THE ROLE AND PREVALENCE OF FACULTY MENTORING AMONG AFRICAN AMERICAN AND LATINO UNDERGRADUATES IN DIFFERENT INSTITUTIONAL CONTEXTS: A MIXED METHODS STUDY

BY

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DISSERTATION

Submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy in Educational Policy Studies
in the Graduate College of the
University of Illinois at Urbana-Champaign, 2010

Urbana, Illinois

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Abstract

While the higher education mentoring literature is quite extensive, it largely discusses faculty mentoring in respect to graduate students. Knowledge about faculty mentoring among undergraduate students in general, and underrepresented undergraduate students in particular, in the extant literature is largely the result of the (mis)appropriation of what researchers know about faculty mentoring among graduate students to undergraduate students; very little research has actually been conducted that investigates faculty mentoring among undergraduates.

This study explores the role and prevalence of faculty mentoring among underrepresented undergraduate students. Utilizing a mixed methods approach, a secondary analysis of data collected from participants in the Summer Research Opportunities Program (SROP) was conducted to determine the role, importance, and benefits of faculty mentoring among underrepresented students, from their perspective. It also probes the prevalence of faculty mentoring among African American and Latino undergraduates particularly and whether it differs for these students based on the institutional context of the colleges and universities they attend. Additionally, this research explored the relationship between faculty mentoring and these students' collegiate satisfaction.

The findings suggest that underrepresented undergraduates generally find faculty mentoring relationships to be an important, beneficial, and valuable asset to their collegiate experiences and outcomes, especially their educational goals and aspirations. The findings also indicate that differences exist in the prevalence of faculty mentoring for these students based on the research emphasis and selectivity of their institutions; these findings have important implications for researchers, students, institutions, and practitioners. Ultimately, this work highlights the role of faculty mentoring among underrepresented undergraduate students and

recommends that institutions and practitioners seriously commit to devising, developing, and evaluating strategies to foster these relationships and increase their occurrence among underrepresented undergraduate students.

To mentors everywhere

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Chapter 1

Introduction

*"It is clear that many of the most important effects of college occur through students' interpersonal experiences with **faculty members** and other students. It is equally clear that the academic, social, and psychological worlds inhabited by most nonwhite students on predominantly white campuses are **substantially different** in almost every respect from those of their white peers" (Pascarella & Terenzini, 1991, p. 644).*

As a result of the Civil Rights Movement, during the 1960s and 70s many institutions of higher education, especially predominantly white colleges and universities, experienced an influx of nontraditional students (i.e. racially and ethnically diverse, low-income, first-generation, women). The surge of these students introduced several new academic and social challenges to these institutions around issues of campus diversity, underrepresentation, low matriculation, high attrition, academic and social adjustment to the collegiate environment, and low persistence and completion rates (Laden, 1999). Subsequently, many institutions scrambled to devise and implement strategies to address these wide-scale issues (Laden, 1999). One strategy that emerged was to encourage and increase positive student-faculty interactions through faculty mentoring relationships with students (Astin, 1993; Mohr, Eiche, & Sedlacek, 1998; Pascarella & Terenzini, 2005; Tinto, 1993).

Presently, students of color—specifically African Americans, Latinos, American Indians, and Asian/Pacific Islanders—continue to be largely underrepresented at four-year colleges and universities (Jones, Castellanos, & Cole, 2002). In fact, African Americans and Latinos continue to trail whites in college participation rates as marked by the percentage of 18-24 year-old high school graduates who enroll in college (Cook & Córdova, 2007). As the number of underrepresented students of color who gain access to institutions of higher education increases,

addressing issues of academic and social adjustment and integration, persistence, retention, completion, and overall collegiate satisfaction, becomes increasingly more important.

Much of the current mentoring literature in higher education focuses on utilizing mentoring as a tool to effectively address such issues among traditionally underrepresented students of color in higher education (Jacobi, 1991; James, 1991) and also largely purports these students as some of the main beneficiaries of mentoring relationships with faculty members (Jacobi, 1991). However, neither the prevalence, nor the actual benefits, of faculty mentoring among underrepresented undergraduates is known. In fact, in-depth engagement with the higher education literature reveals that very few studies exist that specifically explore and document these students' actual perceptions of the prevalence, role, benefits, or importance of faculty mentoring in their collegiate experience (Romero, 1995).

Statement of the Problem

The mentoring research literature in higher education is quite extensive and largely points to mentoring as a positive, beneficial, and important facet of higher education for students (Jacobi, 1991; Johnson, 1989; Merriam, Thomas, & Zeph 1987). However, a review of the literature reveals a noticeable lack of consensus over several key features of the mentoring concept, such as definitions of mentoring, appropriate roles and functions of mentors, as well as important characteristics and qualities of mentors (Busch, 1985; Frierson, Hargrove, & Lewis, 1994; Healy & Welchert, 1990; Jacobi, 1991; Mertz, 2004). This lack of consensus illustrates the complex nature of mentoring, and is also frequently noted as one of the most problematic aspects of the mentoring research literature in higher education (Jacobi, 1991; Mertz, 2004). Ultimately, this inconsistency raises important questions about researchers' certainty of the role,

importance, or benefits of mentoring among underrepresented undergraduates that is commonly reported in the higher education literature (Haring, 1999; Jacobi, 1991; Mertz, 2004).

In fact, much of the mentoring literature in higher education seems to work from a widespread assumption that mentoring is indeed important and beneficial for undergraduates, especially underrepresented undergraduates. The general acceptance and propagation of this idea in the literature appears to largely stem from research findings about the role and importance of faculty mentoring relative to graduate students that has in turn been (mis)appropriated to undergraduates as a presumably logical extension. Because mentoring has traditionally been associated with graduate education, much of the research literature defines mentoring, documents its perceived benefits, and identifies the important characteristics and functions of mentors and mentoring relationships from the perspective of college and university administrators and graduate students (Romero, 1995). Yet, despite the focus on the graduate perspective and an acknowledged paucity of research that actually explores mentoring from an undergraduate perspective (Romero, 1995), the positive benefits of mentoring for underrepresented undergraduates are cited extensively in the literature (Jacobi, 1991). In addition, while the literature hails underrepresented students as some of the main beneficiaries of faculty mentoring relationships in higher education, there are few studies, if any, that document the actual prevalence of faculty mentoring among undergraduates generally and underrepresented undergraduates specifically.

Additionally, a large body of the higher education literature indicates that student-faculty interactions, like faculty mentoring relationships with students, are important and beneficial for several student outcomes, including educational aspirations, academic achievement, persistence, and intellectual and personal development (Astin, 1993; Mohr, Eiche, & Sedlacek, 1998;

Pascarella & Terenzini, 2005; Tinto, 1993). One outcome in particular that the literature maintains faculty mentoring has a positive and influential effect on is the collegiate satisfaction of underrepresented undergraduate students (Astin, 1999; Bonous-Hammarth & Boatsman, 1996; Outcalt & Skewes-Cox, 2002; Watkins, 1998). Yet, while some researchers have noted a significant effect of student-faculty interactions on students' satisfaction with their collegiate experience, others have found that increased interactions or contact with faculty do not necessarily translate into increased educational satisfaction (Cole & Jackson, 2005).

Moreover, the literature suggests that the prevalence of student-faculty interactions, such as faculty mentoring relationships, varies among underrepresented undergraduates based on the type of institution that they attend (Allen, 1992; Fleming, 1984; Laird, Bridges, Morelon-Quainoo, Williams, & Holmes, 2007; Loo & Rolison, 1986; Outcalt & Skewes-Cox, 2002); specifically, whether they attend predominantly white institutions (PWIs) or minority-serving institution (MSIs) such as Historically Black Colleges and Universities (HBCUs), Hispanic-Serving Institutions (HSIs) and Tribal Colleges and Universities (TCUs). Subsequently, the existence, or lack thereof, of these student-faculty interactions is reported to affect underrepresented students' level of satisfaction with their undergraduate experience and education (Endo & Harpel, 1982; Loo & Rolison, 1986; Pascarella, 1980; Romero, 1995). However, while the mentoring literature demonstrates acceptance of the idea that faculty mentoring has a profound effect on collegiate satisfaction among underrepresented undergraduates, there is still very little research that directly explores whether there is indeed a positive association between faculty mentoring and collegiate satisfaction and whether faculty mentoring and collegiate satisfaction in fact varies across institutional contexts for these students.

The disparity noted by researchers in the prevalence of faculty mentoring relationships among underrepresented undergraduates across institution types is problematic in two respects. First, it is most often largely based on broad comparisons between minority and majority students at PWIs, or between black students at HBCUs and their counterparts at PWIs (Allen, 1992; Fleming, 1984; Laird et al, 2007; Outcalt & Skewes-Cox, 2002). Consequently, it largely fails to explore the prevalence of faculty mentoring among underrepresented undergraduates who fall outside of the commonly studied black-white binary (i.e. Latinos, Native Americans, and Asian/Pacific Islanders). In addition, while there is an abundance of research on HBCUs (as they are the oldest established MSIs) and student experiences in these institutions, there is far less research in the current mentoring literature that explores the experiences of underrepresented students who attend other types of MSIs, such as Tribal Colleges and Universities (TCUs), or Hispanic-Serving Institutions (HSIs), which are increasingly serving a greater portion of the Latino college-age population.

Second, the existent literature fails to explore the effects of other important institutional characteristics (besides institution type) that comprise the institutional context on underrepresented students' faculty mentoring relationships and experiences, such as the institution's size, student-faculty ratio, selectivity, control (i.e. whether it is public or private), and whether it has an institutional emphasis on research or teaching. These institutional characteristics vary within and across PWIs and MSIs and most likely have an effect on the prevalence of faculty mentoring among underrepresented undergraduate students, as well as on their reports of satisfaction or dissatisfaction with their collegiate experience. Ultimately, the failure of researchers to explore the effects of these significant racial/ethnic and institutional differences makes it difficult to adequately assess the actual prevalence, role, benefits, or

importance of faculty mentoring relationships among underrepresented undergraduate students of color.

Purpose of the Study

In an effort to contribute to the existent, but sparse, higher education literature on faculty mentoring among underrepresented undergraduate students of color, the purpose of this project is multifold. First, it seeks to fill a current void in the research literature by investigating the merits and benefits of faculty mentoring from the perspective of students belonging to two racial minority groups that have historically been, and continue to be, underrepresented in higher education—African American and Latino undergraduates. While faculty mentoring has been discussed extensively in relation to African Americans in the higher education literature, this literature has been particularly focused on graduate and professional students (Blackwell, 1983; Brown, Davis & McClendon, 1999; Dixon-Reeves, 2001; Jacobi, 1991; Smith & Davidson, 1992). The current literature offers little insight with respect to faculty mentoring among African American undergraduates. Thus, this study will expand the literature on faculty mentoring among underrepresented undergraduates by not only focusing on African American undergraduates, but also Latino undergraduates, who tend to be even more understudied in the higher education research on mentoring than African American undergraduates.

In tandem with the first goal, this study also aims to broaden the current research on faculty mentoring by extending beyond its traditional focus on the black-white binary. This emphasis is currently indicated by a paucity of research on faculty mentoring among other racial/ethnic groups besides whites and African Americans, as well as at other types of institutions besides PWIs and HBCUs. More specifically, in the mentoring literature

comparisons are usually made between African American and white students attending PWIs or African American students attending HBCUs and their counterparts at PWIs. Thus, in exploring the faculty mentoring experiences of underrepresented undergraduates, this work extends beyond the traditional black-white focus largely exhibited in the extant literature by not only delving into the faculty mentoring experiences of another underrepresented group in higher education (i.e. Latinos), but also the effects of another type of minority-serving institution—HSIs—on those experiences.

Additionally, this work will also contribute to researchers' understanding of the effects of important institutional characteristics, besides simply institution type (i.e. PWI or MSI), on the role and prevalence of faculty mentoring among these students. These characteristics comprise the institutional context and include the institution's size, student-faculty ratio, selectivity, control (i.e. public or private), and whether it places an institutional emphasis on research or not. Finally, this project will contribute to the existent research in higher education by exploring the role of faculty mentoring and the institutional context on a specific educational outcome among underrepresented undergraduate students of color—specifically African Americans and Latinos' reports of satisfaction with their overall collegiate experience.

More research from the perspective of underrepresented undergraduate students of color about the role and importance of mentoring to their undergraduate experience is necessary to fill a current void in the literature and enhance researchers' ability to identify and answer important questions about faculty mentoring among undergraduate students generally, and underrepresented undergraduate students of color particularly. This project aims to begin filling this void by investigating the merits and benefits of faculty mentoring from the perspective of African American and Latino students. It also seeks to empirically investigate a prevalent

finding in the literature that a positive, yet disparate, relationship exists between faculty mentoring and satisfaction with the collegiate experience among underrepresented undergraduate students of color dependent upon the type of institution that they attend (i.e. PWI or MSI). Additionally, it seeks to determine whether and/or how other characteristics of the institutional context affect this relationship.

This Research

This study is both exploratory and comparative in nature. It is exploratory in that it seeks to determine the actual role of mentoring in the collegiate experiences of underrepresented undergraduates. Particularly, I am interested in understanding the prevalence of faculty mentoring, whether or not underrepresented undergraduates consider it important in successfully navigating their undergraduate institutions, and the characteristics, qualities, roles, and functions of mentors they consider important or essential. This type of exploration is important and necessary because very little is known about the actual mentoring experiences of undergraduate students in general, and underrepresented undergraduates in particular. This study is comparative in that it seeks to determine the similarities and differences in the mentoring experiences of underrepresented undergraduates in different institutional contexts. Specifically, I am interested in determining whether the prevalence of mentoring as reported by these underrepresented undergraduates differs by the type of institution the student attends.

This exploration and comparison of mentoring among undergraduate students is fairly unique as few, if any, other studies have sought to examine the specific aspects addressed in this work. Thus, this work will fill an important void in the research literature and will provide much

needed information about the mentoring experiences of underrepresented undergraduates, especially as it relates to their success and navigation through various institutional contexts.

Definition of Terms

While this research notes the discrepancy in the research literature over definitions of mentoring, the roles and functions of mentors, and important characteristics and qualities of mentors, it does not attempt to provide a new definition or conceptualization of mentoring. Instead, it works from Blackwell's (1989) definition of mentoring which is a prominent definition and conceptualization of mentoring in higher education that I believe not only captures the essence of the main features of mentoring, but also is broad enough to encompass the numerous and various types of relationships that are often identified or referenced as mentoring relationships in higher education. Specifically, Blackwell (1989) writes, "Mentoring has classically been defined as a process by which persons of superior rank, special achievements and prestige instruct, counsel, guide, and facilitate the intellectual and/or career developments of persons identified as protégés" (p. 9).

This research also heavily utilizes a typology of mentoring experiences that college students are likely to encounter, developed by Dixon-Reeves (2003) and which is also based on Blackwell's definition of mentoring. Dixon-Reeve's typology includes:

- Advisor—Someone assigned or selected based on mutual interest who guides you through the requirements and procedures of your program and the university's requirements for the degree.

- Role model—Someone you model yourself after who provides you with informal and formal instructions about collegiality, day-to-day departmental interpersonal relations, academic etiquette, protocol, and the profession's work ethic and expectations of its scholars.

- Sponsor—Someone who uses his or her networks, influence, and/or funding to advance your academic career by providing access to research, teaching, publishing, travel, and training opportunities.

- Coach—Someone who does all of the above and shares his or her wisdom and experiences with you, provides emotional support, and guides your academic trajectory by providing academic, professional development, and networking opportunities.

According to Dixon-Reeves, the roles included in her typology are different types of mentoring relationships that students experience, but mentoring all the same. Ultimately, Blackwell's definition of mentoring, in conjunction with Dixon-Reeves' typology of mentoring, is inclusive and comprehensive enough that it is sufficient for this research and therefore the creation of a new definition or conceptualization of mentoring is unnecessary.

Additionally, for the purposes of this research, the following terms are defined as:

- African Americans—"Reflects the identity of Blacks based on their origins in Africa and their presence in America" (Castellanos & Jones, 2003, p. xxi). This term is often used interchangeably with "black" in this study.

- Latina/o, Latinos—Often used interchangeably with "Hispanic," but in this study only the term "Latino" will be used. Because there is so much heterogeneity among people of this ethnic group in the United States, members may be of any racial identity and refer to themselves by their ethnic heritage, political, regional, or national origins. For this study, the term is meant to include people living in the United States (and the United States Territory of Puerto Rico) who identify as Mexican American or Chicano, Puerto Rican, Cuban, Dominican, Spanish, Central American or South American.

- Underrepresented Students—Generally refers to students who have traditionally been excluded from full participation in the institution and/or are currently underserved by the institution. The primary basis for exclusion is usually race or ethnicity and thus generally includes African Americans, Latinos, Asian/Pacific Islanders, and American Indians. Underrepresented students are also marked by first-generation and/or low-income status. In specific contexts other groups of students could also be considered underrepresented, for instance women in science, technology, engineering and math (STEM) fields.

- Minority-Serving Institutions (MSIs)—Institutions of higher education that enroll a high proportion of African American, Latino, and American Indian students; includes Historically Black Colleges and Universities (HBCUs), Tribal Colleges and Universities (TCUs), and Hispanic-Serving Institutions (HSIs). Institutions are typically classified as MSIs based on either legislation (i.e. federal designation) or their percentage of minority enrollment (Li, 2007). These institutions serve students who are largely first-generation

college goers, low-income, academically unprepared or underprepared, and are members of racial/ethnic minority groups that have historically been discriminated against.

- Historically Black Colleges and Universities (HBCUs)—Oldest established minority-serving institutions of higher education. The term "Historically Black Colleges and Universities" is a federally designated term that refers to institutions identified by Congress in Title III of the Higher Education Act of 1965 as institutions established prior to 1964 that had, and have, a specific history and mission of educating African Americans (Li, 2007). While several HBCUs were established in the North prior to the Civil-War, the majority appeared in the South during the post-bellum period to serve African Americans who were denied access to predominantly white institutions in the southern and border states. The culture, climate, and environment of these institutions have been demonstrated to be extremely well suited for promoting collegiate success among African American students. Currently, due largely to desegregation efforts, these institutions are no longer the primary source of higher education access for African Americans. It is also important to note that the term "Historically Black Colleges and Universities" is a historically specific term that does not simply refer to the ethnic/racial composition of the institution as some HBCUs are now predominantly white (i.e. West Virginia State University) and other HBCUs have seen an increase in their Latino enrollments.

- Black-Serving non-HBCUs—Additionally, there are several institutions that are predominantly black but do not fall under the federally designated title of an HBCU. Instead, these institutions are referred to as predominantly Black institutions or Black-Serving non-HBCUs. Specifically, these are institutions that are not HBCUs "but in which Black students constitute at least 25 percent of the total undergraduate enrollment" (Li, 2007). For the purposes of this research, the term HBCUs refers to both federally designated institutions as well as predominantly Black institutions that are not in fact HBCUs.

- Hispanic-Serving Institutions (HSIs)—The youngest of the minority-serving institutions in higher education. HSIs are either "public and private two- and four-year colleges and universities with Latino enrollments of 25% or more full-time equivalent students" (Laden, 2004, p.181) or are institutions designated by the Office of Civil Rights in 2003 as Hispanic-Serving (Li, 2007). In contrast to HBCUS, these institutions were not originally established to serve Latino students in particular, but rather evolved into institutions that serve large proportions of Latino students mainly due to their close geographic proximity to Latino populations. Although they are the youngest, they are currently the most numerous of the minority-serving institutions.

Research Questions

Utilizing the perspectives of African American and Latino students, this work will strive to answer four main research questions (RQs) pertaining to faculty mentoring among underrepresented undergraduate students of color:

RQ1. Do African American and Latino undergraduates consider faculty mentoring important to their collegiate success? If so, what attributes do they consider most important in a mentor, and what roles and functions do they expect the mentor to perform? Is the race and/or gender of the mentor important?

RQ2. Are faculty mentoring relationships prevalent among African American and Latino undergraduates? If so, what are the racial and gender characteristics of their mentors? How did their mentoring relationships form? How do they characterize their mentoring relationships? Do these students have racial and gender preferences for mentors?

RQ3. What are the institutional characteristics of the colleges and universities that these students attend? Is there a relationship between faculty mentoring and the institutional context of the colleges and universities that these students attend?

> More specifically, does the prevalence of mentoring vary among these students dependent upon their personal characteristics (i.e. race, gender, year in school) and the institutional context of their college or university—particularly, its type (PWI vs. MSI), control (public vs. private), size, student-faculty ratio, selectivity, and research emphasis?

RQ4. Do these students report being satisfied with their overall undergraduate experience? Is there a relationship between faculty mentoring and collegiate satisfaction among these students?

> More specifically, do reports of satisfaction with the undergraduate educational experience vary among these students dependent upon their personal characteristics, whether or not they have a mentoring relationship, and the institutional context of their college or university?

Ultimately, the information that is gleaned from this project will contribute to the mentoring research literature by providing largely missing information about the actual role and prevalence of faculty mentoring among underrepresented undergraduate students of color within and across institutional contexts. Additionally, this research will serve to either corroborate or challenge the

existent literature's common assertion of the importance and benefits of mentoring among these students, which will further advance the knowledge on this topic.

Contextual and Social Significance of the Study

Students of color continue to be largely underrepresented at four-year colleges and universities (Jones, Castellanos, & Cole, 2002), but as an increasing number of these students gain access to institutions of higher education, addressing prominent academic and social issues that they face on college campuses becomes increasingly more important. If mentoring is believed to be a highly effective method of addressing such issues among underrepresented undergraduates, then research that investigates the actual role and benefits of faculty mentoring for these students is imperative and must be expanded. Conducting research that specifically investigates the role and prevalence of faculty mentoring relationships among underrepresented undergraduates within and across institutional contexts and that seeks to substantiate the reported benefits and importance of mentoring for these students is especially crucial. Utilizing these students as a primary source of information to better understand their perceptions of the role of faculty mentoring during their undergraduate careers will contribute to the overall research on mentoring in higher education, enhance the ability of colleges and universities to successfully meet the academic and social needs of underrepresented students, and potentially increase these students' chances of successfully navigating these institutions.

It is particularly important that underrepresented undergraduate students persist and graduate from institutions of higher education, as degree attainment has several important implications. Specifically, obtaining a bachelor's degree has a tremendous affect on earning power and subsequently economic and social mobility. Not only is there an ever-increasing

income disparity between those with college degrees and those without them (Carnevale, 2003), but poverty rates are also known to be associated with higher levels of educational attainment. In particular, the number of adults living below the poverty line declines with increasing educational attainment (Swail, Redd, & Perna, 2003). Educational attainment, or the lack thereof, also affects racial and ethnic minorities' political status; in particular, lacking a higher education greatly impedes minorities' ability to promote significant social change, especially to the degree that is often needed to improve their own communities.

Increasing the number of underrepresented racial and ethnic minorities in higher education that earn college degrees has benefits for the larger society as well. Specifically, an increase in highly educated human capital has the potential to positively affect the U.S. economy by increasing the nation's income and tax revenues. Moreover, diversifying the higher education setting by increasing the representation of racial and ethnic minorities, provides the opportunity for people of different and distinct cultures to study and work together, which is particularly important in a pluralistic society and global economy where people of diverse backgrounds must be able to work together and communicate effectively with one another to ensure success.

Additionally, degree attainment impacts opportunities to pursue post-baccalaureate studies and attain advanced degrees which in turn provides access to the highest paying and most influential careers and occupations (Swail et al., 2003). Also, when underrepresented students pursue the doctorate in particular, there is the subsequent potential to increase the number of people of color who enter the faculty ranks and are able to serve as mentors and role models for underrepresented students on campus. There are economic implications for colleges and universities as well. Specifically, universities lose money as attrition rates soar among underrepresented undergraduate students of color. High attrition rates also potentially negatively

affect institutions' recruitment efforts, which could hinder their ability to bring in future dollars to support and maintain the institution; for public institutions in particular, completion rates can directly affect state appropriations (Melguizo, 2008). Therefore, it is in the best economic interest of colleges and universities to strive to retain and graduate all students, but even more so for students it has been demonstrated are struggling to persist and graduate.

If indeed this research substantiates the role of faculty mentoring as beneficial and important for underrepresented undergraduate students, especially in terms of educational quality and retention and graduation rates, then it is essential that institutions of higher education explore, develop, implement, and evaluate mentoring programs, or at least encourage and foster the development of formal and informal mentoring relationships between students of color and faculty. However, if this research informs us of a less significant or influential relationship between faculty mentoring and the collegiate success and satisfaction of underrepresented undergraduate students than what is reported in the literature, then researchers and practitioners will be alerted to new avenues that need to be explored to best serve this particular population across institutional contexts.

Chapter 2

Review of the Literature

This review of the literature begins with an overview of the educational experiences of African American and Latino undergraduates in the nation's institutions of higher education, paying particular attention to the similarities and differences in these experiences in two different institutional settings: predominantly white institutions and minority-serving institutions. It also provides an extensive review of the mentoring literature in higher education. Specifically, it examines several major areas of consensus and contention in the research mentoring literature and explores their role in contributing to the difficulty of accurately assessing the impact of mentoring in higher education. Finally, it outlines the dominant conceptualizations of mentoring, as well as the purported benefits and beneficiaries of mentoring, especially as they pertain to faculty mentoring among underrepresented undergraduate students.

Overview of African American and Latino Undergraduate Experiences

Although minority students made great headway in higher education in the wake of the Civil Rights Movement, there still persists an enormous education gap among racial/ethnic groups in higher education. Issues of access and opportunity have been major barriers to underrepresented groups' pursuit of higher education. The sharp differences in the representation of racial and ethnic groups in undergraduate enrollments is not surprising when taking into account that of all traditional college-aged students (18-24 years old) who complete high school, African American and Latino students continue to lag behind whites in college enrollment (U.S. Department of Education, 2008). Although there have been some increases in the representation of African American and Latino undergraduates as full-time students in four-

year colleges and universities, their presence is still lower than their overall representation in the traditional college-age population (Swail et al., 2003). In fact, students from racial minority groups are more likely to enroll in two-year institutions rather than four-year institutions of higher education, which is particularly "problematic for those interested in increasing bachelor's degree completion rates for traditionally underrepresented populations" (p. 18), as rates of transfer from two-year institutions to four-year institutions are extremely low.

Even after successfully enrolling in four-year colleges and universities, these students often struggle to persist until degree completion. The current underrepresentation of African Americans and Latinos (as well as members of other racial minority groups like American Indians and Asian Pacific Islanders) among bachelor's degree recipients compared to their representation in undergraduate enrollments is indicative of lower persistence rates for these groups. For instance, in 1999, while African Americans and Latinos represented approximately 12% and 8% of the U.S. first-time, full-time freshman enrollments respectively, they only received 9% and 6% of bachelor degrees awarded to U.S. citizens during the 1999-00 academic year (Swail et al., 2003). Moreover, of students enrolled in 4-year institutions in 1995-96, a much lower percentage of African Americans (46%) and Latinos (47%) than whites (67%) and Asians (72%) completed a bachelor's degree in six years (Berkner, He, Cataldi, and Knepper, 2002). In fact, African Americans and Latinos earn degrees at lower rates than whites and Asians (Swail, et al., 2003). Specifically, in 2006, only 12% of Latinos and 18% of African Americans age 25 and older in the United States had attained at least a bachelor's degree, compared with 31% of whites and 52% of Asians (Chronicle of Higher Education Almanac 2007-2008, 2009).

Researchers note that even after earning admission to institutions of higher education, African Americans and Latinos continued to underperform relative to their white and Asian

counterparts which is often indicated by lower grades, slower progression, and higher drop-out rates (Massey, Charles, Lundy, & Fischer, 2003). In addition, these students face a host of other obstacles to their success including issues surrounding campus climate and a lack of integration into the academic and/or social environment of the campus. Furthermore, many African American and Latino undergraduates are first-generation college students, and subsequently have to grapple with issues specific to this status, including distrust of the institution, fear of being perceived in racially stereotypical ways by white students and faculty, and difficulty transitioning and adjusting to the institution, among other factors (Rendón, 2004). These students are also more likely to be low-income and thus more reliant on financial aid to finance their educational expenses. This is particularly problematic as these students often have to depend on dwindling grant and scholarship funds, increasing loan amounts, or have to work a significant number of hours to pay for their education, which contributes to higher drop out and/or stop out rates due to an inability to afford their education.

By institutional context. Many of the abovementioned academic and social issues have been noted to affect racial and ethnic minority students differentially in various institutional contexts. For the purposes of this work, the institutional context is considered to be comprised of the institutional type (i.e. PWI versus MSI), as well as the institution's control, size, student-faculty ratio, selectivity, and research emphasis. All of these factors, and others, have been noted to have implications for students' collegiate experiences and outcomes.

Predominantly White institutions. Prior to the Civil Rights Movement, African Americans and Latinos were largely excluded from participating in the United States system of higher education via de jure and de facto methods of segregation. In fact, due to barriers preventing attendance at the nation's most selective institutions, African Americans who were

able to pursue a higher education largely attended historically Black colleges and universities (HBCUs) or other under-resourced and under-funded racially segregated state institutions (Benton, 2001; Massey, Charles, Lundy, & Fischer, 2003). Latinos, especially Mexican Americans in Texas, faced similar challenges in their pursuit of higher education, as they were also largely limited by legal mandates (O'Brien & Zudak, 1998; Massey et al., 2003). Since the Civil Rights Movement, there has been a serious and concerted effort to both desegregate and integrate higher education institutions by increasing the number of underrepresented students of color that attend predominantly white institutions (PWIs) of higher education (Nettles, Thoeny, & Gosman, 1986) through various "affirmative action" efforts, including improving minority recruitment and admissions (Massey et al., 2003). However, while minority students have gained access to PWIs, success is not always realized in these institutions for these students, and in fact underrepresented students of color often have vastly different experiences on these campuses than majority students (Allen, 1985; Gloria & Castellanos, 2003; Fleming, 1984; Laird et al., 2007).

Understanding the effects of the racial/ethnic composition of the colleges and universities that underrepresented students attend is important because research has "documented how students benefit differentially depending on the type of institution they attend" (Laird et al., 2007, p.39). It is also especially relevant because of the proportion of minorities that enroll in PWIs; for instance, in 1999, 60% of African American and 42% of Latino full-time undergraduates were enrolled in PWIs (Swail et al., 2003). Moreover, researchers have found that minority students who attend PWIs often face numerous obstacles to their persistence and completion, including racism, discrimination, a hostile, unsupportive and/or unwelcoming campus environment, negative stereotypes, alienation and isolation, a lack of minority faculty,

and cultural insensitivity (Swail et al., 2003; O'Brien & Zudak, 1998; Pascarella & Terenzini, 2005).

Several researchers have also noted that underrepresented students at PWIs often face various impediments or challenges to their engagement in ways that are meaningful for their learning and development (Allen, 1985; Feagin, Vera, & Imani, 1996; Fleming, 1984; Hurtado, Milem, Clayton-Pedersen, & Allen, 1999; Laird et al., 2007), which undoubtedly impacts the ever-looming low retention and graduation rates of African American and Latino undergraduates from these institutions. Thus, there are major and appropriate concerns about the "fit" of these institutions for minority students academically and socially, as well as culturally, which is particularly important because an institution's culture, climate, policies and practices play a significant role in how much students get engaged in their education (Hurtado et al., 1999; Laird et al., 2007). Ultimately, because of increased exposure to these types of impediments, minority students are often at higher risk of exiting PWIs before degree completion (Swail et al., 2003).

Minority-serving institutions. While minority-serving institutions (MSIs) such as HBCUs and HSIs are comprised of high percentages of racial and ethnic minority students, they still "account for only a fraction of the nation's undergraduate enrollments" (Swail et al., 2003, p.20); although racial and ethnic minority students are more likely to attend MSIs, these institutions serve a relatively small share of these students. For instance, in 1999, only 27% of full-time African American undergraduates were enrolled at HBCUs and 21% of full-time Latino undergraduates were enrolled at HSIs (Swail et al., 2003). Moreover, while these institutions have been extremely important in serving these populations' academic, social, and cultural needs and in providing higher education access and opportunities to minority students (O'Brien & Zudak, 1998), they still face their fair share of challenges. In particular, MSIs serve a high

percentage of first-generation and low-income students, who often need financial assistance, remedial programs, tutoring, and mentoring to enhance their academic success—services which these institutions often do not have adequate resources to provide and which subsequently results in higher attrition rates on many of these campuses. However, institutions of higher education with large minority enrollments still have not received adequate attention from scholars and policymakers and thus knowledge about various aspects of these colleges and universities is relatively limited—especially in terms of students' experiences in the institutions and their outcomes (Baez, Gasman, & Turner, 2008).

Historically Black colleges and universities. Research on HBCUs is by far the most common and abundant research on minority serving institutions. The importance of HCBUs has been asserted throughout the literature. One particularly distinctive aspect of these institutions is their overrepresentation in overall degree production among African Americans and the subsequent and significant impact of that overrepresentation on the overall scheme of black attainment in higher education. Specifically, according to Redd (2001) HBCUs comprise only 4% of four-year colleges and universities in the U.S., but they enroll 26% of African American students and produce 28% of African American bachelor degree holders.

Moreover, researchers have found that HBCUs account for a disproportionate number of advanced and professional degrees among African Americans (Allen & Jewell, 2002; Perna, 2001). In fact, it has been noted that approximately half of blacks that earned doctorates earned degrees from HBCUs (Brown & Davis, 2001). The overrepresentation of HBCUs in degree production among African Americans has been found to be even greater when considering specific fields, especially science, technology, engineering, and mathematics (STEM) fields. In particular, Perna et al. (2009) assert that "colleges and universities that serve predominantly

Black populations and/or women appear to be disproportionately effective in promoting the educational attainment of these groups overall, and in STEM fields in particular" (p. 5). Furthermore, they note that "of the top 20 leading producers of African American bachelor's degrees in STEM fields, all but three are HBCUs" (p. 5).

Additionally, research indicates that attending an HBCU significantly contributes to student outcomes among African American students (Flowers, 2002; Outcalt & Skewes-Cox, 2002). In particular, HBCUs have been noted to provide more educationally beneficial experiences for black students than PWIs (Laird et al., 2007); provide more opportunities for African American students to participate in activities and organizations catered towards their interests; and have higher levels of extracurricular and academic involvement for black students (Outcalt & Skewes-Cox, 2002). In fact, Laird et al. (2007) assert that "the bulk of evidence supports the idea that there is a significant institutional effect in attending an HBCU on many outcomes" (Laird et al., 2007, p.43). One outcome in particular that HBCUs have been found to positively influence is students' reports of collegiate satisfaction. In particular, Outcalt and Skewes-Cox (2002) found that when controlling for other environmental factors, attending an HBCU nearly doubled the odds that a black student would indicate being satisfied with their overall collegiate experience. This finding is especially relevant in light of the positive link that has been made between students' satisfaction and their persistence and academic achievement (Astin, 1993; Cabrera, Nora, & Castaneda, 1993).

In general, HBCUs are described as providing African American students a social, cultural, and racial environment that is "supportive, caring, and nurturing for students and that promotes academic achievement and success" (Perna, 2001, p.269). In a recent study examining the engagement of African American and Latino seniors at MSIs and PWIs, Laird et al. (2007)

found that black students at HBCUs overall development was significantly greater than that of black students at PWIs, which seems to indicate that "African American seniors at HBCUs sense that they are learning and developing as a result of their collegiate experiences to a greater degree than African American seniors at PWIs" (p. 50). Additionally, in comparison to African Americans who attend PWIs, African Americans who attend HBCUs have been found to experience less "social isolation, alienation, personal dissatisfaction, and overt racism" (Perna, 2001, p.269). The authors assert that these differences are due to important distinctions between the institutional cultures of HBCUs and PWIs—particularly that the culture of HBCUs is geared toward student involvement and success, and thus black students at these institutions "have more opportunities to engage in effective educational practices and encounter fewer impediments to engagement" (p. 51) than those at PWIs.

Besides a focus on student involvement, HBCUs tend to embrace and utilize a model to successfully graduate black students which includes a commitment to educating and graduating all admitted students; meeting students where they are academically and helping them to get where they need to be; and not allowing financial disadvantage, test scores, or high school grades prevent students from being admitted (Benton, 2001). In addition, HBCUs exhibit characteristics that are instrumental to their operation and success including an atmosphere that that is inclusive and provides students "a greater sense of confidence and builds higher self-esteem" (Harvey & Williams, 1996, p.236) as well as other structural and intangible characteristics, such as an expectation of success and positive role models, that impact the educational experiences of black students on these campuses.

Especially important to the success of HBCUs is the relationships between students and faculty on these campuses which have been noted to be quite different from the student-faculty

interactions often experienced by black students on white college campuses (Harvey & Williams, 1996). In fact, it has been posited that throughout the history of HBCUs one important mainstay has been the personal academic relationship that faculty establish with their students which is believed to at least "partially explain the tendency of HBCU students—despite any academic and economic difficulties—to demonstrate higher levels of psychosocial adjustment, academic gains, and greater cultural awareness than do their African American counterparts at PWIs" (Swail et al., 2003, p. 58). Fleming (2001) asserts that not only do black students at HBCUs "appear to have more frequent interactions with friends, mentors, and peers in extracurricular activities, faculty interaction and specifically faculty support of student development may be the most consistent effect of Black schools" (p. 598).

Moreover, researchers have noted that not only do HBCUs educate a disproportionate share of African Americans, but they also employ a disproportionate number of African American faculty members. Specifically, Perna's (2001) analysis of the 1992 National Study of Postsecondary Faculty showed that more than one third of full-time African American faculty worked in colleges and universities where the student body was at least fifty percent African American. Thus, not only are HBCUs important to degree-production and subsequently educational and social mobility among African Americans, but they "may also play an important role in the production of new African American faculty" (p. 268). The role of HBCUs in preparing African Americans for careers as college and university faculty, and hence shaping faculty members who can or will potentially serve as mentors for future students, is an important and possibly cyclical one. Perna (2001) cites Tack and Patitu's (1992) conclusion that "minority faculty may prefer to work at HBCUs in order to assist greater numbers of minority students and work with more minority professors, and thereby feel less isolated" (p. 287). Perna also points

out that “African American faculty with doctorates from HBCUs also appear to be more likely than other African American faculty with doctorates to be working in the fields of science, mathematics, and engineering (46% versus 20%), at private liberal arts colleges (29% versus 12%), and at predominantly Black colleges and universities (70% versus 41%)” (p. 278-9).

Ultimately, HBCUs continue to successfully educate black students, despite often facing funding shortages, lack of adequate resources, and inadequate facilities. Therefore, it has been suggested that PWIs explore and possibly adapt the organizational structures, instructional styles, and operational approaches that these institutions utilize in a serious effort to increase their own success with black students (Harvey & Williams, 1996).

Hispanic-serving institutions. In contrast to the abundance of research on HBCUs, there is a paucity of research on HSIs and their effectiveness for Latino students. While Latinos are the fastest growing segment of the college-going population, research on the Latino undergraduate “has not maintained a proportional pace” (Laird et al., 2007, p.39). In fact, research focused on the “learning environments of institutions the federal government has specifically designated as serving this population” (p. 40) is particularly lacking. However, recently more research has emerged on HSIs largely as a result of steady growth in the Latino student population and an increase in the numbers of institutions that have gained designation as HSIs due to this demographic trend (Laird et al., 2007).

According to the U.S. Department of Education (2001), 52% of all postsecondary Latino students are enrolled at HSIs, which also account for 41% of bachelor’s degree recipients. HSIs currently play, and will continue to play, a large role in providing access to higher education for Latino students. However, exactly how effective these institutions are in successfully retaining and graduating these students still remains to be uncovered. In a study utilizing data from the

National Survey of Student Engagement (NSSE), Laird et al. (2007) explored the role of HSIs among Latino undergraduates in an effort to determine if they were as effective for Latino students as HBCUs have been found to be for black students. In contrast to black undergraduates at HBCUs who have been found to be more engaged than their counterparts at PWIs, the authors reported that Latino undergraduates attending HSIs were quite similar to their counterparts attending PWIs in terms of their engagement, collegiate satisfaction, and overall development gains. While Latino students face challenges at PWIs similar to those faced by African Americans at these institutions, and there is some evidence that suggests that HSIs have positive effects for Latino students, it is still unclear whether the positive effects of attending an HSI are as widespread for Latinos as they are for African American students attending HBCUs. Unfortunately, there is not presently "a parallel body of work examining whether [Latino] students differentially benefit from attending an HSI versus a PWI" (Laird et al., 2007, p.43)

Researchers have surmised that differences in the experiences of Latino at HSIs and African Americans students at HBCUs stem largely from differences in these institutions inceptions and histories (Laird et al., 2007). Specifically, in stark contrast to the long history of HBCUs serving African American students, HSIs have a relatively short history of serving large numbers of Latinos, and in fact most have long histories of serving whites. Thus, many of these institutions are currently and continuously in the process of evolving to become more inclusive of Latino students and their educational needs. Additionally, some of the institutions are simply designated HSIs in reference to their student demographics (not because their institutional culture is particularly relevant or responsive to Latino students), which largely contrasts with HBCUs which have histories built on being relevant and responsive to the needs of African American students. These differences in histories and institutional cultures provide some

possible insight into why HSIs and HBCUs might differ in their effectiveness and experiences for the populations they serve. Nevertheless, it has been suggested that "Identifying and studying HSIs that have become relatively successful at serving the educational needs of Hispanic students could prove particularly useful for other HSIs and PWIs trying to improve the educational success of diverse groups of students" (Laird et al., 2007, p.52) and ultimately positively impact the current disproportionate representation of Latino students in higher education.

Other institutional characteristics. In the higher education research literature, comparisons between PWIs and MSIs are abundant. Some researchers have begun to question whether these constant comparisons of MSIs to PWIs actually do a disservice to MSIs (and the research) as they basically attempt to normalize MSIs to PWIs when they are in fact different institutions with different resources and missions (Laird et al., 2007). Not only are PWIs constantly compared to MSIs, but MSIs are also treated as if they are homogenous instead of diverse in type and makeup. For instance, because of their common mission, HBCUs are often treated in the research literature as if they are monolithic. But like PWIs, these institutions vary considerably in their "academic quality, financial health, physical facilities, student body attributes, and faculty strength" (Harvey & Williams, 1996, p.235), as well as their effectiveness. In fact, there are a variety of factors both within and between PWIs and MSIs that provide unique and specific contexts that can influence students' learning, development, and overall collegiate experiences. These factors include the history, mission, and quality of the institution, as well as other institutional characteristics such as its size, selectivity, and control.

While there are some institutional characteristics shared by MSIs, there is still considerable diversity among these groups of institutions, which most likely has some impact on

their effectiveness in educating their students. For instance, HBCUs were founded with the purpose of educating African Americans and initially were the only postsecondary option for the majority of African Americans; the central mission of these institutions was, and continues to be, to meet the educational needs of black students. In contrast, most HSIs were not established specifically to help Latinos, but instead started out as institutions that served majority students. Due to increasing enrollments of Latino students, as a result of demographic trends in the 20th century, these institutions became largely Latino-serving institutions and ultimately gained federal designation as HSIs (Dayton, Gonzalez-Vasquez, Martinez, & Plum, 2004; Laden, 2004; Gasman, 2008). Thus, unlike HBCUs, HSIs are more a result of institutional and demographic evolution, rather than a long-standing mission and commitment to Latino students and culture (Laird et al., 2007). In fact, it is particularly interesting that in a study exploring the incorporation of the HSI identity into the mission statements of a sample of HSIs, all of the institutions' mission statements failed to explicitly mention their designation as an HSI (Contreras, Malcolm, & Bensimon, 2008).

Similarly, there is great variation among and between PWIs and MSIs in terms of their size and control, both of which can affect students' educational experiences and outcomes. In fact, it has been noted that bachelor's degree completion within six years of enrollment "is higher for students who first enrolled in a private rather than a public four-year institution, regardless of race and ethnicity" (Swail et al., 2003, p. 25). Private institutions have been found to consistently have higher retention rates than public institutions and it has been shown that students take less time to complete their degree in these settings (Astin & Oseguera, 2005). However, degree completion rates are still lower for African Americans and Latinos at both types of institutions than for Asians and whites (Swail et al., 2003).

With these statistics in mind, it is important to note that the majority of HSIs (67%) are two-year, public institutions compared to nearly half of all HBCUs (47%) being private, four-year institutions (Mercer & Stedman, 2008; Contreras, Malcom, & Bensimon, 2008). This is a particularly significant and noteworthy point in two respects. First, the high concentration of Latino students that attend HSIs, the majority of which are two-year colleges, and the dismal record associated with two-year institutions of preparing students and facilitating their transfer to four-year colleges and universities, could be indicative of the segregation of Latino students in higher education, as well as a reduced opportunity for educational advancement (Contreras, Malcolm, & Bensimon, 2008). Second, it is interesting that a significant portion of HBCUs are private, four-year institutions and that HBCUs in general are often touted in the literature for their success in graduating African American students, which supports the current research that indicates the positive association between attending four-year, private institutions with degree completion rates, as well as with the time it take to reach degree completion.

Additionally, while 80% of HBCUs and 50% of HSIs enroll fewer than 5000 students, some HBCUs and HSIs have significantly higher enrollments; In fact, 9.7% of HSIs enroll more than 20,000 students. Thus, like PWIs, there is great variety in the size of MSIs. Smaller enrollments have important implications for student-faculty ratios on campus; specifically, they ensure lower student-faculty ratios than larger institutions, and ultimately facilitate more student-faculty interactions (Allen, 1986; Fleming, 1984), which have been found to be important for several student outcomes including the academic and social engagement and integration of students into the institution (Pascarella & Terenzini, 2005; Tinto, 1993). Kim & Sax (2007) highlight the ways in which certain institutional characteristics, such as institutional size and research emphasis, impact student-faculty interactions in particular. They note that

undergraduates attending small, liberal arts colleges tend to experience more frequent in-class and out-of-class interactions with faculty, in comparison to undergraduates attending large research universities who often "have more difficulty gaining access to faculty" due mainly to large student-faculty ratios and an acute emphasis on research at these institutions.

Along with their size and control, PWIs and MSIs also vary a great deal within and between themselves in terms of their quality. Several proxies have been utilized as measures of institutional quality in higher education, including tuition, student-faculty ratio, test scores, retention rates, and selectivity, among other things (Astin, 1985; Carnevale & Rose, 2003; Melguizo, 2008). The quality of an institution is important as it has been widely documented that graduation rates increase with the quality of the college or university students attend (Astin, 1985; Bowen & Bok, 1998; Carnevale & Rose 2003). The selectivity of an institution—usually indicated by test scores, high school grade point average, high school class rank, institutional acceptance rate, or some combination of these measures—appears to be the most commonly used proxy for institutional quality and has been noted to be associated with graduation rates. For instance, Melguizo (2008) points out that in 2004, "the average 5-year graduation rate at the most selective (scholastic aptitude test (SAT) score range: 1,220–1,380), 4-year public, Ph.D. degree-granting institutions was about 75%, compared with 39% for open-access institutions (i.e., institutions that do not require a minimum SAT score for admission)" (p. 215).

Using a sample of 1989 matriculates from the College and Beyond (C&B) study, Bowen and Bok (1998) analyzed the impact of attending more selective institutions on minority college completion and found that at more selective institutions the graduation rates of African American and White students with similar SAT scores were higher. They also found that students who attended highly selective institutions (as marked by a freshman class with an average SAT score

of 1,300 or more) and selective institutions (average SAT scores between 1,150 and 1,299) were significantly more likely to graduate than those who attended less selective institutions (marked by an average SAT score of below 1,150). A similar study of the High School and Beyond class of 1982 by Kane (1998) also found a positive relationship between attending more selective colleges and higher graduation rates for both white and minority students.

In addition, Astin (1982) found that there are certain environmental factors that facilitate minority students' success once they arrive on campus, including being a residential student at a four-year selective college or university. It is particularly interesting that most HBCUs are not considered selective institutions, but in fact, many are open-admissions institutions and entering students often lack the rigorous high school coursework that Astin indicates is usually a factor in minority students' persistence. In addition, most HSIs are two-year institutions and thus are also not considered to be selective, which has important implications considering the number of Latino students that enroll in HSIs and the relationship that has been established between institutional selectivity and completion rates. The selectivity of institutions also has important effects for student-faculty interactions, such as faculty mentoring, as many highly selective and selective institutions place an emphasis on research, which often negatively affects the quantity and quality of SFIs for undergraduate students.

Faculty mentoring and African American and Latino undergraduates. As this work has thoroughly illustrated thus far, racial and ethnic minorities are underrepresented in higher education and those who are enrolled in the nation's colleges and universities often encounter a host of impediments to their collegiate success. Faculty mentoring has been hailed as one effective strategy to combat some of the obstacles and barriers these students face, and to

facilitate their success in these settings by positively impacting their retention, integration, completion and satisfaction.

Specifically, the higher education research literature indicates many benefits of faculty interaction and mentoring. It has been noted that students who experience more faculty interaction, such as mentoring, take a more active role in their education (Anaya & Cole, 2001), are more engaged in utilizing the institution's resources (Castellanos & Jones, 2003), perceive less discrimination in the classroom and on campus (Nora & Cabrera, 1996) and in fact, have a more positive perception of the university environment in general (Gloria, Robinson Kurpius, Hamilton, & Wilson., 1999). Faculty mentoring is also consistently linked to students' persistence (Tinto, 1993) and collegiate satisfaction. Endo and Harpel (1982) found that informal contact with faculty was particularly impactful on students' attitudes about, and satisfaction with, their collegiate experience, which is important because of the consistently positive relationship that has been noted between students' satisfaction and their persistence and academic achievement (Astin, 1993; Cabrera, Nora, & Castaneda, 1993; Nettles et al., 1996).

The relationship between faculty-student interactions, such as faculty mentoring, and persistence is not only important for college students, but is especially important for minority students. In particular, it has been pointed out that "the interaction between faculty and students has been identified as a major factor in the ability of students to persist in college while also increasing their level of satisfaction" (Swail et al., 2003, p. 65). Researchers have also noted that with respect to underrepresented minorities in universities in particular, "contact with positive role models is even more significant than it is for majority students" (p. 65). Moreover, mentors are considered an important factor in the academic and social integration of students into the campus environment. In fact, the frequency and quality of students' contact with faculty has

been linked to high academic integration, and subsequently considered to be a contributing factor to academic success and students' personal and intellectual development (Pascarella & Terenzini, 1980).

The effects of faculty mentoring have been revealed to differ for students by race (Cole, 2004; Lundberg & Schreiner, 2004). Specifically, Lundberg and Schreiner (2004) found that while African American and Native American students worked hard to meet faculty expectations, their interactions with faculty had little effect on their learning. In fact, despite more frequent contact with faculty, African American and Native American students were found to receive fewer benefits from these interactions than other students. This finding, as well as similar findings by other researchers, may point to a need for underrepresented students to have increased interactions with minority faculty.

The presence of African American and Latino faculty is imperative to serve as role models for African American and Latino students and to aid them in successfully navigating their institutional environment both academically and socially. However, while faculty mentoring is considered to be essential to institutions' ability to facilitate retention among minority students (DeFour & Palude, 1991), there is a paucity of African American and Latino faculty in higher education institutions, especially PWIs, which makes it difficult to provide these students with African American and Latino faculty mentors. National statistics actually confirm the scarcity of minority role models on campus, indicating that African American and Latino faculty members are significantly underrepresented at colleges and universities. In fact, in 1997, only 8 percent of all full-time faculty at four-year colleges and universities nationwide were black, Latino, or American Indian/Alaskan native (Swail et al., 2003). Moreover, a substantial share of minority faculty are employed at minority-serving institutions; specifically,

"African Americans represent 59 percent of all full-time faculty at HBCUs, but only 3 percent of all full-time faculty at four-year non-HBCUs" (Swail et al., 2003, p.66). It is also important to note that minorities are even more underrepresented among tenured faculty with "only 7 percent of full-time tenured faculty who were employed at four-year colleges and universities in 1997" being African American, Latino, or American Indian (p. 66). This underrepresentation of minority faculty among the tenured ranks in higher education is further highlighted by the fact that in 1997 "African Americans held only 2 percent of the full-time, tenured faculty positions at four-year, non-HBCUs nationwide" (p. 66).

Ultimately, the importance of minority faculty representation and student-faculty interactions, such as faculty mentoring, in higher education have been posited as an important factor in the academic success and experiences of underrepresented students in the nation's colleges and universities. However, there is still much that is unknown about the "real" effects of faculty mentoring on the educational experiences and outcomes of underrepresented undergraduate students in higher education.

Overview of the Literature on Mentoring in Higher Education

Since the 1970s, mentoring has received increased attention in the fields of management, psychology and education (Jacobi, 1991), which is evident by the amount of literature on mentoring that has been published since this time. The study of mentoring emerged in the business and corporate setting and has historically been the domain of business and industry. In the 1970s and 80s many institutions of higher education began experiencing an influx of nontraditional students (i.e. racially and ethnically diverse, low-income, first-generation, women) on their campuses and consequently began having to address issues of diversity,

underrepresentation, low matriculation, high attrition, low persistence, and low graduation rates. The mentoring research literature in higher education has largely aimed to address the myriad of problems facing students of color on college campuses, such as their academic and social adjustment, satisfaction with their educational experience, and retention (Jacobi, 1991; James, 1991). The literature also largely addresses how mentoring can be utilized to increase the numbers and the career development of women, as well as faculty and administrators of color, in higher education.

Consensus and contention in the mentoring literature. The higher education literature hails mentoring as a feasible and effective strategy for addressing educational inequalities in higher education. But what exactly is this thing called mentoring? Attempting to answer this question from a review of the extant literature is a difficult feat. Not only is the higher education literature on mentoring extremely vast, but there is a great deal of contention surrounding several key issues relevant to mentoring, including precise definitions of mentoring, and important roles, functions and characteristics of mentors and mentoring relationships.

Definitions of mentoring. Researchers repeatedly reference the broadness of definitions of mentoring that can be found in the literature. In fact, the lack of a singular or concise definition of mentoring is noted as highly problematic by researchers throughout the literature (Healy & Welchert, 1990; Jacobi, 1991; Johnson, 2002; Merriam, Thomas & Zeph, 1987; Mertz, 2004). Jacobi (1991) points out that a major concern with the concept of mentoring is "the absence of a widely accepted operational definition of mentoring" (p. 505). She also notes that while there is some overlap in definitions of mentoring, there is very little consistency in the way mentoring is defined across fields (i.e. business/industry, higher education, etc.), or within them. Similarly, Merriam (1983) asserts that the lack of a clear conceptualization of the mentoring

phenomenon leads to "confusion as to just what is being measured or offered as an ingredient to success. Mentoring appears to mean one thing to developmental psychologists, another thing to business people, and a third thing to those in academic settings" (p. 169). To illustrate the lack of universality in definitions of mentoring, some of the most prominent definitions of mentoring across and within fields are highlighted below:

Education

- Blackwell (1989) defines mentoring as "a process by which persons of superior rank, special achievements, and prestige instruct, counsel, guide, and facilitate the intellectual and/or career development of persons identified as protégés." (p. 9)

- "An intensive, one-to-one form of teaching in which the wise and experienced mentor inducts the aspiring protégé into a particular, usually professional, way of life." (Parkay, 1988, p. 196)

Management/organizational behavior

- "Derived from Greek mythology, the name implies a relationship between a young adult and an older, more experienced adult that helps the younger individual learn to navigate in the adult world and the world of work. A mentor supports, guides, and counsels the young adult as he or she accomplishes this important task." (Kram, 1985, p. 2)

- Roche (1979) defined mentoring as "a relationship with a person who took a personal interest in your career and who guided or sponsored you." (p. 15)

Psychology

- Speizer (1981) wrote "The terms 'mentor' and 'sponsor' are often used interchangeably to indicate older people in an organization or profession who take younger colleagues under their wings and encourage and support their career progress until they reach mid-life." (p. 708)

- "A personal relationship in which a more experienced (usually older) faculty member or professional acts as a guide, role model, teacher and sponsor of a less experienced (usually younger) graduate student or junior professional." (Johnson, 2002, p. 89)

In the higher education literature in particular, Blackwell's (1989) definition of mentoring is referenced often and is considered to be the classical definition of mentoring in this field

(Dixon-Reeves, 2003), but there are also many other definitions in this body of literature. For instance, Moses (1989) defines mentoring as when a "professor takes an undergraduate or graduate student under his or her wing, helps the student set goals and develop skills, and facilitate the student's successful entry into academic and personal settings" (p. 9). A more current definition of mentoring is "the process by which a novitiate person (student or mentee) is positively socialized by a sagacious person (faculty or mentor) for the purpose of learning the traditions, practices, and frameworks of a profession, association, or organization" (Brown, Davis, & McClendon, 1999, p. 106). Laden (1999) points out several other definitions of mentoring that range from more pragmatic definitions of mentors as people who provide practical day-to-day advice that can be used immediately as well as to help the mentee prepare for advancement, to definitions that emphasize ethnic or gender similarities between mentors and mentees.

This variation in definitions of mentoring in the literature is problematic for research on mentoring in higher education as well as across other fields. Norma Mertz (2004) points out:

> The absence of a shared, stipulative definition of mentoring and of boundaries for distinguishing mentoring from other types of supportive relationships makes it difficult to talk with one another, within or across contexts, with any sense of certainty that we are talking about the same things—researcher to researcher, researcher to participant, practitioner to researcher, practitioner to practitioner—or to maximize the potential benefits of mentoring or any kind of relationship. And it makes it difficult, if not impossible, to build a cohesive, coherent empirical base of research. (p. 543)

While the term "mentoring" is used in the literature to describe various different types of relationships there has been little agreement among researchers about exactly who mentors are or what mentoring is (Mertz, 2004).

Because of the great variety in definitions of mentoring, Healy and Welchert (1990) attempted to provide what they considered to be necessary—a functional and comprehensive

definition that would serve to advance educational research and practice. For these authors, functional refers to the ability of the definition to describe mentoring in such a way that it is "distinguished from other superior/subordinate interactions, bridges the hiatus between formalized and classical mentoring, and implies corollaries that highlight significant unanswered questions" (p. 17). Additionally, a comprehensive definition would also accommodate the various observations from mentoring studies. Thus, these authors define mentoring as a "dynamic reciprocal relationship in a work environment between an advanced career incumbent (mentor) and a beginner (protégé) aimed at promoting the career development of both" (p. 17). They assert that there are two elements of their definition that are essential for distinguishing mentoring from other superior/subordinate supportive relationships: there is reciprocity between the mentor and mentee and some form of identity transformation by both the mentor and the mentee.

According to Healy and Welchert (1990), their definition is accurate and useful because it is applicable to both formal and informal mentoring relationships, and unlike other definitions of mentoring it captures the essence of both of these forms of mentoring. However, while these authors believe their definition to be the most accurate and sufficient, other researchers disagree. For example, Haring (1999) points out that while this particular definition recognizes the reciprocity of the relationship, uses career stage instead of age to define the mentor, and defines mentoring in general in such a way that informs the expectations of both the mentor and mentee, it still fails to suggest how the roles and activities ascribed to mentors in the literature should inform practice. Ultimately, according to Haring, this definition fails to provide suggestions about exactly how the stated purpose of mentoring that this definition outlines can be achieved.

Roles and functions of mentors. Several factors, like significant variations in researchers' conceptions of the primary roles and functions of mentors and important characteristics of mentors and mentoring relationships that foster success, make it extremely difficult to postulate a singular and cohesive definition of mentoring. According to Jacobi (1991), one reason it is so difficult for researchers to agree on a single definition of mentoring is because most researchers define mentoring by the functions the mentors are expected to provide or the roles they are expected play. These functions and roles are as numerous and diverse as the definitions of mentoring found in the literature.

Evanoski (1988) argues that mentoring is best defined by the multiple roles of the mentor which include acting as a teacher who enhances the skills and development of the protégé; a sponsor who assists with the protégé's entry and advancement; a host and guide that welcomes the protégé into a new social and occupational world; and finally someone who acquaints the protégé to the values, culture, customs, resources and people of the institution. Similarly, Jacobi (1991) reports that there are 15 roles and functions that are often ascribed to mentors in the literature: providing support, guidance, access to resources, opportunities, information, protection, social status, coaching, sponsorship, training, and exposure, as well as serving as role models and "host and guide," stimulating the acquisition of knowledge, and helping the mentee clarify their own values and goals. These functions are usually grouped into three broad categories: emotional and psychological support, direct assistance with career and professional development, and role modeling.

Defining mentoring based on the wide array of roles and functions outlined in the literature is difficult because there is no agreement among researcher about whether these roles are the same, similar, or entirely distinct. For instance, some researchers have argued that

mentors and sponsors are the same, but are different from role models (Speizer, 1981), while others have made a clear distinction between mentors and sponsors. In particular, Canton & James (1995) argue that mentors can be sponsors, but that sponsors are not mentors. Likewise, Lee (1999) asserts that "mentors should not be confused with role models" (p. 32) because while role-modeling tends to have a less formal structure and a role model could be completely unaware that someone is modeling their behavior, mentoring is more intentional, longitudinal, and structured. Méndez-Morse's (2004) definition of a role model as "someone whose characteristics or traits are emulated by others" (p. 561) and a mentor as "someone who actively helps, supports, or teaches someone else how to do a job so that they will succeed" (p. 561) supports Lee's distinction. Mentors have also been distinguished from coaches, counselors, brokers and teachers.

Moreover, Holland (1998) found that not all supportive relationships are in fact mentoring relationships. For instance, among black doctoral students he found five different supportive student-faculty relationships: formal academic advisement, academic guidance, quasi-apprenticeship, academic mentoring, and career mentoring. In contrast, other researchers, such as Regina Dixon-Reeves (2003), who created a five-fold typology of mentoring experiences among black doctoral students that included peer counseling, advising, role modeling, sponsorships and coaching, argue that these are actually just different types of mentoring experiences, but mentoring nevertheless.

In an attempt at clarification, Mertz (2004) argues that the "real" distinguishing factor between these various titles or roles is the level of primary intent and the level of involvement of the "mentor." For instance, she asserts that an advisor's "primary intent is professional development" (p. 552), they use "their knowledge of the school, program, institution, area of

teaching, or all of these, to help others (students, student teachers, new teachers, new administrators) to learn what they need to know, to make sound educational decisions, to enhance their performance, and to grow and develop intellectually and professionally" (p. 552). On the other hand, a broker's main focus, for example, would be on helping the student acquire what they need in order to be successful in advancing in an organizational or professional context.

Additionally, according to Mertz (2004) these roles can be differentiated by the intensity of involvement that they require. She maintains that the time required by a role model is less than that required of an advisor, broker or mentor. For instance, she asserts that the nature of the responsibilities required by an advisor indicates a "greater emotional involvement than that required to serve as a role model" (p. 554) and similarly "mentoring requires more of the mentor than is required of the advisor," which places the mentor in a more "intense, intimate involvement with the protégé" (p. 554). Ultimately, Mertz notes that "although it is possible for the mentor to also serve as a sponsor or benefactor and/or as a patron or protector, and although all these roles serve a career advancement function, they are distinguished from one another by the intensity of involvement and trust required and the degree to which career advancement is the primary focus" (p. 555). However, while like Mertz, some researchers have described mentoring as being at the highest end of a continuum of mentoring relationships, others do not identify mentoring as one point on a continuum of relationship intensity, but by the roles and functions played by the mentor, rather than the level of intimacy or intensity (Phillip-Jones, 1982; Zey, 1984).

Important characteristics of mentors and mentoring relationships. Along with the widely varying roles and functions of mentoring that are identified in the literature, the numerous

and disparate ideas about important characteristics of mentors and the mentoring relationship found in the literature also make it difficult to precisely define mentoring. The lack of consensus about important characteristics that mentors should possess include age, race, and gender differences between the mentor and the mentee, as well as what should be considered the appropriate length of a relationship in order for it to be deemed a mentoring relationship. For instance, Jacobi (1991) points out that some researchers are very specific about how much older a mentor should be than a student, while others are less specific, or do not believe an age difference is important at all, as long as the mentor can fulfill the mentoring roles and functions. Similarly, while some researchers argue that a true mentoring relationship is longitudinal, others argue that it can be as short as a single encounter.

Another characteristic of mentors and mentoring relationships that divides researchers, and that is especially relevant to the mentoring of minority students, is whether cross-race and cross-gender mentoring relationships are as effective, more effective, or less effective than mentoring relationships in which the student and mentor are of the same race and/or gender. Some of the literature on mentoring students of color emphasizes the effectiveness of cross-race and cross-gender relationships, while others emphasize the necessity and effectiveness of same-gender or same-race relationships for these students. For instance, a study by Lee (1999) found that African American students "felt that having an African American faculty mentor was less important than having a mentor in their career field" (p. 37). Similarly, Hickson (2002) conducted a survey of 250 black students at an HBCU in Texas and found that the majority of these students believed it was necessary to have a mentor, but did not believe the mentor needed to be of the same race. On the other hand, Frierson, Hargrove, and Lewis (1994) assert that their findings from a study of undergraduate minority students participating in a summer research

program in which faculty mentoring relationships were a key component seem to "support a premise that black faculty presence is important to provide effective mentoring and to promote positive attitudes toward research and academic careers in African American students" (p. 479). They also point out that questions about the importance of mentor-protégé racial similarity arise so often largely due to the paucity of minority faculty that are available as mentors for minority students, especially at predominantly white institutions.

Because of their small numbers in the academy, Adams (1992) suggests that minority and female students should not limit their search for a mentor to minority or female faculty members. Instead, he argues that the main criteria for choosing a mentor should be that the mentor has the time, interest, and intention to guide, support, and encourage the student so that they can complete their studies in a timely and productive manner. This suggestion seems to be somewhat supported by an evaluation of one university's faculty-student mentoring program conducted by Campbell and Campbell (1997) which hypothesized that gender matching would not have significant effects on academic success and which indeed found that "gender matching did not influence units completed, GPA, or dropout rate" (p. 740). However, many researchers recognize that some benefits accrue to students, especially students of color and women, from having mentors who share their race/ethnicity or gender. For instance, Erkut and Mokros (1984) point out that "people emulate models who are perceived to be similar to themselves in terms of personality characteristics, background, race, and sex" (p. 400). They particularly note the idea in higher education that women professors are important as role models for college women. They write, "It is assumed that by demonstrating, and hence legitimating, a professional role, women professors encourage women students to seek similar achievements" (p. 400).

Nevertheless, it is important to point out that little research has been conducted that actually determines whether the gender of a faculty mentor in fact has a differential impact on students (Erkut & Mokros, 1984). Ultimately, Jacobi (1991) points out that the theoretical and descriptive mentoring research literature in higher education emphasizes the effectiveness of cross-race and cross-gender relationships for mentoring students of color. However, many programs still strive to match students with mentors from their own gender or ethnic backgrounds, which illustrates how strong of an effect background similarities are believed to have in fomenting successful mentoring relationships, despite a lack of empirical support for this widely held notion.

Not only does the lack of agreement in the literature over the various roles and functions mentors are expected to perform and the important characteristics they should possess make defining mentoring difficult, but this task is further complicated by disagreement in the research over the importance of different types of mentoring. Specifically, there are two main types of mentoring used in postsecondary education that are discussed in the literature: formal and informal mentoring. The primary difference between the two is that in formal mentoring the relationship is assigned by a third party, while informal mentoring relationships develop spontaneously between a mentor and mentee. Some researchers have noted that while informal mentoring, because of its spontaneous formation, implies a desire and willingness to be in a mentoring relationship on the part of both the mentor and the protégé, formal mentoring is often forced—mentors or protégés may be required to participate, which could decrease the willingness and motivation of both (Chao, Walz, & Gardner, 1992), and subsequently the effectiveness of the partnership.

Grooming mentoring is the traditional type of formal mentoring where the mentor and mentee are paired in order to increase or enhance the mentee's success. The goal of this mentoring is to support the mentee as a newcomer to the organization by acclimating him or her to the organization or institution in order to promote their success (Haring, 1999). Grooming mentoring is the type of mentoring most often associated with formal mentoring programs in higher education for students, as well as new faculty and administrators. For instance, James (1989) asserts that formal mentoring usually refers to mentoring that is specifically designed to increase the enrollment, retention and satisfaction of minority students with their academic experience. Although formal mentoring is widely used in higher education, there is research that suggests that it is not as effective as informal mentoring and results in less communication, interaction, relational comfort and identification (Johnson, 2002). In fact, some researchers have found that informal mentoring is more effective and meaningful than formal or assigned mentoring (Ragins & Cotton, 1999; Chao, Walz & Gardner; 1992) because these relationships tend to be based on shared interests, similarity, enjoyment of interactions and shared expectations about the form and function of the relationship (Johnson, 2002). However, while informal institutional mentoring has proven to be beneficial, it has also been suggested that it is largely absent or unexperienced by students, which results in a need for formal mentoring programs (Wallace & Abel, 1997).

Moreover, some researchers note the importance of formal mentoring, but assert that multiple levels of informal mentoring must also be implemented in order to significantly affect the success of students (Pope, 2002). Other types of formal and informal mentoring discussed in the higher education literature include peer mentoring and network mentoring. Peer mentoring has been noted in the literature as one way to provide role models and leadership for

underrepresented students in higher education. It is considered to be a nonthreatening method of understanding and confronting students' academic and social problems, and in fact Marable (1999) argues that peer mentoring is "the most effective means whereby minority students can be mentored" (p. 49). Thus, many universities have begun utilizing this as a strategy to help students transition into the campus environment as well as to provide continued support once students are on campus (Good, Halpin & Halpin, 2000; Marable, 1999).

Network mentoring is similar to peer mentoring in that the hierarchy and power imbalance of the relationship is deemphasized so that participants can serve as mentors when they possess expertise or knowledge that they can offer and protégés when they need the encouragement and support of others in the network. While Haring (1997) argues that there are obvious advantages to this model of mentoring, it also has some disadvantages such as the difficulty of organizing and sustaining the network due to an "ebb and flow" (p. 70) in participation, as well as the difficulty of monitoring levels of interaction within the network and whether the network is meeting participants' needs. Thus, the actual effectiveness of peer mentoring and network mentoring relative to other forms of formal and informal mentoring has not been adequately established in the mentoring research literature. Ultimately, the disagreement in the literature among researchers about the important characteristics of mentors and mentoring relationships, like the effectiveness of formal and informal mentoring, is a major contributor to the difficulty of accurately defining mentoring.

While there is much contention over definitions of mentoring, as well as the essential roles and functions of mentors and the important characteristics of mentors and mentoring relationships (which are often used to define mentoring), there are several elements in the mentoring literature over which there is strong agreement (Jacobi, 1991). First, researchers tend

to agree that mentoring relationships are helping or supportive relationships that are focused on achievement where the mentor provides assistance and support to help the mentee succeed in work or school. Second, it is also agreed that mentoring "includes any or all of the three broad components: (a) emotional and psychosocial support, (b) direct assistance with career and professional development, and (c) role modeling" (p. 513). Third, mentoring relationships are reciprocal and provide emotional or tangible benefits to both mentors and mentees. Fourth, mentoring relationships are personal and require direct interaction between mentors and protégés. Finally, it is agreed that mentors have "greater experience, influence, and achievement within a particular organization or environment" (p. 513) than the protégé. Thus, despite all the contention in the literature over various elements of mentoring, there are several stable components of mentoring. These components provide a foundation for educational researchers to build on in order to clear up the confusion that surrounds mentoring, so that these relationships can be utilized to their maximum potential to affect real change in higher education, especially in terms of addressing educational inequalities.

Purpose and dominant conceptualizations of mentoring in higher education.

Because business and corporate settings have long provided the context for studying mentoring, the purpose and benefits of mentoring have usually been connected with this domain. However, educational settings have more recently begun providing another context for examining mentoring. Mertz (2004) points out that "like business organizations, educational organizations have an implicit obligation to develop their employees," but "unlike business organizations, they have an explicit (or at least widely understood and expressed) moral obligation to the personal and professional development of students and to helping them take their place in society as productive, contributing members" (p. 543-44). The purpose of mentoring has been discussed in

a variety of ways in the higher education literature. For instance, it has been considered a way to bridge the gap between individual student needs and the requirements of the university (Laden, 1999) as well as a method of leadership development and a tool to promote academic success, among many other things.

By far, the dominant conceptualization of the role of mentoring in higher education is as a strategy to address issues of educational inequality. Specifically, mentoring is primarily conceived of as a method of increasing diversity in higher education by directly addressing issues of underrepresentation of racially and ethnically diverse people, and women, in the student body, faculty ranks, and administration. Mentoring is most often discussed as a strategy to tackle problems of attrition, retention/persistence, recruitment, completion/graduation, satisfaction with the educational experience, and social and academic integration that consistently plague students of color and women in higher education, as well as issues that specifically affect the persistently low representation of people of color and women among students, senior faculty, and administrators on college and university campuses.

The social and economic opportunities that a postsecondary degree affords one are documented in the literature. However, the literature also shows that people from certain racial and ethnic minority groups, specifically African Americans, Latinos, American Indians and Asian Pacific Islanders, matriculate to, enroll in, persist and graduate from institutions of higher education at a disproportionately lower rate than whites. This is especially true among students of color attending predominantly white institutions and students that tend to be low-income, first generation college students and often academically underprepared for college level coursework. Thus, mentoring is conceptualized as a way to acclimate these students to the college campus environment and provide them with the tools to increase their persistence and retention and

ultimately completion of their undergraduate studies. Gándara (1999) highlights the importance of minority students' success in higher education by asserting that:

> Until much higher percentages of students from underrepresented minority groups enjoy very high levels of educational success, it will be virtually impossible to integrate our society's institutions completely, especially at leadership levels. Without such progress, the United States also will continue to be unable to draw on the full range of talent in our population in an era in which the value of an educated citizenry has never been greater. (p. vii)

Similarly, the research shows that the number of underrepresented minorities receiving doctorates and entering the academy continues to be significantly small (Carter & Wilson, 1996; Frierson, Hargrove & Lewis, 1994). In order to increase the number of African Americans, Latinos, American Indians, and Asian Pacific Islanders that pursue the doctorate, several strategies have been devised and implemented in higher education, and one such strategy has been summer research mentoring programs. Such programs are geared towards exposing underrepresented undergraduates to the rigors and expectations of research and graduate work and increasing their awareness of and interest in pursuing graduate studies (Frierson, 1997). Mentoring is also conceptualized as important for these students once they enter graduate school to help them persist and attain the doctorate as well as to acclimate them to the norms, values, culture and ethics of the academy. Adams (1992) points out that graduate education is becoming more democratic (i.e. providing access to a wider range of students) and therefore, faculty members must adjust the way they interact with students. While mentoring is not a panacea that will solve all the problems that minority graduate students will face, good mentors nevertheless will ease the process and ensure that these students keep making forward progress (Adams, 1992).

The numbers of underrepresented faculty and administrators at colleges and universities are also extremely low. Thus mentoring is conceived of as a way to integrate new faculty

members of color into the organization and increase their success in the academy. Increasing the numbers of these faculty members is also considered important because it could subsequently increase the number of minority faculty members who could potentially mentor and serve as role models for underrepresented students pursuing undergraduate and graduate degrees. The literature indicates that white males are overrepresented in higher levels of administration and faculty positions which results in those available to serve as mentors largely being white and male (McCormick, 1997). Thus, McCormick (1997) points out that "Due to this scarcity of diverse faculty in higher education and in the mentoring pipeline, the urgency to increase efforts to hire and retain men and women of color and white women on university campuses has been in the forefront of various reports on higher education in the last decade" (p. 188). Similarly, Frierson (1997) writes, "Conventional wisdom supports the notion of the need for greater numbers of faculty of color to work with racial and ethnic minority students and further to broaden the opportunity of students from the general population to interact with and have mentors from backgrounds different from themselves. This in itself would prove to promote diversity in higher education" (p. 4). Ultimately, researchers such as Sloan (1996) argue that the racial and gender homogeneity that is predominant in industry and among faculty on college and university campuses is detrimental, and that in order to ensure racial and cultural diversity in academe, mentoring must be considered an important strategy to achieve diversity.

Benefits and beneficiaries of mentoring in higher education. The perceived importance, resulting benefits, and success of mentoring in corporate settings has led to an interest in mentoring in higher education (Merriam, Thomas & Zeph, 1987). Mentoring in higher education is usually discussed as important and beneficial in three primary types of mentoring relationships: faculty mentoring students, senior faculty mentoring junior faculty, and the

mentoring of administrators to promote career development. The dominant argument in the literature suggests that everyone needs a mentor. Mertz (2004) highlights this point when she writes:

> If the professional and popular literature is to be believed, mentoring is the cure for a thousand ills, the sine qua non of personal development, professional development and career advancement. Not only does "everyone who makes it have a mentor," (E.G.C. Collins & Scott, 1978) but everyone needs a mentor: 1st-year teachers, potential Fortune 500 CEOs, welfare mothers, employees in need of remedial help, disadvantaged youth, student teachers, newly minted assistant professors, prospective administrators, women, minorities, and the list goes on. (p. 540)

Not only does everyone need a mentor in higher education, but the literature also heavily suggests that all mentoring relationships are positive and beneficial for all involved. However, there is some literature that suggests otherwise. As Jeanne Speizer (1981) writes: "The idea that a role model, mentor, or sponsor is a prerequisite for success has achieved the sudden recognition that makes it appear self-evident. At such a moment it is particularly important to ask whether its validity has been demonstrated" (p. 693).

Graduate students. In the higher education research literature, mentoring is largely viewed as a method of increasing the number of underrepresented students of color that pursue graduate studies and ultimately enter the faculty ranks. As informal student-faculty interaction has been shown to be important and beneficial for undergraduate students, it is equally as important, if not more important, for graduate students. In fact, mentoring is considered to be an essential component of graduate education (Cusanovich & Gilliland, 1991). Mentoring of graduate students by faculty members has been found to impact students' future employment possibilities at institutions of higher education (Merriam, Thomas, & Zeph, 1987). The prestige and accomplishments of the mentor also serve to benefit graduate students' academic productivity and advancement. Other researchers note that graduate students learn important

skills and behaviors from their mentors such as risk-taking behavior, communication skills, political skills, and professional skills important to their chosen careers (Bova & Phillips, 1984).

The most reported benefits of mentoring to graduate students are career preparation and psychological support. Frierson (1990) asserts that in graduate education mentoring has been described as a "process that provides individuals with support and protection during their graduate training and serves as additional support once they become professionals" (p. 14). Although mentoring has been acknowledged as a crucial component of graduate education, researchers have recognized that many graduate students of color, especially African American graduate students, often have unequal or substandard graduate educational experiences, due largely to the fact that they do not receive this mentoring (Blackwell, 1983).

Underrepresented graduate students are reported in the higher education literature to need mentoring for several reasons. First, the transition for many of these students from undergraduate to graduate education is often wrought with difficulty because many of these students are the first in their families to pursue graduate studies (Vasquez, 1997). Thus, they may not be aware of the rules, procedures and expectations of graduate school (Allen, Haddad, & Kirkland, 1984). These students may also face cultural incongruence between themselves and the institution and therefore may be reluctant to acculturate to the college culture (Granados & Lopez, 1999). They may also face common feelings of culture shock and marginalization or alienation due to a lack of cultural and ethnic support, which in turn may affect their self-confidence academically and socially. In addition, underrepresented graduate students need mentoring to help them cope with several factors in their transition from undergraduate to graduate education including a paucity of conscientious faculty role models and mentors who are aware of minority students' needs and concerns and are supportive of minority students' research interests, the lack of a minority

student community due to small numbers of minority students on campus, and the lack of mechanisms that facilitate their development and maintenance of social and professional networks (Granados & Lopez, 1999).

Many explanations have been provided for the low numbers of students of color who enter doctoral programs, such as the cost of graduate education, the slow market for college instructors, and limited financial support. Yet, some researchers argue that the cultivation of developmental or mentoring relationships between graduate students and their professors is a critical factor in determining the successful completion of graduate programs (Adams, 1992; Phillip, 1993; Davidson & Foster-Johnson, 2001). In fact, it has been argued that mentoring actually creates the conditions for graduate school success (Davidson & Foster-Johnson, 2001) by serving to integrate students into the department, helping them to develop professional and social networks, and preparing them for entry into the workforce. Thus, there are multiple benefits that mentors provide to graduate students of color, including providing access to career-related or professional services, stimulating the mentee's acquisition of knowledge, and providing specific research or teaching training as well as various psychological benefits (Chao, Walz, & Gardiner, 1992; Ragins & Cotton, 1999).

Ultimately, mentoring underrepresented graduate students provides benefits that help these students face institutional obstacles, adapt to the graduate environment, and create social and professional networks that facilitate persistence in obtaining a graduate degree (Granados and Lopez, 1999). Brown, Davis, and McClendon (1999) point out that faculty mentors can serve to benefit students by assisting them in producing new ideas and insights (academic midwifery), academically and socially shaping students' lives to what they desire (role molding), and providing guidance and wisdom to students (frientoring). Moreover, according to Adams (1992)

graduate minority students can expect to gain several things from successful and effective mentoring relationships: a confidant, a sponsor, a role model, an advisor, a protector, a supporter, a promoter, a teacher and a door opener. As Davidson and Foster-Johnson (2001) note:

> Mentoring in graduate school is an important professional responsibility of educators, researchers, and administrators in many disciplines. An important factor in mentoring is acknowledgement of the differential graduate school and employment experiences of individuals from different cultural heritages. To adequately train educators and researchers, graduate school must prepare students for a diverse work force experience—regardless of cultural group membership. (p. 568)

Faculty and administrators. The higher education research literature also indicates that mentoring is important and beneficial for faculty and administrators, particularly as a way to increase diversity in their ranks. New or junior faculty members and administrators need mentoring for support and to become acclimated to the organization, as well as to progress and develop in the organization, much in the same way that graduate students need this type of support during their graduate studies. Mentoring is considered to be especially essential for faculty and administrators of color at predominantly white institutions where their numbers are often miniscule. For instance, Frierson (1990) points out that the presence of black academicians is important for several reasons: to advance scholarship in general and research on issues important to minorities in particular; to provide necessary support for black and other minority colleagues; to increase the numbers of black scholars in the field; and to significantly effect policy and programs that can enhance students' educational attainment and academic development through research and development efforts.

Like Frierson, other researchers also note the importance of mentoring for new faculty members of color who are interested in pursuing ethnic or cultural research (Padilla, 1994; Stanley & Lincoln, 2005). Stanley and Lincoln (2005) point out that while research focused on racial or cultural issues is important, it is not always rewarded by the academy. In fact, new

faculty members are often discouraged from this kind of research until they achieve tenure. Stanley and Lincoln argue that this type of advice serves an assimilationist agenda by creating "the impression that non-mainstream research is without value, that diversity is respected only insofar as it conforms to majority interests, and that faculty of color are to some degree incapable of laying out research agendas of their own" (p. 48). Thus, they contend that "mentors can use their familiarity with and understanding of such research to influence decisionmaking during faculty recruitment, performance assessments, promotion and tenure reviews, and department and college benchmarking" (p. 48). Ultimately, Hill, Castillo, Ngu and Pepion (1999) argue that "Central to the problem of recruiting and retaining ethnic minority faculty is the lack of consistent effort on the part of the university system to embrace diversity through structural change that includes paradigms reflective of broader worldviews embodied in ethnic minority culture and traditions" (p. 828).

Moreover, there are several other benefits of mentoring faculty and administrators in higher education. Merriam, Thomas & Zeph (1987) report that faculty members and administrators with mentors have higher levels of career development than those without mentors. They also assert that faculty members with mentors were more successful as indicated by the fact that they were found to publish more, receive more grants, leadership roles and higher salaries, hold higher academic ranks, and report more career and job satisfaction (Merriam, Thomas & Zeph, 1987). Those faculty members with mentors also progressed more rapidly in their careers. Similarly, the authors also found that most senior administrators believed that they had advanced in their careers because they had a mentor. Whether an administrator has a mentor or mentoring relationship or not ultimately has the ability to affect whether they have many or few career opportunities. The literature shows that those who have been mentored tend to value

mentoring and ultimately end up serving as mentors, which could prove to be especially beneficial for people traditionally underrepresented in higher education by potentially increasing the numbers of racially and culturally diverse faculty members and administrators who could serve as mentors for underrepresented undergraduates, graduate students and junior colleagues.

Women. Women are another group that is referenced in the higher education literature as needing and benefiting from mentoring. Similar to members of racial and ethnic minority groups, women in higher education often face many obstacles and challenges. They are often in male dominated departments, with few role models, and sometimes experience isolation and alienation. Women also often encounter gender biases and forms of discrimination that have the potential to negatively affect their progress in their career and social development within an organization, such as the ever-looming "glass ceiling" and "old-boy" networks. Mentoring, especially by other women who have successfully navigated through these challenges and obstacles, could potentially benefit other women, by providing psychological, emotional and career support. Thus, mentoring of women in higher education is not only necessary, but is crucial to diversifying higher education along gender lines. Women need mentors to support, guide, encourage and facilitate their career development.

Researchers have noted the positive impact of student-faculty interactions for female students (Sax, Bryant, & Harper, 2005), and the effect of faculty mentoring for women in the STEM fields has especially been emphasized. For instance, in a case study exploring the contributions of Spelman College, an HBCU, in the preparation of African American women for STEM careers, Perna et al. (2009) found that participants indicated that faculty members went "above and beyond" to "promote the attainment of African American women in STEM fields" (p.13). Students indicated that faculty encouraged their success in STEM fields particularly

through their accessibility and interaction with students. Similarly, other researchers have found that both the quality and quantity of student-faculty interaction is positively associated with students' interest in pursuing a career in engineering (Colbeck et al., 2001) and that women who receive career advice and/or encouragement from a faculty member are more likely to seek and gain employment in a science career after graduation (Rayman & Brett, 1995).

Despite the positive impact of student-faculty interactions, such as faculty mentoring, for women noted in the literature, some of the findings in the literature also suggest that it is often more difficult for women to find mentors than men, and that male mentors "provide a narrower range of benefits for women than for men" (Noe, 1988). This is especially true when women are in male-dominated situations or environments. Potential male mentors may shy away from mentoring talented women because of "apprehensions that close male-female working relationships automatically become sexualized in the minds of peers and supervisors, regardless of any indications to the contrary" (Gilbert & Rossman, 1992, p. 233). It is often even more difficult for minority women to find female mentors. For example, Castellanos and Jones (2003) point out that "Locating and establishing mentoring relationships with Latina and African American female faculty is also a relevant concern for women of color. The challenge of finding an ethnic/racial woman faculty member is a well-documented issue, as there are fewer ethnic/racial women faculty than other faculty group[s] in academia" (p. 83).

Undergraduate students. Finally, mentoring has been argued to be essential to undergraduate success (Graff, n.d.). In fact, researchers indicate that there is a positive association between students' educational aspirations, satisfaction with college, academic achievement, personal and intellectual development, and persistence, and the quantity and quality of students' informal interaction with faculty members (Mohr, Eiche, & Sedlacek, 1998;

Pascarella, 1980). Specifically, Mohr, Eiche, and Sedlacek (1998) assert that "Faculty advising provides a unique opportunity for individual faculty members, and the institution by proxy, to develop a close connection with students" (p. 13), and in turn this connection can result in increased satisfaction and persistence among students. Similarly, Gardiner (1994) acknowledges several benefits of undergraduate students receiving academic advising from faculty members, but he also points out that when students have a mentor, as opposed to just an advisor, they better understand, plan, and utilize their time in college. According to Graff (n.d.), mentors also provide undergraduate students with "the support, challenges, and the vision necessary to view questions or problems from internal and external perspectives" (p. 5). Students who do not have mentoring relationships are reported to miss out on nonacademic aspects of their undergraduate education more often than those with mentors (Gardiner, 1994).

The literature points out that mentoring is especially beneficial for certain populations in the undergraduate student body, such as students majoring in science, technology, engineering and mathematics (STEM; also referred to as SMET in the literature) fields and racially/ethnically underrepresented students. Research has found that some of the highest attrition rates are among freshman and sophomore college students majoring in science, mathematics and engineering (Gainen, 1995) and these attrition rates are much higher among students of color in these fields because they often encounter differences in cultural values, stereotypes, isolation, racism and inadequate support (Seymour & Hewitt, 1997). Thus, in the case of these students, mentoring is considered to be beneficial by providing the necessary and appropriate support for students to adequately deal with academic and social challenges that are prevalent in these fields.

Mentoring is also necessary for students in STEM fields as a way to increase their recruitment, as well as their completion rates. Woolston, Hrabrowski, and Maton (1997) point

out that while nine percent of students enrolled in American colleges and universities are African American, they only earn five percent of bachelor's degrees and two percent of doctorates in science and engineering. These authors also note that there are several factors critical to minority persistence and success in the sciences: knowledge and skills, motivation and support, monitoring and advising, and academic and social integration. Thus, they assert that mentoring from peers, faculty, administrative staff, family, and professionals in science and engineering fields plays an important role and can serve to significantly increase the chances of minority student success through the provision of support, insight into the scientific work world, exposure, advice, and protection among many other things.

Students in STEM fields have been shown to especially benefit from peer mentoring that socializes new students to the environment and helps them to successfully deal with the stress that is often associated with such majors. It appears that the networking and academic and social support that students receive from peer mentoring helps them to feel less isolated when facing academic difficulty (Good, Halpin & Halpin, 2000). Marable (1999) writes, "Undergraduate student mentors share knowledge and experiences of the social, ethnic, and cultural dimensions of engineering where a professor or administrator would have little firsthand knowledge" (p. 49). Also, the support students receive from peer mentoring has been reported to have a positive effect on the retention of students in STEM fields (Good, Halpin, & Halpin, 2000).

The importance of building knowledge in the science, technology, engineering and mathematics fields is underscored by William McHenry (1997) when he notes that the economies of the 21st century will be largely driven by the knowledge derived from research in these fields. McHenry asserts, "A nation's use of this knowledge is dependent on the quality of the SMET workforce and the SMET literacy of its citizenry. The United States and other nations

must continuously strive to improve their SMET knowledge base by ensuring that all students have access to a quality education system, from kindergarten through adult continuing education programs" (p. 115). The literature indicates that members of minority racial groups are underrepresented in these fields, and McHenry argues that if the United States aims to remain globally competitive, then it "must provide better access to quality SMET programs for all students, especially blacks, Hispanics, Native Americans, and Pacific Islanders" (p. 116).

The diversification of these fields is important for several reasons. First, science requires critical thinking and creative and innovative solutions to problems; having viewpoints from different cultural perspectives only broadens the potential for cutting-edge scientific and technological advances. In addition, diversity in the STEM workforce is important for strengthening society because it allows people from different backgrounds and perspectives to work together to solve modern scientific and technological problems and to ultimately identify commonalities and to function as a cohesive unit (McHenry, 1997). Thus, as the research literature highlights the importance of diversifying the STEM fields, higher education must work to recruit members of underrepresented groups into these fields, retain them through graduation, and encourage them to enter academic and industrial STEM research institutions; mentoring is one primary avenue for meeting these goals.

Moreover, in the higher education literature, the benefits and necessity of mentoring are especially discussed in reference to racial minority students on college and university campuses. Berta Vigil Laden (1999) notes that the Civil Rights Movement opened the college doors to students who were not previously found in significant numbers in higher education. These students—who quickly became known as nontraditional students—were different because they tended to be first-generation college students, academically underprepared, older, female,

racially and ethnically diverse, disabled, and from low-income households. These factors, and others, were large contributors to high attrition rates among these students, and thus some higher education institutions developed strategies aimed at increasing the retention and completion rates of these students. Mentoring has been one such strategy.

Retaining and graduating students of color has been an enduring problem. This is especially true for African American college students, and even moreso for African American students attending predominantly white institutions (Astin et al., 1996). Research has shown that black students "have not fared well on predominantly white college campuses" which is indicated by "lower persistence rates, lower academic achievement levels, less likelihood of enrollment in advanced degree programs, poorer overall psychosocial adjustment, and lower post-graduation occupational attainments and earnings" (Allen, 1985, p. 134-35). Latino college students experience similar educational challenges and outcomes in higher education (Laird et al., 2007), and thus the establishment of formal mentoring programs for students of color, especially at predominantly white institutions, has been one effort aimed at reversing this dire trend.

Besides aiding in the retention of underrepresented undergraduate students, faculty mentoring is also an important method of integrating students into an institutional environment academically and socially. Specifically, researchers in higher education have noted that students' ability to successfully integrate into the college environment greatly affects their persistence (Astin, 1982; Tinto, 1993). Thus, mentoring provides support for students who may have difficulty adjusting to the collegiate environment socially and academically by providing them with access to someone who has experienced the difficulty involved in navigating unfamiliar territory and has succeeded (Wallace & Abel, 1997).

Ultimately, mentoring of undergraduate students has also been associated with academic success. While Jacobi (1991) notes that there are relatively few studies that directly assess the relationship between mentoring and academic success, there is plenty of indirect evidence. Specifically, there is literature that asserts that frequent and positive contact between students and faculty is linked to academic achievement, student satisfaction with college, and retention (Astin, 1993; Tinto, 1993; Allen, 1985). In fact, it has been reported that undergraduate students who have been mentored report significantly higher levels of satisfaction with their college experiences than students who fail to connect with faculty and staff (Endo & Harpel, 1982).

Weaknesses of the higher education mentoring literature. Major research findings suggest that mentoring relationships are positive, beneficial and critical to success, especially among underrepresented populations, including women, in higher education. However, it is difficult to determine how accurate the findings in the literature are in terms of the importance, significance and benefits it attributes to mentoring in higher education because of several prominent weaknesses—specifically, definitional, theoretical and methodological deficiencies—in the research literature that ultimately reduce the usefulness of the existent research.

First, the research literature on mentoring lacks a theoretical or conceptual base and the fact that this research has not been driven by theory is highly problematic (Campbell & Campbell, 1997; Jacobi, 1991). The mentoring research literature in higher education fails to provide a theoretical or conceptual base that explains links between mentoring and academic success. Jacobi (1991) points out that there are various theoretical approaches in the mentoring literature but they all tend to emphasize different aspects of the mentoring relationship. For instance, one perspective may view mentoring as a strategy for encouraging involvement in learning, while another may view mentoring as a tool of academic and social integration to

decrease attrition and increase retention, while still yet another may focus on mentoring as a method of social or developmental support. Thus, a theoretical base is badly needed to make sense of the smorgasbord of empirical research that has been conducted on mentoring, as well as to better understand and explore what the findings of this research suggest about the characteristics and outcomes of mentoring relationships.

A second weakness of the mentoring literature is the fact that not all literature that refers to "mentoring" is referring to the same thing. A dominant theme in the higher education literature is that certain benefits accrue to those involved in mentoring relationships. However, a major problem with this assertion is that the literature also notes that because there is so much definitional variety in the mentoring literature in terms of exactly what mentoring is and even who mentors are, researchers are not entirely sure whether all the relationships that are referred to as "mentoring" relationships are actually talking about the same thing. For instance, Speizer (1981) writes: "Role models, mentors and sponsors are concepts which still need to be defined and studied. Despite their almost universal acceptance, there is very little supportive evidence for their validity" (p. 712). She further asserts that researchers must establish accepted definitions for each concept and "once universally accepted definitions have been established by scholars within their own discipline and perhaps among disciplines, research with different approaches can be pursued" (p. 712). Thus, in order for the benefits of mentoring that are discussed in the literature to be considered accurate, or even useful, researchers must first agree on a definition of mentoring as well as important roles, function and characteristics of mentors. Ultimately, Healy and Welchert (1990) argue that "the absence of definitional consensus is stymieing efforts to synthesize empirical findings into a coherent body of knowledge and to identify important unanswered questions" (p. 17).

A third major weakness with the research literature on mentoring is several measurement and methodological issues that have proven to be problematic. For example, researchers found that protégés who expressed minor satisfaction or dissatisfaction with their mentors often had attitudes equivalent to or worse than individuals who did not have mentors (Ragins, Cotton, & Miller, 2000). However, Pelligrini and Scandura (2005) point out that this finding might, in fact, be the result of methodological problems. They write that "observed differences in this important finding may also reflect the fact that the same mentoring instrument might be measuring different constructs in different groups rather than suggesting that the groups vary on the same constructs" (p. 325). Thus, these authors point out potentially biasing problems with research methods used in mentoring research. They argue that when there are differences in mentoring experiences, researchers must ensure that appropriate instruments are being used to capture the dynamics of the various types of relationships. It is critical that there is confirmation that researchers are actually measuring the same thing when students report dissatisfaction with their mentoring relationships. Ultimately, Pelligrini and Scandura suggest that it is of the utmost importance in the mentoring research that construct comparability is ensured when testing for cross-group differences. Researchers could do this by simply ensuring that before they attempt to interpret scale score differences across groups, they demonstrate that members of these groups share a common understanding of the scale indicators.

Jacobi (1991) points out several other problematic research design and measurement issues that affect the usefulness of the mentoring literature. First, much of this research utilizes "retrospective, correlational designs" (p. 520) that limit data collection to one point in time as well as to a specific sample. This type of design results in research that often either fails to control for confounding variables or "to eliminate alternative explanations for observed effects"

(p. 520). To address this problem, Jacobi suggests the use of quasi-experimental research designs that include longitudinal and cross-sectional components. Jacobi notes that a fair amount of the research does have cross-sectional components, but this research usually just compares individuals with mentors to those without mentors. Cross-sectional design research that compares the outcomes that are associated with the different mentoring functions (i.e. career development vs. psychosocial support) outlined in the literature, as well as the different patterns of interaction (i.e. frequent vs. occasional meetings) and different mentor-protégé characteristics (i.e. same sex/ethnicity vs. cross-sex/ethnicity) are also needed. It would also be beneficial to compare mentored students to students participating in other kinds of planned programs and activities that are designed to promote academic success. Jacobi also points out that longitudinal research that collects data at multiple intervals would also be more beneficial than research that simply collects data before and after, "since it is unknown how long it takes for mentoring effects to emerge or how long they last" (p. 520).

The higher education mentoring research is also weakened by a lack of valid and reliable measurement instruments. Much of the current research relies on self-reports from survey or interviews instead of observation, not only because they are the most feasible methods, but also because valid and reliable measurements have yet to be developed. The existing mentoring research also is problematic because of low levels of external validity—data is often collected in a single institution or department, and the extent to which these findings generalize to other institutions and students is unknown.

Merriam, Thomas, and Zeph (1987) indicate another "major shortcoming of the mentoring literature in higher education" (p. 207) is that little of this research has attempted to assess the impact of mentoring on the lives and careers of students, faculty and administrators.

While they admit that experimental designs with mentoring "treatments" would be difficult to manage, they believe that ex post facto studies are more feasible and more of these types of studies in higher education "might provide the foundation and rationale for incorporating mentoring more systematically into the career development process" (p. 207).

In terms of understanding the relationship between mentoring and academic success, the existing mentoring research in higher education could be significantly improved through the use of more ethnographic and qualitative methods such as content analysis of mentor or protégé journals, direct observation or fieldwork, and interviews and focus groups. Jacobi (1991) writes, "These methods offer the opportunity for in-depth and longitudinal exploration of mentoring relationships and for hypothesis generation, but they are less appropriate for confirming hypotheses about the strength and direction of the association between mentoring and academic success" (p. 522). Similarly, Merriam, Thomas and Zeph (1987) note that data collection methods can affect the reports of mentoring. They write that "More mentoring is reported in in-depth interviews with small samples than through a survey with larger numbers of respondents. These two factors make it impossible to accurately enumerate the extent of mentoring in higher education or in even one set of participants such as students, faculty or administrators" (p. 207).

A fourth and very important weakness of the mentoring literature is its assumption that mentoring relationships are beneficial to all involved and that both the mentor and protégé are equally committed to the goals of the relationship. Mertz (2004) points out that the idea that the mentoring relationship is beneficial to all involved has been the foundation of mentoring programs and a way of selling them to sometimes reluctant participants. Merriam, Thomas, and Zeph (1987) assert that "Mentoring appears to be one factor, but only one, in achieving success in higher education" and they caution that in fact "there may be serious limitations to having a

mentor" (p. 207). However, some research, although very little, has noted that not only are all mentoring relationships not beneficial, they are not all successful or positive either (Eby, McManus, Simon, & Russell, 2000; Ehrich, Hansford, & Tennent, 2004). Eby et al. (2000) note that although the benefits of mentoring have been recognized, mentoring "is also an intense personal relationship that does not preclude the possibility that it may have some negative aspects." These potentially negative aspects of mentoring relationships need to be fully explored in order to adequately capture the true nature of mentoring relationships.

Scandura's (1998) work explores the negative aspects of mentoring and provides a usable framework for studying the negative aspects of mentoring. In particular, this work examines the ways that mentoring relationships can actually be dysfunctional or involve negative actions or behaviors such as sexual harassment, aggressive acts, verbal abuse, deception, tyrannical supervisory behavior and favoritism, among other things. Scandura also explores the power imbalance between the mentor and the protégé and the potentially negative aspects of this imbalance. Scandura writes, "By virtue of his or her gatekeeper status, a mentor has access to resources that a protégé desires, including access to challenging job assignments, organizational information, and career guidance" (p. 5-6). This gatekeeper status or power imbalance can also lead to negative behavior on the part of the mentor such as "overworking the protégé or taking credit for the accomplishments of the protégé" (Eby et al., 2000). Similarly, Ehrich et al. (2004) point out that mentoring relationships can be detrimental to the mentor, mentee or both. Some specific problems that could result in negative mentoring relationships include "a lack of time for mentoring, poor planning of the mentoring process, unsuccessful matching of mentors and mentees, a lack of understanding about the mentoring process, and lack of access to mentors from minority groups." (p. 520).

Along the same lines, not much is known about mentoring from the perspective of mentors, especially in terms of their motivations for participating in mentoring relationships. Mertz (2004) writes, "We assume that mentoring is inherently good and beneficial to the mentor; thus, everyone should want to be a mentor. Yet that is not the case" (p. 545). While the literature describes mentoring relationships as enriching and fulfilling for both the mentor and protégé, Mertz notes that this is not always true, because there are "differences in the willingness of senior people to commit to a relationship" (p. 545), significant variation in the frequency of mentoring, as well as differences in the effectiveness of arranged mentoring relationships versus those that occur naturally (Mertz, 2004). Also, attitudes towards mentoring have been found to vary at different types of institutions of higher education.

Ultimately, a critical weakness of the mentoring literature in higher education is that it has failed to answer several questions important to better understanding and utilizing mentoring in higher education. Jacobi notes that this literature has discussed many topics essential to mentoring relationships, but has left several major questions unanswered that are important to evaluating the true benefits and necessity of mentoring and mentoring relationships in higher education. These unanswered questions include: "What is the prevalence or frequency of 'natural' (informal) mentoring in higher education?" "What is the degree of discrepancy between mentoring available to Caucasian students versus students of color and male versus female students?" "To what extent and in what ways does mentoring contribute to academic success?" "What mentoring functions are most important to academic success?" "To what extent do formal mentoring programs relative to informal mentoring programs and alternative types of interventions promote academic success?" (p. 526-528). Until, the literature finds a way to answer these questions—that is based on sound theory and a succinct definition of mentoring—

the benefits of mentoring in higher education will continue to be debated and not fully understood.

Chapter 3

Methodology

This work examines the role and prevalence of faculty mentoring among African American and Latino undergraduates. More specifically, it explores whether differences exist in these students' perceptions of the role and prevalence of faculty mentoring as well as their reports of collegiate satisfaction dependent upon whether or not they had a mentoring relationship, as well as the institutional context of their college or university. To reiterate from Chapter 1, this research poses the following questions:

RQ1. Do these African American and Latino undergraduates consider faculty mentoring important to their collegiate success? If so, what attributes do they consider most important in a mentor, and what roles and functions do they expect the mentor to perform? Is the race and/or gender of the mentor important?

RQ2. Are faculty mentoring relationships prevalent among African American and Latino undergraduates? If so, what are the racial and gender characteristics of their mentors? How did their mentoring relationships form? How do they characterize their mentoring relationships? Do these students have racial and gender preferences for mentors?

RQ3. What are the institutional characteristics of the colleges and universities that these students attend? Is there a relationship between faculty mentoring and the institutional context of the college and universities that these students attend?

> More specifically, does the prevalence of mentoring vary among these students dependent upon their personal characteristics (i.e. race, gender, year in school) and the institutional context of their college or university—particularly, its size, student-faculty ratio, selectivity of the institution, whether it is a PWI or MSI, public or private, and research intensive or not?

RQ4. Do these students report being satisfied with their overall undergraduate experience? Is there a relationship between faculty mentoring and collegiate satisfaction for these students?

> More specifically, do reports of satisfaction with the undergraduate educational experience vary among these students dependent upon their personal characteristics, whether or not they have a mentoring relationship, and the institutional context of their college or university?

In order to provide a broad and comprehensive investigation into the role and prevalence of faculty mentoring among underrepresented undergraduate students of color, both qualitative and quantitative data and methods were used for this study. Secondary analysis of focus group and interview data collected during the summers of 2002 and 2004, and survey data collected during the summers of 2003 and 2004 from participants in the Summer Research Opportunities Program (SROP), was conducted to investigate the research questions outlined above.

Description of the Summer Research Opportunities Program (SROP)

The SROP was initiated in 1986 by the Committee on Institutional Cooperation's (CIC) Minority Access Panel. The CIC is a consortium of the "Big Ten" research universities and the University of Chicago, and currently has the SROP established at 15 sites: The University of Chicago, University of Illinois at Urbana-Champaign, University of Illinois at Chicago, Indiana University, Indiana University-Purdue University Indianapolis, University of Iowa, University of Michigan, Michigan State University, University of Minnesota, Northwestern University, Ohio State University, Pennsylvania State University, Purdue University, University of Wisconsin at Madison, and the University of Wisconsin at Milwaukee. The program was designed to provide underrepresented undergraduate students with exposure to both professional and educational opportunities in the academy, with the ultimate goal of increasing the number of underrepresented students that pursue graduate studies and ultimately an academic career. To this end, two major components of the SROP are undergraduate research experience and mentorship. Particularly, this "early intervention program [was] designed to engage underrepresented minority students in research experiences with faculty mentors, to accelerate each student's socialization into the discipline, …foster the creation of a community of scholars

among participants, [and]…better prepare students for and encourage them to pursue graduate study and academic careers" (CIC, 2004, p. 4).

The 15 CIC SROP sites range in size from as few as five to over 100 participants depending on the host site and its particular financial commitment, which typically ranges from $10,000 to $500,000 (Davis, 2005). The majority of participants are African American and Latino, with smaller representations of Asian/Pacific Islanders and American Indians. Moreover, despite having a mission of serving underrepresented minority students, there is a small, white population, which has been noted to be due mainly to the decision of some SROP sites to serve low-income majority students to avoid discrimination law suits (Davis, 2005). The majority of the sample used for this study participated in the program at the University of Illinois at Urbana-Champaign (n=100), which generally has the largest number of participants from year to year (Davis, 2005). Table B1 in Appendix B shows the numeric breakdown of the sample's participation at the SROP host institutions.

Students who are selected to participate in the program are assigned to faculty mentors before the program begins based on similar research interests, as well as the faculty mentor's willingness to work with undergraduate students during the summer. The responsibilities of faculty mentors include supervising students' research over an 8-10 week period and approving their final research paper at the end of the program. Both the student and mentor are expected to reap the benefits of the relationship in that students gain research and professional experience and insight, while faculty mentors are exposed to capable and talented students.

Research Design

Secondary data analysis refers to the use of data that have already been collected for another purpose (Carter, 2003). It can be particularly useful for researchers as it limits the amount of time and money that is often necessary for primary research. Thus, unlike primary research, which requires an adequate, and often hefty, amount of time to develop a survey instrument, administer it, and create a database for it, secondary data analysis only involves obtaining the data, preparing it for analysis, and conducting the analysis. Ultimately, given the innumerable ways that institutions and organizations collect data, it is quite often possible for researchers to analyze data collected for another purpose to meet their specific research goals (Carter, 2003).

For this study, performing a secondary analysis of the SROP data to answer the aforementioned research questions was adequate because of the particular characteristics and components of the SROP; specifically, the SROP targets underrepresented undergraduate students of color as participants, has a significant mentoring component, and participants are diverse in respect to their home institutions (i.e. participants attend MSIs and PWIs across the United States and the U.S. territories of Puerto Rico and the US Virgin Islands). Thus, using data collected from these students about their views on the role and prevalence of faculty mentoring not only provides the underrepresented undergraduate perspective that is largely missing from the higher education literature on mentoring, but also allows for an examination of these views across institutional contexts.

In order to provide a comprehensive investigation into the role of faculty mentoring on the collegiate experience of underrepresented undergraduates, a mixed methods design was utilized for this study. The goal of mixed methods research is to draw on the strengths and limit

the weaknesses of both qualitative and quantitative research techniques, methods, approaches, concepts, or language, in a single study (Johnson & Onwuegbuzie, 2004). There are various reasons for mixing different types of data, including to elaborate on findings of one method with another; to provide a more comprehensive analysis of a research problem through the convergence of quantitative and qualitative data; or "to serve a larger, transformational purpose to change and advocate for marginalized groups" through the use of a "theoretical lens as an overarching perspective within a design that contains both quantitative and qualitative data" (Creswell, 2003, p. 16).

The specific goal of the mixed methods approach used in this study is referred to in the mixed methods literature as "expansion" (Greene, Caracelli, and Graham, 1989). Research with an expansion purpose seeks to "expand the breadth and range of inquiry by using different methods for different inquiry components" (Onwuegbuzie & Teddlie, 2003, p. 353). More specifically, the qualitative focus group interviews were used to explore and describe the role of faculty mentoring relationships among underrepresented undergraduate students of color. Alternatively, the quantitative survey data was used to determine the actual prevalence of mentoring and differences in the prevalence of mentoring by institutional context among these students, as well as the relationship between faculty mentoring and collegiate satisfaction among these undergraduates.

In particular, this study utilized a parallel mixed analysis (Tashakkori & Teddlie, 1998), a strategy often used in mixed methods research with an "expansion" purpose (Caracelli & Greene, 1993). Onwuegbuzie & Teddlie (2003) note that this strategy can be employed if: "(a) both sets of data analyses occur separately, (b) neither type of analysis builds on the other during the data analysis stage, and (c) the results from each type of analysis are neither compared nor

consolidated until both sets of data analyses have been completed" (p. 365). According to Tashakkori and Teddlie (1998), after conducting the analysis of both the qualitative and quantitative data, the researcher can write up the findings separately or in some integrated fashion. Under this design, while both the analysis and findings of the qualitative and quantitative data occurred and are discussed separately, the interpretation of the results note the convergence or divergence of the qualitative and quantitative findings with one another, as well as the extant literature, in an effort to validate and substantiate the findings. Qualitative findings were further validated through peer debriefing (Creswell, 2003; Stage & Manning, 2003) by one non-participating research peer who raised important questions and pointed out potential biases and illogical conclusions of the research. A portion of the qualitative results were further validated through data transformation (Creswell, 2003; Creswell & Plano Clark, 2007) in which the qualitative data was quantified and the number of times qualitative codes occurred in the data were counted, allowing for a more quantitative interpretation of qualitative results.

Sample

The qualitative sample for this project was compiled from three sources: SROP participants' responses from 13 semi-structured focus group interviews and six semi-structured individual interviews conducted during the 2002 and 2004 program years, as well as survey respondents' written responses to open-ended questions from the 2003 and 2004 SROP surveys related to their mentoring preferences and relationships. Participation in the focus groups and individual interviews was voluntary and no demographic information was collected about participants except for the year they participated in SROP and the name of their SROP institution. Focus group interviews were only conducted at SROP sites where students

volunteered to participate, which resulted in the focus group data representing student voices from 11 of the 15 SROP sites. Student responses to three open-ended questions from the surveys were of interest. Particularly, (1) How does gender affect your choice in a mentor? (2) How does race or ethnicity affect your choice in a mentor? and (3)What is the most important contribution your mentor has made to you?

The quantitative sample was derived from SROP participants who completed a survey distributed to all SROP participants from the 15 sites who attended the 2003 and 2004 annual CIC SROP conference. In 2003, 431 of 504 students completed surveys, yielding a response rate of 85.5%, and in 2004, 485 of 513 students completed surveys for a 94.5% response rate. Subsequently, the original combined dataset of the 2003 and 2004 survey data yielded 916 cases. However, the sample used in this research was limited to include only respondents who were first-time participants in the SROP at the time of the survey, identified themselves as African American or Latino, [1] and did not have missing data on the 7 survey questions identified as essential for the analysis—particularly, their race, gender, SROP institution, home institution, whether or not they currently had a mentor, year in school (i.e. classification), and their level of satisfaction with their undergraduate experience. Ultimately, after these exclusions, the dataset was reduced by 55%, yielding a sample for analysis of 506 cases.

[1] It is important to note that respondents that marked the "other" option with reference to their race/ethnicity and wrote in their race with specificity such as "African American and Cuban" or "African American and Caucasian," or more generically as "biracial," or "multi-racial," were not included in the analysis. This study was primarily interested in students who identified as African American or Latino, thus these respondents were excluded because whether they identified as African American or Latino was not necessarily explicit.

Instrumentation

The SROP survey instrument contained 101 items and was composed of a mixture of Likert-like items, open-ended questions in which participants answered in their own words, and close-ended items where they choose from a list of provided responses. Only 33 items from the survey were used for the analysis in this study. These items elicited (1) general background information about the respondent (including their race and gender); (2) SROP institutional affiliation information (including the name of SROP institution in which they participated and the importance of various elements of the SROP); (3) home institutional affiliation (including the name of their home institution and their year in school); (4) mentoring questions (including questions that asked about their relationship with their SROP mentor, whether they had a current mentor external to SROP, how their current external mentoring relationships formed, and their racial/ethnic and gender preference for mentors); (5) mentor demographics (including the mentor's race and gender); and (6) collegiate experience (including questions probing their views about the effects of their undergraduate program, and institution in general, on their academic and social development as well as a question that asked whether they were satisfied with their undergraduate experience).

Information used in the quantitative analysis was also derived from other sources; particularly, variables to represent the characteristics that comprise the institutional context under investigation in this study were constructed from the U.S. Department of Education's Integrated Postsecondary Education Data System (IPEDS) and the Carnegie Classifications of Institutions of Higher Education. Specifically, variables for the size and selectivity (based on admission rates) of the respondent's home institution and whether the institution was public or private were constructed from information available from IPEDS. In order to categorize respondents' home

institutions as PWIs, HBCUs, or HSIs, IPEDS, the racial/ethnic composition of the institution's student body found on the institution's website, and federal guidelines that delineate the requirements an institution must meet in order to be recognized as an MSI were utilized. A variable for whether the institution had a research emphasis or not was constructed from the Carnegie Classifications.

Procedure

Because this study utilized mixed methods and the specific strategy chosen (parallel mixed analysis) applies equal weight to the implementation of the qualitative and quantitative methods, the procedures for the qualitative and quantitative data analysis are discussed separately below.

Qualitative. To answer RQ1, the 19 transcripts of the focus group and individual interviews were coded and analyzed according to the guidelines outlined by Miles and Huberman (1994) using the Atlas.ti software program. A provisional list of descriptive codes—which simply describe phenomena and "entail little interpretation" (Miles & Huberman, 1994)—was developed that mirrored the findings in the literature regarding the important roles, functions, and characteristics of mentors, as well as from the guiding research questions. A list of the provisional codes is provided in Appendix A. First-level codes—codes that described phenomena not circumscribed by the initial list of provisional codes—were added as needed for variables that emerged from the data, and were quite extensive. Due to the semi-structured design of the focus group and individual interviews, some questions often elicited long responses that addressed several constructs. Thus, some responses often required multiple codes.

After assigning provisional and first-level codes to all transcripts, I reviewed individual transcripts and codes again, which allowed me to verify the accuracy and internal consistency of the coding system, combine similar codes, reduce the number of first-level codes by combining related categories, and remove codes that were assigned to passages that were not central to the study. Next, categories with similar codes were combined into themes, which allowed me to sort through larger chunks of information more easily and to see general trends and patterns in the data. This analysis revealed four major themes related to mentoring among underrepresented students; these themes were interrelated and served to provide a "thick" description of underrepresented undergraduate students' actual perceptions of faculty mentoring. More specifically, these themes conveyed these students' perceptions of the importance of faculty mentoring relationships, the attributes they found important in mentors, the roles and functions they believed mentors should perform, and their perspectives of the importance or unimportance of the racial and gender characteristics of mentors.

In addition, the qualitative portion of the survey data (i.e. write-in responses to open-ended questions) was "quantitized," which entails converting qualitative data into numerical codes that can be represented statistically (Tashakkori & Teddlie, 1998). Specifically, survey respondents' written responses to three open-ended questions regarding how gender and race affected their mentor choices, as well as the most important contribution of their mentor, were coded and the frequency of the codes was counted. Counting the codes and themes made it easier to identify patterns (Miles & Huberman, 1994) in respondents' responses and also prevented me from "overweighting" or "underweighting" emergent codes and themes. According to Sandelwoski (2001), when quantitizing data, "qualitative 'themes' are numerically represented, in scores, scales, or clusters, in order to fully describe and/or interpret a target phenomenon" (p.

231). Thus, the transformation of qualitative data in this study involved counting codes and themes and displaying the results in a matrix that was used to compare the quantitized results with other qualitative and quantitative findings, as well the extant literature.

Quantitative. Several procedures were involved in the quantitative data analysis, including preparing the data, making the data more manageable, and analyzing the data. These steps and procedures are detailed below.

Data preparation. Because this research was a secondary analysis of data, before conducting the statistical analysis for this study, attention needed to be paid to coding and reducing the amount of quantitative data on hand. To begin this process, several of the survey items were recoded. Specifically, survey questions that were negatively worded (i.e. had responses in a negative direction) were converted into positives. Variables that were used as dependent variables in the binary logistic regression were also recoded. Specifically, these variables were reduced to two categories (i.e. binaries), so that they were in the appropriate form to serve as dependent variables in the binary logistic regression models. Missing data that was coded as 999 or 9999 to represent "user missing" data in the original dataset was recoded to "system missing" to reduce redundancy in the output in terms of the missing data. Similarly, some variables were recoded simply to reduce the number of categories; for example, the income variable that was originally coded with 11 levels of income was reduced to 10 levels, and the father's education and mother's education variables which originally had 12 categories of education—were reduced to eight categories for the analysis in this study.

Several variables were also added to the dataset and assigned proper codes. In particular, variables were created to indicate the names of the SROP host institutions, the Integrated Postsecondary Education Data System (IPEDS) identification numbers for respondents' home

institutions, the names of the home institutions, as well as the raw numeric variables and the equivalent categorical variables necessary for the logistic regression analysis for institutional size, type, control, student-faculty ratio, admission rate, selectivity, and the research emphasis of the institution.

Data reduction. In addition to coding and recoding necessary survey items, several of the survey items appeared to be directly related to one another or to be measuring similar concepts. Factor analysis was employed in an effort to bring some order to the data, as well as to eliminate redundancy and reduce the number of variables used in the analysis. Factors were extracted based on the criteria of having eigenvalues greater than one. Items were retained in a factor if they had a loading[2] (i.e. correlation coefficient) greater than .40. Factor analysis was conducted for data reduction purposes on one of the survey items. Specifically, 14 survey items pertaining to the effect of the undergraduate experience on participants' development (rated on a 1 "Not at all" to 4 "Very much" scale) were factor analyzed using exploratory factor analysis with varimax (orthogonal) rotation. The analysis yielded two factor composites: the effect of the undergraduate experience on participants' academic development and the effect of the undergraduate experience on participants' social development.

After factors were extracted, reliability analysis was conducted to determine the internal consistency of the scales proposed by the factor analysis using Cronbach's coefficient alpha. According to the results from the reliability analysis, specifically if alpha was above .70, the item-total correlation was moderate or high (i.e. .40 or above) indicating that the item was

[2] Loadings are correlation coefficients of each item with the component. They range from -1.0 to +1.0. A negative loading indicates that the question needs to be reversed when interpreting the factor.

probably at least moderately correlated with most of the other items in the scale and would make a good component of the proposed summated scale, and whether deleting an item increased Cronbach's alpha, summated scales were created for each factor. Ultimately, the specific survey items used in the factor analysis, the factor loadings, and alpha reliabilities for each of the resulting factors are provided in Table B2. To construct the summated scales recommended by the results of the factor analysis and the subsequent reliability analysis, I used the means of the item scores because the mean of item scores is perfectly correlated with the sum of the item scores, and thus for correlations and regressions it makes no difference which is used. The interpretation of the mean of items scores is also clearer than the sum (Anglim, 2009).

***Analyses*.** Because the survey data was categorical, Pearson chi-square tests (or Mantel-Haenszel chi-square tests where appropriate) and logistic regression were chosen as the best and most appropriate statistical techniques to analyze the data and to answer the specific research questions using the statistical software SPSS 17.0. To answer RQ2, crosstabulations were used to provide a general description of the prevalence of mentoring among respondents, the race and gender of their current mentors, how their current mentoring relationships formed, the type and amount of support they received from their mentors, and their racial and gender preferences of mentors; chi-square tests were used to determine if significant differences existed on these measures by respondents' background characteristics (i.e. race, gender, and year in school).

To answer RQ3, first a descriptive analysis provided insight into the institutional contexts of the colleges ad universities that the African American and Latino undergraduates in this study attended. Then, crosstabulations and Pearson chi-square tests of independence were conducted to explore the relationship between the prevalence of faculty mentoring among African American and Latino undergraduates and their institutional context. To further investigate this relationship,

binary logistic regression was used to identify the characteristics of the institutional context (i.e. type, control, size, SFR, selectivity, research emphasis) that were most strongly associated with whether or not these students had a faculty mentor.

Similarly, to answer RQ4, the collegiate satisfaction of the African American and Latino participants in this study is discussed generally via descriptive statistics, followed by crosstabulations and Mantel-Haenszel chi-square tests to explore the relationship between the prevalence of faculty mentoring among African American and Latino undergraduates and their collegiate satisfaction. This relationship was further investigated through the use of a second binary logistic regression equation that modeled the probability that an African American or Latino undergraduate would express satisfaction with their undergraduate educational experience based on several explanatory variables, including whether or not they had a current mentoring relationship and the characteristics of the institutional context mentioned above. For each logistic regression model, other variables that possibly affected the prevalence of faculty mentoring or reports of collegiate satisfaction among these students were also included and controlled for, particularly the race, gender, and year in school of the student, their racial and gender preferences for mentors, the race and gender of the mentor, and variables representing the undergraduate experience.

Binary logistic regression is a form of regression that is used when the dependent variable is categorical and dichotomous; independent variables can be of any type (i.e. dichotomous, multiple levels, categorical, or continuous). In general, logistic regression has less stringent requirements than Ordinary Least Squares (OLS) regression models. Specifically, unlike OLS regression models, logistic regression does not assume a linear relationship between the independent and dependent variables, does not require the variables to be normally distributed,

and does not assume homoscedasticity. However, it does require independent observations, and a linear relationship between the independent variables and the logit of the dependent variable. As with other forms of regression, multicollinearity (i.e. high correlations among independent variables) and zero cell counts can be problematic (Garson, 2009a). The logistic regression equation is expressed as

$$Z = ß_0 + ß_1X_1 + ß_2X_2 + ... + ß_kX_k$$

where Z is the log odds of the dependent variable, $ß_0$ is the constant, $ß_1$ through $ß_k$ are the logistic regression coefficients (also called parameter estimates), and X represents each independent variable.

Binary logistic regression was used in this analysis specifically to predict the presence or absence of the dependent variable from a host of independent variables and to determine the percent of variance in the dependent variable explained by the independent variables. A regression coefficient of zero indicates that a given explanatory variable does not affect the logit (meaning it makes no difference in the probability that the outcome of interest actually occurs). A positive or negative ß coefficient indicates that the explanatory variable increases or decreases the logit of the dependent and thus increases or decreases the likelihood that the outcome of interest actually occurs (Agresti, 1996).

More particularly, the effect of the predictor variables on the dependent variable is generally explained in terms of odds ratios, which are interpreted as the relative impact of each dependent variable on the probability of a certain outcome. The odds ratio is the natural log base, e, to the exponent ß (i.e. $e^{ß}$ or Exp(B)) where ß (or B) is the parameter estimate. An odds ratio of one is interpreted as an explanatory variable with no effect on the dependent variable, whereas and odds ratio less than one indicates that the independent variable decreases the logit and

decreases the odds of the event being predicted actually happening. Similarly, an odds ratio greater than one indicates that the independent variable increases the logit and increases the odds of the event (Garson, 2009a).

The analysis for this study compared binary logistic regression models by first using blockwise entry of the variables, which entailed adding a group or "block" of variables to the model and examining changes in the model in terms of significant improvements of fit. Then, backward elimination tests were also conducted, which involved eliminating variables or groups of variables that appeared to have no significant effect across models and determining the effect of their removal on the fit of the model. After comparing models using blockwise entry and backwards elimination tests, the best fitting model was chosen using several goodness-of-fit measures including the -2 log likelihood (-2LL) statistic, the Hosmer-Lemeshow chi-square test, the model chi-square, and the pseudo R-squared ("R^2"). The model selection process is discussed in detail below.

Model selection. To reiterate, the first logistic regression analysis was used to isolate the effects of students' background characteristics and the institutional context on the prevalence of faculty mentoring among African American and Latino undergraduates after controlling for their undergraduate experience and their racial and gender preferences for mentors. For this binary logistic regression analysis, the dependent variable "faculty mentor" was defined as having a faculty mentoring relationship external to the SROP (1=yes, 0=no).

The "faculty mentor" dependent variable was expected to be influenced by students' background characteristics, mentor racial and gender preferences, the institutional context, and their undergraduate experience. Background characteristics were measured by students' race, gender, and the number of years they had been enrolled at their current institution. The

institutional context was measured using the institution's type, control, size, student-faculty ratio (SFR), selectivity, and research emphasis. The undergraduate experience was measured by students' indication of their level of satisfaction with their undergraduate education, their perception of their undergraduate institution's supportiveness of their educational aspirations, and the highest degree they expected to complete. The background variables were entered on the first step, the variables measuring respondents' racial and gender mentor preferences were entered on the second step, then the institutional characteristic variables, followed by the variables representing the undergraduate experience. Table B3 in Appendix B displays the complete list of variables used in the quantitative analysis and their definitions.

In the first step, represented in Model 1 (see Table B4), the effect of the background characteristics on the likelihood of having a faculty mentor is shown. Model 2 represents the added effect on the dependent variable attributable to respondents' racial and gender mentor preferences, while Model 3 represents the added effect of the institutional characteristics. Model 4 represents the incremental effect of the undergraduate experience on the outcome variable, while controlling for background characteristics, mentor preferences, and institutional characteristics. Also as shown in Table B4, the addition of the groups of variables in each of the four steps appears to increase the ability to predict whether respondents had a faculty mentor or not, which is indicated by the reduction in the G^2 across the four models. However, it is important to note that the G^2 associated with Model 4 simply indicates that this model seems to fit the data better than the previous three. More testing of the statistical significance of the alternative models was necessary and thus was performed and is shown in Table B4.

In Table B5, column 1 represents the model under estimation, columns 2 and 3 display the degrees of freedom and the scaled deviance/goodness of fit (G^2) for the model, and columns

4 and 5 represent changes in degrees of freedom and in G^2s between a given model and the alternative model (background characteristics). In logistic regression the first model (in this case the background only model) is usually considered the baseline or null model when comparing alternative models (Cabrera, 1994). This table indicates that while adding the mentor preference and institutional variables contributed to the fit of the model, these contributions were nonsignificant, p = .29 and p = .15, respectively. Adding the variables representing the "undergraduate experience" contributed the most to the model's fit, p = .04.

This same procedure was also used to make comparisons across models, using other models (besides the one representing background characteristics) as reference models. Results from these comparisons indicated that Model 4 provided a better representation of the data than Model 3 (observed $\chi^2 = G^2_3 - G^2_4 = 438.99 - 421.87 = 17.12$; $df = df_3 - df_4 = 441 - 432 = 9$; *p*-value = .05) or Model 2 (observed $\chi^2 = G^2_2 - G^2_4 = 455.80 - 421.87 = 33.93$; $df = df_2 - df_4 = 453 - 432 = 21$; *p*-value = .04). However, the results provided no evidence in terms of the relative improvement of Model 3 over Model 2 (observed $\chi^2 = G^2_2 - G^2_3 = 455.70 - 438.99 = 17.12$; $df = df_2 - df_3 = 453 - 441 = 12$; *p*-value = .16).

To further judge alternative models in an attempt to find the absolute best fitting model, the backward elimination test was also utilized. This test was appropriate as it determined the extent to which deleting variables worsened the fit of the model. More specifically, the G^2 of a model in which a variable or group of variables was deleted, was compared to the G^2 of the original model. In this case, a review of Table B4 indicated that the background variables had no significant effect across the four models. Therefore, I hypothesized that excluding these variables would not effect the predictive power of the models. In order to test this hypothesis, a new model, Model 5 (which eliminates these variables), was compared to the best fitting model thus

far, Model 4. The reduction of parameters did not significantly worsen the fit of the model (observed $\chi^2 = G^2_5 - G^2_4 = 430.11 - 421.87 = 8.24$; $df = df_5 - df_4 = 437 - 432 = 5$; p-value = .14). Thus, Model 5 can now be considered my best fitting model over the previously best-fitting Model 4. The backward elimination test was continued, eliminating variables or groups of variables one at a time, and evaluating their effect on the model fit. The models tested and their subsequent results are displayed in Table B6 and Table B7, respectively.

After completing the backward elimination test and reviewing all models, the final model was selected based on several goodness-of-fit measures, specifically, the -2 log likelihood (-2LL) statistic, the Hosmer-Lemeshow chi-square test, the model chi-square, and the pseudo R-squared ("R^2"). A non-significant Hosmer-Lemeshow chi-square (i.e. greater than .05) indicated that the data were a good fit to the model. Moreover, a decrease in the -2*LL* between the null (baseline) and the final model also indicated a better fitting model (Hair et al., 2006; Hosmer & Lemeshow, 2000). In fact, the smaller the statistic the better the model. In addition, a significant model chi-square—which represents the difference in the G^2 of the null model (with the intercept only) and the alternative model (also known as the full model)—indicates that the model fits the data. Finally, the pseudo r-squared ("R^2"), which is an indicator of how well a set of independent variables explain the variance in the dependent variable, was also considered. More specifically, the "R^2" provides a conservative estimate of the reduction in unexplained variance, thus a model with a higher "R^2" indicates a better fitting model.

According to this criterion, the best fitting model would have a low -2LL statistic, a nonsignificant Hosmer-Lemeshow chi-square, a significant model chi-square (also known as the χ^2 of overall fit) and "R^2" explaining a higher percentage of the variance. Therefore, Model 4 was selected as the best fitting model with its -2LL of 421.87, non-significant Hosmer-

Lemeshow, significant model chi-square and the highest "R^2" of .09, which indicated that the model accounted for a nine percent reduction in error variance.

The second binary logistic regression was used to isolate the effects of faculty mentoring and the institutional context on students' reports of satisfaction with their undergraduate experience, after controlling for background characteristics, their mentor characteristics, and respondents' perception of their institution's supportiveness of their educational aspirations. Here, the dependent variable "satisfaction" was defined as whether respondents were satisfied overall with their undergraduate education (1 = yes, 0 = no). It is important to note that the original "satisfaction" variable was an ordinal variable with four categories ranging from 1 (not at all satisfied) to 4 (very satisfied), but it is treated as a dichotomous variable for the binary logistic regression because 95% of all African American and Latino students in this study indicated that they were "somewhat satisfied" or "very satisfied" with their undergraduate education, compared to only five percent that reported being "not too satisfied" or "not at all satisfied." Treating this variable as a dichotomous variable rather than an ordinal variable most likely resulted in a more conservative estimate as well as the loss of some information about students' satisfaction with their undergraduate education, but given the distribution, dichotomizing the variable was appropriate.

The "satisfaction" dependent variable was expected to be affected by students' background characteristics, whether they had a faculty mentoring relationship, and the racial and gender characteristics of their faculty mentor, the institutional context, and their perception of their undergraduate institution's supportiveness of their educational aspirations. A list of variables and their definitions is located in Table B3 in Appendix B.

Model selection for this binary logistic regression proceeded in the same manner as the first binary logistic regression in terms of utilizing hierarchical testing of models to determine the best fitting model for the data. As shown in Table B8, the background variables were entered on the first step, the mentor characteristic variables were entered on the second step (i.e. mentor's race and gender, whether respondent had a faculty mentor), then the variables comprising the institutional context, followed by a variable representing the undergraduate experience (i.e. respondents' perception of their institution's supportiveness of their academic goals). Model 1 represents the effect of the background characteristics on the likelihood of indicating satisfaction with the overall undergraduate experience. Model 2 represents the added effect on the dependent variable attributable to characteristics of respondents' mentors, while Model 3 represents the added effect of the institutional characteristics. Finally, Model 4 represents the incremental effect of the "undergraduate experience" factor while controlling for background characteristics, mentor characteristics, and institutional characteristics/context.

Also as Table B8 shows, the reduction in the G^2 across the four models indicates that the addition of the groups of variables in each of the four steps appears to increase the model's ability to predict whether respondents reported being satisfied or not. While the G^2 associated with Model 4 indicates that this model seems to fit the data better than the previous three, more testing of the statistical significance of the alternative models was necessary and thus was performed and is shown in Table B9.

Table B9 indicates that while adding the mentor characteristics and institutional variables contributed to the fit of the model (as indicated by the lower G^2s), these contributions were nonsignificant, $p = .06$ and $p = .16$ respectively. Adding the variable representing "undergraduate experience" contributed the most to the model's fit, $p < .001$. This strategy was also used to

make comparisons across models, using other models (besides the one representing background characteristics) as reference models. Results from these comparisons indicated that Model 4 provided a better representation of the data than Model 3 (observed $\chi^2 = G^2_3 - G^2_4 = 158.09 - 139.00 = 19.09$; $df = df_3 - df_4 = 437 - 436 = 1$; p-value < .001) or Model 2 (observed $\chi^2 = G^2_2 - G^2_4 = 165.09 - 139.00 = 26.09$; $df = df_2 - df_4 = 444 - 436 = 8$; p-value = .001). However, the results provided no evidence in terms of the relative improvement of Model 3 over Model 2 (observed $\chi^2 = G^2_2 - G^2_3 = 165.09 - 158.09 = 7$; $df = df_2 - df_3 = 444 - 437 = 7$; p-value = .43).

Next, a backward elimination test was performed to determine the extent to which deleting variables would worsen the fit of the model. More specifically, the G^2 of a model in which a variable, or group of variables, was deleted, was compared to the G^2 of the original model. The backward elimination test proceeded by eliminating variables or groups of variables one at a time and evaluating their effect on the model fit. The models tested and their results are displayed in Table B10 and Table B11, respectively.

After completing the backward elimination test and reviewing all models, as in the first binary logistic regression, the final model was selected based on several goodness-of-fit measures, specifically a decreased -2 log likelihood (-2LL) statistic, a nonsignificant Hosmer-Lemeshow chi-square test, a significant model chi-square, and a higher value for the pseudo R-squared ("R^2"), all of which indicate a better fitting model. To be clear, the best fitting model would then have a low -2LL statistic, a nonsignificant Hosmer-Lemeshow chi-square, a significant model chi-square (also known as the χ^2 of overall fit) and an "R^2" explaining a higher percentage of the variance. Based on this criterion, Model 4 was selected as the best fitting model with its -2LL of 139.00, non-significant Hosmer-Lemeshow, significant model chi-square and the highest "R^2" of .075, which indicated that the model accounted for approximately an

eight percent reduction in error variance. The final models for each binary logistic regression, as well as the factors found to be statistically significant at the .05 alpha level, are discussed in-depth in Chapter 4.

Threats to Internal and External Validity

Internal validity addresses the accuracy of the results, while external validity addresses the generalizeability of the findings. One primary concern to internal validity was the use of convenience sampling for the study instead of random sampling, which serves to allow every individual an equal probability of being selected and subsequently allows the sample to be generalized to the larger population.

Another threat to internal validity deals with the instrumentation. For example, although a variable measuring "collegiate satisfaction" is an important dependent variable in this study, it must be noted that this variable lacks complexity, and in fact may be overly simplistic. The survey question "Have you been/were you satisfied with the undergraduate education you received" indicated very little about what this variable actually measured. Specifically, when a respondent indicated that "no" they were not satisfied with the undergraduate education they received, there is nothing to indicate exactly what was problematic about the experience or with what they were particularly dissatisfied. It is also entirely possible that ideas about collegiate satisfaction vary for different students, as well as for students attending different types of institutions. There is no way to differentiate what exactly students were referring to or using as a point of reference in responding to this particular question. Nevertheless, this was the most appropriate measure of collegiate satisfaction available in the SROP database. Moreover, the analyses aimed at understanding the collegiate satisfaction of African American and Latino

undergraduates were also limited by the small number of variables available in the database that describe the undergraduate experiences of these respondents.

Also in regards to instrumentation, instrument decay posed a threat to internal validity. Specifically, semi-structured interviews were conducted for focus group and individual interviews, which left the direction of the interviews largely up to the interviewer conducting the interview, particularly in terms of what they decided to probe further or not. Thus, in certain instances, one interviewer may have encouraged participants to elaborate on a given subject, thereby taking the interview in one direction, while another interviewer in another session may not have probed or prompted interviewees in the same way. Thus, decay in this case refers to different usage of the semi-structured interview protocol by different interviewers.

Besides the aforementioned threat to external validity resulting from non-random sampling, another threat to external validity was posed by the use of the particular people in the study. Specifically, it could be argued that the results of this study on faculty mentoring among African American and Latino undergraduates were largely influenced by the fact that the sample was drawn from participants in the SROP—a program for minority students with a significant mentoring component—which may have directly or indirectly affected their discussions of faculty mentoring in the focus groups and individual interviews, as well as in their survey responses. Ultimately, although these threats to internal and external validity were present, every attempt was made to discount their possible effects and triangulation was employed to facilitate validation of the findings and also to increase confidence in the credibility of the results of the study.

Limitations

Several limitations related to the study's design, data, and methodology existed that must be addressed. First, because this study was interested in the prevalence and effects of faculty mentoring among African American and Latino undergraduates in various institutional contexts, it does not include other racial or ethnic groups. Examinations of other racial or ethnic groups were also primarily restricted by the small number of non-African American and non-Latino participants in the SROP program and consequently in the sample utilized for this study. Of the 2002 and 2003 population of 916 SROP participants, only 55 were white, 51 were Asian/Pacific Islander, and 12 were Native American.

Another limitation pertains to the use of secondary data analysis. While conducting a secondary analysis saves the researcher the personnel, time, and money associated with data collection (Stage and Manning, 2003), it is limited in that it may not be entirely appropriate for answering the specific research questions as fully or completely as a survey or database that was designed particularly to answer the outlined research questions. More specifically, due to the nature of secondary data analysis, the results of this research are limited by the variables available in the SROP database. It is also possible that the collected data fails to examine important variables that could improve the understanding of the larger problem.

Additionally, the secondary analysis is limited by the researcher's lack of information or access to information about the collected data, specifically detailed information about the focus group participants as well as the construction and development of the survey instrument. Having access to this information would have been useful in helping the researcher understand not only the best way to treat variables in the database but also the best way to interpret the results of the analyses as well.

Another limitation is posed by the fact that the data used for this study was collected cross-sectionally—meaning it was gathered at one point in time—rather than longitudinally. Cross-sectional data collection fails to allow for tracking of specific subjects in order to measure changes over the course of time, in this case over the course of participants' undergraduate careers. Examining the role and prevalence of faculty mentoring among African American and Latino undergraduates at several different points throughout their college careers could have strengthened the study by providing insight into when faculty mentoring might have the greatest impact among underrepresented undergraduates. A longitudinal study might also provide a better understanding of the duration of the impact of mentoring relationships.

Furthermore, limitations that apply to individual qualitative and quantitative methods can also serve as limitations when conducting a mixed methods research design. Specifically, this study relies on students' self-reports on the survey instrument, which is often cited as a limitation in quantitative research utilizing survey instruments because of the inability to verify the accuracy of the responses. Also with respect to the quantitative data, there was an abundance of missing information, which dramatically reduced the usable data and thus the sample size for this research. Similarly, the reduction of multiple-level variables to dichotomous variables for use in the second logistic regression equation probably resulted in a loss of some information, which may not have occurred if multinomial logistic regression were used.

Moreover, it is possible that the focus group interviews were influenced by the presence of the interviewer(s) and the qualitative findings are certainly subject to alternative interpretations and are generalizable to neither all underrepresented undergraduates nor all African American and Latino undergraduates at PWIs or MSIs. Despite these limitations, this research provides a much needed exploration of the role and prevalence of faculty mentoring

among African American and Latino undergraduates, and although it is not perfect, the SROP database is a still a good and adequate source of data for examining these issues.

Chapter 4

Results

The analyses of data were conducted to answer the research questions posed in Chapter 1. Because this study used mixed methods, the findings are reported in this chapter in two sections. In the first section, the results from the content analysis of the qualitative data (i.e. focus group and individual interview transcripts) are presented. The results of the quantitized qualitative data are also presented. The second section provides the findings from the quantitative data analysis. First, RQ2 is addressed using crosstabulations (and Pearson and/or Mantel-Haenszel Chi-Square tests where appropriate) to provide a detailed descriptive analysis of participants' institutional contexts, faculty mentoring experiences, and collegiate satisfaction. Next, the descriptive information from the crosstabulations and the subsequent appropriate chi-square tests, as well as the results of the binary logistic regression models used to address RQ3 and RQ4, are presented.

Qualitative Findings

One objective of this study was to explore the role and prevalence of faculty mentoring from the perspective of underrepresented undergraduates. To reiterate, the qualitative part of this mixed-methods research was both exploratory and confirmatory; specifically, themes were allowed to emerge from the data and triangulation was used to determine whether the findings confirmed or substantiated claims in the literature as well as the quantitative findings. Triangulation and interpretation takes place in the discussion section.

This section details the thematic strands that were revealed through the qualitative data analysis carried out as described in the previous chapter. Four major themes resulted from the qualitative data analysis: importance of faculty mentoring, attributes of good mentors, mentor

roles and functions, and the importance of racial and gender characteristics of mentors. Through the use of direct quotes representing participants' voices, these themes largely illuminated the viewpoints and perceptions of underrepresented undergraduates about important elements and aspects of faculty mentoring relationships.

Importance of faculty mentoring. The first theme represents participants' perceptions of the importance of faculty mentoring. In response to a series of semi-structured interview questions about the relationship they had with their faculty mentors, including whether they felt having a mentor was important, participants most often answered affirmatively using terms such as "yes," "definitely," "extremely," "absolutely," or "it's very important," among other concurring responses. Moreover, several participants expounded on the importance of having a faculty mentor for undergraduates and actually seemed to indicate that having a mentor was not only important, but necessary. For example, participants stated:

> I think having a mentor is very important because…it gives you a sense of I have someone there that has my back. I have someone there that can give me opportunities that I want to have or wouldn't be able to get just myself. It gives you someone to talk to. It gives you someone to tell you the truth, and someone that tells you that you need to do better, or, "I'm being honest with you. Go this way and go that way." And for you to ask questions, and engage in different conversations with them, and like he was saying, being a friend. –IUPUI Focus Group Participant

> I think it's essential to have a mentor because although you think you know everything, you don't. I mean, we're undergraduates. We've taken a couple of classes in a couple of fields, and we don't know everything. And even if we did, we don't know everything about this specific campus and the research going on. And so, you kind of need somebody there to bridge that gap to share the knowledge with you, and to also get you more affiliated with what's going on in this specific campus and the specific university. –IUPUI Focus Group Participant

> It's very important to have a mentor, someone to show you along the way, guide you, and when you get frustrated, to be able to say, "Hey, I'm frustrated, too. This is how it works. This is why people do what you're doing." –Pennsylvania State University Focus Group Participant

These underrepresented undergraduate participants' perspectives not only illuminated a variety

of reasons why they considered having a faculty mentor important, but also seemed to indicate that they believed faculty mentors were essential.

Also, with respect to the importance of faculty mentor relationships for underrepresented undergraduates, some participants noted the impact of having a faculty mentor on their educational goals and aspirations, stating:

> I mean I really wasn't thinking about doing something after my bachelor's degree to be honest, but one of my chemistry professors took a real interest in me. He pushed me to apply for the mock program and he pushed me to apply for summer programs and to go to graduate schools. He did not push me to say forced me, but let me know that the opportunities are out there and I know for a fact that if it wasn't because of him there is no way I would be here pursuing this Ph.D. –Indiana University Focus Group Participant

> I would like to see myself in a faculty position in ten years from now, and doing research, and also working closely with the undergraduates and giving back mentorship that I know is so important, because I've gone through my undergraduate—I started out thinking I was going to go to med school, but then I realized that was really my parents' goal for me—it wasn't what I wanted to do—and then I changed over to business, and now I want to go to grad school and get my Ph.D. And throughout all of that, I've had support from my mentors, and that's what's really kept me on track and continuing my research on what it is that I want to do. And I want to be able to be in that position where I can guide another student through that in the future. –University of Minnesota Focus Group Participant

Moreover, one participant expressed their view of the importance of faculty mentoring for minority students in particular, especially in terms of pursuing graduate studies, asserting:

> When you think about it, it is not because I don't have the ability, it's just because I didn't know about the opportunity and I think that is a real problem with minority students. A lot of times we don't recognize that we have the potential and even if we do have the potential then we don't recognize the opportunities that are out there for us. [My mentor] would always tell me get your education… Once you have that Ph.D. there are so many things that you can do with that Ph.D. You can teach or you can go to the industry. Just go out there and get it. –Indiana University Focus Group Participant

Overall, these students' voices seemed to indicate that having a faculty mentor was not only important for underrepresented undergraduates to navigate their collegiate environment, but also had a positive impact on their educational goals and aspirations.

Mentor roles and functions. The second theme references the large variety of mentor roles and functions that emerged from the data as important in the mentoring relationships of these underrepresented undergraduate participants. Many of these participants articulated their perspectives of the value of having a faculty mentor in terms of benefits they received from the various roles or functions their mentors performed. Specifically, participants indicated that the guidance mentors provided was not only a benefit of having a faculty mentor, but also that providing guidance or direction was an important role or function that they believed mentors should perform.

For example, some participants expounded on the mentor's role in guiding them as well as their valuation of its importance:

> The mentors in my life, they provided guidance and that's good…And I always have this little phrase that I say, "Some mentors will guide you; some mentors will push you a little bit, and there's some that will shove you into it." And I've had all three types…Always remember that, you know, a mentor's purpose is to be here to guide you and at the same time, they want you to do things; they want you to be better than them. They don't want you to be exactly like them, but be better than them, and that's why they give you this information that you can pass on to someone else and continue that tradition. –Pennsylvania State University Focus Group Participant

> We're just at the beginning of our careers academically, and you have to have a guide that knows the ropes and has been there… Not only are you at the beginning of your academic career, but we have not done this before. It doesn't matter how good you did as an undergrad, you've never done this before. You've never done a research project as a graduate student versus what they require you as undergraduate, even if you got an A in that class. So having someone who's done it already to say, "Here are the things that I've done. This is where I kind of screwed up. This is what I wish I would have done," you can kind of pick and choose from that. –UW-Milwaukee Focus Group Participant

In addition to guidance and direction, several other mentor roles and functions seemed to reoccur throughout these students' descriptions of mentor roles and functions they perceived to be important, including providing opportunities, exposure, experience, resources, information, and networking. In particular students noted:

> Well, my mentor helped me formulate what kind of study I wanted to do. I used an existing data set, and so she just kind of let me look at different variables, let me know which ones were available to be used. And so she kind of helped me with that—kind of helped me—like I would have ideas and she kind of helped me write it more specifically the way it needed to be written as far as research goes, but she also helped me—she took me out to lunch, she started talking about grad school in general, grad school here, her husband has designed a web site for GRE preparation, so she gave me access to that. That website has the opportunity to have a coach where somebody else will get to know how often you've been on the site, and things like that. She told me that if I wanted to, she could be my coach for that. She talked about that she would write me a letter of recommendation to go to graduate school, the different opportunities here at Penn State, but she also told me about other schools that are really good and the programs. So it was like, she gave me a lot of information. She also told me that this summer, when I'm starting to write my personal statement, that if I e-mail her, she'll give me feedback on that. –Pennsylvania State University Focus Group Participant

> [My mentor] did tell me about other programs. He has been trying to help me get funding to come here, and he's taken me to thesis defenses. So people in the department have gotten to know me, and I've actually had people approach me and give me information about things to help me, as far as getting money and other things as far as coming here, and wanting me to meet other people who might be able to share their interest and their research with me, so I can kind of be able to be well-rounded, before I really make a decision about what I want to do. –Pennsylvania State University Focus Group Participant

These responses demonstrate the number and variety of the roles and functions that the mentors of the underrepresented undergraduates in this study performed. In particular, the first participant pointed out at least five different functions that their mentor provided: help with research and writing, access to resources, willingness to write letters of recommendation, information about graduate school, and feedback on personal statements; the second participant described four completely different functions that their mentor provided, including help with funding, exposure to graduate school (i.e. thesis defense), information, and networking.

Other roles or function that these underrepresented undergraduate students perceived as important for their mentors to perform included serving as a role model, challenging the student and helping them network. One participant succinctly stated, “I think that [faculty mentors] should kind of be a role model, and just kind of like what they’re doing.” Similarly, in the first

quote below a participant described how their faculty mentor actually served as a role model and its subsequent impact on their educational aspirations, while the second quote is another participant's description of how their faculty mentor challenged them. The participants explained:

> But then at the same time, having my mentor be somebody I can identify with and I can say, "I want to be exactly like that. I want to be able to do this." Having her to look to was good. So people should be—well, try to compare it with people who they can identify with 'cause it made it so much easier. Because I didn't decide—I was not going to graduate school when I came here this summer, but when I saw her, "I'm going to graduate school. I'm getting a Ph.D. Call me Dr. [inaudible]." –Iowa University Focus Group Participant

> Well, Lori and I have a friendship, but she knows to ask the hard questions, like, she doesn't take crap from me basically, 'cause she knows I can do better, and she won't let me slack. When we get into one of our weekly meetings, she's like, "Well, okay, so what have you done since the last time we've met? Do you understand your reasoning? Can you work through it with me? Can you define it in lay terms? Why does your project matter? Can you explain it to a board of faculty members and tell them and get them interested in it? Why should I listen to your project, basically?" So she really makes sure that I understand the theory, the basic concept. –University of Minnesota Focus Group Participant

Both of the quotes above not only provide underrepresented undergraduates' descriptions of how their faculty mentors perform various roles and functions, but they also provide insight into the impact of, as well as the value these students place on, their mentors' performance of these roles and functions.

Several of these underrepresented undergraduate participants discussed the role that mentors played in helping them network. They seemed to perceive networking to be very important, which was indicated through their awareness and articulation of how such networking could help further them academically, as well as possibly in their future careers. Participants stated:

> I'd also say that a mentor is someone, if they know the information, they'll provide it to you, but if they don't know it, they know who to contact. I think that was really good

> that my mentor, even though he didn't know the answer, he knew somebody in his department who had the answer, and he directed me to them, or directed me to the secretary who knew how to contact that person. –Pennsylvania State University Focus Group Participant

> I definitely think it's important to have mentors because realistically, they're the first step in your moves to start networking with people in your future, in the future fields you might be going into. I mean, they're going to have contacts based upon their experiences that they can introduce you to who can help further your ambitions and goals. So, realistically, you're not looking to have just one mentor. It's one mentor who can branch out to multiple mentors who can help shape and mold where you're going. –IUPUI Focus Group Participant

> Also, other than just being there for you, [faculty mentors are] just like a field goal for you to network…just an excellent resource for me to meet other people that are involved in my field, other important people in the community. I mean, [my mentor has] taken me to all kinds of community events, just showing me a lot of what my field—what's going on in my field, let me intro—introduced me to key people within those areas so that I can create those networks for myself. –UW-Milwaukee Focus Group Participant

Ultimately, there were a host of roles and function that these students believed to be important for their mentors to perform. The number and variety of these roles and functions was further exhibited through the quantitized qualitative data—in particular, participants' written responses to the open-ended survey question, "What is the most important contribution your mentor has made to you?" Specifically, of 760 valid write-in responses to this question, 71 independent codes were generated to categorize the responses (see Table B12). Thirty-three of these codes represented a mentor role or function. Thus, 45% of the codes for the question regarding these underrepresented undergraduates' perceptions of their faculty mentors' most important contribution referred to mentor roles and functions. Moreover, the 71 independent codes were used a total of 1,183 times to code respondents' most important mentor contributions; of this total, the 32 mentor roles and function codes were utilized a total of 997 times. Thus, 84% of the most important mentor contributions codings were mentor roles and functions; this high percentage seems to indicate that these underrepresented students believed

mentor roles and functions were indeed important.

The most used mentor role or function codes was “advice” (11%), followed by “exposure” (11%), “guidance/direction” (11%), “information/knowledge” (10%), and “teaching/training” (9%). Several of these roles and functions were also explicitly mentioned by participants in the focus group and individual interviews, and it appears that these underrepresented undergraduates believed these particular mentor roles and functions not only to be their mentors’ most important contributions, but also to be some of the most important roles and functions for their mentors to perform. Table B13 displays the 32 mentor roles and function codes and their frequencies.

Mentor attributes. The third theme describes the attributes that the underrepresented undergraduate participants in this study believed it was important for faculty mentors to embody and/or exhibit. Like the mentor roles and functions discussed above, there was great variety in the characteristics and qualities that these students believed to be important in a mentor. These attributes seemed to comprise several subcategories and therefore were grouped into four subthemes which were labeled as: time/effort, personality, knowledge, and respect.

The first subtheme, time/effort, refers to these students’ indication that one attribute they felt important in a mentor was that the mentor was willing to put time and effort into the mentoring relationship. Thus, this theme included participants’ references to important mentor qualities and characteristics like accessibility, availability, and making time to address questions and concerns, as well as references to mentors “being ‘there’” and going “above and beyond” in the mentoring relationship. In particular, in describing their ideas of the attributes of a good mentor, as well as the type of mentor students should look for, these participants often referred to the mentor’s availability and time. For example, participants asserted:

> The type of mentor that you want to look for is someone that has the time to spend with you…because it is really hard to be out there trying to do it all on your own as a student without that support from your mentor. Without that interest from him and without someone to discuss and to bounce your ideas off of. –University of Minnesota Focus Group Participant

> I think [a good mentor is] somebody who's willing to work with you for a long time, not just for one semester, but over the period of your undergrad, maybe your grad career at school...[My mentor has] really helped me become a good writer, and he's taken the time to work with me, and…it really challenges me. –Indiana University Focus Group Participant

Moreover, another participant explained, "[Your faculty mentor] is going to have to give you a little extra room in his day or schedule, because you are going to need that.[3]" Similarly, a participant pointed out the importance of mentors putting forth time and effort in a mentoring relationship as an important characteristics that mentors should possess by asserting, "I don't think you should volunteer to be a mentor if you don't actually have the time.[4]"

The second subtheme, personality, refers to the range of personality attributes participants indicated that they believed it was important for mentors to embody. This subtheme included qualities and characteristics such as "approachable," "friendly," "flexible," "honest," "caring," "reliable," and "tolerant" among many others. For instance, participants indicated honesty was an important characteristic in a mentor, noting, "I think a good mentor has to be honest with you. Be critical and constructive criticism of me is always a great tool to use.[5]" Similarly, another participant referred to the value and importance of a mentor's honesty when describing a good mentor as:

> Somebody who wants to get to know you and can give you the kind of tips, advice, et cetera, that's going to help you get where you want to be. A person who's willing to tell you the bad things as well as the good things to try to make sure that you get through the

[3] Indiana University Focus Group Participant
[4] Northwestern University Individual Interview Participant
[5] IUPUI Focus Group Participant

> bumps, and that you're able to be the best you can be in order to compete. –Pennsylvania State Focus Group Participant

Moreover, participants indicated that they valued mentors who were "caring," truly interested in them personally, and also understood and valued their interests. One participant stated, "One of the luckiest things you can have is a mentor that's interested in what you're doing.[6]" Similarly, in their descriptions of what made a good mentor, some participants elaborated on the importance of faculty mentors exhibiting care or concern for them by taking a genuine interest in them. Specifically, participants asserted that a good mentor was:

> Someone who seems genuinely interested in your own personal interests and your past, what research have you already done, what kind of grad school are you interested in, to try to relate what they're doing to what you want to do, like, try to make that connection so you're just not out there doing something that you don't want to be doing. –UW-Madison Focus Group Participant

> Someone who is willing to work to bring out the best in you. Sometimes we come to our mentors as damaged people. You know, we've gone through the system, and people have ripped up our papers. They've said our English isn't right, or they've said that you're not gonna make it because you're a woman in science. Whatever has happened to you prior to you reaching that mentor, that mentor, for me, if they really want you …[are] really interested in your well being—I'm not saying that they have to become your therapist—maybe they do, I don't know—but I think that what a mentor does is they recognize your strengths, and they really work to help you develop them, and they work to help you become the person that you need to be, and bring out and recognize…your voice and help you to develop that voice and to develop your different aspects of, and different attributes that you need to make it in this field, whatever your field may be. –University of Illinois-Chicago Focus Group Participant

Another participant simply stated, "I think what makes a good mentor is someone that truly has your best interest at heart.[7]"

Along with caring and being interested in the student, these participants indicated that they believed it was important for their mentor to be willing to interact with people—to be friendly and approachable. One participant pointed out:

[6] University of Illinois-Chicago Focus Group Participant
[7] University of Illinois-Chicago Focus Group Participant

> You need somebody that's willing to interact, friendly…Somebody that you'll see on a regular basis, and like they have some input for you, especially like I think it's really important that you can get along with this person, like you wouldn't mind being friends with them, 'cause you'll be more willing to engage with them, and you'll be more willing to listen to them because, like, you respect them and you like them. –Pennsylvania State University Focus Group Participant

Another participant explained:

> With my mentor one of the things I really picked up—he's very diplomatic. He knows how to deal with—well, he's now our department head so I guess—but he knows how to deal with everyone in a way such that no one gets offended, no one is upset, is angry, so he knows how to talk to people, talk with people and see what it is that goes through their mind, what areas they need help in, things like that, so that's one thing I did gain from him, learning how to be diplomatic, deal with the politics and things like that. –Purdue University Focus Group Participant

The third subtheme, knowledge, refers to participants' expressions of their belief that an attribute faculty mentors should possess is knowledge or expertise, particularly in their field. A participant stated:

> I think a good mentor has to be someone…who is very knowledgeable in their field, but doesn't come at you as if you should know the same stuff that they know. So they know that you're just beginning, and you're just starting also. They tailor how they talk to you, tailor the information that they give to you in a way that you could understand it, and then from there, build on it. –University of Illinois-Chicago Focus Group Participant

Other participants also described their mentors and the value of this characteristic in their mentor. One participant recalled, "Now my mentor is very knowledgeable in the field, and I can ask him for anything, for any kind of questions,[8]" while another student asserted, "The thing that really helped me was that my mentor was actually capable of understanding the research that I was doing. I mean…I studied something really obscure, and if she didn't know what it was or what I wanted to do with it, it would've been really hard to help me.[9]" Another participant elaborated, "[My mentor is] one of the top guys in his field. I mean, when I get to tell people,

[8] IUPUI Focus Group Participant
[9] University of Illinois-Chicago Focus Group Participant

'Yeah, you know, I had lunch with Dr. Santoro,' and when I hand in recommendations from him, people are like, 'Oh, wow! This guy, you know, he must be doing something right.[10]'"

The final subtheme, respect, refers to these underrepresented undergraduate students' desire to be in mentoring relationships in which they felt their faculty mentors demonstrated respect for them. For these participants, their mentors exhibited respect for them in a variety of ways such as trusting the student, recognizing and being confident in the student's abilities and/or capabilities, valuing the student's opinions and input, and by valuing reciprocity in the mentoring relationship. For instance, some participants' statements illustrate these students' perception of the importance and value of respect in the form of their mentors trusting them or having confidence in them. In particular, one participant explained, "On a daily basis [my mentor] is very confident in what she does and also with what I do. And it's not a demeaning relationship. She treats me as an equal just like a regular lab technician in the lab, very respectful.[11]" Similarly, another participant stated:

> And for [my mentor] to take up a project that she's put so much time into, and where the samples are, you know, so few and far between and where the slightest little mistake can ruin the whole set of samples, and she just had me pretty much in charge of everything. No one knew anything about what I was doing except me and her. It forced me to be more careful with what I did, and at the same time, I'm learning what I'm doing, and it also made me more confident and, I guess, more proud of the accomplishments I've made in the project. So really, I don't think I really had the feeling of what I've been doing if she hadn't showed that trust. –IUPUI Focus Group Participant

Participants also indicated that they felt mentors demonstrated respect for them when they valued their opinions and input, demonstrated confidence in their abilities, and allowed them some independence, especially where their work was concerned. Participants noted:

> Well, one thing—it's been really a challenge for me—which I totally enjoy, because basically when I met my two mentors, they said, "Well, we don't know, we're going to do

[10] Pennsylvania State University Focus Group Participant
[11] IUPUI Focus Group Participant

> this part of the project, and we don't know about this other part, but we thought this would be interesting for you, so we want you to become the expert and we want you to be able to tell us about it and explain things to us, and you can come to us for help and for guidance, but there are also other resources. We want you to be able to try to find the resources that are available to develop the project." And that has been wonderful, because I found it's given me an opportunity to find out how resourceful I can be, because I found creative ways. It's given me an opportunity to find creative ways to find out about the research, and also it's given me challenges of thinking about what's important to me, as far as the research is concerned, and in data collection and validating data. –Pennsylvania State University Focus Group Participant

> My mentor didn't really try to steer me to do anything else. I mean, like she kind of let me put it in my own ideas. I know a lot of professors and a lot of mentors are always like, "Oh, that's okay if you do this, this, and that." They don't really want to let you do what you want to do. So that's really important to me. –UW-Milwaukee Focus Group Participant

> That has like really been a big inspiration, [that he] allows me, most important, to implement my own ideas. You know what I'm saying? And him being honest about whether or not he thinks this will work or that will work. 'Cause he's not the type of mentor where he's like, "Okay, well, now you do it my way." You know? I might have an idea, but he's like, "No, okay, well, I think it should be this way, and this is why." So he honestly lets me implement, you know, my own experiences, you know, with the research process. –Michigan State University Interview Participant

Additionally, participants expressed that mentors exhibited respect for them when they acted in ways that seemed to indicate that they acknowledged and valued reciprocity in the mentoring relationship. One participant highlighted the value they placed on reciprocity in the mentoring relationship, noting:

> Sometimes it's like we're working side-by-side on the same thing. It's kind of interesting to know the professor's not necessarily teaching you, but he's kind of—you're kind of learning along with him, even though he's got a little more insight and kind of knows what's going on. We're both working on the same thing, and we're both--we don't know the outcome, really, so that's nice. –University of Minnesota Focus Group Participant

Ultimately, the importance of mentor attributes in the mentoring relationship for these underrepresented undergraduates was also highlighted in the survey respondents' answers to the open-ended question, "What is the most important contribution your mentor has made to you?" Specifically, 39 of the 71 independent codes that were generated to categorize the 760 valid

write-in responses to this question represented a mentor characteristic or quality (see Table B14). Thus, 55% of the codes for the question regarding these underrepresented undergraduates' perceptions of their faculty mentors' most important contribution referred to mentor attributes. While the 71 independent codes were used a total of 1,183 times to code respondents most important mentor contributions, the 39 mentor attributes were utilized a total of 186 times. Thus, approximately 16% of the most important mentor contributions codings represented mentor characteristics and qualities.

Additionally, the 39 mentor attribute codes yielded themselves to be categorized according to the subthemes, which not only seemed to substantiate the adequacy of these subthemes, but also seemed to highlight the importance of these characteristics and qualities in mentors among underrepresented undergraduate students. More specifically, 81 (44%) of the mentor attribute codings aligned with the personality subtheme, followed by 60 (32%) with the time/effort subtheme, 30 (16%) with the respect category, and 15 (8%) with the knowledge category. Table B14 displays the 39 mentor attributes codes and their frequencies.

Mentor racial and gender characteristics. The underrepresented undergraduate participants in this study also discussed their perceptions of the importance of some of their mentors more intrinsic characteristics—particularly their race and gender. Specifically, participants responded to the semi-structured interview question "Does the ethnicity of your mentor matter?" The responses of these underrepresented undergraduates seemed to indicate that working with and interacting with faculty of color was important. For instance, in response to this question one participant stated, "Well, like I said, it wouldn't, but when I go the full year, when I go a whole---I mean, I've gone a whole 2 years with just white professors, and it's not---

and they're great professors, but that's all I get.[12]" Another participant asserted, "It feels good to see someone after being so long in school that isn't white and that is in academia.[13]" Similarly, other participants elaborated:

> So I've gone through my whole English—you know, now I'm in the English department, going with all these professors, and it was nice to know that during the summer, last summer, I got to work with a Latina woman, and this summer, I got to work with a Latina professor. So just knowing that first, that now I have the students that are African American, Latino that are doing academic research, and then, also being able to work with mentors that are African American, Latino that are also in academia and [inaudible]. That makes it a little—it makes it better during the year knowing that I have the opportunity to work during the summer with professors of color. –University of Illinois-Chicago Focus Group Participant

> You know, when I was at Rutgers, I didn't get the opportunity of working one-on-one with a mentor, because I was just there for the summer component. Now this summer and last summer, working with Dr. Dunbar and watching him, I mean, first of all, me working with another African-American male-You know what I'm saying? Something that I'm not used to-I mean, growing up, I've probably only had one African-American male teacher, so me seeing an African-American male in an academy, do you know what I'm saying? This is like a role model to me. –Michigan State University Individual Interview Participant

Moreover, some of these underrepresented undergraduate participants pointed out the importance of having faculty mentors of color to serve as role models and to provide racially relevant information that would help them navigate in academia. For instance, one participant stated:

> Especially what I like is the African-American mentor that I have here. He's very bluntly honest about what's happened in the department with regard to African-American students, which has helped me really see that I really need to be ready for the challenge, because I will be challenged. And so it's good to know that in advance, rather than to be—you come into a place and you're blindly hit with this, and you don't know how to handle it. And so, it's kind of good to know things and to be able to be observant and to be there ahead of time to kind of understand the dynamics. And having somebody to guide you on that, that's been great. –Pennsylvania State University Focus Group Participant

[12] University of Illinois-Chicago Focus Group Participant
[13] University of Illinois-Chicago Focus Group Participant

Thus, while these participants indicated that they generally did not have regular interactions with faculty of color and expressed disappointment with this reality, they also seemed to express excitement and gratitude when they did get the opportunity to work with faculty of color and seemed to place a high value on these interactions.

Participants also expressed their views about the importance and value of having faculty mentors of color particularly when their research interests pertained to racially or ethnically diverse or underrepresented groups. Participants stated:

> My research is dealing with African American churches and health. Now if I had a Caucasian or even a Latino or Latina professor or mentor, I don't think that would—I don't think it would work out because everybody has their own perceptions of what goes on in their own culture, but to kind of cross the line and try to talk about somebody else, it wouldn't—like my ideas and whatever were different from theirs, so they would probably clash at some point. –University of Illinois-Chicago Focus Group Participant

> Sometimes, I mean, I don't know but sometimes it may be depend on like the nature of your research, as well. If you're doing research that's dealing with minorities or what have you, you kind, I think, maybe want somebody that maybe can speak for that group versus somebody that can't. And me, personally, I do think that there are cultural differences, and people look at things differently depending on your culture. –University of Illinois-Chicago Focus Group Participant

> To be a researcher, and maybe this is wrong of me to think, but if you don't grow up in this low income context and you're not black and Latino—for me, I'm invested in the project because I'm both. I came from a low income and I'm a Latina. So maybe that's why I'm so invested in the project. So it's hard for me to picture how anyone who didn't come from that environment could be so invested in that project. So to do the research with somebody like [inaudible] I'm doing is studying this, but also, lived within that context. So it makes the research, to me—I don't know, like you're really invested in it. And I'm not saying maybe perhaps other people, researchers who have done the same thing that are going through areas like ethnographic research that they're not from there, but they learn the culture, that's fine. But to me, like just from the experience, I don't know how important I would have thought my research was if I had not shared that experience. –University of Illinois-Chicago Focus Group Participant

However, other participants asserted that the mentor's race or ethnicity was not an important factor in their mentoring relationship, even if they were conducting racially or culturally specific research. These participants noted:

> I think what would be—is most important—if I was studying infant survival rates in Hispanic cultures and I'm a black man, and I had a German [mentor], I think as long as we---he may come a different way at it. I would definitely come a different way at it…So I think as long as we're all focused in, we can make it work, but we have to want to do the same thing. And I think the ethnicity isn't the important thing, but the project. –University of Illinois-Chicago Focus Group Participant

> My mentor is white. I don't know from where or what, but she's definitely white…I bring that up because we're studying the Caribbean, Trinidad. So when we're looking at—I believe it's 40% African American…40% African Trinidadian, 40% [inaudible] Trinidadian, and then, like Chinese people. Like in the racial—in the population makeup, we don't see anything about, really about white people. And so for her to be studying this area, it was interesting to me. But we don't really deal with race in my research...we haven't really had much discussion about race. We've been very—you know, I'm not gonna say objective, but we haven't really had a race discussion. –University of Illinois-Chicago Focus Group Participant

Additionally, some participants did not think that mentor race was an important factor in the mentoring relationship at all. In fact, these participants indicated that finding or sharing a common ground with the mentor was often more important than racial or ethnic similarities. These participants related:

> And I think beyond my research, what's cool about my mentor—and she's a white woman—when she sees me, she's like, "How's Diana?" She's always asking me about my baby. So I thought that was very important. Ideally, you would like to see someone who looks like you who is helping you with this, but because I have a concern outside of myself, which is my children, the fact that she's concerned about them makes her cool to me…But you know what? I think the reason my professor asked about my baby is because she was pregnant while she was going through. I don't know whether she was teaching or in a PhD program. Her life was similar to mine in a lot of ways. I've had black professors who are looking at me like so you shouldn't have babies before you finished, like I really wasn't smart. Like I haven't had—I've had some black professors who really haven't been supportive or that's trying to understand, but they really just can't understand. And so I think that if you can find some sense of common ground when you're dealing with folks, then that works. –University of Illinois-Chicago Focus Group Participant

> I think it's more the character of the mentor than the color. My mentor is Caucasian, but he's great. You know, we talk, and he respects me and I respect him, and it's just more about the character than color. It would be nice to see a black professor or have a black mentor or Latino mentor just 'cause you can relate more socially, but if the person's cool, color isn't an issue. –University of Illinois-Chicago Focus Group Participant

Thus, these underrepresented undergraduate participants' perceptions of the importance and value of a faculty mentor's race or ethnicity in the mentoring relationship ran the gamut; some participants expressed that it was a very important factor to others stated it was important contingent upon research scopes and interests (i.e. if they were doing racially or culturally specific research), and still others indicated that the mentor's race or ethnicity was unimportant.

The variety of responses that emerged from the focus group and individual interviews with respect to the importance of the mentor's race or ethnicity in the mentoring relationship also seemed to prevail in survey respondents' answers to the open-ended question "How does race or ethnicity affect your choice in a mentor?" In particular, in coding 182 valid write-in responses to this question, 29 independent codes were generated and were utilized a total of 363 times. The code representing respondents' preference of mentors of the same race or ethnicity was the most used code—it was used 83 times (23%). Moreover, respondents provided some insight into how or why race affected their choice in a mentor by indicating that when mentor and mentee shared the same race, it was "easier to relate," which was coded 76 times (21%), they shared experiences and similarities, which was coded 48 times (13%), it was a more comfortable relationship, which was coded 22 times (6%), and they could relate culturally, which was coded 21 times (6%). A graphical representation of the most used codes is provided in Figure C1.

In addition, like the focus group and individual interview participants, in response to the open-ended question "How does race or ethnicity affect your choice in a mentor" some survey respondents also indicated their belief that it was important to have mentors of color when doing ethnic research. Specifically, respondents wrote:

> I would have greatly enjoyed having a mentor of color because I believe it would be ideal if my research interest were supported by a person who is not only an expert, but I can relate to culturally.

> Because of the field I am interested in pursuing (particularly, formal education of minority students, especially but not limited to underprivileged African Americans), I have learned from experience that mentors (professors, etc.) of these ethnicities share a common understanding of and desire for what I want to do.
>
> Race or ethnicity affects my choice in a mentor because my research interests deal with culturally sensitive issues. In most circumstances, a mentor of the same race or ethnicity or another "minority" race is more "connected" with the research. Therefore I believe that this mentor will be able to effectively guide me.

Some survey respondents also indicated that while having a mentor of the same race was a preference, it was not a requirement. One respondent wrote, “I think that a mentor of the same race could relate to me in ways that he or she couldn’t otherwise. However, a mentor of the same race is not a must” while another respondent penned, “Race is a factor as I prefer to work with someone who is black or Hispanic. I do not exclude mentors because of their race however.” Moreover, some survey respondents asserted that mentor’s race simply did not matter, or was not that important, by simply writing “it does not” in response to this question, while others elaborated, writing “It doesn't affect [my choice in a mentor] a great deal. I just feel more comfortable at times when he/she is of the same race” and “Race does not affect my choice in a mentor but it is nice to have a mentor that you can relate to.”

Unlike the discussion of their mentors’ race that often ensued in the different focus groups and individual interviews, focus group and interview participants did not discuss the importance or value of their mentors’ gender in the mentoring relationship in detail or at length. This discrepancy in attention to the importance of mentors’ race or ethnicity versus gender presumably was the result of the lack of a semi-structured interview question that directly addressed the role and importance of the mentor’s gender in the mentoring relationship as there was for the mentor’s race or ethnicity. The absence of discussion of mentors’ gender may also simply have been affected by the nature of the semi-structured interviews—particularly that

while generally they entail having a formalized set of questions, they are flexible in that they allow new questions to arise based on the responses of interviewees. Thus, it is possible that interviewers did not take the opportunity to probe this aspect of the mentoring relationship if the subject was broached. In these interviews, participants mostly described their mentors' gender by referring to "he" or "she," but did not really delve into the benefits or disadvantages, if any, that they perceived from having same-gender or cross-gender mentoring relationships.

Although noticeably absent from the interviews, some information about underrepresented undergraduates' perceptions of the role of faculty mentors' gender was gleaned from their responses to the open-ended survey question "How does gender affect your choice in a mentor?" In particular, 159 valid responses generated 25 independent codes that were used a total of 320 times. The code representing that respondents preferred a mentor of the same gender was used 74 times (23%), followed by the code representing they preferred a female mentor being used 49 times (15%), compared to the code indicating that respondents preferred a male mentor being coded seven times (2%). Judging from the frequency of the codes, these survey respondents seemed to indicate that they found it easier to relate to a mentor of the same gender (coded 55 times), that they were more comfortable in relationships in which their mentor was of the same gender (coded 47 times), and that they believed that by sharing the same gender with their mentor, they would have shared experiences and similarities (coded 26 times). A graphical representation of the most used codes is provided in Figure C2.

Besides respondents indicating their mentor gender preferences in response to this question, some respondents also indicated that the mentor's gender was not important. For instance, one respondent wrote, "It doesn't [matter], whomever is best for me is who I want to be mentored by" and another respondent wrote, "Gender may be significant but does not determine

a good mentor. Thus, if he/she is a good mentor that is what matters." However, some respondents not only indicated that mentor gender was important, but that it was particularly important in the sciences. For instance, one respondent noted "Because I am in engineering where women are an extreme minority, I would feel more comfortable with a woman who can understand that" and another wrote, "Well women in science have different experiences than men, so I would at least want to talk to a female because she may offer relevant information that a male mentor cannot." Other respondents also highlighted the importance of mentor gender in the sciences by responding, "There would be fewer females in my field (electrical engineering) and a female mentor would be able to give me valuable information a male mentor would probably not know about" and "Women have different pressures in science than men and I need to learn how to be a woman in the sciences." Ultimately, from a count of the codes, it appears that these underrepresented undergraduates largely preferred mentors of the same gender for a variety of reasons, most of which seemed to relate to their perceptions that based on their shared gender with their mentors, these relationships would be more comfortable, beneficial and relevant.

Summary of the qualitative results. The results from the analysis of qualitative data provide a thick description of the role and importance of faculty mentoring among underrepresented undergraduates from their perspective. Specifically, the findings indicate that not only is mentoring important to these students, but many consider it an essential component of their ability to successfully navigate their undergraduate institutions.

These results indicate that these students want mentors that can perform a host of roles and functions aimed at helping them navigate their undergraduate institutions and pursue their short and long-term educational and personal goals. Additionally, the findings indicate that these

underrepresented undergraduate participants generally want mentors that exhibited characteristics and qualities conducive to building and sustaining a positive mentoring relationship and experience—including the willingness to devote time and effort to the relationship; demonstrating positive personality attributes such as friendliness, reliability, and honesty; being knowledgeable; and demonstrating respect for the student by valuing their input and being confident in their abilities.

Moreover, the findings show that race and gender often factored into these students' ideas of important characteristics of mentors. Specifically, although some participants indicated that mentor race and gender were unimportant, most indicated that they felt more comfortable or that it was easier to relate to mentors in same-race or same-gender mentoring relationships. These students also pointed out that sharing race or gender with the mentor could be especially relevant in particular instances, such as when conducting racially/ethnically specific research, or for women in largely male dominated fields, like the STEM fields.

The results of the qualitative data analysis are discussed in greater detail in the final chapter, especially as they relate to the extant literature and the quantitative findings. The implications of these findings for underrepresented students, educational researchers, and higher education institutions and practitioners (i.e. administrators, faculty, support staff) are also discussed.

Quantitative Findings

After making the exclusions discussed in the methodology section, the quantitative sample consisted of 506 survey respondents from the 2003 and 2004 program years of the Summer Research Opportunities Program (SROP). Because each respondent did not necessarily

answer every single survey item, which resulted in an abundance of missing data, a standard of inclusion for variables was set. Particularly, in order for a variable to be included in the analysis, no more than 10% (n=50) of respondents could be missing information on the variable. Thus, only variables with at least 456 cases with valid answers were included in the analysis. Subsequently, there were different numbers of total respondents for the survey items discussed in this section. Therefore, I am careful to state the number of respondents to each particular question throughout this section; unless otherwise noted, the total sample (n=506) was used.

Demographics. Sixty-nine percent of the total sample was African American and 31% was Latino. Seventy-four percent of the sample was female and 26% was male. More specifically, the sample was comprised of 53% African American females, 21% Latino females, 16% African American males, and 10% Latino males. Of 501 valid responses, 88% of respondents were native-born U.S. citizens, six percent were naturalized U.S. citizens and another six percent reported that they were not U.S. citizens; those who were not U.S. citizens were living in the U.S. with either a permanent or temporary resident visa. Moreover, of 499 valid responses, 76% of respondents indicated that English was the primary language spoken in their homes.

In terms of parental education, of 491 valid responses about participants' fathers, the majority (22%) reported having fathers who had completed some college or vocational school, followed by 18% with fathers who were high school graduates, another 17% that reported having fathers who had earned a bachelor's degree, and 11% with fathers who held master's degrees. In comparison, the majority (28%) of participants' mothers had some college or vocational school, followed by 22% with mothers who had earned a bachelor's degree, another 17% that reported

having mothers who were high school graduates, and 16% with mothers that had earned a master's degree.

Six percent of respondents reported having been enrolled in their undergraduate program for one year, 66% had been enrolled between two and three years, 25% had been enrolled between four and five years, and another three percent had been enrolled five or more years. Of 495 valid responses, 63% of participants indicated that the highest degree they expected to receive was the doctoral degree, followed by 19% who expected to receive a professional degree, and 12% who expected to receive a master's degree. While 4% of respondents indicated they were unsure of the highest degree they expected to receive, only a very small number of respondents indicated they expected to receive less than a master's degree; specifically, three participants (< 1%) anticipated that the highest degree they expected to receive was a bachelor's degree, and five respondents (1%) indicated that they only expected to complete two or more years of college.

Faculty mentoring among African American and Latino undergraduates. The second research question largely sought to explore the prevalence of faculty mentoring relationships external to the SROP among African American and Latino undergraduates. Analysis of the quantitative survey data allowed for an in-depth view into the prevalence of mentoring among these students as well the racial and gender characteristics of their mentors, the formation of these mentoring relationships, students' characterization of the mentoring relationships, their perceptions of the type and amount of mentor support they received, and their racial and gender preferences for mentors.

Of the total sample of 506 respondents, 79% indicated that they had a current mentoring relationship (external to the SROP), while 21% did not have a mentoring relationship. However,

69% of those who reported not having a mentoring relationship, indicated that there was someone in their life that assumed the role of an advisor, role model, sponsor, or coach, that they considered a mentor. As expected, based on the racial composition of the sample, a much larger percentage of the respondents who reported having a mentoring relationship were African American than Latino (69% versus 31%, respectively). However, an approximately equal percentage of the Latino respondents as the African American respondents reported having mentoring relationships (80% versus 79%, respectively). Similarly, due to the gender composition of the sample (more female than male respondents), a higher percentage of female than male respondents reported having mentoring relationships (75% versus 25%, respectively); of male respondents, 75% reported having mentoring relationships, while of female respondents 80% reported having mentoring relationships. Chi-square tests of independence indicated that statistically significant associations did not exist between respondents' race and whether or not they reported having a mentoring relationship, nor between respondents' gender and whether or not they reported having a mentoring relationship.

A crosstabulation between the prevalence of mentoring and the number of years respondents had been enrolled in their undergraduate degree program showed that the majority (67%) of those who reported having mentoring relationships had been enrolled in their undergraduate degree program between two and three years. In addition, twenty-six percent of those who reported not having a mentoring relationship had been enrolled between four and five years, followed by four percent who had been enrolled for one year, and another three percent who had been enrolled five or more years. A chi-square test of independence indicated that this was indeed a statistically significant difference, $\chi^2(3, N = 506) = 10.25, p = .02$.

Sixty-one percent of respondents answered affirmatively to a survey question probing whether they had ever had a mentor who was a person of color, compared to 39% who reported that they had not. Although 72% of 494 respondents reported that they had no preference in terms of their mentor's race, more African American than Latino respondents indicated that they preferred a mentor of the same race (34% versus 14%, respectively). A higher percentage of Latinos than African Americans reported that they had no preference in terms of their mentor's race (86% versus 66%, respectively). A chi-square test of independence showed that the difference between mentor racial preferences for African American and Latino respondents was in fact a statistically significant difference, $\chi^2(1, N = 492) = 19.94, p < .001$.[14]

Of the 471 participants who indicated their current mentor's race, 53% had white mentors, followed by 28% with black mentors and 9% with Latino mentors. Respondents with mentors of other races or ethnicities (i.e. Asian/Pacific Islander, Native American, or other) comprised about 10% (n = 48) of the sample. A crosstabulation of the 471 respondents' race with their mentors' race revealed that the majority of African American and Latino respondents had white mentors (49% and 62%, respectively). Thirty-six percent of African American respondents had African American mentors, 20% of Latino respondents had Latino mentors, and almost 10% of Latino respondents had African American mentors. A chi-square test of independence showed that there was a statistically significant relationship between respondents' race and their mentors' race $\chi^2(3, N = 471) = 59.20, p < .001$.

While 78% of the 499 respondents with valid responses reported that when selecting their mentors they had no gender preferences, a higher percentage of female than male respondents

[14] Because so few respondents (n=2) indicated preferring a mentor of a different race, a dichotomous form of the mentor racial preference variable (including only the "same race" and "would not matter" categories) was used for the chi-square test. This resulted in a slightly smaller sample size of 492, rather than 494.

indicated that they preferred a mentor of the same gender (22% versus 17%, respectively). Likewise, a higher percentage of males than females reported that their mentor's gender did not matter (82% versus 76%, respectively). However, a chi-square test of independence showed that this difference in gender preferences for male and female respondents was not statistically significant.

In terms of their current mentor's gender, 61% of the 471 respondents who indicated their mentor's gender were mentored by males compared to 39% who had female mentors. In fact, a crosstabulation showed that both male and female participants had male mentors more often than female mentors. Specifically, 54% of female participants had male mentors, compared to 46% who had female mentors; meanwhile, 78% of male respondents were mentored by men, compared to 22% who were mentored by women. A chi-square test of independence indicated that the relationship between respondents' gender and mentors' gender exhibited in this sample was statistically significant $\chi^2(1, N = 471) = 21.43, p < .001$.

A crosstabulation of mentors' race and mentors' gender (n=465) revealed that participants in this study were largely mentored by white males (32%), followed by white females (21%), black males (16%), and black females (12%). Approximately five percent of respondents had Latino male mentors, and another four percent had Latino female mentors. Approximately, 10% of respondents reported having mentors of other races/ethnicities (including Native American, Asian/Pacific Islander, and other). A chi-square test of independence indicated that there was not a statistically significant relationship between mentors' race and mentors' gender.

Of 477 respondents that answered a survey question about how their current external mentoring relationship formed, 33% indicated that they selected an advisor based on their own

interests and 32% reported that they were assigned an advisor by their university. Eleven percent of participants indicated that they were introduced to their mentor by another party, and another 10% reported that their mentor was their professor. Six percent of respondents were approached by the mentor, and three percent were connected with their mentor through an established departmental program. The remaining five percent of respondents reported that their current mentoring relationships formed in other ways or that they did not know how they formed.

In general, participants characterized their relationships with their mentors positively. Specifically, of 475 valid responses, 88% indicated that they would characterize their mentor-protégé relationship as "professional" and 79% of 476 respondents reported that they would characterize their relationship as "friendly." Although of 475 participants, 57% indicated that they would not characterize their mentor-protégé relationship as particularly "personal," only very small numbers of respondents reported that they would characterize their relationship with their mentor negatively. For instance, of 475 respondents only 4% characterized their relationship as "adversarial" and only 7% characterized it as "competitive." Moreover, of 471 valid responses, 2% described their relationship with their mentor as changing over time from positive to negative, and slightly more (4%) indicated that they perceived their relationships as initially negative but that they changed for the better over time.

Along with the characterizations of their mentoring relationships, respondents also reported their perceptions of the quantity of various types of support they received from their mentors. Specifically, participants were asked to indicate whether they received "none at all," "some," or "a lot" of emotional support, letters of recommendations, advising on career matters, advising on personal matters, and advising on course selection from their mentors. The majority of respondents indicated that they either received "some" or "a lot" of each of these types of

support from their mentors except providing advice on personal matters. Specifically, of 471 respondents, 65% reported that they received emotional support from their mentor; of 460 respondents, 58% received letters of recommendations from their mentor; of 493 valid responses, 84% indicated that their mentor advised them on career matters; and of 468 respondents, 66% reported their mentor advised them on course selection. In terms of their mentors advising on personal matters, 51% of respondents indicated they received "none at all" compared to 49% of respondents who reported receiving this type of support from their mentor.

The Institutional Context

The third research question was aimed at probing the relationship between faculty mentoring and the institutional contexts of African American and Latino undergraduates. The findings from the descriptive analysis and binary logistic regression analysis used to address the specific question posed by RQ3 are presented in this section.

Institution type, control, size. Of the 506 respondents in the sample, the majority (55%) attended predominantly white institutions, followed by 30% who attended Historically Black Colleges and Universities (HBCUs), and 15% who attended Hispanic-Serving institutions (HSIs). Seventy percent of the sample attended public institutions compared to 30% who attended private universities. Sixty-three percent of respondents attended large institutions,[15] 26% attended medium-sized institutions, 7% attended small institutions, and 4% attended very small institutions.

[15] Utilizing categories for institution size established by The Carnegie Classification of Institutions of Higher Education--Large institutions enroll over 10,000 students; medium-sized institutions enroll 3,000-9,999 students; small institutions enroll 1,000-2,999 students; and very small institutions enroll up to 999 students.

In particular, a crosstabulation between institution type and control revealed that 80% of participants attending PWIs attended public institutions, compared to 20% that attended private institutions. While an approximately equal percentage of respondents (50%) attending HBCUs attended public institutions as private institutions, a much higher percentage of respondents attending HSIs attended public institutions (74%) than private institutions (26%). A chi-square test of independence indicated that there was a statistically significant association between respondents' institution type and control, $\chi^2(52, N = 506) = 42.98, p < .001$. Moreover, the majority of participants attending PWIs also attended large institutions (88%) as did the majority of those that attended HSIs (65%), while the majority of respondents that attended HBCUs attended medium-sized institutions (56%). A chi-square test indicated that there was a statistically significant difference between the institution type and the size of the institution that respondents attended, $\chi^2(4, N = 506) = 216.31, p <.001$.

Additionally, the majority of respondents (55%) attended large, public schools, followed by 15% that attended medium-sized, public schools, 11% that attended medium-sized, private schools, 10% that attended small, private schools, and less than 1% that attended small, public schools. A chi-square test indicated that there was a statistically significant association between institution control and size, $\chi^2(2, N = 506) = 164.42, p < .001$.

Institution student-faculty ratio, selectivity, research emphasis. The Integrated Postsecondary Education Data System's (IPEDS) defines the student-faculty ratio (SFR) as the total full-time equivalent students not in stand-alone graduate or professional programs divided by the total full-time equivalent instructional staff not teaching in stand-alone graduate or professional programs. According to this definition the majority (74%) of participants attended

institutions that had a medium-sized student-faculty ratio. [16] An approximately equal percentage of respondents, 13%, attended institutions characterized as having a low SFR or a high SFR.

Although the majority of participants that attended PWIs (75%), HBCUs (75%), and HSIs (66%) attended institutions that had a medium-sized student-faculty ratio, a much higher percentage of respondents attending HBCUs (21%) attended institutions with a low student-faculty ratio than those attending PWIs (12%) and HSIs (3%). A chi-square test revealed that there was a significant relationship between institution type and the student-faculty ratio of the institution, $\chi^2(4, N = 506) = 44.03, p < .01$.

Moreover, the majority of participants (83%) that attended public institutions, attended schools with a medium-sized student-faculty ratio, compared to 51% of those who attended private institutions. Similarly, a much higher percentage of participants that attended public schools attended institutions that had a high student-faculty ratio (17%) than those who attended private institutions (5%). Even more notable is the finding that while 44% of respondents that attended private schools were enrolled at institutions that had a low faculty-student ratio, none of the respondents attending public institutions attended institutions that had a low student faculty ratio. A chi-square test of independence revealed a statistically significant relationship between institution control and student-faculty ratio, $\chi^2(2, N = 506) = 182.69, p < .001$.

The majority of respondents attending large institutions also attended institutions with a high SFR (74%). Similarly, a much higher percentage of those attending medium-sized institutions attended institutions with a medium-sized SFR (81%), than a high SFR (13%), or low SFR (6%). As expected, a higher percentage of respondents that attended large institutions, also attended institutions with a high-SFR (15%) than those attending medium-sized institutions

[16] Low SFR = 10 or less students per one faculty member; Medium-sized SFR = 11 to 20 students per one faculty member; High SFR = 21 or more students per one faculty member.

(13%) or small institutions (0%). Surprisingly though, a slightly higher percentage of those attending small institutions attended institutions that had a medium-sized SFR (53%), compared to 47% that attended institutions with a low SFR. A chi-square test of independence indicated that there was a statistically significant relationship between the institution's size and SFR $\chi^2(4, N = 506) = 67.88$, $p < .001$.

In terms of the selectivity[17] of the institutions that respondents attended, the majority (54%) attended low-selectivity institutions, 27% attended medium-selectivity institutions, 15% attended institutions that were not selective at all (including open-enrollment institutions), and 4% of respondents attended institutions characterized as highly selective. More specifically, a crosstabulation revealed that the majority of participants attending PWIs attended low-selectivity institutions (71%), while the majority of participants attending HBCUs attended medium-selectivity institutions (56%), and the majority of respondents attending HSIs attended non-selective institutions (47%). A chi-square test also indicated that the relationship exhibited between institution type and selectivity was statistically significant, $\chi^2(6, N = 506) = 176.26$, $p < .001$.

Additionally, while a crosstabulation showed that the majority of respondents that attended public schools (64%) attended low-selectivity institutions, a much lower percentage of respondents attending private schools (33%) attended low-selectivity institutions. Subsequently, higher percentages of respondents attending private schools attended medium-selectivity and highly selective institutions (47% and 9%, respectively), compared to respondents that attended

[17] Selectivity was determined by institutional admissions rates of applicants outlined in IPEDS. Highly selective institutions admitted 0-25% of applicants; Medium-selectivity institutions admitted 26-50% of applicants; Low-selectivity institutions admitted 51-75% of applicants; and non-selective institutions admitted 76-100% of applicants—thus this category included open-enrollment institutions.

public schools that were medium-selectivity and highly selective institutions (18% and 2%, respectively). A chi-square test of independence indicated that there was a statistically significant difference in the association between institution control and selectivity, $\chi^2(3, N = 506) = 69.14, p < .001$.

The majority (58%) of respondents attended institutions characterized by The Carnegie Classification of Institutions of Higher Education as doctorate granting universities with very high or high research activity,[18] compared to four percent who attended institutions characterized as simply doctoral/research universities and 38% who attended institutions characterized as Master's/Baccalaureate universities. Specifically, a crosstabulation indicated that 83% of respondents that attended PWIs were also at institutions characterized as having very high or high research activity, while 68% of those attending HBCUs and 69% of those attending HSIs attended institutions characterized as Master's/Baccalaureate universities (i.e. very low or no research activity). A chi-square test indicated that this difference between institution type and the research level of the institution was statistically significant, $\chi^2(4, N = 506) = 168.56, p < .001$.

The majority of respondents that attended large institutions also attended institutions with very high or high research activity (85%), while the majority of those attending medium-sized institutions (77%) or small institutions (100%) also attended institutions characterized as

[18] Doctorate granting universities award at least 20 doctoral awards per year (excluding professional-level doctorate degrees such as JDs and MDs) and are differentiated based on their research activity. Specifically, research activity is determined through the use of a multi-measure index that is not limited to funding; in which funding measures are not limited to federal funding; and that considers aggregate and per capita measures of research activity. Thus, the categories are research universities with very high research activity (RU/VH), research universities with high research (RU/H), and doctoral/research universities (DRU) which also award at least 20 doctoral awards per year, but are distinguished by their lower levels of research activity; Master's colleges and universities award at least 50 Master's degrees per year, and less than 20 doctorates; Baccalaureate Colleges are institutions where at least 10% of all undergraduate degrees are baccalaureate degrees, and they award less than 50 Master's degrees or 20 doctorates per year.

Master's/Baccalaureate institutions, as opposed to research institutions. A chi-square test of independence indicated that there was indeed a statistically significant relationship between institution size and research activity, $\chi^2(4, N = 506) = 283.87, p < .001$. Also, the majority of respondents (62%) attended research institutions; of those that attended research institutions, 79% attended institutions that had a medium SFR, compared to 12% that attended institutions with a low SFR and 9% that attended institutions with a high SFR. Similarly, of those respondents that did not attend research institutions, 66% attended institutions with a medium SFR, compared to 19% that attended institutions with a high SFR and 15% that attended institutions with a low SFR. A chi-square test of independence revealed that there was a statistically significant association between an institution's research emphasis and its student-faculty ratio $\chi^2(2, N = 506) = 12.38, p = .002$.

Respondents' race and the institutional context. A slightly higher percentage of African American respondents (57%) than Latino respondents (53%) attended PWIs. As expected, a much higher percentage of African American participants (43%) than Latino participants (1%) were enrolled in HBCUs, and similarly, a much higher percentage of Latino respondents (46%) than African American respondents (<1%) were enrolled at HSIs. A chi-square test of independence indicated that there was a statistically significant relationship between respondents' race and institution type, $\chi^2(2, N = 506) = 213.53, p < .001$. A crosstabulation also revealed that there were racial differences in the numbers of African American and Latino respondents enrolled at institutions based on their institutional control (i.e. public vs. private). Specifically, a larger percentage of African American than Latino respondents attended private institutions (33% versus 24%, respectively), and likewise a larger percentage of Latino respondents attended public institutions compared to African American

respondents (76% versus 67%, respectively). A chi-square test indicated that this was a statistically significant difference, $\chi^2(1, N = 506) = 3.92, p = .048$.

Seventy-five percent of Latino respondents attended large institutions compared to 58% of African American respondents. In contrast, larger percentages of African American than Latino participants attended medium-sized institutions (28% versus 22%, respectively) and small institutions (14% versus 4%, respectively). This association between respondents' race and the institution size was statistically significant, $\chi^2(2, N = 506) = 17.02, p < .001$. Likewise, a crosstabulation showed that similar percentages of African American and Latino participants attended low-selectivity institutions (55% and 53%, respectively). However, while a higher percentage of African American than Latino respondents attended medium-selectivity institutions (33% versus 15%, respectively), higher percentages of Latinos than African Americans attended highly selective institutions (6% versus 3%, respectively) and non-selective institutions (26% versus 10%, respectively). Differences in respondents' race and the institutional selectivity were statistically significant, $\chi^2(3, N = 506) = 35.56, p < .001$.

Although the majority of African American and Latino respondents attended institutions with a medium-sized SFR (76% and 68%, respectively), 16% of African American respondents attended institutions with a low SFR compared to 8% of Latinos, while more Latinos attended institutions with a high SFR than African Americans (24% versus 8%, respectively). A chi-square test of independence indicated that the association between respondents' race and the SFR of the institutions they attended was statistically significant, $\chi^2(2, N = 506) = 26.82, p < .001$. Moreover, while a slightly higher percentage of African American respondents than Latino respondents attended institutions with a very high or high research emphasis (60% versus 56%,

respectively), a chi-square test of independence revealed that this was not a statistically significant difference.

Faculty mentoring and the institutional context. Crosstabulations between whether students had a mentor or not and each of the six variables that comprise the institutional context (i.e. type, control, size, SFR, selectivity, research emphasis) were also conducted. However, using chi-square tests of independence, no statistically significant relationships were found between whether African American and Latino undergraduates had a mentoring relationship and any of the variables that characterized elements of the institutional context.

To further address RQ3, logistic regression analysis was used to predict the probability that a respondent would report having a faculty mentor. Recall that after an extensive model selection process (detailed in Chapter 3) Model 4 was selected as the model that best fit the data (see Table B4). Model 4 represents the added effect on the outcome variable "faculty mentor," attributable to the "undergraduate experience" while taking into account background characteristics, mentor preferences, and institutional characteristics. This model had an overall success rate of correctly classifying those who had a mentor and those who did not of 80%. Moreover, this model indicates that institutional selectivity, research emphasis, and respondents' satisfaction with their undergraduate education are all statistically significant, which means they had an effect on whether or not respondents had a faculty mentor. Table B15 presents the betas (i.e. parameter estimates) and corresponding standard errors, as well as significance level and the odds ratio (labeled Exp(B)) for the model.

Institutional selectivity, institutional research activity, and the respondent's level of undergraduate satisfaction each had a significant effect on the outcome variable—whether or not the respondent had a faculty mentor. Using the odds prediction equation of ($ODDS = e^{a+bX}$), the

model predicted that a respondent attending a non-selective institution was 10.30 times as likely to have a mentor than not have a mentor, and respondents attending low-selectivity and medium-selectivity institutions were 10.74 and 9.39 times, respectively, as likely to have a mentor than not have a mentor. In contrast, the model predicted that respondents attending highly selective institutions were only about two times as likely to have a mentor than not have a mentor. These odds were converted to probabilities using the formula $\hat{Y}$ = odds / (1 + odds). Thus, the model predicted that 90% or more of respondents attending a non-selective (91%), low-selectivity (91%), or medium-selectivity (90%) institution would have a faculty mentor.

Moreover, the odds ratio (Exp(B))—which is simply a ratio of the odds—predicted by the model indicates that when controlling for other variables the odds of having a faculty mentor compared to not having a faculty mentor were increased by a factor of 4.833 by attending a non-selective institution rather than a highly selective institution. This means that the odds of having a mentor were almost five times higher for respondents attending non-selective institutions as opposed to highly selective institutions. Similarly, attending a low-selectivity institution or a medium-selectivity institution also had a positive effect on having a faculty mentor. Particularly, when controlling for other variables, attending a low-selectivity institution increased the odds of having a faculty mentor by a factor of 5.040, while attending a medium-selectivity institution increased the odds of having a faculty mentor by a factor of 4.404.

In terms of the effect of the research emphasis of an institution on the outcome variable, the model predicted that a respondent attending an institution characterized as a Master/Baccalaureate institution was only .789 times as likely to have a mentor than not have a mentor. Converting these odds to a probability, the model predicted that only 44% of respondents attending Master's/Baccalaureate institutions would have a faculty mentor. In fact,

the research emphasis of Master's/Baccalaureate institutions had a negative impact on having a faculty mentor. Specifically, the odds ratio predicted by the model indicated that when controlling for other factors, attending an institution classified as a Master's/Baccalaureate institution as opposed to an institution classified as having a very high or high research emphasis decreased the odds of having a faculty mentor by a factor .370.

Moreover, respondent's level of satisfaction seemed to have a similar effect on the outcome variable as the institutional research emphasis. For instance, the model predicted that a respondent who indicated that they were "not too satisfied" with their overall undergraduate experience was only .438 times as likely to have a mentor than not have a mentor. Converting these odds to a probability, the model predicted that only 30% of respondents that indicated that they were "not too satisfied" with their undergraduate experience would have a mentor. In fact, respondents' level of satisfaction with their overall undergraduate experience had a negative impact on the odds of having a faculty mentor. In particular, when controlling for other variables, being "not too satisfied" with the overall undergraduate experience was significant at the .01 level of significance (the pre-determined criterion was .05) and decreased the odds of having a faculty mentor by a factor of .205.

Collegiate Satisfaction

Collegiate satisfaction among African American and Latino undergraduates was also a variable of interest in this study, especially in terms of its relationship with faculty mentoring among these students and their institutional context. In terms of their levels of satisfaction with their undergraduate education, on a scale of 1 (not at all satisfied) to 4 (very satisfied), respondents' mean level of satisfaction was a 3.51. More specifically, 57% of respondents

indicated they were “very satisfied” and another 38% reported that they were “somewhat satisfied,” compared to a combined five percent who reported being “not too satisfied” (4%) or “not at all satisfied” (1%).

Because the satisfaction variable used in this descriptive analysis was an ordinal variable, and the other variables were dichotomous nominal variables and thus could be validly treated as an ordinal variable (Agresti, 1996), the Mantel-Haenszel chi-square statistic (also called the linear-by-linear association chi-square) was more appropriate than the Pearson chi-square. Specifically, the Mantel-Haenszel tests the significance of a linear relationship between two ordinal variables; if found significant, it is interpreted as “increases in one variable are associated with increases in the other greater than would be expected by chance of random sampling” (Garson, 2009b). Moreover, the Spearman Correlation statistic provides added insight into the direction and strength of any significant linear associations. In particular, the Spearman Correlation ranges from -1 to +1; a statistic equal to zero indicates no tendency for Y to increase or decrease with X, while a statistic closer to 1 or -1 indicates a strong association. Likewise the sign of the statistic indicates whether Y increases (+), or decreases (-), with increases in X.

Mantel-Haenszel chi-square tests conducted on crosstabulations between respondents’ race and satisfaction with the collegiate experience, respondents’ gender and satisfaction with the collegiate experience, and the number of years respondents had been enrolled and their satisfaction, revealed that there were no statistically significant linear associations between these variables. Similarly, several crosstabulations were conducted to determine the association, if any, between respondents’ satisfaction and the various characteristics of their home institutions (i.e. size, type, control, selectivity, research status, student-faculty ratio). The only statistically significant linear associations revealed by Mantel-Haenszel chi-square tests between these

variables were between respondents' satisfaction and the control of their home institution, M^2 (1, N = 506) = 9.81, p = .002, and between respondents' satisfaction and the SFR of the institution, M^2 (1, N = 506) = 4.17, p = .04.

The relationship between respondents' perceptions of their undergraduate institutions and collegiate satisfaction was also explored. First, in response to the survey item "In general, I view my undergraduate institution as supportive of my educational aspirations," on a scale of 1 (strongly disagree) to 5 (strongly agree), respondents had a mean level of agreement of 3.34. More specifically, of 489 valid responses, a combined 89% "strongly agreed" (47%) or "agreed" (42%) with this statement, compared to a combined 11% of participants who "disagreed" (9%) or "strongly disagreed" (2%). A crosstabulation between respondents' collegiate satisfaction and the survey item probing their level of agreement with the statement that their institution was supportive, indicated a statistically significant linear-by-linear association between these variables, M^2 (1, N = 506) = 32.62, p < .001.

More specifically, the Spearman Correlation statistic indicated that as agreement with the statement that the undergraduate institution was supportive increased among these African American and Latino undergraduates, their reports of being satisfied with their collegiate experience increased as well. Statistically significant linear relationships were also found between these students' perceptions of the supportiveness of their institutions and the control of the institution, M^2 (1, N = 489) = 11.25, p = .001), as well as the SFR of the institution, M^2 (1, N = 489) = 10.48, p = .001). In particular, the Spearman Correlation statistic indicated that students' perceptions of the supportiveness of the institution increased with the control of the institution—in this case, public institutions over private institutions—as well as with a low SFR (as opposed to a medium or high SFR).

Respondents also provided their perceptions of how much they believed their undergraduate experience helped them to develop academically. Specifically, on a factor composite representing the effect of the undergraduate experience on their academic development (i.e. analytical and problem-solving skills, critical thinking skills, knowledge of a particular field/discipline), respondents had a mean of 3.27 on a scale of 1 (not at all) to 4 (very much). More specifically, 89% of the 506 respondents had an agreement level between 3 and 4. Likewise, on a factor composite representing the effect of the undergraduate experience on respondents' social development (i.e. leadership skills, ability to form and retain friendships, interest in community service, etc), respondents had a mean of 2.73 on the same scale. The vast majority of respondents, 93%, had an agreement level between 2 and 3. Crosstabulations and subsequent Mantel-Haenszel chi-square tests between respondents' reports of collegiate satisfaction and each of these factor composites revealed statistically significant linear-by-linear associations for both, M^2 (1, N = 506) = 64.32, $p < .001$ and M^2 (1, N = 506) = 12.39, $p < .001$, respectively. The Spearman Correlation statistic indicated that as African American and Latino undergraduates' level of agreement about the impact of their undergraduate experience on their academic and social development increased, so did their reports of collegiate satisfaction.

Statistically significant linear-by-linear associations were also found between the factor composite representing the effect of the undergraduate experience on respondents' social development and the institution type, M^2 (1, N = 506) = 13.79, $p <.001$; the size of the institution, M^2 (1, N = 506) =11.72, $p = .001$; and the research emphasis of the institution, M^2 (1, N = 506) = 6.89, $p = .009$. Likewise, statistically significant linear relationships existed between the factor representing the effect of the undergraduate institution on respondents' academic

development and the control of the institution, M^2 (1, N = 506) = 7.60, p = .006, as well as the institution's SFR, M^2 (1, N = 506) = 5.18, p = .02.

Faculty mentoring and collegiate satisfaction. A crosstabulation between respondents' satisfaction with their undergraduate experience and whether or not they had a mentor revealed that a larger percentage of participants that reported having a mentor (60%) indicated being "very satisfied" with their undergraduate experience than those who did not have a mentor (46%). In comparison, a higher percentage of those who did not have a mentor reported being only "somewhat satisfied" (45%) or "not satisfied" (9%) than those with mentors (35% and 5%, respectively). Moreover, a Mantel-Haenszel chi-square test revealed a statistically significant linear relationship between respondents' reports of satisfaction with their undergraduate education and whether or not they had a mentoring relationship, M^2 (1, N = 506) = 7.41, p = .007; respondents' satisfaction increased with having a faculty mentor.

To further address RQ4, binary logistic regression was used to predict the probability that a respondent would report being satisfied with their overall undergraduate experience. Again, the model selection process detailed in Chapter 3 resulted in the selection of Model 4 as the model that best fits the data (see Table B8). Model 4 represents the added effect on the outcome variable "satisfaction," attributable to the variable representing "undergraduate experience" while taking into account background characteristics, mentor characteristics, and institutional characteristics. This model had an overall success rate of 95% of correctly classifying those who were satisfied with their undergraduate experience and those who were not. As shown in Table B8, Model 4 indicates that only the variable representing respondents' perception of the supportiveness of their undergraduate institution in helping them reach their academic goals was statistically significant, meaning it had an effect on the dependent variable—whether or not

respondents reported they were satisfied with their overall undergraduate education. Table B16 presents the betas (i.e. parameter estimates) and corresponding standard errors, as well as significance level and the odds ratio (labeled Exp(B)) for the model.

Using the odds prediction equation of ($ODDS = e^{a+bX}$), the model predicted that a respondent who had a positive perception of their undergraduate institution's supportiveness in helping them reach their academic goals was only .593 times as likely to report being satisfied with their undergraduate experience as to report being dissatisfied. These odds were converted to probabilities using the formula $\hat{Y}$ = odds / (1 + odds). Thus, the model predicted that about 37% of respondents that indicated that they agreed that their undergraduate institution was supportive in helping them reach their academic goals would also report being satisfied with their overall undergraduate experience. Moreover, the odds ratio (Exp(B)) indicated that this "undergraduate experience" factor—particularly respondents' disagreement with the statement that their institution was supportive of their educational goals—had a negative impact on the dependent variable (i.e. respondents' reports of satisfaction with their overall undergraduate experience). In particular, the odds ratio predicted by the model indicates that when controlling for other variables the odds of a respondent reporting being satisfied with their undergraduate education were decreased by a factor of .087 and was significant at the .01 alpha level.

Summary of the quantitative results. The results from the quantitative data analysis provide evidence of the prevalence of faculty mentoring among African American and Latino undergraduates, as well as information about the relationship between faculty mentoring and the institutional contexts of these students' undergraduate colleges and universities, and their satisfaction with the collegiate environment.

In particular, these results indicate that not only was faculty mentoring common among the African American and Latino undergraduates in this study, but also that an approximately equal percentage of African American and Latino participants in this study reported having faculty mentoring relationships. In terms of their mentor preferences, these students largely reported that they did not have racial mentor preferences; however, it was noteworthy that more Latino than African American participants indicated they had no racial mentor preference, while more African American than Latino respondents indicated they preferred a mentor of the same race—a difference that was statistically significant. Also, with respect to the racial and gender characteristics of their mentors, these African American and Latino undergraduates were largely mentored by faculty mentors who were white and male. The findings also illustrate that these students largely characterized their mentoring relationships positively and also viewed them as beneficial as indicated by their reports of the quantity and quality of the various types of support they received from their mentors.

With respect to the relationship between faculty mentoring and the institutional context of the colleges and universities that these African American and Latino undergraduates attended, these results reveal that the only institutional factors that impacted the odds of these students having a faculty mentor were the selectivity of the institution and its research emphasis. Particularly, the odds of these students having a faculty mentor were increased approximately five times by attending a non-selective institution or low-selectivity institution, and nearly four and half times by attending a medium-selectivity institution, as opposed to highly selective institutions. In contrast, with respect to the relationship between faculty mentoring and collegiate satisfaction among these African American and Latino undergraduates, the results indicate that the presence or absence of a faculty mentor did not impact the odds of these students' reporting

being satisfied with their undergraduate experience. However, the results did reveal that when these students reported that they did not view their undergraduate institution as supportive of their academic goals, their odds of reporting being satisfied with their undergraduate education were decreased. Ultimately, the results of the quantitative data analysis, their relationship to the findings of the qualitative analysis and their implications are examined more closely in the next chapter.

Chapter 5

Discussion and Conclusion

African Americans and Latinos have historically been underrepresented in higher education and their matriculation, retention, and graduation rates continue to be significantly lower than those of other students. Student-faculty interactions, like faculty mentoring relationships, have been posited as one effective way to address the myriad of issues that perpetuate these students' exclusion and underrepresentation in higher education. Specifically, researchers have extolled faculty mentoring relationships as beneficial for the collegiate experiences and outcomes of undergraduates, especially underrepresented undergraduates (Anaya & Cole, 2001; Castellanos & Jones, 2003; Swail et al., 2003). However, despite this common and widespread assertion in the literature, very few studies have examined the role, importance, and benefits of faculty mentoring among these students from their perspective.

Of all the research ascribing the benefits of faculty mentoring to the collegiate experiences and outcomes of underrepresented undergraduates, most tends to treat these students as a homogenous group. Few, if any, studies take into account the fact that these students vary in their educational abilities, achievements, aspirations, and expectations; as such they attend a variety of colleges and universities with distinct institutional contexts (i.e. institutions ranging in type, size, control, student-faculty ratios, selectivity, and research emphasis), which undoubtedly impacts their undergraduate experiences and outcomes. In particular, it is quite plausible that the institutional contexts of the various colleges and universities that these students attend also affects the quantity and quality of their interactions with faculty, including their opportunities to become involved in faculty mentoring relationships. However, few studies have sought to

determine whether and how the prevalence of faculty mentoring differs for these students by institutional context.

Noting the lack of attention to these particular issues relating to faculty mentoring among underrepresented undergraduates, this study explored the role of faculty mentoring in the collegiate experiences of African American and Latino undergraduates from their perspective. In particular, it sought to gain insight into these students' perceptions and views of the actual relevance or importance of faculty mentoring as they navigated their undergraduate institutions. Additionally, this research was interested in determining the prevalence of faculty mentoring among these students, whether the prevalence of faculty mentoring relationships among these students differed by the institutional contexts of the colleges and universities they attended, as well as whether the presence or absence of faculty mentoring relationships played a role in one particular student outcome—their overall collegiate satisfaction.

This chapter begins with an analysis of the study's findings. Each research question is addressed sequentially; thus, the research questions answered using the qualitative data and methods are addressed first and are discussed in terms of how they triangulate with the extant literature. Next, the significant and noteworthy findings from the quantitative data analysis are discussed, and particular attention is devoted to highlighting how they converge or diverge from the qualitative findings as well as the current higher education mentoring research literature. The chapter concludes with a discussion of the study's implications, its limitations, and important questions and issues for consideration in future research.

Underrepresented Undergraduates' Perspectives on Faculty Mentoring

With so much contention in the higher education research literature over various aspects of mentoring—including disagreement among researchers over basic elements of mentoring such as its role and importance—the analysis of the qualitative data in this study was particularly useful because it yielded the actual student voices that are largely missing from the extant higher education literature. Additionally, the representation of these students' perspectives that the qualitative analysis provides also serves to expand the existing literature by providing a better and clearer indication of the actual role, importance, and benefits of faculty mentoring for these students to rival the conjecture and assumptions that currently dominate the literature with respect to faculty mentoring among these students.

The themes that emerged from the analysis of the qualitative data seemed to largely support the assertion in the higher education mentoring literature that faculty mentoring is important for underrepresented undergraduates and their collegiate experience (Anaya & Cole, 2001; Castellanos & Jones, 2003; Swail et al., 2003). In particular, one emergent theme was actually labeled "the importance of faculty mentoring" and represented participants' beliefs that faculty mentoring was not only important but essential for them as they navigated their collegiate environment. For these participants, having a faculty mentoring relationship provided them with the comfort of knowing that they had someone "in their corner," someone there to guide them and show them the way.

Additionally, just as the literature emphasized the role of faculty mentoring on the educational aspirations of undergraduates, these underrepresented undergraduates also indicated that having a faculty mentoring relationship had an important and positive effect on their educational goals and aspirations. Specifically, many of these students indicated that their

involvement in faculty mentoring relationships was often how they first learned about graduate education programs and opportunities; moreover, several participants noted that their involvement with a faculty mentor not only made them aware of post-baccalaureate opportunities, but more importantly it motivated them to seriously pursue or consider pursuing such opportunities for educational and professional advancement.

In addition to highlighting these students' views of the importance of faculty mentoring, the emergent themes also provided insight into the roles and functions these underrepresented undergraduates perceived to be important for their mentors to perform, as well as the attributes they believed their mentors should personify. Specifically, there were a variety of roles and functions that these students pointed to as important for their mentors to perform, including providing guidance, direction, exposure, opportunities, networking, sponsorship, and resources, among others. The roles and functions that participants in this study noted largely aligned with the 15 roles and functions that Jacobi (1991) outlined in her seminal work as those most ascribed to mentors in the mentoring literature. The alignment of respondents' articulation of important mentor roles and functions with those that Jacobi outlined suggests that despite the number and variety of roles and functions that these students point to as important for their mentors to perform, there are indeed some roles and functions that are constant among these underrepresented undergraduates that they expect their mentors to perform.

In fact, Evanoski (1988) argued that mentoring is best defined by the multiple roles of the mentor, which definitely seemed to be the case with the underrepresented undergraduate participants in this study. For example, in response to the semi-structured interview question probing their ideas of what made a good mentor, they often provided lengthy and detailed descriptions of the various roles and functions that good mentors provided or performed.

Similarly, their discussions of the importance of faculty mentoring relationships were also largely framed by references to the ways in which their faculty mentors' performance of various roles and functions served to benefit them in their undergraduate careers.

That the roles and functions mentors performed were an important part of having a faculty mentor for these underrepresented undergraduates was also expressed in their written responses to the open-ended survey question inquiring about their view of their mentor's most important contribution; specifically, 84% of the codes used to characterize participants' responses to this question were codes that referenced a mentor role or function (see Table B13). Thus, the "mentor roles and functions" theme not only provided ancillary support for the claim in the higher education research literature that mentoring is important among these students, but it also further substantiated researchers' assertion that there are a core set of roles and functions that students most often expect their mentors to perform.

Along with important mentor roles and functions, the participants in this study also described the characteristics and qualities that they looked for, or found most important, in their faculty mentors. Like the "mentor roles and functions" theme, the "mentor attributes" theme also included a large variety of mentor characteristics and qualities that these underrepresented undergraduates valued and sought in a faculty mentor; these attributes were categorized into four subthemes: time/effort, personality, knowledge, and respect. In particular, the underrepresented undergraduate participants in this study largely indicated that it was important to have mentors who were willing to put time and effort into the mentoring relationship. This sentiment was expressed quite frequently, especially in participants' descriptions of good mentors as being available, accessible, and having the time, or being willing to make the time, to devote to the student and the relationship.

The value and importance that these students placed on their mentors' willingness to put in the time and effort into their relationships was further exhibited in their written responses to the open-ended survey question probing their views of their mentors' most important contribution. In particular, of 71 codes used to characterize their responses to this question, 39 codes referred to mentor attributes and were used a total of 186 times; one-third of the 39 mentor attribute codes were directly related to the time/effort subtheme. These 13 codes were used a total of 60 times, which equates to codes referencing mentors' time/effort being used 32% of the time by these participants when describing their mentors' most important contribution (see Table B14).

Moreover, with respect to the "time/effort" subtheme, some participants specifically mentioned wanting a mentor who could be involved in the mentoring relationship for a prolonged amount of time, or in their words "for the duration." Participants' references to the value they placed on the length of the mentoring relationship highlight one point of contention in the research literature over whether true mentoring relationships are longitudinal or whether they can be just as beneficial if they are as short as a single encounter. In fact, while some of the underrepresented undergraduates in this study indicated wanting mentoring relationships that occurred over a long period of time, others found shorter relationships valuable and beneficial as well—which was implicitly highlighted by favorable descriptions of their SROP faculty mentoring relationships that often only spanned the 8-10 weeks of the program. Therefore, while the value and importance that these students placed on a mentor's time and effort in the mentoring relationship is clear, overall the perspectives expressed by participants in this study support both sides of the disagreement in the literature over the exact quantity of time that is sufficient in order for these relationships to be beneficial.

The “personality” subtheme referenced the mentor personality qualities and characteristics that the participants in this study indicated were important for their mentors to exemplify. In particular, these students identified a number of desirable personality attributes for their mentors to possess, including honesty, positivity, friendliness, enthusiasm, trustworthiness, relatability, sincerity, and approachability, among a host of others. They also consistently expressed wanting and valuing mentors who took a genuine interest in them personally and tried to get to know them beyond their academic and/or professional relationship. In general, these students indicated wanting mentors who had personality attributes that were conducive not only to furthering their educational and career goals but their personal development as well. In fact, the importance of a mentor’s personality attributes for these underrepresented undergraduate participants was also highlighted by their survey responses to the open-ended question pertaining to the mentor’s most important contribution. Specifically, 19 of the 39 mentor attribute codes reflected the “personality” subtheme; these codes were utilized 81 of 186 times. Thus, the codes representing mentor personality characteristics or qualities were used 44% of the time to characterize these students’ perceptions of their mentor’s most important contribution (see Table B14).

The final two subthemes, “knowledge” and “respect,” emerged from the data unexpectedly. It was surprising to note the importance that the participants in this study placed on their faculty mentors being knowledgeable, especially in their fields. In fact, knowledgeable faculty mentors were frequently and consistently mentioned in these students’ descriptions of what made a good mentor. In particular, many of these underrepresented undergraduates believed that having a mentor that was an expert in their field not only exposed them to someone who could provide them relevant and important information about the field, but also, by

association, with certain prestige or social status that could help them in their future endeavors (i.e. strong letters of recommendation, assistance getting into graduate school, funding opportunities, job opportunities). The advantages that a mentor's prestige can afford a student is in fact noted in the research literature as an important benefit of having a faculty mentor, especially for underrepresented students; the student perspectives in this study strongly supported this claim.

Likewise, "respect" was also a surprising mentor attribute that emerged as important among the participants in this study. In particular, these students indicated that they highly valued being respected by their mentors. They indicated that their mentors exhibited this "respect" for them in a variety of ways including demonstrating trust in them, exhibiting confidence in their abilities, valuing their input and opinions, and treating them like equals. Not only did participants express that being respected by their mentors gave them a sense of pride and increased their confidence in themselves, but it also served to motivated them to pursue and attain their educational and personal goals. Additionally, mentors' displays of respect for these students also made them feel that they were in a relationship that had mutual benefits for all involved—that not only were the students gaining and benefiting from the relationship, but that their mentors felt like they were learning something from the students as well.

While the higher education literature encompasses widely disparate views on various aspects of mentoring in higher education such as mentor roles and functions and mentor attributes, it is especially divergent over the significance or insignificance of differences in age, race, and gender between mentors and mentees. One point of contention in the mentoring literature that is especially relevant to underrepresented undergraduates pertains to whether same-race and/or same-gender mentoring relationships are better for, and more valued or

preferred by, these students than cross-race and/or cross-gender relationships. Some researchers contend same-race mentoring relationships are vital (Frierson, Hargrove, and Lewis, 1994), while others have found that traditionally underrepresented students tend to place more value on having a mentor in general over having one of a shared race (Lee, 1999; Hickson, 2002) or gender (Adams, 1992; Campbell & Campbell, 1997).

In terms of the importance of same-race versus cross-race mentoring relationships, participants in this study aligned with both sides of the argument. Many of the focus group and interview participants had lengthy discussions about the importance and value of same-race mentoring relationships, providing support for some researchers' claims in the literature that these relationships are more beneficial for underrepresented undergraduates. In particular, some participants indicated that these relationships were important in order for them to have proper and relevant role models, and some pointed out that it was especially necessary if they were conducting research pertaining to racially or ethnically underrepresented groups. Moreover, some of these participants expressed disappointment with their exposure to minority faculty members, which they reported was extremely limited, and seemed especially pleased and grateful when they had the opportunity to work and have extended interactions with minority professors. Such statements provided further support for Frierson, Hargrove, and Lewis' (1994) assertion in the mentoring literature that the importance of racial similarities between faculty mentors and their students arise so often mainly because of the paucity of minority faculty available to serve as mentors for these students, especially at predominantly white institutions.

In contrast, some of these underrepresented undergraduate participants also indicated that the mentor's race was unimportant, or at least not as important as finding a mentor with whom they shared a common ground and understanding, thus providing some corroboration of the

claim made by some researchers that simply having a faculty mentor often takes precedence over having a mentor of a shared race. Participants' responses to the open-ended survey question querying how race or ethnicity affected their mentor choices also demonstrated that the underrepresented undergraduates in this study had varying perspectives on the issue of the importance of race in faculty mentoring relationships. Specifically, the code representing students' preference for a mentor of the same race or ethnicity was used 23% of the time and was the most used code to characterize respondents' answer to this question. In comparison, the code representing these students' view that the mentor's race or ethnicity was not that important or was simply a preference, not a requirement, was only used 4% of the time to characterize participants' responses to this question. Ultimately, while some of these underrepresented students indicated that mentor race was important, and others indicated that it was not, the frequency of use of the code indicating that the mentor's race was indeed important, along with the numerous times mentors' race was discussed as important in the focus groups and interviews, suggests that in general these students perceived mentor race to be an important consideration in choosing a mentor and in mentoring relationships.

As noted in the prior chapter, the underrepresented undergraduate participants in this study did not discuss their perceptions of the importance or value of the mentor's gender in the mentoring relationship in as much detail, nor as frequently, in the focus group and individual interviews as they did race/ethnicity. However, their responses to the open-ended survey question about how gender affects their choice in a mentor indicate that their perspectives about the importance of same-gender versus cross-gender mentoring relationships were not exactly homogeneous. Specifically, the code representing these students' preference for a mentor of the

same gender was used 24% of the time to characterize participants' responses to this question, compared to the code representing that gender was unimportant being used 6% of the time.

Those who indicated they preferred a mentor of the same gender often referred to its importance in terms of it being easier to relate, being more comfortable in the relationship, and their perceived value in having similarities or shared experiences based on a shared gender. It was also interesting that the code indicating preference for a mentor of the same gender often co-occurred with the code representing a preference for a female mentor, which suggests that it was mostly female participants that were expressing a preference for mentors of the same gender. Specifically, of the 74 times the code indicating respondents' preference for a mentor of the same gender was used, it co-occurred with the code representing students' preference for a female mentor 49 times, compared to co-occurring only seven times with the code indicating a preference for male mentors.

This finding is particularly relevant in light of the assertion in the mentoring literature that in higher education women professors are of particular importance as role models for college-aged women (Sax, Bryant, & Harper, 2005). In direct support of this assertion, some survey respondents indicated that they believed that having a mentor of the same gender was important because they could serve as better role models. Additionally, some of the participants' responses in this study also substantiated the assertion in the literature about the importance of mentor gender in certain fields, particularly the STEM fields (Perna et al., 2009). Specifically, respondents pointed out the relevance and importance of mentor gender for women in the sciences by noting how having female mentors was extremely beneficial for female students in a typically male-dominated field, not only because they served as role models, but also because

female students perceived them as being able to provide them with a particular kind of support that could help them navigate these fields.

African American and Latino Undergraduates Mentoring Relationships

While the goal of RQ1 was to provide a general description of mentoring and its role and importance from the perspective of underrepresented undergraduates, RQ2 was aimed at investigating the prevalence of faculty mentoring, as well as the characteristics of these relationships, among two specific groups traditionally underrepresented in higher education—African American and Latino undergraduates. Specifically, this research question sought to determine how common faculty mentoring was among African American and Latino undergraduates, as they are particular groups for whom the higher education mentoring literature asserts mentoring is especially beneficial (Jacobi, 1991; Swail et al., 2003). This question also sought to gain insight into these students' actual mentoring relationships—specifically, the racial and gender characteristics of their mentors, how the relationships formed, students' characterization of the relationship, and whether students had specific racial and gender preferences for mentors.

Faculty mentoring was quite prevalent among the participants in this study; seventy-nine percent of these African American and Latino respondents indicated that they had a faculty mentoring relationship. It was interesting that in response to a survey question probing whether these students had ever had a mentor of color, 61% answered affirmatively, which was surprising given that the higher education mentoring literature asserts that minority faculty mentors are in short supply (Frierson, Hargrove, & Lewis, 1994; Swail et al., 2003). Given the paucity of

minority faculty in higher education, it was expected that far fewer of these underrepresented undergraduates would report ever having had a faculty mentor of color.

However, the seemingly increased exposure of these African American and Latino respondents to faculty of color could possibly be explained by their status at the time of the survey as current participants in the SROP. Specifically, minority faculty members at the SROP host institutions are often recruited, or volunteer, to participate in the program as faculty mentors, and presumably do so because of their belief in and support of the goals of the program—particularly its aim to expose underrepresented undergraduates to the research and the rigors of academia. Thus, it is entirely plausible that increased participation in the SROP by minority professors results in increased exposure to professors of color by the underrepresented undergraduates in this particular study. More simply stated, it is possible that when reporting whether they had ever had a mentor of color, these participants' numbers may have been higher than expected because of their increased exposure to faculty mentors of color as a result of their participation in the program.

The qualitative findings in this study provide further elucidation about the possibility that the seemingly high percentage of African American and Latino students who reported having ever had a mentor of color may have been influenced by respondents' participation in the SROP. Specifically, when discussing the importance of the faculty mentor's race in the focus group and individual interviews, some students indicated that at their home institutions they often did not get exposure to minority faculty mentors, and that most, if not all, of their professors were white. Therefore, they were often pleasantly surprised, and even grateful, that they were able to get that exposure to, and interaction with, minority faculty through their participation in the SROP. However, it must be noted that the high percentage of participants indicating having had a

mentor of color could possibly be a result of the survey question not being entirely specific, querying "Have you ever had a mentor of color?" and not specifically inquiring about "faculty mentors." Thus students may have been referring to people they considered mentors in general and not necessarily faculty mentors when answering this question.

Also with respect to faculty mentors' race, the findings indicated that while 72% of these African American and Latino undergraduates reported that they had no preference in terms of their mentor's race, a higher percentage of African American respondents than Latino respondents indicated that they preferred a mentor of the same race, which was a statistically significant finding. Similarly, that the majority of these African American and Latino undergraduate respondents (53%) reported having white mentors was also statistically significant, but it was not a particularly surprising finding given that minority faculty members have consistently been shown to be underrepresented in higher education. Due to the paucity of faculty of color in higher education, the opportunities for underrepresented undergraduates to become engaged in student-faculty interactions, like mentoring relationships, with faculty of color are severely limited.

In terms of gender, a higher percentage of females than males indicated preferring a mentor of the same gender, a finding that was also exhibited in the qualitative data. However, while the findings indicated that a statistically significant relationship existed between respondents' gender and mentors' gender, they also showed that these students' expressed preferences and their actual mentoring experiences were not aligned. In particular, despite their preferences, the majority (61%) of these African American and Latino undergraduates reported having male mentors; in fact, the majority of male and female respondents were mentored by males (78% and 54%, respectively). However, a higher percentage of female respondents than

male respondents were mentored by females, which suggests that when female mentors were available, more of them mentored female students. This is an important finding given the importance, value, and benefits of mentoring relationships between female faculty mentors and female college-aged students that the literature purports and the findings from this research seem to corroborate.

In addition to their mentors' racial and gender characteristics, the African American and Latino survey respondents in this study also provided information about how their mentoring relationships formed. This information was important as the formation of the mentoring relationship is yet another point of contention in the higher education mentoring literature; specifically, researchers hold disparate ideas over whether formal mentoring relationships (i.e. relationships assigned by a third party) or informal mentoring relationships (i.e. relationships that develop spontaneously) are more beneficial for students. Particularly, some researchers have argued that informal mentoring relationships imply a desire and willingness to be in a mentoring relationship by both parties involved, while formal mentoring relationships, they argue, are often forced and thus could negatively impact the effectiveness of the relationships (Chao, Walz, & Gardner, 1992).

The African American and Latino undergraduates in this study were either assigned advisors by their university (i.e. formal relationships) or selected them based on their interests (which presumably means they were informal relationships) in approximately equal percentages. However, despite how the relationships formed, these students generally characterized their mentoring relationships very positively, as indicated by a very high percentage (80% or more) of respondents characterizing the relationship as "professional" or "friendly" and a very low percentage (7% or less) of respondents characterizing it as "competitive" or "adversarial." These

students characterizations of their mentoring relationships as mainly positive possibly suggests that the formation of the relationship may not be all that important—that these relationships whether established via a formal process or spontaneously may simply have different, yet equally important, benefits for these students.

Also with respect to these students' characterizations of their mentoring relationships, it was interesting to find that the majority of respondents indicated that they would not characterize their mentoring relationship as particularly "personal." This finding seems to illustrate that although the focus group and interview participants indicated that they believed it was important to have a personal relationship with their mentors—specifically, that they wanted mentors whom they felt took a personal interest in them and was concerned about them outside of their academic relationship—the "personal" aspect was often lacking in their actual mentoring relationships. Thus, it is possible that the actual lack of personal relationships with their faculty mentors made it a characteristic that these students valued even more as an important component of their mentoring relationships.

While these students' negative characterizations of their mentoring relationships were low, they still highlight an important point that is made by some researchers in the higher education mentoring literature about the often assumed positive impact of mentoring relationships. Specifically, mentoring is largely discussed in the literature with the presumption that these relationships are beneficial for all involved, and the negative effects or aspects of mentoring relationships are rarely considered or addressed (Eby, McManus, Simon, & Russell, 2000; Merriam, Thomas, & Zeph, 1987; Mertz, 2004). The indication by some students in this study, albeit a small number, that their mentoring relationships were "adversarial" or "competitive" provides support for the claim in the literature that these relationships are not

always positive, beneficial, or successful and is an aspect of faculty mentoring relationship that unequivocally needs more investigation.

The participants in this study also provided some insight into the types and frequency of various forms of support they received from their mentors. Particularly, as indicated in the findings, the majority of these respondents indicated that they received "some" or "a lot" of emotional support, letters of recommendation, advice on career matters, and advice on course selection. This finding was substantiated by the quantitized qualitative findings. Specifically, in response to the open-ended survey question about their mentor's most important contribution, "advice" (including general advice, career advice, academic advice, and research advice) was coded 114 times of the 997 times that all 32 codes were used, and it was the most used code to characterize students' responses to this question. More specifically, of the 114 times "advice" was coded, academic advice was coded 42 times (37% of the time), and career advice was coded 36 times (32% of the time).

Although participants did not specifically refer to their mentors providing "personal" advice in their written responses, the non-specific code "advice" was used when students simply indicated that their mentors provided advice, but did not elaborate on the kind of advice. Therefore, it is possible that this category included "personal" advice; nevertheless, it was coded the fewest times, 27 times or 24% of the time. That respondents did not explicitly indicate that their mentors provided "personal" advice, as well as the fact that even if the "advice" category did include personal advice (which I cannot be sure it did or did not), it was still the least used "advice" code, which seems to indicate that for the most part either these students did not receive advice on personal matters from their mentors, or if they did, they did not receive as much personal advice as other types of advice. Ultimately, while the qualitative findings indicate that

these African American and Latino undergraduates seek personal relationships with their mentors and consider having a personal connection with their mentors an important and valuable component of the mentoring relationship, their reports of not receiving personal advice from their mentors, along with their indications that they would not characterize their faculty mentoring relationships as "personal," provides further evidence that the "personal" aspect of the mentoring relationship was often lacking in their actual mentoring relationship.

Institutional context. The institutional context was an important factor in this research, as African American and Latino undergraduate students attend a wide range of institutions that vary by type, control, size, student-faculty ratio (SFR), selectivity, and research emphasis. All of these factors are likely to impact their experiences in these institutions as well their outcomes. In fact, the correlations between these variables, as well as the statistically significant chi-square tests indicating the association between these variables, demonstrate their intertwined nature. In particular, many of the associations between these variables that are detailed in the literature were unsurprisingly also exhibited in the findings of this study.

For the most part, the findings related to the exploration of the institutional contexts of the colleges and universities that the African American and Latino undergraduates in this study attended simply substantiated documented associations between these variables. However, there were some noteworthy findings such as the relationship that was exhibited between institution type and selectivity. Overall, the majority of participants attended PWIs. Of those that attended PWIs, most attended low-selectivity PWIs, while the majority of those that attended HBCUs attended medium-selectivity institutions. The majority of participants that attended HSIs also attended non-selective institutions. This finding is notable for several reasons. First, the fact that

the majority of participants attended low-selectivity PWIs may be one explanation for the high percentage (79%) of participants who indicated that they had a faculty mentoring relationship.

Specifically, the results of the binary logistic regression analysis indicated that students attending low-selectivity institutions were over five times as likely to have a faculty mentor than those attending highly selective institutions. Similarly, students attending non-selective and medium-selectivity institutions were approximately five times, and four and a half times, respectively, as likely to have a faculty mentor than those attending highly selective institutions. Therefore, the fact that the students in this sample largely attended low-selectivity, medium-selectivity, and non-selective institutions may be why they also reported having faculty mentors in such high numbers.

Secondly, this finding was also notable because while the higher education literature denotes that many HBCUs are non-selective (Gasman, Baez, & Turner, 2008), the participants in this study apparently attended some of the more selective HBCUs, which may provide some indication of the academic caliber of the undergraduate participants in this study. Similarly, the literature indicates that HSIs are largely non-selective institutions (Mercer & Stedman, 2008), an assertion that is supported by this finding that the majority of respondents in this study that attended HSIs indeed attended institutions characterized as non-selective. Moreover, it is important to note that despite many MSIs being under-resourced and under-funded and generally not being able to provide many of the services that their students need, the students in this study that attended MSIs still reported having faculty mentoring relationships. The prevalence of faculty mentoring among the participants that attended MSIs speaks to either the value these institutions place on these relationships or the accessibility of faculty on these campuses—both

of which are positives as they increase opportunities for student-faculty interactions for these students.

Finally, the discovery of the relationship between institution type and institution selectivity was noteworthy because of the other important questions that arise from this finding. Particularly, while the majority of the African American and Latino students in this study attended PWIs, they largely attended the least selective PWIs, which ultimately brings the question to mind of whether they attend these institutions by choice or circumstance (i.e. were not accepted to more selective institutions). More specifically, the question becomes whether African American and Latino students are purposely choosing less selective institutions based on their perceptions of the interactions they could potentially have on these campuses, especially with faculty, that they do not perceive as feasible at more selective institutions.

Faculty mentoring and the institutional context. Another interesting and somewhat surprising finding in this study was related to the relationship between the institutional context and faculty mentoring among African American and Latino undergraduates. To reiterate, the goal of RQ3 was to determine whether the prevalence of faculty mentoring among African American and Latino undergraduates varied by the institutional context of the colleges or universities these students attended. The results of crosstabulations and the subsequent chi-square tests of association between faculty mentoring among these students and the six elements that comprised the institutional context (i.e. type, control, size, SFR, selectivity, and research emphasis) indicated that there were no statistically significant relationships between whether these African American and Latino undergraduates had a faculty mentoring relationship and the elements of the institutional context.

This finding was particularly surprising given the claims in the literature that there are definite differences in the educational experiences and outcomes of underrepresented students that attend PWIs and MSIs. Researchers have even noted differences in student-faculty interactions at these different institution types for these students—with these interactions being more prevalent at MSIs (Laird et al., 2007; Perna, 2001). With these claims in mind, one main premise of this research was that differences in the institutional contexts of the colleges and universities that African American and Latino students attended would impact the prevalence of faculty mentoring among these undergraduates. Particularly, it was expected that faculty mentoring would be more prevalent among these students that attended MSIs rather than PWIs. However, this research did not support this expectation.

The binary logistic regression analysis allowed for further and more specific investigation into the relationship between faculty mentoring among African American and Latino undergraduates. In particular, the binary logistic regression analysis predicted the probability that the African American and Latino respondents in this study would report having a faculty mentor while taking into account their background characteristics, mentor preferences, institutional context, and undergraduate experience. While none of the background variables or mentor preferences were indicated to have a statistically significant impact on the odds that these students would have a faculty mentor, the results did indicate a relationship between some elements of the institutional context and faculty mentoring. Specifically, the institutional selectivity, institutional research emphasis, and respondents' satisfaction with their undergraduate experience all had a statistically significant effect on the prevalence of faculty mentoring (i.e. whether or not these students reported had a faculty mentor) among these students.

In particular, the findings showed that the odds of having a faculty mentor were approximately five times greater for African American and Latino undergraduates attending non-selective or low-selectivity institutions rather than highly selective institutions, and four times greater for those students attending medium-selectivity institutions rather than highly selective institutions. This finding makes sense given the relationship noted in the higher education literature between an institution's selectivity and its research emphasis, as well as by significant chi-square results in this study between the selectivity of the institution and its research emphasis. Specifically, both indicated that highly selective institutions generally have a very high or high research emphasis, and therefore faculty members at these institutions are primarily engaged in and/or prioritize research activities over teaching, which often leads to decreased opportunities for student-faculty interactions, like faculty mentoring relationships, on these campuses. In contrast, most low-selectivity institutions, and some medium-selectivity institutions, are not research-driven institutions; instead these institutions often place a greater emphasis on teaching and undergraduate education, which facilitates student-faculty interactions and thus makes it more likely that students attending these institutions would report having faculty mentoring relationships.

However, the results of the binary logistic regression analysis were surprising in that they indicated that African American and Latino students that attended an institution characterized as a Master's/Baccalaureate institution in terms of its research emphasis, as opposed to an institution characterized as having a very high or high research emphasis, had a significant and negative effect on the odds that they would have a faculty mentor. This was a surprising finding as it seems contradictory that undergraduate students attending Baccalaureate institutions—institutions with a primary focus on undergraduate education and that largely have a teaching

emphasis—would decrease the odds of these students having a faculty mentor. Instead, it seems that these institutions would in fact facilitate more student-faculty interactions; however, in this study this was not the case.

One possible explanation for this seemingly contradictory finding is the fact that due to the small number of institutions in the sample that actually fit the Carnegie Classification definition of Baccalaureate institutions, for the purposes of this research Master's and Baccalaureate institutions were combined into one category—the Master's/Baccalaureate category. Therefore, it is possible that the negative effect of this variable is a result of there being a much higher number of Master's institutions than Baccalaureate institutions in the category. If this is indeed what is causing the negative effect of the "Master's/Baccalaureate" variable on the odds of these students having a faculty mentor, then it is not as contradictory or surprising, as it initially seems; specifically, because these institutions, while not typically engaged in very high or high research activity, still largely focus on graduate education and graduate students, which possibly negatively affects the opportunities for student-faculty interactions (like mentoring relationships) between undergraduates and faculty.

However, if the baccalaureate institutions in the "Master's/Baccalaureate" variable do in fact have a negative impact on the odds of the African American and Latino undergraduates in this study having a faculty mentor, then this result, while perplexing, may still have an explanation. Particularly, despite the fact that research and graduate education tend to be the primary focus of most institutions characterized as having very high or high research activity, undergraduates attending these institutions actually have increased opportunities for working and interacting with faculty on research projects—opportunities that would be severely limited, or even non-existent, at Baccalaureate institutions where faculty is engaged in little to no research.

The findings of this binary logistic regression model also indicated that students' expressions of dissatisfaction with the collegiate experience (i.e. reporting being "not too satisfied") had a significant and negative impact on the odds of these students having a faculty mentor. More specifically, this finding indicates that African American and Latino undergraduates who were dissatisfied with their overall undergraduate experience were less likely to have a faculty mentor than those who reported being very satisfied with the undergraduate experience. This finding reveals potentially important information about the impact of these students' level of satisfaction on the prevalence of faculty mentoring among them—particularly that those who were dissatisfied were also less likely to have a faculty mentor. It is also an important finding as the literature indicates that there is a positive relationship between student-faculty interactions, like faculty mentoring relationships, and students' collegiate satisfaction. Particularly, researchers have found that students who are involved in these types of interactions with faculty generally report more collegiate satisfaction. Thus this study's finding that students who were dissatisfied with their collegiate experience were less likely to have a faculty mentor was in alignment with the extant literature.

Surprisingly, many of the independent variables in this binary logistic regression had no impact on the odds of these African American and Latino undergraduates having a faculty mentor. Specifically, it was somewhat unexpected that none of the background characteristics (i.e. race, gender, year in school) had an impact on the odds of these participants having a faculty mentor, especially in light of there being statistically significant associations (as indicated by crosstabulations and chi-square tests) between these variables and the prevalence of faculty mentoring among these students. Similarly, it was surprising that none of the other variables representing elements of the institutional context (i.e. institution type, size, control, SFR) were

found to have an impact on the odds of these students having a faculty mentor, especially because as previously mentioned these variables are indicated in the literature to have an impact on students' collegiate experiences—including their interactions with faculty.

In pondering explanations for the largely insignificant results of this binary logistic regression analysis a couple of reasons seem particularly plausible. First, it is possible that this logistic regression analysis yielded insignificant results for many of the variables due to multicollinearity (i.e. high inter-correlations or inter-associations between variables), which can make it difficult to assess the relative importance of the independent variables in explaining the variation caused by the dependent variable. The insignificant results could also be explained by the fact that the distribution of the sample was highly skewed with 79% of participants in this study actually indicating that they had a faculty mentor. Perhaps using a random sample of undergraduates, rather than the convenience sampling that was used for this study, would have yielded different, and possibly more significant, results.

Collegiate satisfaction. The collegiate satisfaction of African American and Latino undergraduates was also of particular interest in this study, especially in terms of its relationship with the institutional context, as the literature indicates that collegiate satisfaction varies among underrepresented undergraduates by institutional context. With respect to the institutional context and these students' reports of their level of satisfaction with their undergraduate experience, the findings indicated that there were statistically significant linear associations between these students' satisfaction and whether their institution was publicly or privately controlled, as well as their satisfaction and the SFR of the institution. More specifically, the findings indicated that African American and Latino undergraduates attending private institutions reported being more satisfied than those attending public institutions, and similarly

those attending institutions with a low SFR were more satisfied than those attending institutions with higher SFR. These findings generally support the associations between these variables that are denoted in the literature.

Although the literature indicates that some researchers have found that attending an HBCU increased the odds that a black student would indicate being satisfied with their overall collegiate experience (Outcalt & Skewes-Cox, 2002), this claim was unfounded in this study. In particular, whether students attended an MSI was not a factor with a significant impact on the odds that the African American and Latino students in this study would report being satisfied with their collegiate experience. This is a noteworthy point given the positive association that has been made between students' satisfaction, their persistence, and achievement. However, that so many of the respondents in this study indicated being satisfied with their collegiate experience presumably bodes well for their academic achievement, an outcome that was not explicitly under consideration in this study.

In exploring the collegiate satisfaction of the African American and Latino participants in this study, the relationship between these students' levels of collegiate satisfaction and their views of their undergraduate institution were investigated. In particular, a significant linear association was found between these students' collegiate satisfaction and their perceptions of their institutions as supportive. As these African American and Latino undergraduates' perceptions of their institutions' supportiveness increased, so did their reports of collegiate satisfaction. The same relationship was exhibited between these students' perceptions of the impact of their institutions on their academic and social development and their collegiate satisfaction. Although not surprising, these were important findings as they provide a bit more information about these students' perceptions of their actual undergraduate experience and its

impact on particular outcomes, specifically their academic and social development and their collegiate satisfaction.

Faculty Mentoring and collegiate satisfaction. The relationships between faculty mentoring and the collegiate satisfaction of African American and Latino undergraduates was also a major interest of this study. Results of crosstabulations and subsequent chi-square tests indicated that there was a statistically significant linear association between students' reports of having a faculty mentor and their levels of collegiate satisfactions; specifically, African American and Latino undergraduates with faculty mentors reported higher levels of collegiate satisfaction. To further explore the relationship between these variables, binary logistic regression was used to predicted the odds that the African American and Latino undergraduates in this study would report being satisfied with their collegiate experience while controlling for their background characteristics, mentor characteristics, institutional context, and the undergraduate experience.

The findings indicated that the only significant variable in the model was the "undergraduate experience" variable. Particularly, this variable, which represented these students' disagreement with the statement that their undergraduate institution was supportive, had a significant and negative impact on the odds that students would report satisfaction with their collegiate experience. While this variable was statistically significant and it is completely logical that students who did not perceive their institutions as supportive of their educational goals would be less satisfied with their collegiate experience, this variable was not one of the main variables of interest for this study.

Similar to the first logistic regression discussed earlier, the absence of statistical significance for some of the factors included in the model was unexpected. In particular, it was

surprising that having a faculty mentor or not had no impact on the collegiate satisfaction of the African American and Latino undergraduates in this study. This finding was especially puzzling given not only the relationship between student-faculty interactions and collegiate satisfaction that the literature highlights, but also the statistically significant relationship that was identified between these variables and the significant negative impact that being dissatisfied with the undergraduate experience was found to have on the odds that these students had a faculty mentor in the first logistic regression. It was also surprising that none of the institutional context variables impacted the odds of collegiate satisfaction in this study, especially since the literature asserts that students attending HBCUs tend to be more satisfied with their collegiate experience than those attending PWIs; this assertion was unsupported by this study.

Ultimately, the largely insignificant results of this binary logistic regression could largely be a result of multicollinearity among the variables and/or the sample distribution being extremely skewed. Particularly, 95% of the sample indicated that they were satisfied with their collegiate experience, which possibly negatively affected the results of the analysis as well as their reliability. Different and more generalizeable results may have resulted with the use of random sampling rather than the purposive convenience sampling that was utilized. Moreover, while this study did not indicate as clear of a relationship between faculty mentoring and collegiate satisfaction as I would have liked, the findings could be perceived as providing some support for one side of the argument in the literature which asserts that increased interactions or contact with faculty may not necessarily translate into increased educational satisfaction (Cole & Jackson, 2005)—a claim that could definitely benefit from more investigation.

Implications and Recommendations for Institutions and Practitioners

Student-faculty interactions, like faculty mentoring, have persistently been discussed in the higher education literature as beneficial for underrepresented undergraduate students. This study sought to explore the role and importance of faculty mentoring from the perspective of these students to determine whether the benefits emphasized in the literature were actually espoused by these students. This study was also interested in investigating the actual prevalence of faculty mentoring among African American and Latino undergraduates, the relationship between faculty mentoring and the institutional contexts of the colleges and universities these students attended, and the relationship between faculty mentoring and these students' reports of collegiate satisfaction. The results of this study have several implications for researchers, students, institutions, and practitioners.

While the results of the qualitative analysis fulfilled the purpose of providing the actual viewpoints of underrepresented undergraduates about the role and importance of faculty mentoring in their undergraduate experience and collegiate success, they also provide some insight into why there is so much contention in the higher education literature over various aspects of mentoring as they relate to these students. With respect to the important roles and functions of mentors, mentor attributes, and racial and gender characteristics, the perspectives of these participants were as diverse as those expressed by researchers in the literature. One explanation for such variety is that undergraduate students in general, and underrepresented undergraduate students in particular, are not homogenous groups but are often treated as such in research and in the literature. Instead, these are groups comprised of people with various viewpoints about what is and is not important in a mentoring relationship.

Given the diversity within this group, it is highly improbable that there will ever be one description of mentoring that will successfully and adequately encompass what a good mentor or good mentoring relationship is for all underrepresented students. Instead, perhaps a shift in the focus of those conducting the higher education mentoring research is required. Particularly, instead of the continued pursuit of a "one-size-fits-all" type definition of mentoring, researchers should focus more on the recognition that in general students find these relationships important and beneficial, which the underrepresented undergraduates in this study repeatedly expressed in the focus group and individual interviews and the quantitative findings substantiated. Perhaps researchers should devote more attention to how to actually provide the opportunity for more undergraduates, especially underrepresented undergraduates, to become involved in these relationships.

The importance, value, and benefits the underrepresented undergraduates in this study attributed to faculty mentoring also have important implications for their collegiate experiences and outcomes. For instance, the higher education mentoring literature notes the impact of faculty mentoring on students' educational aspirations. The findings of this study supported this claim through students' discussions of the impact of their faculty mentors and faculty mentoring relationships on their desire to pursue post-baccalaureate education. In particular, many of the students in this study with faculty mentoring relationships indicated gaining their initial exposure and awareness of post-baccalaureate opportunities via these relationships, as well as the motivation and support to pursue these opportunities. If as a result of their involvement in mentoring relationships more underrepresented undergraduates are retained and graduate from their baccalaureate institutions (and then successfully matriculate to graduate programs), then their underrepresentation in graduate programs will gradually lessen. Moreover, if these students

enter doctoral programs, are retained, graduate, and subsequently enter the faculty ranks, they not only help diversify the faculty in higher education but in turn can also serve as role models and faculty mentors for underrepresented undergraduates, both of which the students in this study, as well as the higher education literature, indicate are much needed.

This study also has several particular implications and recommendations for higher education institutions and practitioners. First and foremost, it is imperative that colleges and universities make better utilization of faculty members on campus. Specifically, faculty members should be encouraged to engage in faculty mentoring relationships with undergraduate students, especially at institutions with a research emphasis, where interactions with undergraduate students may not be the priority. Compensating faculty for time spent with students outside of the classroom (formally and informally) is one option.

For institutions that typically prioritize research and graduate education over teaching and undergraduate students, rewarding faculty for going above and beyond their teaching, research, and other institutional responsibilities is another option. Specifically, these institutions could consider modifying the tenure process to include other forms of service, such as mentoring students, to not only encourage faculty who typically do not participate in these activities to get involved, but also to reward those who participate and impact students' experiences and outcomes. Overall, implementing these types of rewards, and also supporting the establishment of trainings and seminars for faculty that emphasize the value and benefits of mentoring undergraduates, could foster professors' engagement in formal and informal student-faculty interactions, like mentoring relationships with undergraduates, and would also provide more opportunities for undergraduates to interact with professors.

As this study indicates, an important component of faculty mentoring relationships for underrepresented students is the exposure to graduate school and the academy that these mentors provide. Thus, it is important that faculty get these students involved in research and the work of the academy through internships and research opportunities to expose them to what it is faculty "really" does. Specifically, undergraduates typically see professors in the classroom, but often they do not know about the other important activities faculty are engaged in such as research projects, writing books, serving as journal editors, and more. Having specific knowledge of, and exposure to, the various aspects of the professorate is especially critical in sparking the interest of undergraduates, underrepresented undergraduates especially, to pursue graduate school and possibly even careers in the academy. Early exposure to careers and opportunities in academia is critical for underrepresented undergraduates in particular, as often these students are completely unaware of such opportunities.

The establishment of departmental or college-wide faculty mentoring programs would be a great starting point for institutions, and especially practitioners, to begin facilitating and fostering mentoring relationships between undergraduates and faculty. In order for these types of programs to be successful, they need institutional support as well as the support of administrators and faculty. It is important that the practitioners charged with developing and establishing any formal mentoring programs include faculty and students in the process. Particularly, conducting surveys and focus groups with undergraduate students, as well as garnering the views and perspectives of faculty members, would provide practitioners with valuable input and information that would serve them well as they develop these programs.

Moreover, if faculty mentor and student "matching" or "assignment" are to be used when implementing these programs, this study indicates that a serious and concerted effort to match

individual students to the type of mentor they seek is important in an effort to ensure that the most beneficial matches possible are made. It is important that those facilitating and fostering these relationships try to match students based on the preferences they individually indicate that they are looking for, including racial and gender preferences. Additionally, those in charge of the "matching" efforts must not work from the assumption that simply matching a student with a faculty member is sufficient or necessarily beneficial, because as the literature asserts, and this study substantiated, not all mentoring relationships are positive, successful, or beneficial. With this in mind, regular monitoring or regular student and faculty evaluations of their mentoring relationships would help in determining if a particular mentoring relationship is working for those involved or if its unsuccessful and adjustments need to be made. Additionally, regular evaluations of the actual faculty mentoring programs are also essential to these programs operating successfully and also meeting the needs of students, faculty, and the institution.

Also with respect to the practical application of these research findings, in establishing and directing mentoring programs practitioners should consider making staged social interactions between undergraduates and professors an integral component of the program. These interactions are a common occurrence in graduate school, so it makes sense to expose undergraduates to these experiences as well. Not only would these staged social encounters serve to increase student-faculty interactions between undergraduates and faculty, but they would also give those undergraduates who will continue on to graduate school the opportunity to practice being involved in these kinds of interactions with faculty. This is probably particularly pertinent for minority students because vital information is often passed along in these social settings, and students who are not participating for fear of not knowing how to or not knowing about the actual events are missing out on prime information. Exposing underrepresented undergraduates

to these opportunities early on could possibly prepare them to successfully and comfortably engage in these social experiences later.

Directions for Future Research

Research studies typically generate additional questions that with further investigation would also contribute to the knowledge of the topic. As such, several important research questions pertaining to faculty mentoring among underrepresented undergraduates were not addressed in this study and remain unanswered. First, although not discussed in this study, "confidence" seemed to be an emerging theme among these students as an important benefit they received from their mentors. It would be interesting to conduct further research to determine whether this emerges among a sample of undergraduates (i.e. that they have low or no confidence but gain confidence from their interactions with a faculty member) or if this finding is something more specific to underrepresented students. It seems plausible that some underrepresented students might have lower confidence in their academic abilities, especially if they do not have people reinforcing or encouraging them.

It is also possible that references to having low or no confidence among students in this study may vary by the type of institutions they attend. For instance, HBCUs have been reported to positively affect students' sense of confidence and their self-esteem (Harvey & Williams, 1996). Thus, it is probable that underrepresented students attending PWIs might lack confidence due to the paucity of minority faculty members on campus who could provide support, as well as the absence of support from majority faculty members. Similarly, underrepresented students at MSIs might lack confidence because of the lack of resources at their institutions, as well as the

perceptions of their institutions as not being academically rigorous, which may leave them feeling like they can not compete with students at other institutions.

This study also did not consider differences in the prevalence of faculty mentoring among these underrepresented undergraduates by major. In particular, this research and the literature indicates that students in certain fields—especially STEM fields—need mentors. Thus, future research could explore the prevalence of faculty mentoring among these students by major or field of study. In addition, the mentoring literature could benefit from more exploration of the actual mentoring relationships among these students. Specifically, more information is needed about the characteristics of the students and faculty members that participated in these relationships, as well as the outcomes of participation in these relationships for both students and faculty. Moreover, as this study investigated the effect of faculty mentoring on one particular outcome—the collegiate satisfaction of African American and Latino undergraduates—more research on the impact of faculty mentoring on other outcomes, such as grades, students' self-concept, motivation, and aspiration to pursue post-baccalaureate opportunities would also be interesting to explore.

In terms of research design, future studies on faculty mentoring among underrepresented undergraduates should include other groups, such as Native Americans and Asian Pacific Islanders, as the collegiate experiences and outcomes of these students are also often negatively affected by their underrepresented status in higher education. Moreover, investigating whether there are differences in the prevalence of mentoring (and if so to what degree) among white undergraduates and underrepresented undergraduates, as well as between male and female undergraduates, is also important. Additionally, it would be extremely beneficial to investigate faculty mentoring among underrepresented undergraduates using longitudinal research rather

than the cross-sectional studies. Longitudinal research would provide a better measure of these students' perceptions of the benefits, outcomes, and success of these relationships over a full college career. Quasi-experimental research designs would also be useful to address problems of confounding variables as well as to eliminate alternative explanations for observed effects. Ultimately, it would be very beneficial to replicate this study using an instrument designed specifically to address faculty mentoring among undergraduates, as well as a random sample and a population more representative of underrepresented undergraduates across the country, which would increase the generalizeability of the findings.

In conclusion, this research contributed to filling a current void in the mentoring research literature through its investigation of the merits and benefits of faculty mentoring from the perspective of undergraduate students. More specifically, this study has contributed to expanding the knowledge of faculty mentoring among underrepresented undergraduates from their perspectives in terms of its role, importance, and benefits in their collegiate experiences and outcomes. This study definitely substantiated the claim in the higher education mentoring literature that faculty mentoring is important and beneficial to the collegiate experiences and outcomes of underrepresented undergraduates. While some of the expected outcomes of this study were unfounded, such as the effect of the various elements of the institutional context on the odds that these students would have a faculty mentor, as well as the impact of having a faculty mentor on the odds that these students would report being satisfied with their undergraduate experience, it nevertheless served to expand the research by pointing to areas that need more investigation and also by raising other important questions to be considered in future research.

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Appendix A

Lists

List of Provisional Codes used in Qualitative Analysis

Support
Guidance
Access to resources
Opportunities
Information
Protection
Social status
Coaching
Sponsorship
Training
Exposure
Role model
"Host and guide"
Stimulates acquisition of knowledge
Helps mentee clarify their own values and goals
Availability
Time
Advice
Direction
Exposure
Friendly
Honest
Trustworthy
Importance/Unimportance of mentor race
Importance/Unimportance of mentor gender

Appendix B

Tables

Table B1

Numeric Breakdown of Sample Participation at SROP Host Institutions

Name of SROP Host Institution	Number of Participants in Sample from SROP Host Institution
University of Chicago	14
University of Illinois at Chicago (UIC)	49
University of Illinois at Urbana-Champaign (UIUC)	100
Indiana University	3
Indiana University-Purdue University Indianapolis (IUPUI)	22
University of Iowa	30
University of Michigan	39
Michigan State University	52
University of Minnesota	9
Northwestern University	30
Ohio State University	30
Pennsylvania State University	35
Purdue University	39
University of Wisconsin-Madison (UW-Madison)	45
University of Wisconsin-Milwaukee (UW-Milwaukee)	9

Table B2

Factor Scales Used in the Analyses

Variable	Factor Loading
Social effect of the undergraduate institution	
Ability to form and retain friendships	0.73
Ability to work cooperatively	0.69
Get along with people of different beliefs	0.67
Ability to adapt to change	0.65
Ability to relax and enjoy leisure	0.62
Religious values	0.58
Get along with different races/cultures	0.57
Active interest in community service	0.57
Ability to communicate well orally	0.57
Leadership skills and abilities	0.51
Competitiveness	0.49
Eigenvalue	4.759
Alpha reliability coefficient	0.84
Academic effect of the undergraduate institution	
Ability to think critically	0.88
Analytical and problem solving skills	0.83
Knowledge of a particular field	0.55
Eigenvalue	1.710
Alpha reliability coefficient	0.72

Table B3

List of Variables Used in Analysis

Variable	Description
Student Background Characteristics	
Race	0=Latino, 1=African American
Gender	0=male, 1=female
Enrollment	Number of years enrolled in undergraduate degree program
	1=1 year
	2=2-3 years
	3=4-5 years
	4=More than 5 years
Language	English primary language spoken in home: 0=No, 1=Yes
U.S. Citizen?	1=Yes, native-born, 2=Yes, naturalized, 3=No
U.S. Residency	R currently live in the U.S.?
	1= Yes, with a permanent U.S. resident visa
	2=Yes, with a temporary U.S. resident visa
	3=No, I live in a U.S. territory
Mother's Education	Highest level of education Rs mother completed
	0=No mother
	1=Less than a high school graduate
	2=High school graduate
	3=Some college/vocational school
	4=Bachelor's degree
	5=Some graduate school
	6=Master's degree
	7=Professional degree
	8=Doctoral degree
Father's Education	Highest level of education Rs father completed
	0=No father
	1=Less than a high school graduate
	2=High school graduate
	3=Some college/vocational school
	4=Bachelor's degree
	5=Some graduate school
	6=Master's degree
	7=Professional degree
	8=Doctoral degree
Faculty Mentor Relationships	
Faculty Mentor	R currently has a mentoring relationship: 0=No, 1=yes
Other mentor?	R have someone else that they consider a mentor: 0=No, 1=yes
Gender Preference	1=Prefers mentor of the same gender
	2=Prefers mentor of the opposite gender
	3=Would not matter

(continued)

Table B3 (continued)

Variable	Description
Race/Ethnicity Preference	1=Prefers mentor of the same race/ethnicity
	2=Prefers mentor of an opposite race/ethnicity
	3=Would not matter
Mentor of color	R ever had mentor of color: 0=No, 1=Yes
Mentor's gender	Gender of Rs current mentor: 0=No mentor, 1=male, 2=female
Mentor's race/ethnicity?	Race/ethnicity of Rs current mentor: 1= Black, 2=Latino, 3=White, 4=Other
Formation of relationship	How did Rs mentoring relationship form?
	1=Assigned advisor at university
	2=Selected advisor based on interests
	3=Approached by mentor
	4=Department has established mentoring program
	5=Introduced to mentor by another party
	6=He/she was my professor/teacher
	7=Other
	8=Don't know
Characterization of relationship	How would R characterize mentoring relationship?
	Professional 0=No, 1=Yes
	Personal 0=No, 1=yes
	Friendly 0=No, 1=yes
	Adversarial 0=No, 1=yes
	Competitive 0=No, 1=yes
	Changed over time from positive to negative 0=No, 1=yes
	Changed over time from negative to positive 0=No, 1=yes
Mentor provided emotional support?	1=None at all, 2=Some, 3=A lot
Mentor provided letters of recommendation?	1=None at all, 2=Some, 3=A lot
Mentor provided advice on career matters?	1=None at all, 2=Some, 3=A lot
Mentor provided advice on personal matters?	1=None at all, 2=Some, 3=A lot
Mentor provided advice on course selection?	1=None at all, 2=Some, 3=A lot
Undergraduate Experience	
Satisfaction	Is R satisfied with their undergraduate education?
	1=Not at all satisfied, 2=Not too satisfied, 3=Somewhat satisfied, 4=Very satisfied
	0=No, 1=Yes†
Supportive	Undergraduate institution is supportive of Rs educational aspirations
	1=Strongly disagree, 2=disagree, 3=agree, 4=strongly agree
	0=Disagree, 1=agree†
Academic development	Undergraduate experience helped Rs academic development
	1=Not at all/a little, 2=Somewhat, 3=Very much

(continued)

Table B3 (continued)

Variable	Description
Social development	Undergraduate experience helped Rs social development
	1=Not at all/a little, 2=Somewhat, 3=Very much
Educational Aspirations	Highest degree R expects to receive
	Two or more=1, Bachelor's degree=2, Master's degree=3, Professional degree=4, Doctorate=5
Institutional Context	
Type	PWI=1, HBCU=2, HSI=3
Control	0=Private, 1=Public
Size	1=Very small, 2=Small, 3=Medium, 4=Large
	Small institution: 0=No, 1=yes†
SFR	High SFR=1, Medium SFR=2, Low SFR=3
	Low SFR: 0=No, 1=Yes†
Selectivity	1=Not selective, 2=Low-selectivity, 3=Medium-selectivity, 4=Highly selective
	Selective institution: 0=No, 1=Yes†
Research Emphasis	1=Master's/Baccalaureate 2=Doctoral/Research University 3=Very High/High research activity
	Research institution: 0=No, 1=Yes†

Note. †Variable converted to dichotomous form for use in "Satisfaction" binary logistic regression

Table B4

Effect of Background, Mentor Preferences, Institutional Context, and Undergraduate Experience on Having a Faculty Mentor

Factor	Step 1 (Beta)	Step 2 (Beta)	Step 3 (Beta)	Step 4 (Beta)
Race (Latino)	-0.013	0.065	0.222	0.272
Gender (Male)	-0.247	-0.215	-0.092	-0.027
Years Enrolled				
1 year	-0.483	-0.593	-0.769	-1.053
2-3 years	0.636	0.629	0.500	0.178
4-5 years	0.899	0.905	0.807	0.467
Mentor Gender Preference				
Same		-0.282	-0.290	-0.318
Opposite		0.226	-0.145	0.519
Mentor Race Preference (Same)		0.561	0.537	0.614
Institution Size				
Small			0.656	0.855
Medium			0.435	0.501
Institution Type				
PWI			-0.014	0.182
HBCU			0.250	0.408
Institution Control (Private)			0.342	0.123
Student-Faculty Ratio				
High			0.162	-0.003
Medium			-0.741	-0.973
Institutional Selectivity				
Not Selective			1.213	1.575*
Low-Selectivity			1.283*	1.617*
Medium-Selectivity			1.214	1.483*
Institutional Research Activity				
Master's/Baccalaureate			-0.921*	-0.994*
Doctoral/Research			-1.122	-1.135
Undergraduate Satisfaction				
Not at all satisfied				-0.559
Not too satisfied				-1.582**
Somewhat satisfied				-0.447
Undergraduate Inst. Supportive (Disagree)				0.342
Highest Degree Expected				
2+				-1.155
Bachelor's				-2.138
Master's				-1.044
First Professional				-0.429
Doctorate				-0.103
Intercept	0.957	1.140	1.207	0.757

(continued)

Table B4 (continued)

Model "Fit" Statistics	Step 1	Step 2	Step 3	Step 4
G^2	459.556	455.799	438.997	421.869
df	456.000	453.000	441.000	432.000
G^2/df	1.010	1.010	0.975	0.977
Pseudo R^2	0.020	0.028	0.061	0.093
PCP	79.400	79.800	78.700	80.500
X^2 , df	9.473, 5	13.23, 8	30.032, 20	47.160*, 29
n=461				

*=p < .05. **=p < .01

Table B5

Effects of Adding Factors on the Fit of the Model

Model	*df*	G^2	Change in *df*	Change in G^2	Improvement of Fit *p*-value
1. Background Only	456	459.56			
2. Adding Mentor Preferences	453	455.80	df_1-df_2=3	G^2_1- G^2_2 =3.76	0.29
3. Adding Institutional Characteristics	441	438.99	df_1-df_3=15	G^2_1- G^2_3 =20.57	0.15
4. Adding Undergraduate Experience	432	421.87	df_1-df_4=24	G^2_1- G^2_4 =37.69	0.04*

*=p < .05.

Table B6

Models Tested During Backwards Elimination Test

	MODEL 5	MODEL 6	MODEL 7	MODEL 8	MODEL 9	MODEL 10	MODEL 11	MODEL 12
G^2	430.11	446.42	431.24	431.94	432.66	441.67	463. 56	456.24
df	437	440	439	441	442	444	459	458
X^2, df	38.92*, 24	35.82*, 21	37.80*, 22	37.09**, 20	36.37**, 19	27.36*, 17	25.84, 16	23.26, 14
G^2/df	0.984	1.010	0.982	0.979	0.979	0.995	1.010	0.996
"R^2"	0.078	0.072	0.076	0.074	0.073	0.056	0.052	0.047
PCP	79.8	79.9	80	80	79.6	79.2	78.4	80.1
n	461	461	461	461	461	461	475	472

* = p < .05. **= p < .01

Table B7

Results of Backwards Elimination Test of Alternative Models

Comparison	Change in *df*	Change in G^2	*p*-value
Model 5 vs. Model 4	df_5-df_4=5	G^2_5- G^2_4 =8.24	0.140
Model 6 vs. Model 5	df_6-df_5=3	G^2_6- G^2_5 =16.31	0.001***
Model 7 vs. Model 5	df_7-df_5=2	G^2_7- G^2_5 =1.13	0.570
Model 8 vs. Model 7	df_8-df_7=2	G^2_8- G^2_7 =.70	0.700
Model 9 vs. Model 8	df_9-df_8=1	G^2_9- G^2_8 =.72	0.400
Model 10 vs. Model 9	df_{10}-df_9=2	G^2_{10}- G^2_9 =9.01	0.010**
Model 11 vs. Model 9	df_{11}-df_9=17	G^2_{11}- G^2_9 =30.90	0.020*
Model 12 vs. Model 9	df_{12}-df_9=16	G^2_{12}- G^2_9 =23.58	0.090

* = p < .05. ** = p < .01. *** = p < .001.

Table B8

Effect of Background, Mentor Characteristics, Institutional Context, and "Academic" on Collegiate Satisfaction

Factor	Step 1 (Beta)	Step 2 (Beta)	Step 3 (Beta)	Step 4 (Beta)
Race (Latino)	0.275	0.145	0.000	-0.385
Gender (Male)	-0.362	-0.133	-0.047	-0.040
Years Enrolled				
1 year	0.586	0.396	0.290	-0.295
2-3 years	1.361	1.057	1.163	0.874
4-5 years	1.050	0.849	0.953	0.670
Have a faculty mentor ? (No)		-0.866	-0.937	1.060
Mentor Gender (Male)		-0.709	-0.683	-0.796
Mentor a Person of Color? (No)		0.731	0.761	0.838
Small Inst			1.554	1.439
Institution Type? (No)				
PWI			0.087	-0.259
HBCU			-0.166	-1.172
Institution Control (Public)			0.747	0.967
Low Student-Faculty Ratio? (No)			-1.115	-0.512
Selective Institution? (No)			-0.617	-0.648
Research Institution? (No)			-0.279	-0.531
Undergraduate Inst. Supportive (Disagree)				-2.438**
Intercept	2.550	2.551	2.668	1.915
Model “Fit” Statistics				
G^2	172.340	165.090	158.090	139.003
df	447.000	444.000	437.000	436
G^2/df	0.390	0.370	0.360	0.32
Pseudo R^2	0.008	0.023	0.038	0.075
PCP	95.100	95.100	95.100	94.9
X^2 , df	3.57, 5	10.82, 8	17.82, 15	36.90**, 16
n=452				

*=p < .05. **=p < .01.

Table B9

Effects of Adding Factors on the Fit of the Model

Model	*df*	G^2	Change in *df*	Change in G^2	Improvement of Fit *p*-value
1. Background Only	447	172.34			
2. Adding Mentor Preferences	444	165.09	df_1-df_2=3	G^2_1- G^2_2 =7.25	0.06
3. Adding Institutional Characteristics	437	158.09	df_1-df_3=10	G^2_1- G^2_3 =14.25	0.16
4. Adding Undergraduate Experience	436	139.00	df_1-df_4=11	G^2_1- G^2_4 =33.34	0.0005***

*** = p < .001

Table B10

Models Tested During Backwards Elimination Test

	MODEL 5	MODEL 6	MODEL 7	MODEL 8	MODEL 9
G^2	141.18	144.43	160.14	170.67	174.09
df	441	447	480	487	488
X^2, df	34.72***, 11	31.97***, 10	37.23***, 9	26.70***, 2	23.29***, 1
G^2/df	0.320	0.323	0.333	0.350	0.357
"R^2"	0.071	0.065	0.071	0.052	0.045
PCP	94.9	95.0	94.7	94.9	94.9
n	452	457	489	489	489

*** = p < .001.

Table B11

Results of Backwards Elimination Test of Alternative Models

Comparison	Change in *df*	Change in G^2	*p*-value
Model 5 vs. Model 4	df_5-df_4=5	G^2_5- G^2_4 =2.18	0.820
Model 6 vs. Model 5	df_6-df_5=6	G^2_6- G^2_5 =3.25	0.780
Model 7 vs. Model 6	df_7-df_6=33	G^2_7- G^2_6 =15.71	0.990
Model 8 vs. Model 7	df_8-df_7=7	G^2_8- G^2_7 =10.53	0.160
Model 9 vs. Model 8	df_9-df_8=1	G^2_9- G^2_8 =3.41	0.060

Table B12

Mentors Most Important Contributions

Codes	Frequency of Occurrence
Support	85
Opportunities	83
Exposure	113
Teaching/training	93
Stimulated acquisition of knowledge	14
Advice	114
Information	97
Resources	29
Guidance	105
Role model	16
Networking	26
Encouragement	56
Letters of recommendation	32
Suggestions	12
Helps mentee clarify own values and goals	8
Confidence	41
Challenge	17
Supervision	1
Experience	3
Help	6
Motivation	9
Feedback	7
Publishing	1
Prolonged contact	1
Coaching	9
Friendship	3
Personal relationship	7
Professional relationship	2
Sponsorship	3
Prestige	1
Constructive criticism	2
Shaped ideas	1
Independence	24
Honesty	6
Being "there"	14
Time	25
Shares experiences/similarities	19
Expertise	14
Availability	7
Positivity	4
Care	7
Patience	8
Enthusiasm	5

(continued)

Table B12 (continued)

Codes	Frequency of Occurrence
Willingness to help	1
Friendliness	5
Approachable	5
Concern	2
Open to opinions and concerns	3
Rigorous work ethic	1
Treats mentee as equal	1
Willingness to work with mentee	2
Values mentees ideas	3
Respects mentee	1
Goes "above and beyond"	1
Listens	3
Trust	6
Wisdom	1
Best interest	1
Personal interest	1
Thoughtful	1
Eager to help	1
Understanding	2
Acknowledgement of abilities	1
Took an interest	1
Open door policy	1
Compassion	1
Relatable	1
Accessibility	2
Flexibility	1
Sincerity	1
Effort	3
Total	1,183

Table B13

Mentors Most Important Contributions (32 Roles and Functions)

Codes	Frequency of Occurrence	Intensity Effect Sizes (% of total)
Support	85	8.5
Opportunities	83	8.3
Exposure	113	11.3
Teaching/training	93	9.3
Stimulated acquisition of knowledge	14	1.4
Advice	114	11.4
Information	97	9.7
Resources	29	3.0
Guidance/direction	105	10.5
Role model	16	1.6
Networking	26	2.6
Encouragement	56	5.6
Challenge	32	3.2
Experience	12	1.2
Prolonged contact	8	0.8
Friendship	41	4.1
Personal relationship	17	1.7
Professional relationship	1	0.1
Sponsorship	3	0.3
Prestige	6	0.6
Constructive criticism	9	1.0
Letters of recommendation	7	0.7
Suggestions	1	0.1
Helps mentee clarify own values and goals	1	0.1
Confidence	9	1.0
Supervision	3	0.3
Help	7	0.7
Motivation	2	0.2
Feedback	3	0.3
Publishing	1	0.1
Coaching	2	0.2
Shaped ideas	1	0.1
Total	997	100

Table B14

Mentors Most Important Contributions (39 Characteristics and Qualities)

Codes	Number of Codes in Each Category	Frequency of Occurrence	Intensity Effect Sizes (% of total)
TIME/EFFORT	**13**	**60**	**32**
Being "there"		14	7.5
Time		25	13.4
Availability		7	3.8
Willingness to help		1	0.5
Rigorous work ethic		1	0.5
Willingness to work with mentee		2	1.0
Going above and beyond		1	0.5
Best interest		1	0.5
Personal interest		1	0.5
Took an interest		1	0.5
Open door policy		1	0.5
Accessibility		2	1.0
Effort		3	1.6
PERSONALITY	**19**	**81**	**44**
Honesty		6	3.2
Shares experiences/similarities		19	10.2
Positivity		4	2.0
Care		7	4.0
Patience		8	4.3
Enthusiasm		5	2.7
Friendliness		5	2.7
Approachable		5	2.7
Concern		2	1.0
Open to opinions and concerns		3	2.0
Listens		3	2.0
Trust		6	3.2
Thoughtful		1	0.5
Eager to help		1	0.5
Understanding		2	1.0
Compassion		1	0.5
Relatable		1	0.5
Flexibility		1	0.5
Sincerity		1	0.5
KNOWLEDGE	**2**	**15**	**8**
Expertise		14	7.5
Wisdom		1	0.5
RESPECT	**5**	**30**	**16**
Independence		24	12.9
Treats mentee as an equal		1	0.5
Values mentees' ideas		3	1.6
Respects mentee		1	0.5
Acknowledgement of abilities		1	0.5
Total	39	186	100

Table B15

"Faculty Mentor" Binary Logistic Regression Results

Variable	B	SE	df	Sig.	Exp(B)
Race (Latino)	0.272	0.369	1	0.462	1.312
Gender (Male)	-0.027	0.281	1	0.923	0.973
Years Enrolled					
1 year	-1.053	0.78	1	0.177	0.349
2-3 years	0.178	0.641	1	0.781	1.195
4-5 years	0.467	0.679	1	0.492	1.595
Mentor Gender Preference					
Same	-0.318	0.329	1	0.333	0.727
Opposite	0.519	1.484	1	0.727	1.68
Mentor Race Preference (Same)	0.614	0.326	1	0.060	1.848
Institution Size					
Small	0.855	0.737	1	0.248	2.344
Medium	0.501	0.501	1	0.317	1.651
Institution Type					
PWI	0.182	0.507	1	0.720	1.200
HBCU	0.408	0.609	1	0.502	1.504
Institution Control (Private)	0.123	0.418	1	0.769	1.131
Student-Faculty Ratio					
High	-0.003	0.749	1	0.997	0.997
Medium	-0.973	0.621	1	0.117	0.378
Institutional Selectivity					
Not Selective	1.575	0.757	1	0.037	4.833*
Low-Selectivity	1.617	0.676	1	0.017	5.040*
Medium-Selectivity	1.483	0.688	1	0.031	4.404*
Institutional Research Activity					
Master's/Baccalaureate	-0.994	0.487	1	0.041	0.370*
Doctoral/Research	-1.135	0.606	1	0.061	0.322
Undergraduate Satisfaction					
Not at all satisfied	-0.559	1.250	1	0.655	0.572
Not too satisfied	-1.582	0.596	1	0.008	0.205**
Somewhat satisfied	-0.447	0.267	1	0.094	0.639
Undergraduate Inst. Supportive (Disagree)	0.342	0.421	1	0.417	1.407
Highest Degree Expected					
2+	-1.155	1.137	1	0.310	0.315
Bachelor's	-2.138	1.776	1	0.229	0.118
Master's	-1.044	0.683	1	0.126	0.352
First Professional	-0.429	0.657	1	0.514	0.651
Doctorate	-0.103	0.624	1	0.869	0.902
Constant	0.757	0.693	1	0.274	2.132

*=p < .05. **=p < .01

Table B16

"Satisfaction" Binary Logistic Regression Results

Variable	B	SE	df	Sig.	Exp(B)
Race (Latino)	-0.385	0.733	1	0.462	1.312
Gender (Male)	-0.040	0.534	1	0.923	0.973
Years Enrolled					
1 year	-0.295	1.225	1	0.177	0.349
2-3 years	0.874	0.988	1	0.781	1.195
4-5 years	0.670	1.062	1	0.492	1.595
Have a faculty mentor? (No)	1.060	0.545	1	0.052	0.347
Mentor Gender (Male)	-0.796	0.579	1	0.333	0.727
Mentor a Person of Color? (No)	0.838	0.528	1	0.727	1.680
Small Institution? (No)	1.439	0.983	1	0.060	1.848
Institution Type					
PWI	-0.259	0.943	1	0.784	0.772
HBCU	-1.172	1.088	1	0.282	0.310
Institution Control (Private)	0.967	0.818	1	0.237	2.631
Low Student-Faculty Ratio? (No)	-0.512	1.272	1	0.687	0.599
Selective Institution? (No)	-0.648	0.626	1	0.300	0.523
Research Institution? (No)	-0.531	0.643	1	0.409	0.588
Undergraduate Inst. Supportive (Disagree)	-2.438	0.553	1	0.000	0.087**
Constant	1.915	0.693	1	0.006	6.790

**=p < .01.

Appendix C

Figures

Most Used Codes to Describe the Effect of Race and Gender on the Choice of Mentors

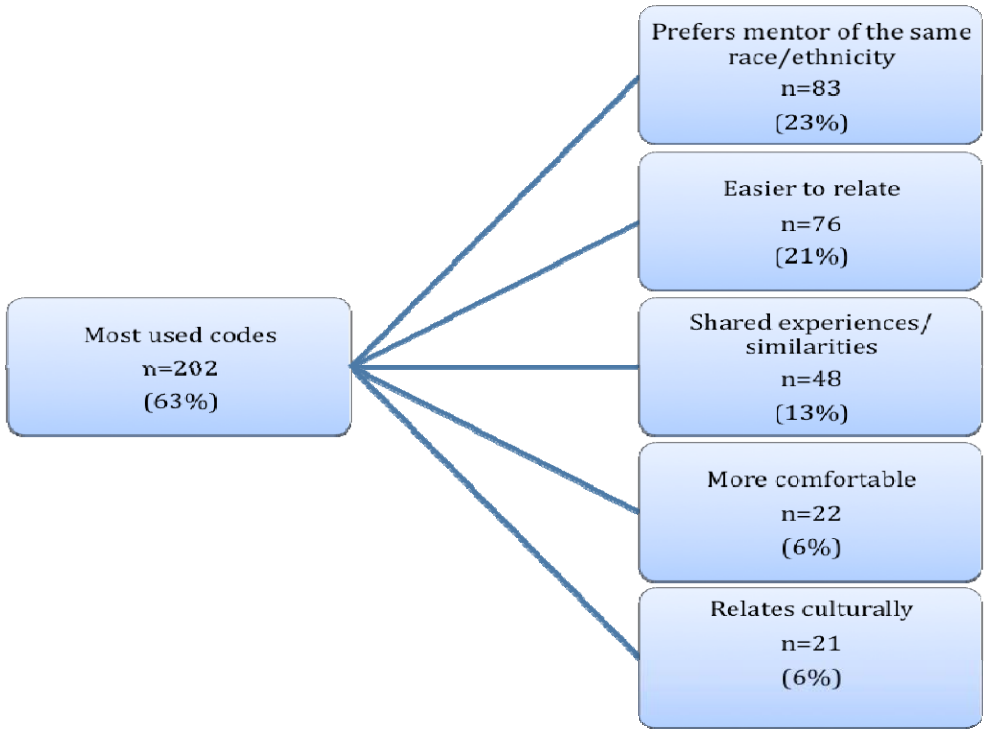

Figure C1. Graphical representation of the most used codes utilized to categorize students' written responses to the question, "How does race or ethnicity affect your choice in a mentor?" Twenty-nine independent codes were generated to code the 182 valid written responses to this question and were used a total of 363 times. In this figure, "n" represents the number of times the code was used, and the "%" represents the percentage of total times the codes was used.

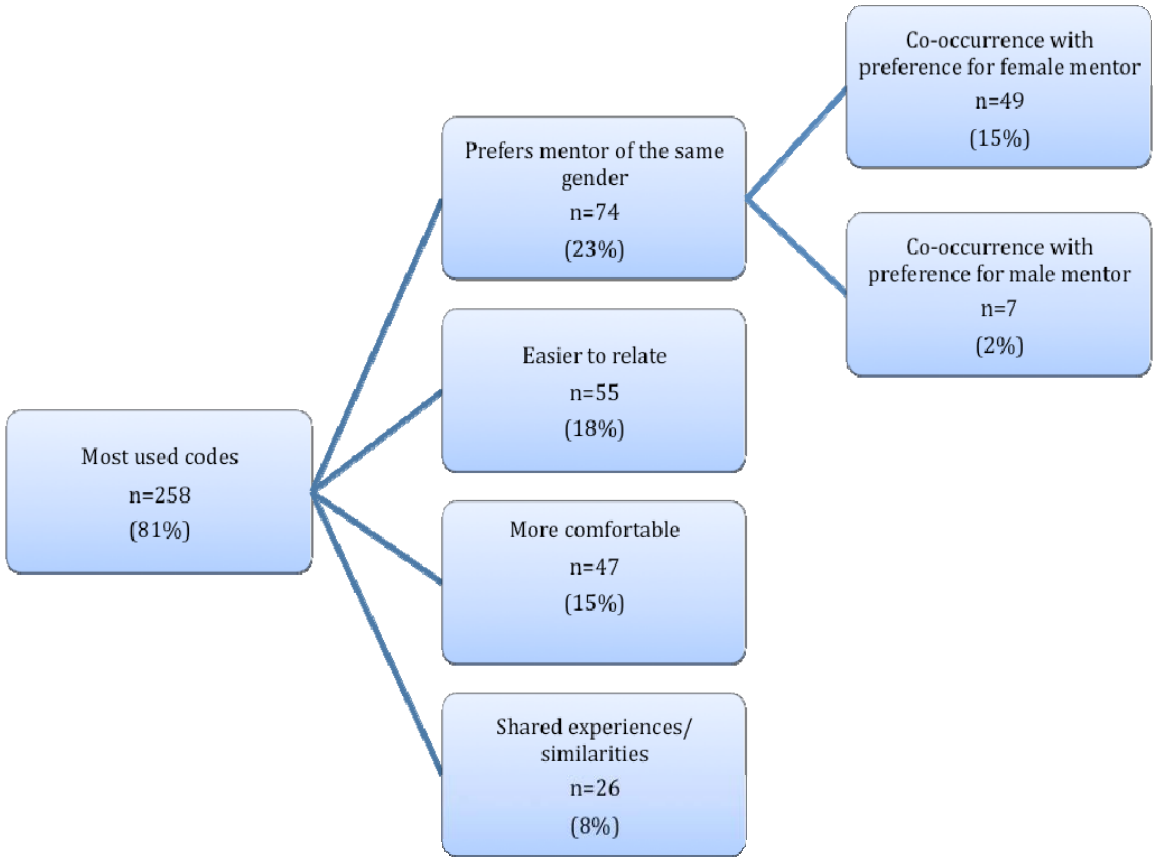

Figure C2. Graphical representation of the most used codes utilized to categorize students' written responses to the question, "How does gender affect your choice in a mentor?" Twenty-five independent codes were generated to code the 159 valid written responses to this question and were used a total of 320 times. In this figure, "n" represents the number of times the code was used, and the "%" represents the percentage of total times the codes was used. This graph also shows that the preference for a mentor of the same gender co-occurred with the preference for a female mentor much more frequently than with the preference for a male mentor.