pull factors have on students' likelihood to persist at four-year institutions. Gender, race, socioeconomic status, academic ability, and educational goal comprise the five background characteristics that Titus includes in his model of student persistence. Titus measures ability as a composite factor that includes students' high school GPA and Standardized Aptitude Test (SAT) scores and finds that students' pre-college ability represents a significant predictor in a students' likelihood of remaining enrolled in college. Titus' finding about the significance of students' prior achievement on persistence support Bean's (1990) assertion that pre-college characteristics matter for students' success in college. Academically prepared students arrive on campus better equipped to face the academic

challenges of college life and thus demonstrate greater resiliency when faced with difficult intellectual tasks.

While adequate preparation for college work remains significant for success in higher education, the benefits from such preparation appear to vary by race/ethnicity. Oseguera (2005) finds that high school GPA represents a stronger predictor for White students' persistence than for Black students' persistence. Oseguera's study suggests that measures of Black students' social involvement on college campuses represent some of the strongest predictors of Black students' likelihood of graduating with a bachelor's degree.

In addition to academic preparation, students' aspirations and parents' expectations for degree attainment also have a significant influence on Black students' likelihood of college success and persistence. Cabrera and LaNasa (2000) suggest that Black parents transmit these expectations to their children through their involvement in their students' lives and through discussions about college. Freeman (1997) supports this assertion, as she finds that Black students who have not had the values of higher education readily impressed upon them by their parents exhibit attitudes of indifference toward college degrees. These students view the attainment of a bachelor's degree as something that affluent, non-Black individuals pursue. Students who lack aspirations to earn a bachelor's degree are less likely to complete a bachelor's degree (Cabrera & LaNasa, 2000; Freeman, 1997). According to Freeman (1997) and Cabrera and LaNasa (2000), Black students' aspirations and Black parents' expectations have a significant

effect on Black students' likelihood of enrolling in and graduating from four-year institutions of higher education.

Importance of Academic Achievement

Some research suggests that students' academic performance in college oftentimes has a greater effect on their likelihood to persist and to complete a college than pre-college academic abilities. Titus (2004) finds that, compared to other predictors, undergraduate academic achievement is a more significant predictor of students' likelihood to persist at the same institution. Likewise, Adelman (2006) suggests that, compared to institutional and student-level financial predictors, students' academic achievement in the first-year is one of the most significant predictors of college completion.

Adelman's (2006) study examines a number of factors affecting students' likelihood to graduate from college. He finds that first-year academic performance plays a significant role in students' likelihood to persist at the same institution and eventually graduate with a college degree. Adelman suggests that the relationship between first-year academic performance and eventual degree completion is affected by the standards within higher education, as students withdraw from college involuntarily because of poor academic performance.

Importance of Black Student Involvement

As all students adjust to academic challenges in the first year of college, minority students in particular search for ways to become connected to the culture of their institution. Minority students establish these connections through classes, interpersonal

relationships with faculty, staff, and students, and involvement in a variety of formal and informal campus activities. Minority students derive the greatest benefits for increasing their likelihood of degree completion by engaging in cultural, non-mainstream student groups (Hurtado & Carter, 1997). The authors conclude that minority students develop a greater sense of belonging on campus through participation in religious, cultural, and student government organizations on campus and that this sense of belonging promotes students' persistence.

Davis' (1995) qualitative study confirms the findings of Hurtado and Carter (1997). Davis concludes that Black students' participation in cultural activities, dances, and community service projects has a significant influence on their satisfaction with their college experience. These activities provide minority students with a support network on campus that enables them to establish stronger connections to the institution.

Black students' involvement in athletics, Greek Life, and other traditional and non-mainstream social activities facilitates a number of social connections among students, faculty, and staff at the institution. These connections, both formal and informal, enable students to find a place within the social culture of a college campus. As students become socially connected at colleges and universities, students exhibit stronger forms of institutional commitment (Mayo, Murguia, & Padilla, 1995) and remain more likely to complete their bachelor's degree (Berger & Milem, 1999; Thomas, 2000). Thomas (2000) has provided support for Bean's (1990) and Tinto's (1993) assertions that establishing social ties to the institution through involvement facilitates a greater likelihood of persistence among students.

In their study of student motivation, Sergent and Sedlecek (1990) underscore the importance of Black students' involvement in a variety of campus organizations. Sergent and Sedlecek find that Black students remain significantly underrepresented in the mainstream culture of campus life. In particular, Black men are substantially underrepresented in involvement in campus activities. Wilson (1994) concludes that Black men consistently demonstrate lower levels of campus involvement and suggests that this lack of involvement among Black males makes them more likely to drop out of institutions of higher education.

Taylor and Howard-Hamilton (1995) examine the effects of involvement on Black men's likelihood to succeed in college. Analyzing data from 117 Black men among 10 predominantly White institutions in the southeastern U.S., the authors incorporate concepts of Astin's (1984) theory of student involvement with Black identity development theory. Taylor and Howard-Hamilton (1995) conclude that Black men's involvement in a variety of activities on campus facilitates their racial identity development. Specifically, Greek letter organizations seem to have a significant impact on Black males' development of a positive racial identity (Taylor and Howard-Hamilton, 1995). As Black men have opportunities to connect with other Black men who face similar challenges from institutional and societal culture, they develop stronger support networks that facilitate more positive attitudes about college life. Although they consider the influence of Black men's involvement in Greek organizations on Black men's identity development and likelihood for college success, Taylor and Howard-Hamilton do not

examine how participation in Greek life affects Black men's likelihood to complete a college degree.

Although research (e.g., Davis, 1995; Hurtado & Carter, 1997; and Taylor & Howard-Hamilton, 1995) examines the effects of social involvement on a variety of student outcomes, many studies on Black student involvement do not establish direct ties between student involvement and college degree completion. Instead, many of these studies consider social involvement as an indirect factor in predicting degree completion or persistence. Research considering the direct effects of Black students' social involvement on their likelihood to complete college degrees tends to focus on athletics (e.g., Rishe, 2003).

As Black students derive a number of positive gains related to a variety of student outcomes through their involvement in social activities, Black male and female athletes find similar benefits in the form of higher degree completion rates through their involvement in college athletics. Rishe (2003) argues that Black athletes experience substantial benefits toward degree completion. Rishe's study finds that, compared to Black non-athletes, Black male athletes are 15.0% more likely to complete their bachelor's degree. Compared to other Black undergraduate students, Black female athletes are 30.0% more likely to graduate from college. While these findings are important in the study of Black students' likelihood of attaining a bachelor's degree, Rishe acknowledges that institutional controls may account for much of the difference in completion rates between Black athletes and non-athletes. These institutional controls include significant financial aid awards in the form of scholarships, minimum GPA

requirements for continued participation, mandatory study halls, and tutoring services. In essence, institutions provide athletes with additional resources to help them find success in college.

Institutional Characteristics

Although student-level characteristics have a significant impact in predicting the likelihood of degree completion, institutional characteristics also affect student outcomes. DeSousa and Kuh (1996) find that Black students report feeling alienated at predominantly White institutions, and this feeling of alienation likely leads to lower persistence rates at such institutions for Black students. In a study investigating the differences in gains made by Black students at predominantly White institutions and historically Black colleges and universities (HBCU), DeSousa and Kuh suggest that HBCUs provide Black students with a richer learning environment in which Black students exert greater academic effort than their counterparts attending predominantly White institutions. DeSousa and Kuh identify several obstacles, such as alienation, racism, and lack of emotional support, that Black students at predominantly White institutions often face. These obstacles affect the degree to which Black students become socially connected to their institution and lead to lower graduation rates among Black students at predominantly White institutions compared to Black students at HBCUs.

According to DeSousa and Kuh (1996), environmental factors within the institution have significant influences on the degree completion differentials among Black students at predominantly White institutions and HBCUs. The results of a study by Oseguera (2005) confirm other research (Adelman, 2006; Astin, 2005) by concluding

that attending more selective institutions has a positive impact on students' degree completion rates. Selective institutions are more likely to have an academic culture that perpetuates the importance of degree completion; thus, students are more likely to become academically involved with their peers and faculty. Additionally, selective institutions have greater amounts of resources to encourage and support student involvement in a number of campus activities. The potential for increased student social and academic involvement as well as additional financial and human resources contribute to students' higher completion rates at more selective institutions.

Although institutional characteristics, such as selectivity and type of institution, influence students' likelihood to complete their degrees, consideration of institutional effects is beyond the scope of this study. Many students within the BPS: 96/01 study transfer to other institutions before earning their bachelor's degree. This study focuses on degree completion from a system perspective of higher education rather than from an institutional perspective. Thus, focusing on student-level influences on degree completion is appropriate. Fixed-effects logistic regression is used to take into account the unobserved institutional effects in the model presented below.

Conclusion

Persistence to degree completion represents a complex problem in higher education research. Theoretical and conceptual perspectives of Tinto (1993), Bean (1990), and Astin (1984) provide important guidance in explaining the reasons why some students drop out of college and others complete their bachelor's degree. However, these frameworks are incomplete with regard to their applicability to minority students.

Although their frameworks emphasize the positive effects that social and academic involvement have on degree completion, Tinto (1993), Bean (1990), and Astin (1984) do not account for differential effects of involvement by gender within race.

Because Black women consistently graduate at significantly higher rates than their male counterparts, this study makes an effort to explain the degree completion disparity between Black men and women. A number of studies (e.g, Berger & Milem, 1999; Mayo, Murguia, & Padilla, 1995; Thomas, 2000) consider the role of student involvement in predicting persistence, yet these studies do not disaggregate the data by gender within race to determine how involvement differentially affects Black men and women in terms of degree completion. Other researchers (e.g., Astin, 1993; Light, 2001; Milem and Berger, 1997) are even more general in their studies, as they use aggregated student data to examine the effects of involvement on degree completion.

This study makes an effort to identify differences between Black men and Black women in the types of activities in which they become involved. Additionally, using fixed-effects logistic regression, this study examines tests for possible differential effects of involvement on degree completion for Black men and Black women. The regression models in this study control for race and gender and include pre-college characteristics, social involvement, academic involvement, on-campus residency, and academic performance as predictors of degree completion. Figure 2.1 provides a graphic illustration of the conceptual model. The arrows between race and gender indicate an

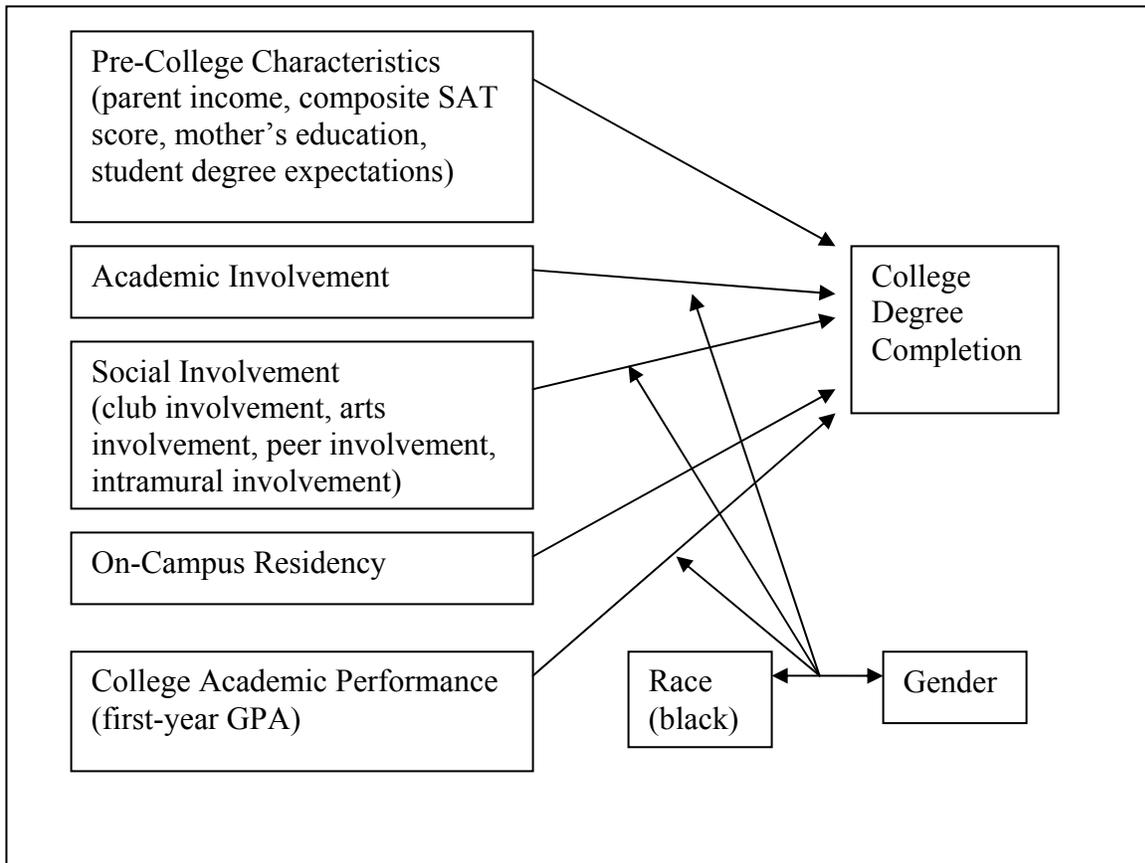


Figure 2.1. *Conceptual Model of the Differential Effects of Involvement on College Degree Completion*

expected interaction effect between those control variables. The interaction between race and gender is expected to have a differential effect on the influences of academic involvement and social involvement as well as students' academic performance in their first year of college.

This study uses a fixed-effects logistic regression model to determine how involvement differentially influences the likelihood of degree completion among Black men and women. Because of the dichotomous dependent variable, college degree

completion, logistic regression remains appropriate. Additionally, the fixed-effects model controls for unobserved institutional effects on the outcome variable.

Chapter III.

Methodology

Introduction

A review of the current literature illustrates the lack of research investigating differential effects of involvement on the likelihood of degree completion among Black men and women. While many scholars attempt to explain differences in completion rates by race, researchers do not disaggregate these analyses by gender. In an attempt to close this gap in the literature, this study uses fixed-effects logistic regression models to analyze data from a National Center for Education Statistics' (NCES) dataset to identify factors that explain the disparity in college degree completion rates between Black men and women. Drawing from Astin's (1984) involvement framework, this study examines the possible differential effects of involvement on degree completion for Black men and Black women. Specifically, this study attempts to answer the following research questions:

1. Do Black men and women at four-year institutions differ in their levels of involvement in campus activities?
2. Taking into account pre-college characteristics, how does involvement in campus activities influence degree completion rates among Black men and women at four-year institutions?

This chapter outlines the methods used to address the above research questions. A discussion on the dataset and sample provides an overview on how the data was collected by the National Center for Education Statistics (NCES). A description of the variables

included in the analyses presents rationale for the selection of variables as well as an overview of how certain variables are derived. The chapter then moves into a discussion on the statistical techniques used to answer the two research questions. Finally, the chapter concludes with an acknowledgement of the limitations of this study.

Sample

This study utilizes data from the 1996-2001 Beginning Postsecondary Students (BPS: 96/01) dataset. BPS: 96/01 is a national longitudinal study of students entering institutions of higher education for the first time in the 1995-1996 academic year. Sponsored by NCES, the BPS: 96/01 dataset includes individual data on more than 12,000 students in nearly 1,000 institutions (NCES, 2002). The students in the BPS: 96/01 dataset entered higher education institutions for the first time in 1995-1996, were enrolled in an academic program, at least one credit-based course, or a vocational program, were not concurrently enrolled in high school, and were not enrolled solely in a high school completion program (NCES, 2002).

The BPS: 96/01 dataset includes three waves of data. The first wave of data was collected in 1996 during students' first academic year of enrollment. The data was collected in conjunction with the National Postsecondary Student Aid Study (NPSAS). Questions in the first wave of data collection focused on students' pre-college characteristics, first-year college experiences, and persistence (NCES, 2002).

The first follow-up for the BPS: 96/01 study occurred in 1998 during students' third academic year of enrollment in postsecondary education. NCES used a variety of methods (e.g., mailings to parents, information retained by postsecondary institutions,

phone calls to participants) to locate students who participated in the first-wave of the study. The first follow-up focused on student persistence and their college experiences. In 2001, NCES concluded the BPS: 96/01 study with the second follow-up. This wave of data was collected six years after students' initial enrollment in postsecondary education. This third wave of data asked students about their persistence, educational attainment, and employment since leaving or graduating from higher education institutions.

The BPS: 96/01 dataset represents a clustered, multi-stage sample design. First, NCES sampled NPSAS-eligible institutions as part of the NPSAS study. Second, within the sampled institutions, NCES utilized a stratified, systematic sampling method to select students for the BPS: 96/01 study, and the resulting data comprise the total BPS: 96/01 sample. NCES gathered information from sampled students through phone interviews and face-to-face interviews.

This study focuses on degree completion among students at four-year colleges and universities. The research excludes students who identify as American Indian (N=30) and other race/ethnicity (N=7), as the generalizability from such small samples remains limited. The analytic sample excludes cases with missing data for the outcome variable of college degree completion (N=1,747). Additionally, listwise deletion was used for missing data for independent variables. Listwise deletion eliminates cases that have variables with missing data (Allison, 2001). The final analytic sample for this study is composed of 5,385 first-time, degree-seeking, dependent and independent students. BPS: 96/01 only includes data for students enrolling in higher education for the first time in 1995-1996. This study is limited to degree-seeking students because of its focus on

degree completion. Including students enrolled in higher education but not seeking a degree would skew the results of the study.

Variables

In this study, the dependent variable, college degree completion, is defined as having completed a bachelor's degree within six years of having enrolled in postsecondary education at the time of the second follow-up. This research focuses on degree completion in the system of higher education rather than at a particular institution. Therefore, degree completion is defined by an affirmative answer to the question in BPS: 96/01, "Have you earned a bachelor's degree at any school?" In this analysis, the independent variables include measures of students' pre-college characteristics, academic and social involvement, on-campus residency, and undergraduate academic performance. Table 3.1 presents information on all variables included in the analysis.

Students' pre-college characteristics include race/ethnicity, gender, pre-college academic performance, degree expectations, mother's education, and parents' income level in 1995. Four racial/ethnic groups are included in this analysis: Asian, Hispanic, White, and Black students. White students comprise the reference group. Students' combined SAT scores serve as the measure for students' pre-college academic ability. SAT scores indicate students' level of preparation for and ability to succeed in college. Students' degree expectations are measured by students' response to the question: "What is the highest level of education you ever expect to complete?" Students' degree expectations indicate an initial commitment to completing at least a bachelor's degree. Both mother's education and parent income level in 1995 serve as indicators of resources,

Table 3.1. *Description of Variables of BPS: 96/01 Data*

BPS: 96/01 Name	Variable	Model Role	Description
QBANYBA	Degree completion	Dependent	Binary value: did not complete bachelor's degree (0) or completed bachelor's degree (1)
SBRACE	Black		Recoded. Binary: Black (1) or non-Black (0). White is the reference group. Original code for SBRACE: White (1), Black (2), Hispanic (3), Asian (4), American Indian (5), Other (6).
	Hispanic		Recoded. Binary: Hispanic (1) or non-Hispanic (0). White is the reference group.
	Asian		Recoded. Binary: Asian (1) or non-Asian (0). White is the reference group.
SBGENDER	Female		Recoded. Binary: Female (1) or male (0). Male is the reference group. Original code for SBGENDER: Male (1), Female (2)
EPHDEGY1	Student Degree Expectations		Recoded. Ordinal: don't know (0), less than four-year degree (1), certificate (2), associates degree (3), bachelor's degree or higher (4). Original code for EPHDEGY1: Don't know (0), less than a four-year degree (1), Certificate (2), Associate's degree (3), Bachelor's degree (4), Completion of post-baccalaureate program (5), Master's degree (6), Advanced degree—doctoral or first professional (7)
TESATDER	Composite SAT Score		Interval value, standardized. Students' combined score on the Standardized Aptitude Test (SAT)
MOTHEDEC	Mother's education		Ordinal value: less than high school (0), high school diploma (1), some college (2), bachelor's degree (3), post-baccalaureate degree (4)
PARINC95	Parent income		Ratio value of \$0-1,000,000. Standardized. Parents' income for students younger than 30 years old, regardless of dependency status
SILECTUR, SISTUDGP, SISOCIAL, SIMEET, SITALK	Academic involvement		Factor composite of the frequency students reported attending lectures/conventions/field trips, talking with faculty outside class, having social contact with faculty, meeting with academic advisor, and attending study groups.
SIINTRAM	Intramural Involvement		Recoded. Binary: Not involved (0), Involved (1). Original code: Never (0), Sometimes (1), Often (2)

Table 3.1. *Description of Variables of BPS: 96/01 Data (continued)*

SICLUBS	Club involvement		Recoded. Binary: Not involved (0), Involved (1) . Original code: Never (0), Sometimes (1), Often (2)
SIFRIEND	Peer involvement		Recoded Binary: Never go out with friends (0), go out with friends (1). Original code: Never (0), Sometimes (1), Often (2)
SIARTS	Arts involvement		Recoded. Binary: Not involved (0), Involved (1) . Original code: Never (0), Sometimes (1), Often (2)
SEGPAY1	College GPA		Ratio value. Standardized. Reported cumulative GPA through the first year of enrollment.
HTENRLY1	On-Campus Residency		Recoded: Binary: off-campus residency (0), on-campus residency (1). Original code: On-campus (1), Off-campus, school-owned housing (2), In apartment/house not with parents (3), With parents or guardian (4), With other relatives (5), Some place else (6)
B01LWT1	Analysis Weight	Weight	Analysis weight for students responding in 1996, 1998, and 2001.
INSTID	Institutional ID	Cluster	String value. Identifier of students' first institution.
INST96WT	Institutional Weight	Weight	Analysis weight from base-year sample adjusted for non-response.

Source: BPS: 96/01 survey data

both tangible and intangible, available to students in their pursuit of their bachelor's degree.

Following Astin's (1984) recommendation of using actual behaviors as measures of involvement, this study incorporates variables that describe students' actions in becoming involved on campus. The academic involvement component includes variables measuring the frequency that students reported having social contact with faculty, meeting with their academic advisor, talking with faculty outside of class, attending study groups, and attending lectures, conventions, or field trips. Principal Component Analysis

(PCA) reduces the number of variables by taking into account the total variance of variables (Dunteman, 1989). Factor analysis, on the other hand, considers only the common variance between variables and ignores variables' unique variance (Dunteman, 1989). Factor analysis focuses on correlations among variables whereas PCA includes considerations for correlations and total variances among the variables. PCA resulted in one component being extracted from five academic involvement variables. Because the reliability coefficient for this five-item factor is 0.63, which falls below Pedhazur and Schmelkin's (1991) recommended standard of 0.70, readers should interpret this composite factor with caution. Table 3.2 shows the factor loadings for the academic involvement composite factor.

Table 3.2. *Factor Loadings of BPS: 96/01 Data for Academic Involvement Composite Factor*

BPS ID	Variable	Factor Loading	Alpha Score If Item Deleted*
SILECTUR	Attend Lectures/conventions/field trips	0.583	0.594
SISTUDGP	Attend study groups outside class	0.585	0.600
SIMEET	Meet with advisor about plans	0.631	0.575
SISOCIAL	Have social contact with faculty	0.652	0.581
SITALK	Talk with faculty outside class	0.732	0.533

* Alpha reliability coefficient = 0.630

Source: Analysis of BPS: 96/01 survey data

Using PCA, a component was constructed for students' social involvement. The composite factor included four variables that measured students' frequency of going places with friends, attending fine arts events, playing intramural sports, and participating in social clubs. The component had a reliability coefficient of 0.48. Because this value is significantly below the recommended threshold of 0.70 by Pedhazur and Schmelkin (1991), the social involvement composite factor was excluded from the analysis. Instead,

four distinct, dichotomous variables provide measures for students' level of social involvement on campus. These variables include how often students reported going places with friends, participating in school clubs, playing intramural sports, and attending fine arts events. Each of these four variables is measured by a dichotomous indicator of involvement or non-involvement in the specified activity. Because minority students receive substantial benefits from their participation in non-mainstream social activities (Hurtado & Carter, 1997), the researcher does not aggregate the variables for social involvement.

On-campus residency is represented by a dichotomous variable indicating whether or not students lived on campus during their first-year of enrollment. Astin (1993) provides support for including students' place of residence while in college. Students who live on campus remain more likely to complete their degrees and become more involved in campus activities. Living on campus may be related to how far away the student lives from home. To test for exogeneity of on-campus residency, a Smith-Blundell (1986) test was conducted. Students' decision to live on campus may be influenced by the distance between their institution and their permanent home. The Smith-Blundell (1986) test for exogeneity used the BPS: 96/01 variable ICMILES, which indicates the distance between students' permanent home and the institution where they enrolled in 1995, in a two-stage probit model. The probit model includes pre-college, social involvement, academic involvement, on-campus residency, and academic achievement as predictors of college degree completion. In the Smith-Blundell (1986) test for exogeneity, the chi-square statistic and probability value ($\chi^2 = 0.015$, $p < 0.9041$)

resulted in a failure to reject the null hypothesis. The Smith-Blundell (1986) test indicated that on-campus residency should be included as is in the analysis as an exogenous variable.

College academic performance is measured by students' first-year grade point average (GPA). Students' undergraduate GPA represents a continuous variable in the analysis. Research by Adelman (2006) and Titus (2004) provides support for inclusion of first-year academic achievement in the model.

Panel weights are included for both students (B01LWT1) and institutions (INST96WT). The student-level weight accounts for students who responded in all three waves of BPS: 96/01 (NCES, 2002). The institutional-level weight accounts for institutional non-response from the base-year sample of NPSAS: 96 institutions.

For interpretability purposes, the continuous variables in this study were standardized. Standardizing variables subtracts the mean of each variable from each observation and then divides by the standard deviation for the variable. This process produces a mean of zero and a standard deviation of one for each standardized variable.

Data Analysis

The research questions for this study require several statistical techniques. To determine differences between Black men and women in their involvement in campus activities, mean comparison and analysis of variance (ANOVA) tests for the involvement variables provide context for the first research question. The Kruskal-Wallis test is used to test differences between Black men and women in their levels of degree completion and involvement with clubs, fine arts and friends. Because the degree completion and

involvement variables are dichotomous, they do not meet the assumption of a normal distribution necessary for parametric analyses (Levin, 1999); therefore, the nonparametric Kruskal-Wallis test is appropriate to compare differences between Black men and women in regards to these variables. ANOVAs are used to determine differences between Black men and women in their level of academic involvement and their undergraduate GPA.

In addition to mean comparison and ANOVA tests, this study uses principal component analysis (PCA) to derive a single variable for academic involvement. PCA takes into account variables' total variance instead of just the common variance that factor analysis takes into account. In this study, PCA considers five variables related to students' academic involvement and extracts a single component.

To answer the second research question, this study uses standard logistic and fixed-effects logistic regression. Logistic regression is an appropriate technique because of its predictive ability for a dichotomous dependent variable: college degree completion. Fixed-effects logistic regression takes into account unobserved institutional effects in the regression model (Allison, 1999). In fixed-effect logistic regression, the model assumes that omitted variables vary between cases but remain constant across institutions. Because this study focuses on degree completion from a system of higher education perspective, the regression models in this study do not consider institutional effects. Using fixed-effects regression models controls for unobserved institutional effects; this is a major strength of fixed-effects logistic regression models in analyzing retention using multi-institutional data.

The fixed-effects logistic regression also accounts for the complex design of the BPS: 96/01 sample. Standard regression techniques assume a simple, random sample and thus underestimate standard errors in the analysis by not taking into account design effects of the survey (Allison, 1999). Underestimation of standard errors often results in a Type I error in which a researcher concludes a relationship exists when in fact one does not exist (Allison, 1999). Institutions represent the sampling strata in the BPS: 96/01 dataset, and controlling for the clustering of students within institutions accounts for the effects of the complex sample design.

Equation 1 presents the standard logistic regression model.

$$\log \left[\frac{\phi}{1 - \phi} \right] = \alpha + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_i x_i \quad (1)$$

Equation (2) represents the full fixed-effects logistic regression model.

$$\begin{aligned} \log \left[\frac{\phi}{1 - \phi} \right] = & \beta_{0j} + \beta_{1j} * Black_{ij} + \beta_{2j} * Asian_{ij} + \beta_{3j} * Hispanic_{ij} + \beta_{4j} * Female_{ij} \\ & + \beta_{5j} * CompositeSATScore_{ij} + \beta_{6j} * DegreeExpectations_{ij} \\ & + \beta_{7j} * Mother'sEducation_{ij} + \beta_{8j} * ParentIncome_{ij} \\ & + \beta_{9j} * (ACADEMICINVOLVEMENT)_{ij} + \beta_{10j} * Club Involvement_{ij} \\ & + \beta_{11j} * ArtsInvolvement_{ij} + \beta_{12j} * PeerInvolvement_{ij} \\ & + \beta_{13j} * IntramuralInvolvement_{ij} + \beta_{14j} * First - YearGPA_{ij} \\ & + \beta_{15j} * On - campusResidency_{ij} + \beta_{16j} * (INTERACTION_VARIABLES)_{ij} + \mu_{ij} \end{aligned} \quad (2)$$

where μ identifies the error term. The subscript i denotes the student, and the subscript j denotes the institution. Black, Asian, and Hispanic are dichotomous indicators of race and Female is a dichotomous indicator of gender. Composite SAT score, student degree expectations, parental income, and undergraduate GPA are the BPS: 96/01 variables described in Table 3.1. Mother's education, club involvement, art involvement, peer involvement, and on-campus residency are the derived variables from BPS: 96/01 as

described in Table 3.1 ACADEMIC INVOLVEMENT is the composite factor of five academic involvement variables described earlier in this chapter.

This study tests the significance of a number of interaction variables. Interactions among being Black and being involved with academics, clubs, intramural sports, fine arts, and peers are analyzed to determine if involvement differentially affects Black students' likelihood to complete degrees. Additionally, the interaction between Black students and first-year GPA is examined. Similar analyses are conducted for interactions between women and the various involvement variables as well as first-year GPA. If any of these interactions variables prove significant in the fixed-effects logistic regression model, additional interaction terms are tested. The additional interaction variables test for significant relationships between Black students and involvement and between Black students and academic performance by gender. Similarly, if interactions of Black students by involvement by gender prove significant, they remain in the final model.

Beta coefficients and odds-ratios are used in reporting the results of the logistic regression. The results include odds ratios because these values are easier to interpret in terms of their effect on the outcome variable. Odds ratios indicate how a one-unit change in the independent variable, controlling for the other independent variables, changes the odds of degree completion (Allison, 1999). Values greater than one indicate an increase in the odds of completing a degree. Values less than one suggest a decrease in the chance of completing a college degree.

Limitations

This study is limited in several ways. First, the availability of the variables within the secondary dataset limits the flexibility of variable selection. The analyses are constrained to the type of variables available in the dataset. Second, this study uses list-wise deletion for missing data. List-wise deletion leads to bias within the sample (Allison, 2001). Third, the sample is limited to degree-seeking students in 1995-1996. Students initially may enroll in higher education institutions as non-degree-seeking students and then begin in a degree program after their first year. Students who change their status from non-degree-seeking to degree-seeking after their first year are not included in the sample for this study. Fourth, this study does not include institutional variables. This study focuses on degree completion from a system perspective within higher education. BPS: 96/01 tracks students through to degree completion but includes institutional information for the students' initial institution at which they enrolled. Using fixed-effects logistic regression accounts for unobserved effects at the institutional level. Fifth, because no variance in the dependent variable exists within certain institutions, using fixed-effects regression results in a less efficient model with a slight decrease in the number of cases; however, fixed-effects logistic regression results in more consistent estimates (Allison, 1999).

Chapter IV.

Results

Introduction

This chapter presents the results from the analyses described in Chapter 3. Descriptive statistics and the results from the analyses of variances (ANOVAs) and Kruskal-Wallis tests provide information regarding the differences and similarities between Black men and Black women in their level and type of involvement in various campus activities. These statistics address the first research question of the study.

Addressing the second research question, results from standard and fixed-effects logistic regression models are included in this chapter. The standard logistic regression models are included for comparison purposes, as these results demonstrate the importance of accounting for unobserved variance at the institutional level. The fixed-effects logistic regression models account for unobserved institutional effects. The results for both the fixed-effects and standard logistic regression models include odds ratios and Beta coefficients.

Descriptive Statistics

The analytic sample in this study contains 5,385 cases. Table 4.1 includes the descriptive statistics for the variables included in the analysis. As noted in Table 4.1, 9.3% of the students identify as Black, 9.0% identify as Hispanic, and 6.4% identify as Asian. Approximately 56.1% of the students are women. A number of students (62.3%) in the sample completed their bachelor's degree within six years. More than two-thirds of the students lived on campus during their freshmen year. The

Table 4.1. *Descriptive Statistics of Analysis Variables Using BPS: 96/01 Data Weighted by B01LWT1*

Variable	Observations	Mean	S.D.	Min	Max
Degree Completion	5385	0.623	0.485	0.000	1.000
Composite SAT	5385	0.000	1.000	-2.739	2.837
Degree Expectations	5385	5.152	2.099	0.000	7.000
Mother's Education	5385	2.052	1.157	0.000	4.000
Parental Income	5385	0.000	1.000	-1.083	15.884
Female	5385	0.561	0.496	0.000	1.000
Black	5385	0.093	0.290	0.000	1.000
Hispanic	5385	0.090	0.286	0.000	1.000
Asian	5385	0.064	0.244	0.000	1.000
Intramural Involvement	5385	0.421	0.494	0.000	1.000
Club Involvement	5385	0.519	0.500	0.000	1.000
Arts Involvement	5385	0.627	0.484	0.000	1.000
Peer Involvement	5385	0.928	0.259	0.000	1.000
Academic Involvement	5385	0.000	1.000	-2.295	2.653
On-Campus Residency	5385	0.689	0.463	0.000	1.000
First-Year GPA	5385	0.000	1.000	-3.157	1.542
Black*GPA	5385	-0.046	0.361	-3.157	1.542

Source: Analysis of BPS: 96/01 survey data

continuous variables of composite SAT score, parent income, academic involvement, and first-year GPA are standardized, as indicated by their means of 0 and standard deviations of 1. Standardizing continuous variables aids in interpreting the results of logistic regression.

Differences in Types of Involvement

To answer the first research question, Kruskal-Wallis (1952) tests and analyses of variance were conducted to determine how Black men and women differed in their types of involvement. Table 4.2 presents the results of the Kruskal-Wallis (1952) tests for Black men and women. As indicated by Table 4.2, Black men and women differ significantly in their level of participation in the fine arts. The evidence of this analysis suggests that

Table 4.2. Results of the Kruskal-Wallis Test of BPS: 96/01 Data

Variable	Rank Sum		Chi-Square	P-Value
	Black Women	Black Men		
Participate in intramurals	72243.00	53007.00	39.596***	0.001
Go places with friends	83137.00	42113.00	0.634	0.426
Participate in school clubs	82518.50	42730.50	0.155	0.693
Participate in fine arts events	85266.50	39983.50	4.760*	0.029

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Source: Analysis of BPS: 96/01 survey data.

Black women demonstrate higher levels of involvement in fine arts. Participation in fine arts events includes attending school plays, concerts, and dances. Additionally, Black men appear more likely to participate in intramural sports than Black women. Black men and women do not appear to differ significantly in their levels of involvement in school social clubs or with their peers.

Analyses of variance were used to identify how men and women differed in their levels of academic involvement and first-year GPAs. Table 4.3 presents the results of the ANOVAs. Black men and women do not appear to have a significant difference in their academic involvement. Academic involvement represents a composite factor comprising the frequencies in which students meet with their academic advisor, participate in study groups, attend lectures, conventions, and field trips, have social contact with faculty outside of class, and talk with faculty outside of class. Black men and women appear to engage in these activities at similar levels. Table 4.3 indicates that Black men and women differ significantly in their first-year GPAs. The data suggest that Black women perform better academically than their male counterparts throughout their first year of enrollment.

Table 4.3. *Analysis of Variance of Academic Involvement and First-Year GPA in BPS: 96/01 Data*

Variable	Partial SS	Df	MS	F	Prob>F
Academic Involvement					
Female	1.783	1	1.783	1.38	0.241
Residual	644.672	498	1.294		
First-Year GPA					
Female	13.437	1	13.437	11.63***	0.001
Residual	575.237	498	1.155		

* p<0.05 ** p <0.01 *** p < 0.001

Source: Analysis of BPS: 96/01 survey data

Effects of Involvement on Degree Completion

To determine how student involvement affects degree completion for Black men and women, this study utilizes fixed-effects logistic regression. Logistic regression remains appropriate for this analysis because of the dichotomous dependent variable: degree completion. A seemingly unrelated estimation test was used to determine the necessity to use fixed-effects logistic regression instead of standard logistic regression. Chi-square tests were conducted on the coefficients from both the fixed-effects and standard logistic regression models to determine any differences in the two models. Appendix A presents the results of these chi-square tests. A number of significant differences between the two models necessitated the use of the fixed-effects logistic regression model in the final analysis.

Table 4.4 provides results for three standard logistic regression models. The first model contains only demographic and pre-college characteristics, which include SAT scores, students' degree expectations, mother's education, parent income in 1995, gender, and race. The second model incorporates involvement variables, on-campus

Table 4.4. Results of Standard Logistic Regression Models for Degree Completion with Odds Ratios Using BPS: 96/01 Data

Variables	Model 1				Model 2				Model 3			
	Coef.	Odds Ratio	Std. Err.	P> z	Coef.	Odds Ratio	Std. Err.	P> z	Coef.	Odds Ratio	Std. Err.	P> z
Composite SAT Degree	0.546	1.727***	0.049	0.000	0.222	1.249***	0.056	0.000	0.223	1.250***	0.056	0.000
Expectations	0.084	1.099***	0.018	0.000	0.040	1.040*	0.020	0.045	0.039	1.040*	0.020	0.046
Mother's Ed.	0.233	1.262***	0.037	0.000	0.162	1.175***	0.037	0.000	0.161	1.175***	0.037	0.000
Parent Income	0.131	1.140*	0.054	0.016	0.108	1.114*	0.054	0.047	0.105	1.111	0.054	0.053
Female	0.393	1.481***	0.078	0.000	0.205	1.228*	0.087	0.019	0.208	1.232*	0.087	0.017
<i>Male (reference)</i>												
Black	-0.352	0.703**	0.131	0.007	-0.343	0.710*	0.147	0.020	-0.284	0.753	0.155	0.067
Hispanic	-0.037	0.964	0.125	0.771	0.111	1.117	0.140	0.428	0.108	1.114	0.139	0.435
Asian	0.391	1.478*	0.154	0.011	0.500	1.648**	0.171	0.003	0.501	1.650**	0.170	0.003
<i>White (reference)</i>												
Intramural Inv.					0.219	1.245*	0.099	0.027	0.223	1.250*	0.099	0.025
Club Inv.					0.349	1.417***	0.088	0.000	0.345	1.412***	0.088	0.000
Arts Inv.					0.018	1.018	0.097	0.850	0.018	1.018	0.097	0.851
Friend Inv.					0.670	1.955***	0.181	0.000	0.670	1.955***	0.182	0.000
Acad. Inv.					0.170	1.186***	0.043	0.000	0.171	1.186***	0.043	0.000
On-Campus					0.756	2.130***	0.095	0.000	0.758	2.134***	0.094	0.000
<i>Live off-campus (reference)</i>												
First-year GPA					0.851	2.342***	0.060	0.000	0.824	2.281***	0.060	0.000
Black*First-year GPA									0.231	1.259	0.183	0.206
Constant	-0.628		0.141	0.000	-1.519		0.230	0.000	-1.519		0.230	0.000
χ^2	309.23***				547.120***				553.87***			
Pseudo-R ²	0.098				0.229				0.230			

* p < 0.05 ** p < 0.01 *** p < 0.001

Source: Analysis of BPS: 96/01 survey data

Note: Variables are weighted with the panel weight B01LWT1 and are clustered by institution (INSTID).

residency, and undergraduate GPA as predictors of degree completion. Involvement variables include academic involvement, participation in fine arts, involvement in social clubs, intramural participation, and time spent going places with friends. The final model includes all of the variables from Model 2 and adds an interaction term. This interaction term includes the relationship between being Black and first-year GPA.

Odds ratios and beta coefficients are reported for the variables in each of the three models. Odds ratios remain easier to interpret compared to beta coefficients in logistic regression. Ratios above 1.0 result in a greater likelihood for degree completion while odds ratios below 1.0 indicate that a one-unit change in the independent variable predicts a lesser likelihood of earning a bachelor's degree. For example, in Model 1 in Table 4.4 a change in degree expectations from an associate's degree to a bachelor's degree results in an increase in the odds for completing a degree (odds ratio = 1.099, $p < 0.001$).

From Model 1 in Table 4.4, composite SAT scores, student degree expectations, mother's education, parent income, being female, being Black, and being Asian significantly predicted students' likelihood of earning a bachelor's degree. Composite SAT scores (odds ratio = 1.727, $p < 0.001$) and parent income (odds ratio = 1.140, $p < 0.05$) have a substantial positive impact on students' likelihood to complete their college degree. Students with more educated mothers appear to receive substantial benefits toward degree completion, as every increase in the level of education of a student's mother increases the student's odds of completing a college degree (odds ratio = 1.262, $p < 0.001$). Asian students are significantly more likely (odds ratio = 1.478, $p < 0.001$) to

graduate from college than White students whereas Black students are significantly less likely (odds ratio = 0.703, $p < 0.01$) than White students to complete their degrees.

In Model 2 in Table 4.4, the same pre-college and demographic variables from Model 1 are significant. Additionally, intramural involvement, club involvement, peer involvement, academic involvement, on-campus residency, and first-year GPA are significant in the analysis. Intramural involvement is positively related to degree completion (odds ratio = 1.245, $p < 0.05$). Likewise, students who become involved in social clubs have a better chance of graduating from college (odds ratio = 1.417, $p < 0.001$), while students who spend time going places with their friends are almost twice as likely to complete their degrees than students who remain disconnected from their peers (odds ratio = 1.995, $p < 0.001$). Individuals who live on campus in their first year are more than twice as likely as off-campus students to graduate from college (odds ratio = 2.130, $p < 0.001$). Additionally, students who perform better academically appear to be significantly and substantially more likely to earn their bachelor's degree (odds ratio = 2.342, $p < 0.001$).

Taking into account the variables from Model 2, Model 3 in Table 4.4 includes an interaction term that tests the significance of the relationship between Black students and their first-year GPA. This interaction is not a significant predictor in the standard logistic regression model; however, several pre-college and involvement variables are significant in Model 3. Women and Asian students are significantly more likely to graduate from college than male students and White students, respectively. Composite SAT scores remain significantly and positively related to degree completion in Model 3 (odds ratio =

1.250, $p < 0.001$). As in Model 2, participation in intramural sports and involvement in social clubs makes students significantly more likely to complete their college degrees. Generally, students who perform well academically or live on campus during their first year more than double their odds of graduating from college.

The results in Table 4.4 serve as a comparison illustration to demonstrate the difference between using standard and fixed-effects logistic regression. Table 4.5 presents the results of the fixed-effects regression models. Each of the three models includes the same variables as the three corresponding models in Table 4.4.

Several pre-college and demographic variables appear significant in Model 1 in Table 4.5. Students who score better on the SAT remain more likely to complete a college degree (odds ratio = 1.293, $p < 0.05$). This result supports research by Oseguera (2005) who finds that SAT scores remain positive predictors of degree completion. Model 1 suggests that women have greater odds of completing a bachelor's degree compared to their male counterparts (odds ratio = 1.668, $p < 0.001$). Students who aspire to earn more advanced degrees are more likely to graduate from college (odds ratio = 1.094, $p < 0.001$). This finding is consistent with the research of Cabrera and LaNasa (2000) and Freeman (1997), who found that students' aspirations for a college degree positively and significantly predict their likelihood to graduate from college. None of the race indicators prove significant in Model 1. Unlike in the standard logistic

Table 4.5. Results of Fixed-Effects Logistic Regression Models for Degree Completion with Odds Ratios Using BPS: 96/01 Data

Variables	Model 1				Model 2				Model 3			
	Coef.	Odds Ratio	Std. Err.	P> z	Coef.	Odds Ratio	Std. Err.	P> z	Coef.	Odds Ratio	Std. Err.	P> z
Composite SAT Degree	0.257	1.293*	0.001	0.025	-0.043	0.958	0.138	0.766	-0.036	0.965	0.144	0.804
Expectations	0.090	1.094***	0.030	0.001	0.036	1.037	0.031	0.232	0.035	1.035	0.031	0.255
Mother's Education	0.033	1.033	0.060	0.575	0.031	1.031	0.060	0.600	0.025	1.025	0.058	0.669
Parent Income	0.120	1.128	0.000	0.248	0.061	1.063	0.079	0.412	0.057	1.059	0.076	0.452
Female	0.512	1.668***	0.160	0.000	0.310	1.363***	0.163	0.009	0.315	1.370**	0.118	0.007
<i>Male (reference)</i>												
Black	-0.243	0.784	0.184	0.299	-0.254	0.776	0.195	0.313	-0.062	0.940	0.252	0.805
Hispanic	-0.012	0.988	0.214	0.955	-0.093	0.911	0.225	0.706	-0.075	0.928	0.245	0.759
Asian	0.380	1.463	0.311	0.073	0.179	1.196	0.248	0.389	0.184	1.202	0.206	0.372
<i>White (reference)</i>												
Intramural Inv.					0.581	1.788	0.579	0.073	0.590	1.804	0.325	0.069
Club Inv.					0.288	1.334**	0.134	0.004	0.289	1.334**	0.103	0.005
Arts Inv.					-0.156	0.855	0.121	0.267	-0.154	0.857	0.142	0.275
Peer Inv.					0.567	1.764*	0.440	0.023	0.590	1.804**	0.254	0.020
Academic Inv.					0.235	1.265***	0.084	0.000	0.234	1.264***	0.068	0.001
On-campus					0.343	1.409	0.303	0.111	0.335	1.398	0.216	0.120
<i>Live off-campus (reference)</i>												
First-year GPA					0.953	2.593***	0.253	0.000	0.896	2.449***	0.100	0.000
Black*First-Year GPA									0.730	2.096**	0.270	0.006
χ^2	79.08***				458.7***				416.76***			
Pseudo-R ²	0.032				0.181				0.197			

p < .05, ** p < .01, *** p < .001

Source: Analysis of BPS: 96/01 survey data

Notes: Variables are weighted with the panel weight INST96WT and are clustered by institution (INSTID).

regression, parental income, mother's education, being Black, being Hispanic, and being Asian are not significant predictors of college completion in the fixed-effects logistic regression model.

Model 2 features the addition of involvement variables, first-year GPA, and a dichotomous variable indicating on-campus residency to the prediction equation. Women appear to have a better chance of completing a degree compared to men (odds ratio = 1.363, $p < 0.001$); however, none of the other pre-college or demographic variables is significant in Model 2. Several involvement variables as well as first-year GPA have significance. Participation in school clubs positively affects the odds of degree completion (odds ratio = 1.334, $p < 0.01$). Similarly, the level of students' academic involvement in their first year has a positive and significant relationship with college degree completion (odds ratio = 1.265, $p < 0.001$). Students who perform better academically have significantly better odds of college degree completion, as one-unit changes in first-year GPAs more than doubles students' chances of graduating from college (odds ratio = 2.593, $p < 0.001$). On-campus residency, participation in intramural sports, and involvement in fine arts activities do not appear significant in Model 2.

Model 3 in Table 4.5 includes all of the variables from Model 2 and adds the interaction between Black students and first-year GPA. This interaction term indicates that GPA differentially affects Black students' likelihood of graduating from college. Compared to White students, Black students who experience one-unit increases in the first-year GPAs double their odds of completing a college degree (odds ratio = 2.096,

$p < 0.01$). Consistent with Model 2, Model 3 has just one significant demographic variable: being female. Women remain significantly more likely than men to graduate from college (odds ratio = 1.370, $p < 0.01$). Club and peer involvement both appear significant in Model 3, as students involved with their peers and in social clubs and organizations remain more likely to graduate from college than students who are not involved. Academic involvement (odds ratio = 1.264, $p < 0.001$) and first-year GPA (odds ratio = 2.449, $p < 0.01$) have significant and positive effects on students' likelihood to a four-year college degree.

In terms of goodness of fit, Model 3 in Table 4.5 is the best model for the data. The chi-square statistic and the pseudo- R^2 value are largest in the third model. The pseudo- R^2 does not indicate the amount of variance in the dependent variable that is explained by the independent variables, as is the case in linear regression. Instead, the pseudo- R^2 is indicative of the overall strength of the model (Cabrera, 1994).

Additionally, multicollinearity is often a concern with logistic regression analyses (Allison, 1999). To test for potential multicollinearity, variance inflation factors (VIF) and tolerances were conducted. VIFs over 2.0 and tolerances under 0.40 are considered unacceptable (Allison, 1999). Appendix B includes the VIFs and tolerances for the variables included in the final logistic regression models. All of the variables in the final model have acceptable VIFs and tolerances, so multicollinearity among those variables is not a concern.

Conclusion

As indicated in Chapter 3, this study tested a number of interaction variables to determine potential relationships among race, gender, and involvement and academic performance. Out of the many combinations of interactions among these variables, just one interaction, Black students and first-year GPA, had significance in Model 3. Other interaction variables between Black students and involvement variables were not significant in the fixed-effects logistic regression models; hence, they were excluded from the final model. The insignificance of these interactions variables suggests that, with the exception of Black students and first-year GPA, involvement does not differentially affect Black students' likelihood of completing a college degree. Furthermore, these analyses indicate that Black men and women do not differentially benefit from performing well academically or by becoming involved in various aspects of campus life.

Chapter V.

Discussion and Implications

Introduction

The analyses suggest that Black men and Black women vary in their levels of involvement in specific types of campus activities and organizations. Despite these differences, Black men and Black women do not seem to experience differential effects from involvement on their likelihood to complete a college degree. The results from the fixed-effects logistic regressions indicate that involvement in a variety of campus activities generally predicts a greater likelihood of degree completion among all students. Additionally, women and students who earn higher grades in their first-year of college remain significantly more likely to graduate from college than other students.

This chapter discusses the results from this study and connects these findings to recent research. The chapter then discusses implications for practice based on these findings. Lastly, this study provides recommendations for future research.

Discussion

The results of the means tests and analyses of variance indicate that Black men and women do not demonstrate significant differences in most types of involvement in college. The only significant differences exist in Black men's and Black women's participation in fine arts activities and involvement in intramural sports. Black women tend to become more involved in fine arts events than their male counterparts while Black men seem to play intramural sports more often than Black women. The lower involvement intensity demonstrated by Black men in fine arts activities provides partial

support Wilson's (1994) finding that Black men are less likely to become involved in campus activities. Black women and Black men do not appear to differ significantly in their academic involvement, peer involvement, or their participation in social clubs and organizations. Lastly, the ANOVA for first-year GPA suggests that Black women have a significantly higher first-year GPA than their male counterparts.

Although Black women have significantly higher GPAs than Black men, Black women do not appear to receive differential benefits from their first-year academic performance compared to Black men. Tests for interactions between first-year GPA and Black students by gender proved statistically insignificant. Instead, first-year GPA appears to differentially affect Black students as a whole in terms of their likelihood of graduating from college.

Other findings from this study confirm other research on students' likelihood to complete degrees. The positive effects of first-year academic achievement on degree completion support findings by Titus (2004) and Adelman (2006). Titus (2004) concludes that academically successful undergraduate students are more likely to persist at the same institution. Students who have academic success at their institution are less likely to withdraw involuntarily and are more likely to remain satisfied with their college experience. Similarly, Adelman (2006) concludes that first-year GPA has a positive and significant impact on students' likelihood to complete a college degree.

In addition to academic achievement, academic involvement and participation in social clubs positively predict degree completion for the overall sample. Astin (1984, 1993), Bean (1990), and Tinto (1993) highlight the positive benefits of a variety of types

of involvement. Astin (1984, 1993) identifies student involvement as a positive predictor of college academic success, college satisfaction, and persistence. Bean (1990) and Tinto (1993) emphasize the importance of academic and social involvement in predicting students' likelihood to persist.

Although participation in intramural sports is not significant in Model 3 of the fixed-effects regression models, the statistical analyses may mask the effects of this type of involvement, particularly as it relates to Black men. It is possible that a peer effect exists with intramural participation, and Black men perhaps benefit from this peer effect, as they are significantly more involved in intramural sports than Black women. Fixed-effects logistic regression results in conservative estimates for parameters. The less-robust standard logistic regression model indicates that intramural sports participation positively and significantly affects degree completion. Other statistical analyses, such as hierarchical linear modeling, may provide a more accurate depiction of the effects, in both the aggregate sample as well as for Black men, of intramural involvement on degree completion.

In addition to academic achievement and involvement in a variety of activities, being female appears to be a significant predictor of completing a college degree. This finding remains unsurprising, as women, regardless of race, continue to outpace men in graduating from four-year institutions of higher education (NCES, 2005a). Model 3 in Table 4.5 indicates that women in this study are significantly more likely than men to complete a college degree (odds ratio = 1.370, $p < 0.01$).

On-campus living, race, and several pre-college characteristics were not significant in Model 3 in Table 4.5. The insignificance of on-campus living is surprising when considering how other research (e.g., Astin, 1975, 1993; Titus, 2004) have found on-campus residency as a significant predictor of persistence and eventual degree completion. The findings from this study in relation to living on campus may be due in part to the high percentage (68.9%) of students who lived on campus during their first year. With nearly 70% of the sample living on campus, this variable has little variance. Additionally, the involvement variables may account for the effects of on-campus residency. In terms of race and pre-college characteristics, the inclusion of involvement variables in Models 2 and 3 appear to account for the effects of race and pre-college characteristics. As students develop connections with their institutions and begin to experience college life, their pre-college characteristics become insignificant in predicting their likelihood of graduating from college.

Implications for Practice

This study provides additional evidence for the positive effects of student involvement and first-year academic achievement on students' likelihood of completing a college degree. Increasing the level of academic achievement among all students has the potential to increase college degree completion rates for individuals. As students achieve greater levels of academic success, they appear to have a greater likelihood of graduating from four-year colleges and universities.

Findings from this study indicate a strong connection between involvement and degree completion and a connection between academic achievement and degree

completion. By becoming involved in a variety of activities, students learn from one another. This study suggests that, through involvement on campus, students experience a peer effect that influences their learning and their likelihood to complete their degrees. As students become more involved, they become more likely to persist in higher education and complete a college degree (Astin, 1984). Peer involvement is the strongest predictor of degree completion among the involvement variables. With students learning from their connections to one another, higher education administrators and policymakers need to continue to provide additional opportunities for these interactions to occur. Additionally, the connection between involvement and degree completion underscores the need for higher education administrators and policymakers to recognize the importance of how student involvement positively affects a number of college outcomes.

Regarding the academic success of Black students, these findings suggest that college administrators need to focus on facilitating academic achievement among Black students during their first year of enrollment. First-year GPA appears to differentially affect Black students' likelihood of graduating from college. After facing possible struggles throughout their first year of enrollment, academically successful Black students may feel as though they belong in higher education. Academic success in the first year may provide Black students with additional motivation to persist. By facilitating greater levels of academic success in the freshman year among Black students, colleges and universities may provide Black students with an opportunity to close the degree completion gap between themselves and other students.

Recommendations for Future Research

Future research needs to test for interactions between types of involvement and campus residency. Campus residency was not significant in Model 3 of the fixed-effects logistic regression models; however, the involvement variables in the model may have accounted for the effects of living on campus. By considering interactions between campus residency and types of involvement, research can determine if campus residency differentially impacts the effects of involvement on degree completion. Such research may provide support for establishing commuter-student programs and activities.

In examining how involvement affects college outcomes, future research needs to operationalize in a more efficient way than was done in this study. This study used a dichotomous variable to represent involvement and non-involvement in a number of social activities. Astin (1984) emphasizes that involvement represents the amount of energy a student puts forth; thus, by expanding each involvement variable, a researcher can measure the extent to which a student is involved in an activity (e.g., whether the student is a passive member of a club or the president of the organization). Furthermore, in a longitudinal study, a researcher may consider measuring involvement intensity over time to determine how students' level of involvement in campus activities changes. This type of study can provide insight into the net effects of involvement through a student's college career rather than just measuring involvement in a single academic year.

In addition to considering new ways to operationalize involvement, future research needs to examine the differential effect that first-year GPA has on Black students. Black students appear to receive substantial benefits from increasing their GPAs

during their first year of college. Research needs to investigate what other factors influence this relationship between first-year GPA and Black students so that institutions can continue to meet the academic needs of these individuals.

As this study focused on student-level variables, specifically involvement, future research needs to consider how institutional-level variables influence the relationship between Black students' involvement and their likelihood to complete degrees. Institutional-level variables such as size and selectivity may have an impact on Black students' level of involvement and how that involvement affects degree completion. Such analyses would need to utilize advanced statistical methods, such as cross-classified hierarchical linear modeling, to account for students who transfer between institutions as well as the institutional effects on the student-level variables.

Since this study focused primarily on the differential effects of student involvement on Black men's and women's likelihood to complete their degrees, future research should consider differentials within other racial/ethnic groups. Hurtado and Carter (1997) study how Hispanic students become involved on campus; however, their study does not address Hispanic students' likelihood to complete degrees. Additional studies can determine how, if at all, involvement differentially affects degree completion in other racial/ethnic groups by gender.

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Appendices

Appendix A: Seemingly Unrelated Estimation Test of BPS: 96/01 Data

Variables	Coef. Fixed- Effects	z Fixed Effects	Coef. Standard	z Standard	Difference	χ^2	P > χ^2
Composite SAT Degree	-0.054	-0.930	0.232	5.170	-0.286	58.700***	0.000
Expectations	0.017	0.870	0.034	2.080	-0.018	4.710*	0.023
Mother's Education	0.085	2.340	0.145	4.530	-0.060	13.170***	0.000
Parent Income	0.032	0.730	0.095	2.270	-0.063	14.330***	0.000
Female	0.147	1.760	0.232	3.100	-0.085	5.370*	0.021
Black	-0.213	-1.100	-0.381	-2.860	0.168	1.720	0.190
Hispanic	-0.232	-1.600	0.023	0.200	-0.255	7.990**	0.005
Asian	-0.138	-0.780	0.335	2.380	-0.472	24.420***	0.000
Intramural Involvement	0.222	2.700	0.236	3.280	-0.014	0.160	0.691
Club Involvement	0.229	2.950	0.288	4.080	-0.059	3.240	0.072
Arts Involvement	-0.032	-0.400	-0.025	-0.340	-0.008	0.040	0.843
Peer Involvement	0.577	3.470	0.596	4.170	-0.019	0.060	0.803
Academic Involvement	0.134	3.380	0.184	5.270	-0.050	7.560**	0.006
On-Campus	0.570	5.960	0.802	9.330	-0.232	11.640***	0.001
First-Year GPA	0.944	16.000	0.857	16.580	0.087	11.240***	0.001
Black*First-Year GPA	0.456	2.680	0.283	1.940	0.173	4.610*	0.032

Source: Analysis of BPS 96:01 survey data

Appendix B: Variance Inflation Factors and Tolerances

Variables	VIF	Tolerance
Degree Completion	1.36	0.7376
Composite SAT	1.44	0.6944
Degree Expectations	1.07	0.9357
Mother's Education	1.20	0.8342
Parental Income	1.1	0.9103
Female	1.15	0.8719
Black	1.32	0.7602
Hispanic	1.07	0.9349
Asian	1.04	0.9582
Intramural Involvement	1.23	0.8133
Club Involvement	1.34	0.7487
Arts Involvement	1.19	0.8423
Peer Involvement	1.18	0.8481
Academic Involvement	1.26	0.7943
On-Campus Residency	1.34	0.7437
First-Year GPA	1.50	0.6685
Black*First-Year GPA	1.35	0.7413
Mean VIF	1.24	

Source: Analysis of BPS: 96/01 survey data