UNDERSTANDING AFRICAN AMERICAN MALE STUDENT SUCCESS IN A TWO-YEAR COLLEGE:
A REGRESSION ANALYSIS OF PRE-COLLEGE FACTORS AND REMEDIATION

by

COLETTA MARQUECE CARTER

(Under the Direction of James Hearn)

ABSTRACT

This study explored the academic outcomes of African American male students in a two-year college setting in relation to selected pre-college and remediation placement variables to determine their overall rate of success. Specifically Astin's Input-Environment-Output (I-E-O) model was used to investigate the differences among the stated variables. The input variables for this study were high school GPA, diploma type, SAT/ACT scores, Pell eligibility, and race (Black and White). The environmental variables were remediation placement and outcomes. The output variables for this study were successful completion of college-level math and English, persistence at three and six years, graduation, and transfer. The sample consisted of all of the Black and White male students in the 2002, 2003 and 2004 cohorts placed in remedial reading, English or math courses at the time of matriculation.

To address the research questions, both multiple linear regression and multiple logistic regression analyses were conducted. The results indicated that academic preparation was significantly more important than being a Black male and socioeconomic

status in strongly influencing the types of remediation placement and the overall student success in remediation at the study site. The study further found that Black males in remediation at the study site do not do as well as their White male counterparts in completing college-level math and English and persisting to graduation from two-year or four-year colleges. The findings of this study indicate the importance of a rigorous academic curriculum during high school to prepare students for academic success in college. In addition the findings are consistent with the trends of underachievement of African American males when compared to other ethnic subgroups in institutions of higher education.

INDEX WORDS: African-American males; Black males; Pre-college Factors; Remediation; Developmental Education; Two-year Colleges

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DEDICATION

I dedicate this dissertation to my parents, Robert and Olivia Smith, who shaped me into the person that I am today and instilled in me an understanding of the values of education; my husband, Elliott, whose love, encouragement, support and belief in me gave me the faith and courage to begin and complete my doctoral program; and my children, Nicolette, Alexandre and Gabriel who cheered me on through this process and inspired me to finish so that they too would understand the values of education. I cannot express how much you all mean to me.

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Finally, I must give a very special thank you to Dr. Janice Jacques and Dr. Godfrey Fuji Noe for patiently helping me with my statistics and proofing my dissertation. A big thank you to Janice, for giving me the book on SPSS and the "pep talk," that not only motivated me to complete my dissertation, but gave me some much needed comic relief. You are truly an inspiration to me! I am grateful to Godfrey for spending his Sunday afternoons with me, even during football season, to help me complete my dissertation and prepare for my defense.

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CHAPTER 1

OVERVIEW

This study examined the effects of pre-college factors on remediation placement and outcomes and the impact of remediation placement and outcomes on the academic outcomes of African American males in a two-year college environment. Of specific interests are: 1) the differences that high school GPA, high school diploma type, SAT/ACT scores, race (Black and White), and Pell eligibility have on remediation enrollment and outcomes; 2) the overall rate of success evidenced by performance in college-level math and English courses upon exiting remedial studies; and 3) the overall rate of success evidenced by persistence to graduation or transfer after exiting remedial courses.

African American[1] males who successfully complete high school and enroll in an institution of higher education experience completion rates lower than their White male and female as well as their African American female counterparts (Ford, 1996; Hrabowski, Maton, & Greif, 1998). One reason for this disparity is that many African American male students enter college underprepared for the rigors of the academic environment (Adelman, 1999; Anderson, 1985; Astin, 1982; Fullilove & Treisman, 1990). This is also true for students from low income backgrounds, many of whom are African American (Brock, 2010; Noguera, 2003; Polite, 1999). According to the 2010 Conditions of Education report (Aud, Hussar, Planty, Snyder, Bianco, Fox, Frohlich, &

[1] The terms "Black" and "African American" are used interchangeably. Students who spoke English as a second language were excluded from this study.

Kemp, 2010) during 2007-2008, greater percentages of Hispanic, Black, and American Indian/Alaska Native students attended high-poverty public elementary and secondary schools than did White or Asian/Pacific Islander students. Additionally, students from disadvangaged groups such as African American are less likely to be enrolled in rigious, college-bound courses and are more likely to be taught by out-of field teachers (Haycock, 1998). These factors as well as others contribute to the lack of preparedness students experience upon entering college.

Since academic preparedness as measured by high school grade point average (HSGPA), college entrance exam scores, and the quality of the high school curriculum are considered important predictors of college completion (Adelman, 1999; Davis, 1994; Hagedorn, Maxwell, & Hampton, 2001), a number of Black males, particularly those from low socioeconomic situations, enter college "behind the eight ball." African American males are reported to have the lowest high school GPA, score poorly on standardized tests (Harvey, 2008) and are more likely required to enroll in courses designated as "developmental" or "remedial"[2] (Astin, 1998).

Because of the open door access policies of many two-year colleges, these institutions are often the portal to higher education opportunities for a large percentage of minority and low income students who are academically underprepared (Provasnik & Planty, 2008). According to Phillipe (1995) approximately 80% of community college students are first-generation college students, many of whom are minorities and/or come

[2] While "developmental education" and "remedial education" are often used interchangeably by the general public and even by many scholars, those in the field draw distinction between these terms. In general, developmental education is taken to refer to the broad array of services provided to students with weak skills, while remediation is taken to refer specifically to courses given to such students. Moreover, the term "remedial" is often considered to carry a negative connotation. This study primarily discusses remedial courses. Therefore, "developmental education" is used to discuss the broader, comprehensive services, and "remedial" refers to specific courses or sequence of courses. No positive or negative connotation is intended.

from low socioeconomic status families. The fact that two-year colleges typically promote access to higher education by an open or less rigorous admissions policy, and are less expensive than their four-year counterparts, makes them an attractive option for groups like African American males who might not otherwise pursue a postsecondary degree. The accessibility and affordability of two-year colleges contribute greatly to the continuing increase in enrollment they have experienced.

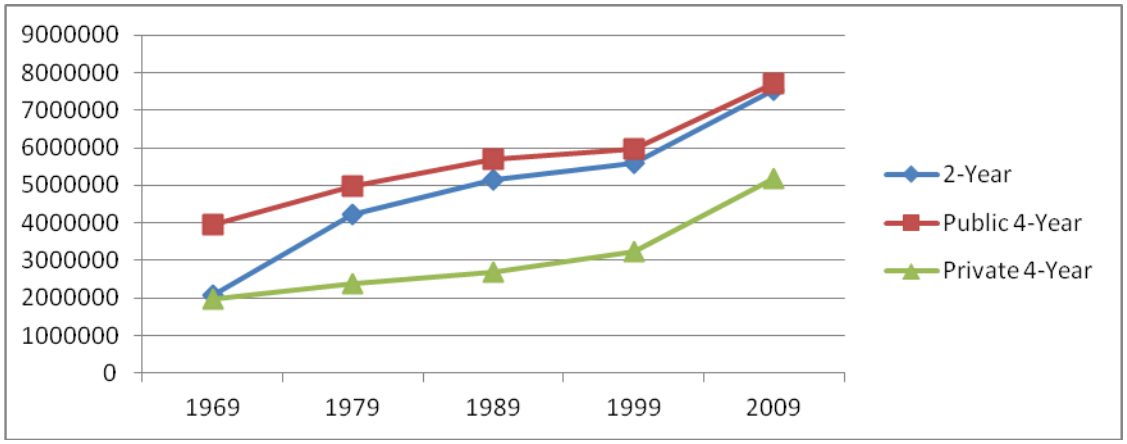

Figure 1:1 Total Fall Enrollment in Degree-Granting Institutions
Source: National Centerfor Education Statistics, 2010, table 198

Two-year colleges recognize that undergraduate programs and services, like developmental education and remedial courses, designed to assist students in developing core compentencies and skill sets, are critical to supporting students' goals of achieving academic success. According to Attewell, Lavin, Domina, and Levey (2006), almost 60% of community college students take at least one remedial education course. The Complete College America (CCA) report Remediation: Higher Education's Bridge to Nowhere (2012) states that African Americans, Hispanics, and low-income students are more likely to need remediation whether they are enrolling in two-year or four-year institutions. Although remediation courses are designed to enhance the educational

experience of underprepared students, the courses are often viewed as a bewildering set of unanticipated obstacles that hinder student persistence. In addition, developmental education is viewed by some as often causing students to slow or even halt their progression toward degree attainment (Collins, 2009).

Statement of the Problem

The guiding principles of President Barack Obama's American Recovery and Reinvestment Act sends the message that providing a high quality education for all children is critical to America's economic future (Schott Foundation for Public Education, 2010). The Act invests heavily in education with the goals of creating jobs for today and laying the foundation for long-term prosperity. President Obama, along with others from various educational and social systems, recognizes that increasing the number of Americans with college credentials is necessary in order for this country to be globally competitive in the 21st century. To be competitive, the United States must equip its citizens with college degrees and experiences that provide the tools necessary to be viable particpants in a knowledge-based economy (Callan, Finney, Kirst, Usdan, & Venezia, 2006). Local, state and federal initiatives, state graduation tests, and postsecondary readiness programs have been put in place purportedly to help level the playing field for all students. Nevertheless, far too many Black students, particularly males, tend to emerge from high school largely uninterested in or underprepared for college work (Orfield, Losen, Wald, & Swanson, 2004).

Community colleges play an important role in fulfilling a critical need in higher education by offering access to a diverse population of students, many of whom are minority and/or low-income. According to the National Center for Education Statistics

(NCES) (2009), 44% of U.S. undergraduates, 43% of first-time freshmen, and 42% of first-generation college students were enrolled in community colleges in fall 2009. The 2009 NCES college enrollment statistics also reflected a large number of minority populations with 44% Black students, 51% Hispanic students, 54% Native American students and 45% Asian/Pacific Islander attending community colleges. Community colleges have undoubtedly provided opportunities for education to populations who might have otherwise not pursued a college degree.

However, the characteristics of students from these underrepresented populations such as African American males make them at-risk for leaving college before achieving their goals. Required enrollment in remedial courses increases the possibility of at-risk students leaving college without a credential (Complete College America, 2012). The Complete College America report (2012) determined that more than 50% of students entering two-year colleges are placed in remedial classes and nearly 4 in 10 remedial students in community colleges never complete their remedial courses. Of those students who complete remediation in two-year colleges, not even a quarter of them ultimately complete gateway English and math courses. Further, fewer than 1 in 10 who start in remedial courses graduate from community colleges in three years. (Complete College America, 2012).

African American males are more likely to be headed toward the remediation dead end. African American males often walk away from education—their hopes and dreams deferred—because they do not view the educational and social systems as places for them to achieve. Rather, these systems are perceived as institutions that collectively label them without affording them the opportunity to realize their potential as individuals (Narine,

1992). Researchers and society at large view education as the basis for increasing intellectual, professional and personal status. Entities such as the Institute for Higher Education Policy identify the individual and public benefits of a college education (Institute for Higher Education Policy, 1998). Postsecondary education can provide individuals opportunity for higher salaries, better working conditions and improved quality of health and life expectancy (Baum, Ma, Payea, 2010; Institute for Higher Education Policy, 1998). Public benefits can include greater productivity in the workforce, appreciation of diverse cultures, enhanced civic engagement, and a decreased need for government financial assistance (Institute for Higher Education Policy, 1998).

Furthermore, successful completion of a bachelor's degree can serve as a gateway for acceptance in a graduate or professional program. Advanced degrees provide access to the highest paying, influential careers and occupations (Baum, Ma, Payea, 2010; Institute for Higher Education Policy, 1998). Without the bachelor's degree, Black males are viewed as unqualified and the group most likely to miss valuable employment opportunities.

Purpose of the Study

The purpose of this study was to examine the effects of pre-college factors on remediation placement and outcomes. The study further examined the impact of being a Black male and remediation placement level on the academic outcomes of African American male students enrolled in remediation at a two-year college in the Southeast region of the U.S. in the 2002, 2003 and 2004 cohorts. The study attempted to determine how selected pre-college attributes (i.e., GPA, SAT/ACT scores, diploma type, race (Black and White), and Pell eligibility) affect student placement and outcomes in

remedial courses. The study also attempted to determine the impact of being a Black male and remedial course placement levels on academic outcomes, specifically success in college-level math and English courses, persistence, graduation or transfer. The following research questions form the basis for this study:

1. For students who are enrolled in remediation, what is the impact of selected pre-college factors (i.e., HSGPA, SAT/ACT scores, diploma type, being a Black male, Pell Grant eligibility) on remedial course placement and outcomes?
2. For students who were enrolled in remediation, what is the impact of being a Black male and remedial placement on academic outcomes (outcomes as defined by C or better in college-level math and English as well as persistence, graduation or transfer)?

With the historical and continual low college completion rates of African American males from institutions of higher education and the limited research on strategies to successfully retain and graduate this disenfranchised population, there is a need to determine if remediation courses help or hinder their academic achievement.

Significance of the Study

Research indicates that high school GPA and standardized test scores such as SAT and ACT are important predictors of student success (Astin, 1997; Hoffman & Lowitzki, 2005; Schwartz & Washington, 1999). Other studies show the relationship between socioeconomic status and college persistence and performance (Choy, 1999; Couturier & Cunningham, 2006; Kuh, Kinzie, Buckley, Bridges, & Hayek, 2007). There is also research that discusses the impact of remedial or developmental education programs on student persistence and academic achievement (Adelman, 1998; Bailey, Jeong, & Cho,

2010; Crowe, 1998). However, although progress has been made in understanding student persistence and success in certain segments of higher education, until recently most research efforts have largely ignored two-year college students (Braxton, Sullivan, & Johnson, 1997; Pascarella, & Terenzini, 2005). The limited research on two-year college students often results in borrowing student success models and educational theories from other institutional types or college leaders making decisions without the benefit of theoretical grounding. Pascarella and Tenezini (2005) determined that during the 1990s researchers "expanded their vision to include community colleges" thus "the impact of community colleges on students is no longer an empirical 'black hole'" (p. 631).

Further, given the scale of higher education remediation, its core function in the postsecondary setting, particularly two-year colleges, and the increasing controversary surrounding it, there are few comprehensive, large-scale, multi-institutional empirical evaluations of its relative success or failure (Phillips, 1998; Roueche & Roueche, 1999). The small-scale studies over the past several decades reveal a varied picture of the efficacy of remediation (Boatman & Long, 2010; Koski & Levin, 1998).

Finally, despite the high number of Black students enrolled in two-year colleges, there is a pronounced scarcity of educational literature and research about the predictors of academic achievement for this group. Furthermore, a close examination of the body of literature concerning African American men and the predictors of college success, particularly as it relates to pre-college factors and college remediation courses, reveals an empirical void (Hagedorn, Maxwell, & Hampton, 2001). Nora and Cabrera (1996) tell us that upon review of extensive research, there were no theoretically-based studies

focusing on African American male community college students. This study attempted to fill the gap in the literature regarding the effects of pre-college factors on participation in remediation courses and the impact of remediation course placement on academic outcomes for Black males in a two-year college environment.

CHAPTER 2

REVIEW OF THE LITERATURE

This chapter provides a discussion of the literature as it relates the role of two year colleges in serving underrepresented students such as African American males and the impact of remedial courses on students in the two-year college setting. The chapter further provides a review of the literature addressing the significance of high school preparedness and issues facing African American males with regard to their academic achievement in high school and college.

Two-Year Colleges

Near the turn of the century twentieth, community colleges began as transfer institutions and were originally called "junior colleges," with many of the public ones starting as extensions of high schools. University leaders such as William Rainey Harper—considered by some scholars to be the father of the junior college—from the University of Chicago and David Starr Jordan of Stanford University led the discussion for the conception of junior colleges. These discussions centered around the idea that junior colleges could relieve senior institutions from the burden of teaching first and second year students. The idea of the associate degree as an academic credential for students completing the first two years of college was conceived by William Harper with the intent of students either matriculating to a four-year college to pursue a baccalaureate or exiting the junior college having completed an adequate amount of education to secure viable employment (Bragg & Townsend, 2006).

The shift to the concept of a community junior college came in the 1950s when Jesse Bogue (1956), one of the first national figures to speak actively about the notion of the comprehensive community college, endorsed the combined mission of transfer, vocational, and continuing education to offer students the opportunity for part-time education. With the 1944 passage of the GI Bill when Congress gave returning GIs a valuable gift—the opportunity to attend college (McCabe, 2000) came a gradual shift in the mission of the higher education system overall, resulting in junior colleges playing an increasingly important role in the system.

In the 1960s, in an effort to correct years of discriminatory injustices of the past, minority groups like African Americans were given the opportunity to share in the educational benefits the U.S. had to offer with the enactment of the Civil Rights Act of 1964. In 1974, the Carnegie Commission on Higher Education's The Open Door Colleges: Policies for Community Colleges advocated "universal access for those who want to enter institutions of higher education [so they] are able to make reasonable progress after enrollment, and benefit from enrollment" (p.17). For the Carnegie Commission, two-year colleges served a democratizing role in American higher education. They were also the institutions of choice to increase access for minority and low-income groups through the creation of a stratified approach to higher education that placed these institutions at the bottom rung of the academic ladder (Bragg & Townsend, 2006). As colleges opened their doors wider to receive more and more historically underrepresented populations, more facilities were built than in the previous two centuries. McCabe (2000) stated "at the forefront of the expansion was the most American of institutions, the open-door, multi-mission community college. Community

colleges embodied a fundamental American value: belief in the worth and potential of every person" (p. 2).

Today public 2-year postsecondary institutions continue to primarily award associate degrees and certificates and offer a wide range of services in their local communities. These institutions are commonly known as "community colleges".[3] In addition to offering academic coursework to earn a degree and occupational education or training, community colleges also help students transfer to public and private 4-year postsecondary institutions with articulation agreements and provide many forms of noncredit activities, including remedial coursework, community, and support services (Cohen & Brawer, 2003; Phillippe, 2004; Vaughan, 2006). According to Bailey, Jaggars, and Jenkins (2011), community colleges play a vital role in the U.S. economy by "providing access to higher education for low-income youth, a path to higher-earning employment for low-income workers, and a supply of well-trained employees for local industry" (p.1).

American Association of Community Colleges reported in its 2012 fact sheet that there are 1,132 community colleges in the United States, enrolling over 7 million students. Provasnik and Planty (2008) report that between1974-1975 and 2006-2007, the number of community colleges in the United States increased by 17%.

As the number of community colleges has increased, so have the number of enrolled students. Between fall 1963 and fall 2011, 2-year colleges saw over an 859% increase in enrollment going from 739,811 enrolled students to more than 7.1 million.

[3] Although this sector of institutions is commonly known as "community colleges," the institution discussed in this study is identified as a "two-year college" which serves as a transfer engine in the state where it is located. Much of the literature, however, uses the term "community college" and "two-year (or 2-year) college" interchangeably. Therefore, this study will also use these terms interchangeably.

However, a vast majority of the students enrolled during this period were part-time. Since the early 1970s, more than half of community college enrollments have been part-time students. This percentage is typically at least twice that of the public and private 4-year institutions (NCES, 2008b).

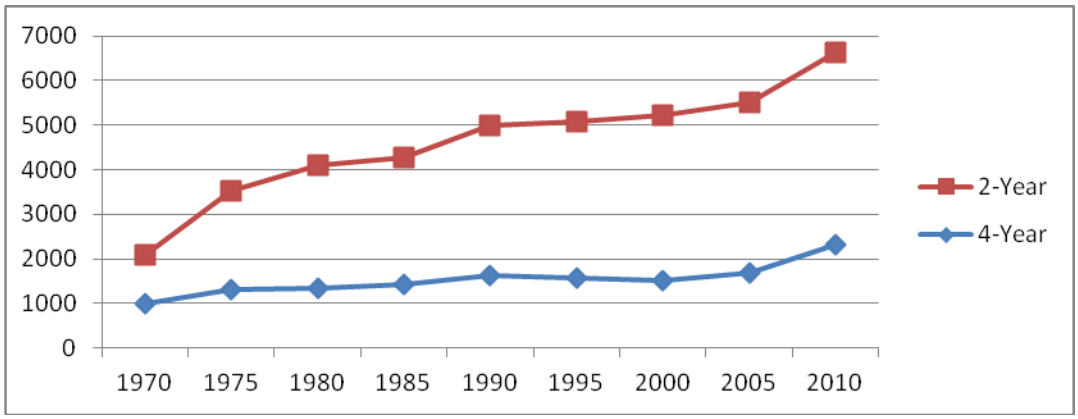

Figure 2:1 Part-time Undergraduate Enrollment in 4-year and 2-year Institutions (in thousands)
Source: National Center for Education Statistics, 2008b, table 187

By virtue of their open access policies, community colleges continue to meet the original expectations of the Carnegie Commission by functioning as the primary portal to higher education for a diverse group of students with various reasons for going to college. These institutions have larger percentages of nontraditional, low-income and minority students than four-year colleges and universities (Provasnik & Planty, 2008). Minority and low-income students view community colleges as the gateway to four-year colleges and the baccalaureate degree, either immediately after high school or later in life. Bragg and Townsend (2006) suggest that this perspective, in large part, has come about because policy makers and policy influencers such as the Carnegie Commission on Higher Education have advocated for a system that would achieve this goal. Dougherty (1994) has emphasized the important role of public officials and private-sector leaders in influencing the evolution of the community college mission, both promoting and constraining policy through competing market, political, and ideological forces.

Dougherty's research recognizes that community college enrollment happens because of the choices individuals make, but also because of the political choices made for them by government officials, politicians, and business leaders. As a result, two-year colleges have been designated and largely accepted as the entry point and catalyst to higher education for minority and low-income students (Bragg & Townsend, 2006).

The U.S. Department of Education's 2010 Conditions of Education examined the racial/ethnic distributions of undergraduate and post-baccalaureate students in the 4,400 public and private not-for-profit, and private for-profit 2- and 4-year degree-granting institutions in the United States. White students accounted for 63% of college students enrolled. In that year, 14% of college students were Black, 12% were Hispanic, 7% were Asian/Pacific Islander, 1% was American Indian/Alaska Native, and 3% were non-resident aliens. The report goes on to say that the percentages of students at public two-year and private not-for-profit two-year institutions who were Black (14% and 20% respectively) were higher than the percentages at public four-year public and private not-for-profit institutions (11% and 12% respectively).

Although there has been some increase in the number of African American male students enrolled in colleges, they are highly concentrated in two-year institutions. Further, this population of students is not as equally represented in transfer rates and degree attainment. Criticism against community colleges has been directed at the exceedingly high attrition rates among minority students, the low transfer rates for Blacks to senior institutions, and the underrepresentation of minorities in A.A. degree attainment (Nora, 1993). A major critique of the two-year college posits that although it may largely guarantee equality of opportunity for access to postsecondary education, it has not, in

relationship to four-year colleges, provided equal opportunity in terms of the outcomes of postsecondary education (Brint & Karabel, 1989; Grubb, 1984; Karabel, 1986; Pascarella & Terenzini, 2005). Critics further argue that due to their focus on non-academic vocational programs, two-year colleges divert students from pursuing a baccalaureate degree (Clark, 1960; Brint & Karabel, 1989; Monk-Turner, 1995). Figures 2:2 and 2:3 show the six-year completion and persistence rates from the NCES 2009, Beginning Postsecondary Students Longitudinal Study of first-time community college students.

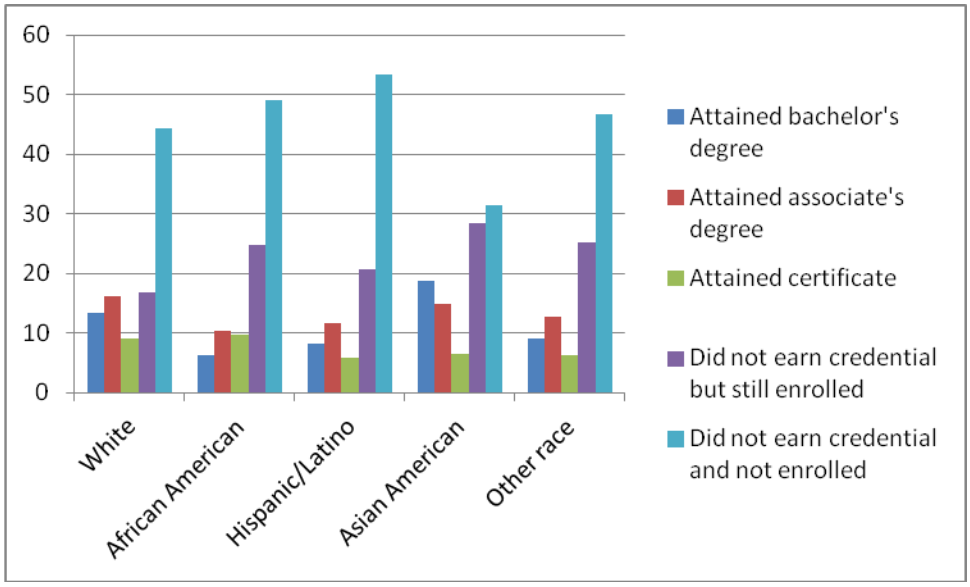

Figure 2:2 Six-year Completion Rates for U.S. Community College Students
Source: U.S. Department of Education, NCES, 2003-04

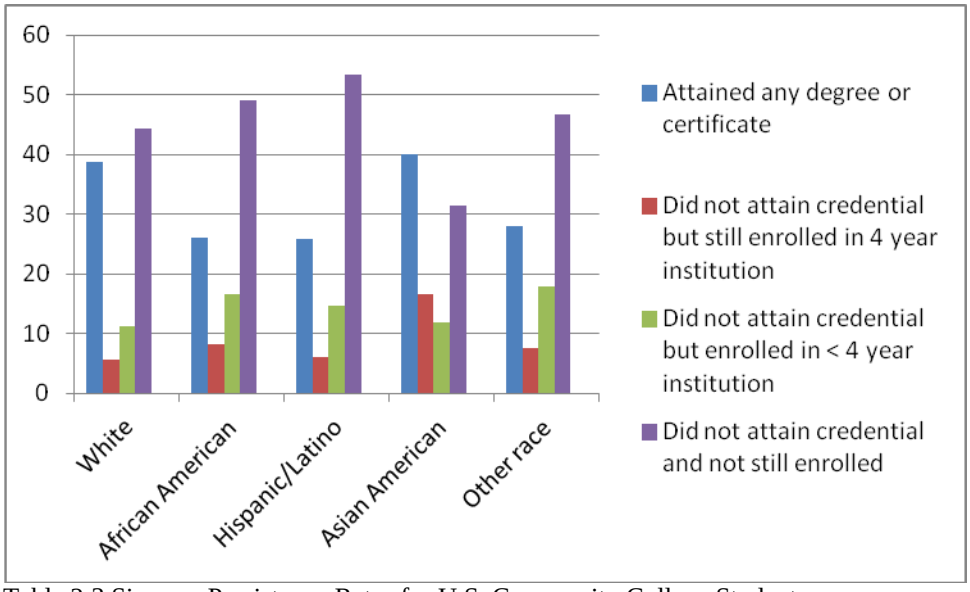

Table 2:3 Six-year Persistence Rates for U.S. Community College Students
Source: U.S. Department of Education, NCES, 2003-04

While there are some researchers who believe that minority students do not persist and transfer because of lower academic aspirations (Cohen, 1988), several studies (Nora & Rendon, 1990a; Grubb, 1991; Ramist & Arbeiter, 1986) found that minority groups were more likely than Whites to aspire to degrees past the baccalaureate.

Unfortunately, aspirations for a college degree do not translate into attainment. According to a study by Bailey, Jenkins, and Leinbach (2005), African American students at a community college in 1995-96 were less than half as likely to earn an associate degree within six years as were White students. Only 2% of Blacks who started at a community college earned a bachelor's degree compared to 12% of Whites. Only about half as many Black students as White students transferred to four-year institutions, which is one cause of the low bachelor's completion rate for Blacks. In another study conducted by Bailey, Crosta, and Jenkins (2007), they found a six-year graduation rate for community college students of slightly less than 40% for a cohort starting in fall of 1996. The graduation rate varied greatly from institution to institution because schools

vary in many dimensions. The 2008 Conditions of Education (Provasnik & Planty, 2008) report also indicates dismal graduation and transfer rates for community college students. The percentage of students who had left school by 2006 without completing a degree or certificate program was higher among 2003-2004 community college freshmen who intended to transfer to a four-year college than among 2003-2004 freshmen at public four-year and private not-for-profit four-year institutions. Pascarella and Terenzini (2005) also reported that even after controlling for various characteristics, students who began in a two-year college reduced their probability of completing a bachelor's degree by 15% to 20%.

Nora (1993) suggested that many of the factors contributing to the high attrition rates of minority students may not be under the control of the student nor the two-year colleges. He continued by suggesting that factors such as poverty, unemployment, poor education in the inner cities, lack of role models, the decline of literacy demands, and lack of preparation in reading, writing and mathematics cannot be solely overcome by two-year colleges (Nora, 1993; Nora & Rendon, 1990a). The researchers for the Complete College America report (2012) suggested that a key factor of the high attrition rates of minority students can be attributed to remediation programs required for academically underprepared students, many of whom are African American males in the two-year college setting.

Remediation Programs

Most community college students begin their college careers at an assessment center, taking exams to test their proficiency in math, reading, and writing. For many, the results of assessment is placement into "remedial" or "developmental" courses because

the students arrive with academic skills judged too weak to allow them to engage successfully in college-level work in at least one subject area. "Remedial education" is designed to provide students who enter college with weak academic skills the opportunity to strengthen those skills enough to prepare them for collegiate-level work.

Postsecondary remediation, which over the past several years has been shifted to the two-year college setting, is a controversial topic (Bettinger & Long, 2005; McMillan, Parke, & Lanning, 1997; Mills, 1998). There are those who argue that it fills a critical niche in higher education in the U.S. (Day & McCabe, 1997; McCabe, 2003; Merisotis & Phillips, 1998; Roueche, Roueche & Ely, 2001) and provides access to economic progress for individuals who lack minimum compentencies in fundamental subjects (Brothen & Wambach, 2004; Day & McCabe, 1997). Other supporters of college remediation recognize that many of those who require remedial courses are students of color and students from less affluent families. These same supporters also recognize that policies preventing students who need remediation from enrolling in four-year colleges could greatly reduce the likelihood that such students would ever obtain bachelor's degrees (Lavin & Weininger,1998). Further proponents stress that most students who take remedial courses subsequently complete their degrees successfully (McCabe, 2000; Merisotis & Phillips, 1998).

Critics of remediation contend that tax dollars should not be used to pay twice for the same learning opportunities students receive, first in high school and then in college (Boylan, 1999; Grimes & David, 2001; Kozeracki, 2002). Some critics also argue that offering secondary-level coursework in the postsecondary environment diminishes academic standards and devalues postsecondary credentials (Brothen & Wambach, 2004;

Oudenhoven, 2002; Mazzeo, 2002). Still others contend that many students get bogged down taking multiple remedial courses and give up on their education. This argument leads to the view that remediation is a hoax perpetrated upon academically underprepared students who are unlikely to persist to graduation (Deil-Amen & Rosebaum, 2002; Rosenbaum, 2001).

Efforts to provide compensatory educations to underprepared students in colleges and universities are not recent events that reflect the present condition of U.S. postsecondary education (Merisotis & Phillips, 2000). Remedial education has been part of higher education since early colonial days, dating back to the 17th century when Harvard College provided tutors in Greek and Latin for those underprepared students who did not want to study for the ministry. The middle of the 18th century witnessed the establishment of land-grant colleges which provided preparatory programs or departments for students below average in reading, writing and arithmetic (Payne & Lyman, 1998). By the end of the 19th century, of the 238,000 students who were enrolled in all of higher education, 40% of the first-year college students participated in pre-collegiate programs (Ignash, 1977). Merisotis and Phillips (2000) contend that "those days when all students who enrolled in college were adequately prepared, all courses offered at higher education institutions were college-level, and students smoothly made the transition from high school and college simply never existed" (p. 69). Boylan (1995) states that colleges have historically offered pre-collegiate courses designed to teach basic academic skills to students who were competent poets, writers, and philosophers, but lacked math skills or students who had excellent potential as scientists, mathematicians or engineers, but had difficulty with the written word. These students

were enrolled in what were called “remedial classes” that were designed specifically to compensate for deficiencies in prior learning.

However, as educational researchers began to understand the factors behind successful college performance, it was recognized that although remedial courses were valuable, they were often not sufficient (Maxwell, 1985). Students are unsuccessful in college for a variety of reasons, with academic unpreparedness being only one. Factors such as personal autonomy, self-confidence, ability to deal with racism, study behaviors, or social competencies have a greater impact on grades, retention and graduation, than how well a student writes or how competent a student is in math (Astin, 1977; Chickering, 1969; Chickering & Reisser, 1993; Higher Education Extension Service, 1992; Sedlacek, 1987). Boylan (1995) explains that recognizing the various factors that impact student success caused those who taught remedial courses to integrate personal development and academic development in the coursework and to add support services such as assessment, counseling, learning centers and laboratories, or advising to their list of interventions. This resulted in the combining of remedial instruction with personal and academic development—a process which became known as developmental education, where remediation is only one of several options along a continuum of interventions. Boylan (1995) admits that there are still some institutions where remediation in the traditional sense is still practiced and where only a few remedial courses are offered, but he states that these institutions are not representative of current scholarly thought or even typical practice among most developmental programs.

Casazza (1999) also provides a distinction between remedial and developmental education. To differentiate remedial education from developmental education, Casazza

(1999) defines four underlying assumptions of developmental education: (1) it is a comprehensive process, looking at the learner holistically; (2) it focuses on the intellectual, social, and emotional growth of the learner, using learning theory to inform the process; (3) it assumes all learners have talents, and educators should identify and use them to support other areas; and (4) it is not limited to learners at any particular level.

Since students who are enrolled in remedial reading and writing courses have been determined to not meet the literacy standards of the college in which they are enrolled, discussions about these specific courses must be based on an understanding of the concept of literacy (Kozeracki, 2002). Harman (1987) tells us literacy "derives its definition from different conditions among different groups at different times" (p.2). There is no universal standard of literacy. Just as the definition and values assigned to literacy are determined by each community, the standards for what is considered remedial coursework can vary significantly between two-year colleges and more selective four-year institutions (California Postsecondary Education Commission, 1983; Merisotis & Phillips, 2000). The term college-level suggests that there is a concensus by educators on the standards that define the term. Merisotis & Phillips (2000) tell us that it would be reasonable to assume that the academic community has identified the specific knowledge and skills required for students to be successful in institutions of higher education. They continue by suggesting that in actuality remedial education is in the eye of the beholder and determined by the admissions standards of the individual institution (Merisotis & Phillips, 2000). Astin (1998) points out:

> "Most remedial students turn out to be simply those who have the lowest scores on some sort of normative measurement—standardized tests, school grades, and the like. But where we draw the line is completely arbitrary: lowest quarter, lowest fifth, lowest 5%, or what. Nobody knows. Second, the 'norms' that define a 'low' score are highly variable from one setting to another." (p. 13)

Although nearly all community colleges and many four-year colleges and universities offer remedial courses (NCES, 2004), each institution uses various approaches to determine remediation needs of students, including locally developed norms, nationally developed norms, grade level equivalences, and special deficiencies and/or competencies. This coupled with the fact that there is a disconnect between what high schools consider college-preparatory, especially in math and English, and what colleges require for their entering students only adds to the ongoing debate regarding remedial education (Merisotis & Phillips, 2000).

Boatman and Long (2010) suggested that there are two common hypotheses as to the potential effects of college remediation. The first hypothesis posits that attending remedial courses may provide students with the skills they need to be academically successful, helping them to persist to graduation. The second hypothesis suggests that remediation slows student progress because remedial courses rarely count toward graduation requirements. Further, taking remedial courses can potentially lead students to having lower self-esteem, higher frustration, and ultimately higher drop-out rates (Bettinger & Long, 2005; Jacob & Lefgren, 2004).

Baily, Jeong and Cho (2008) report that the controversy about remediation has prompted some research on how effective remedial programs are in preparing students for college-level coursework. However, "given the size and significance of the developmental education function, that research is surprisingly sparse" (p. 4). There are some studies that attempted to compare various approaches to remediation (Boylan, 2002), but most of this research shows correlational rather than causal relationships and therefore do not help sort out the competing hypotheses about remediation (Bailey, Jeong & Cho, 2008; Boatman & Long, 2010). Bailey, Jeong & Cho (2008) further stated that only a few studies have compared the success of students who enroll in developmental courses to the success of similar students who enroll directly in college courses. These studies, which typically indicate little positive effect, are most reliable for students at the upper end of the developmental range—students who are assigned to remediation, but who score near the cut-off point on assessment (Attewell, Lavin, Domina & Levey, 2006; Bettinger & Long, 2005; Calcagno, 2007; Calcagno & Long, 2008; Martorell & McFarlin, 2007). Bailey, et al. (2008) suggested that one fundamental problem that accounts for these discouraging results is that most students referred to remediation do not complete their sequences.

Various reports on remedial education presented by the U.S. Department of Education, National Center for Education Statistics (NCES) provide national estimates on the prevelance and characteristics of remedial courses. A 2004 NCES report indicated that in fall 2000, institutions were more likely to offer at least one remedial course in mathematics and writing than reading. Seventy-one percent of institutions offered remedial math courses, 68% offered remedial writing courses, and 56% of institutions

offered remedial reading courses, with 2-year public colleges being more likely than other types of institutions to provide college-level remediation in each subject.

The 2011 U.S. Department of Education report on remedial coursetaking indicated that a significant percentage (42%) of first-year students reported taking remediation courses at public 2-year colleges during 2006-2007. This percentage was higher than students at institutions of any other level or control. In addition, a higher percentage of Black first-year students (45%) reported that they had taken a remedial course (U.S. Department of Education, 2011). Although current data on the number of African American males taking remedial courses is not available, a 2001 report from the U.S. Department of Education indicated that at least 40% were required to take at least one remedial course during their first year of college. Harper, Carini, Bridges and Hayek (2004) report that African American males spend little time and effort reading, writing papers, studying and preparing for class. These poor study habits signficantly contribute to their poor academic performance and supports the need for their referral to remedial programs. However, Dawson-Threat (1997) concluded that remedial courses have a negative effect on African American males and more evaluation is needed to determine their effectiveness. Some researchers wonder if taking remedial courses is a necessary step in preparing students for future academic success, or could these same skills be taught in college-level courses without slowing students' progression toward a degree (Armstrong, 1999; Jenkins, Jaggars & Roksa, 2009).

Pre-College Factors

In trying to understand why some students succeed and others fail in college, there are researchers who have focused on the role of background characteristics. The

literature on academic performance and persistence in college has generally concluded that background characteristics are some of the most reliable predictors of success. High school grade point average, standardized test scores (i.e., SATor ACT), socioeconomic status and parental education have continually emerged to predict persistence in college (Adelman, 2004; Astin, 1997; Kuh, Kinzie, Buckley, Bridges, Hayek, 2007; Pascarella & Terenzini, 2005). In a meta-analysis of 109 studies, Robbins, Lauver, Le, Davis, Langley & Carlstrom (2004) found that socioeconomic status (SES), high school GPA, and ACT or SAT scores were all significant predictors of retention and first-year GPA. Studies by the ACT (2006a , 2006b), Kaye, Lord & Bottoms (2006) Calla, Finney, Kirst, Usdan & Venezia (2006) and Moretenson (2006), have all noted that academic preparation is one of the most important educational challenges this nation has ever faced; academic preparation is critical to college student success.

Educational researchers who have examined the factors that contribute to the academic success of African American males have looked at pre-college indicators such as cognitive and non-cognitive variables. Cognitive variables are factors such as high school grade point average, test scores, placement scores and level of math completed. Non-cognitive variables are factors such as social interaction, motivation, and a student's self-concept (Brooks-Leonard, 1991). A study by Hagedorn, Maxwell and Hampton (2001) looked at data on 202 African American male students enrolled at a west coast community college in fall 1995, fall 1996 and spring 1997 to answer the question: what are the significant factors predicting retention among African American males in an urban community college? The independent variables for the study were separated into four blocks: 1) pre-college factors, consistent of parent education level and high school

preparation; 2) ability testing, including students' self-assessment of their ability; 3) students' experience during the semester, consisting of average credit hours and attendance of student and pre-enrollment orientation; and 4) students' experience during the semester focusing on issues outside the purview of the college. Hagedorn et al. (2001) identified factors that correlated to African American male student retention and success. These factors were high school GPA, the number of course credit hours, and high school preparation. In another study by Nettles (1998) African American and White students were compared to determine if their academic performance and experiences were significantly different; he found that African American students had lower high school preparation in terms of GPA and test scores which correlated with their overall lower GPA in college. Davis (1994) and Johnson (1993) have also concluded that cognitive and non-cognitive variables, including grade point average are significant in predicting the achievement of African American male students.

A study by Cohn, Cohn, Balch and Bradley (2004) assessed the degree to which SAT scores, high school GPA and class rank predicted success in college. The study further investigated whether there were race-sex difference in the likelihood of success in college. Results of the study indicated that nonwhites are less likely than whites and males less likely than females to achieve the predicted 3.0 GPA in college. The study further indicated that only white females with SAT scores of 1100 or better obtained the predicted 3.0 college GPA or better, and nonwhite females had higher predicted college GPAs than nonwhite males. Cohn and his colleagues noted that nonwhites at their university are primarily Blacks.

The Institute for Higher Education Policy in their report Convergence: Trends Threatening to Narrow College Opportunity in America (2006) highlighted various converging trends in the higher education landscape. The report suggest that several of these trends point to decreasing access and success for students of color and students from low-income backgrounds. For example, they report that projections of demographic change suggest that more low-income students and students of color will enroll in college. However, many of these students have been educated in poor and segregated schools and will face barriers to success in the postsecondary environment. NCES (2002) reports that students who began at four-year institutions in 1995-1996 with a bachelor's degree goal yielded a 77% graduation rate for high-income students and a 54% graduation rate for low-income students by 2001. Within the same population, 67% of White students had earned a degree compared to 46% of Black students.

Unfortunately, many African American males, who are often from low socioeconomic backgrounds, do not take courses in high school that adequately prepare them for the rigorous college-level academic curriculum (Adelman, 1999; Anderson, 1985; Astin, 1982; Fullilove & Treisman, 1990). Futher, many Black males live in areas with poorer school districts with limited financial and support resources, resulting in a lack of advanced courses in mathematics, science and other subjects (Payne, 1993). Students who attend these high-poverty schools are not afforded the same learning opportunities or environment as students in more affluent education settings due to the challenge of recruiting and retaining experienced teachers who are considered the primary agent of educational success (Payne, 1993).

Issues Impacting African American Males

The pathways to the baccalaureate can be burdened with challenging obstacles that block or detour academic progression, even for those students who complete high school with the basic college preparatory requirements (Astin, 1982). In spite of the challenges, more students are enrolling in colleges and universities. The U.S. Department of Education's Condition of Education (2010) indicates that undergraduate enrollment in postsecondary institutions increased by 24% to 16.4 million students between 2000 and 2008 and is expected to reach 19.0 million by 2019. The percentage of American college students who are categorized as minorities also saw an increase. In 1976, 15% of college students were minorities compared with 37% in 2008. The percentage of Black students was 9% at the beginning of the time period and it fluctuated during the early part of the period before rising to 14% in 2008. Although higher education has experienced an increase minority student enrollment, there continue to be gaps when compared to enrollment rates for White students. Gaps in undergraduate enrollment can also be found along economic lines. A student from a family in the top income quartile is five times more likely to earn a bachelor's degree by age 24 than a student from the bottom income quartile (Mortenson, 2006).

Rupert (2003) in "Closing the College Participation Gap: A National Summary," identifies the current gaps in college participation and attainment based on age, race, ethnicity and income as a significant warning sign. Ruppert (2003) suggested a greater number of people soon may be at risk of losing access to a college education. He continues by stating that there are three fastest growing and overlapping segments of the population that are likely to be most at risk of losing access to higher education. They

include adults, particularly those with lower education levels; low income populations; and members of certain ethnic groups, particularly those who identify themselves on Census forms as Black or African American or of Hispanic or Latino origin. Educators and politicians acknowledge that although we have made great strides in improving access to higher education, we still have a long way to go to close the persistence achievement gap between rich and poor and between Whites and minority students Rupert (2003).

According to a Dellums Commission report by Shaun Harper (2006), the enrollment of Black males in higher education has not improved, although many colleges have increased their efforts to recruit and retain them. The report entitled "Black Male Students at Public Flagship Universities in the U.S.: Status, Trends, and Implications for Policy and Practice," revealed that although Black males comprised 7.9% of the 18-to-27-year old population in 2000, they accounted for no more than 5.2% of undergraduate students that year. By 2004 the percentage of Black male undergraduate students had dropped to 2.8. The report further stated that although Black female enrollment increased by 126% between 1979 and 2002, Black male enrollment only increased by 51%. Equally as disturbing is the fact that Black males who do enroll in college are not graduating as quickly as other students. The National Center for Education Statistics (2009) reported that African American males attending public two-year colleges had a graduation rate of approximately 14% in 1999 and 12% in 2004. This is significantly lower than their White male counterparts who graduated at a rate of nearly 46% in 1999 and 44% in 2004.

The authors of A Shared Agenda (2004) reflected on the disparity in college degree attainment because of ethnicity and/or income in the following statement:

> "In a nation where equal opportunity for all is a bedrock democratic value, getting a college degree still depends far too much on one's economic circumstances or ethnic heritage. High school graduates from low-income families and those from racial and ethnic minority groups are less likely to enroll in college than other students. Of those who do matriculate, many never complete a college degree. This leads to a cycle of discouragement for students, a squandering of their talents, and inefficient use of public and private resources." (p. 5)

Throughout the educational pipeline in the United States—elementary, secondary and postsecondary—many African American males lag behind their African American female and White male counterparts (Hrabowski, Maton, & Greif, 1998). They are often more likely than any other group to be suspended or expelled from school (Meier, Steward, & England, 1998), to be placed in special education programs at a disproportionately high level (Polite & Davis, 1999), to be underrepresented in gifted education programs or advanced placement courses (Hrabowski, Maton, & Greif, 1998), to underachieve or disengage academically (Ford, 1996), and to experience the most challenges in higher education settings as both students and professionals (Hrabowski, et al., 1998). When compared to their White peers, middle class African American males

lag signficantly behind in both grade point average and on standardized tests (Jencks & Phillips, 1998).

A 2002 study conducted by the University System of Georgia (USG) sought answers to the crucial questions of why so few Black male students were enrolled in USG institutions and how the USG can attract, enroll, retain and, graduate greater numbers of qualified Black males (USG, 2002). The study, which resulted in a report entitled *External Research Report on Attitudes and Barriers Impacting the Participation of African-American Males in the University of Georgia*, was commissioned by the African-American Male Initiative, a task force of the USG Board of Regents. Drawing on discussions in focus groups and with individuals as well as a telephone survey of 750 individuals, the research findings offered clear evidence that many Black males perceive significant barrers to going to college and that these barriers—perceptual, academic and socioeconomic—begin to appear early in their lives. The identified barriers in the study ranged from obvious concerns such as poor grades and low SAT/ACT scores to far more subtle findings about peer pressure, parental and societal expectations, fear of failure, and worries about money and going into debt to obtain what many participants' view as "a credential of dubious value in their immediate sphere" (p. 5). Barriers specifically related to participants' attending USG institutions included criticism of recruitment efforts and little knowledge about or sense of connection with USG institutions, even those in the participants' communities.

The findings of the USG study (2002) supported several troubling themes that have previously been identified in the literature regarding African American males and college (Daily, 2001; Price, 2000). For a variety of inter-related reasons, this population

suffers disproportionately from myriad challenges. They often face the challenges of inadequate academic preparation and a low socioeconomic status. Many Black males may also have disengaged and/or uninformed parents, often with no college experience, who are unfamiliar with the importance of a college education and the necessary steps for their sons to prepare for college beginning in middle school. The study findings further revealed that this disenfranchised group has a general lack of awareness of and information about—and in many cases, a peer-driven bias against—many aspects of college-level academic achievement.

The research in the USG study (2002) also suggested that the low college enrollment rate among African American males in general—and at the USG institutions specifically—correlates strongly to certain real and/or perceived barriers arising in four areas: a) family dynamics; b) high-school academic and disciplinary experience; c) financial considerations; d) social environment. Specific to the high school experience, the study participants expressed that barriers to college often time developed in middle, and even elementary school. Many of the Black parents and students surveyed believed that high school teachers tend not to be responsive to the needs of Black male students. There were also those students who said they felt that Black males were disciplined more harshly than their White male or female classmates. They continued by suggesting that there was a double standard in terms of acceptable behavior in the high school. Price (2000) conducted a qualitative investigation of the social and educational experiences of African American male high school students from diverse socioeconomic locations. Price (2000) used a series of interviews with six African American males who were determined to obtain high school diplomas. His research revealed that each of the

participants' perceptions of their future, value of knowledge and meaning of success was connected to how they experienced social and educational inequities in their daily lives. The results of the Price (2000) study were also supported in the study conducted by Daily (2001) which showed that issues with early academic outcomes and discipline were consistent themes for the participants.

The findings of these studies identifying what may influence students' decisions to attend college and their success upon entering college are in line with research conducted on the general student population. Pascarella & Terenzini (2005) acknowledged that "family socioeconomic status shapes college enrollment independent of an individual's abilities or prior achievement" (p. 373). In addition, Hearn (2006) reported "student success in postsecondary education has roots in students' lives far earlier than the postsecondary years, through influences of families, peers, teachers, counselors, cultural factors, and k-12 school curricula and extra-curricula" (p. iii).

Because African American males are further away from parity with their White counterparts in education as well as other significant categories, the National Urban League paid particular attention to them in their 2007 " The State of Black America" study. Urban League President, Marc H. Morial (2007) stated "empowering Black men to reach their full potential is the most serious economic and civil rights challenge we face today. Ensuring their future is critical, not just for the African American community, but for the prosperity, health and well-being of the entire American family" (p. 15).

Researchers ask the question, how do we address and reverse the low participation rates of African American males in postsecondary education? Many

proponents of African American male programs believe that the process should begin as early as the elementary school level. In his article "The Trouble with Black Boys: The Role and Influence of Environmental and Cultural Factors on the Academic Performance of African-American Males," Pedro Noguerea (2003) expressed the notion that it is possible to educate all children, including Black males, at high levels. He continues by stating that this idea is not based on an "articulation of faith," but instead on a conclusion drawn from a vast body of resarch on human development and from research on the learning styles of African American children. Because of this research, Noguerea (2003) concludes that it is, therefore, possible for schools to take actions that can reverse the patterns of low achievement among Black males. By virtue of the fact that several schools and programs manage to do so already is further evidence that there exists a possibility of altering these trends.

Conceptual Framework

A conceptual framework based on the research of Astin (1993) guided the methodology of this study. Astin's (1993) Input, Environment, and Output (I-E-O) model addresses the central concepts under investigation in this study as it incorporates the pre-college factors that the student brought to the institution (input), the remediation placement and outcomes that the student experienced (environment) and the outcomes that were expected as a result of remediation completion—success in college level math and English, persistence, graduation, or transfer (output).

For over four decades theories of student attrition and persistence in higher education have been developed and researched to guide the study of college's impact on students. Since Spady's (1970, 1971) research that indicated that Scholastic Aptitude

Test (SAT) scores directly correlated to the persistence of students and his influential model of undergraduate student dropout process, researchers have studied the phenomenon of student persistence and have offered a variety of different perspectives through which to examine predictors of persistence, educational attainment, and degree completion. Pascarella and Terenzini (2005) summarized theories and models that have been used in decades of research on student involvement. According to these authors, much of the research on persistence, degree completion, and educational attainment lies in theories delineating a set of interconnected constructs and dynamics presumed to affect enrollment behaviors and educational attainment.

Tinto's (1975, 1987, 1993) model of student departure has been the theoretical framework used most often in examining the complex persistence-related interconnections among students and their college experiences. Although several researchers have recognized the utility of the Tinto's theory in predicting college student attrition (Getzlaf, Sedlacek, Kearney, & Blackwell, 1984; Pascarella & Terenzini, 2005), over the years, researchers have challenged the model for its limited applicability to minority students (Braxton, Sullivan, & Johnson, 1997; Tierney, 1992). Tinto also understood the limitations of his model. Tinto (1982) noted, "recognizing theoretical limits should not, however, constrain it from seeking to improve our existing models or replace them with better ones" (p.689).

In 1984, Bean and Bennett developed the Conceptual Model of Black Student Attrition to provide insight to the high attrition of African-Americans at predominately White institutions. The model, which was originally studied with African American students attending Indiana University-Bloomington, identified nine independent variables

which indicated the potential of an African American student's intent to leave college. The nine variables included: 1) pre-college positive interracial contact; 2) pre-college academic performance; 3) parent education attainment; 4) collegiate positive interracial contact; 5) state of ethnicity; 6) preparedness; 7) satisfaction; 8) less trauma; and 9) college GPA. The research findings identified three independent variables that were significant to African American males' intent to persist in college: 1) preparedness; 2) satisfaction; and 3) less trauma. As a result of the study, Bean and Bennett (1984) recommended the following strategies to reduce African American student attrition, specifically at PWIs:

- Colleges and universities should partner with high schools to encourage student interested in attending college to take high level courses in math and science.
- Postsecondary institutions should support cultural diversity in and out of the classroom and promote a campus environment that has positive interracial contact for all African American students.
- Mentoring is highly recommended for African American students in their freshman year and instructors should utilize teaching styles in the classroom to academically engage African American students.

Bean and Bennett's (1984) theory, as well as the numerous others, recognize that students come to college with a number of characteristics, experiences, and commitments, and that the institution itself has certain characteristics. The theory also attempts to explain the ways in which the student and the institutional environment interact with one another to form and re-form student attitudes, behavior, and commitments (Thayer, 2000).

Astin (1993) considered the primary purpose of higher education to be talent development. According to Astin, assessment results provide the most value "when they shed light on the causal connections between educational practice and educational outcomes" (p.xii). In earlier studies, Astin (1991) identified three fundamental lessons about assessment in higher education: 1) outputs must be evaluated in terms of inputs; 2) outputs cannot be measured by a single input; and 3) educational experiences must be taken into account in addition to input data. Thus, Astin's (1993) I-E-O model was developed as a guiding framework for assessments in the college setting with the premise that educational assessments are not complete unless the evaluation includes information on the student inputs (I), the educational environment (E), and the student outcomes (O).

Although not a fully developed theory, Astin's model provides a conceptual guide to the study of college effects. Additionally, the I-E-O model offers a systematic explanation of the trends by breaking the elements into three temporal categories. Figure 2:2 provides a graphical representation that highlights Astin's I-E-O model as a simple, yet powerful framework for this study.

Having a clear understanding of the student development and persistence theoretical models can provide a framework for institutions to fashion success programs that encourage African-American male students to participate in educationally purposeful activities—so that a greater number of them may achieve their potential.

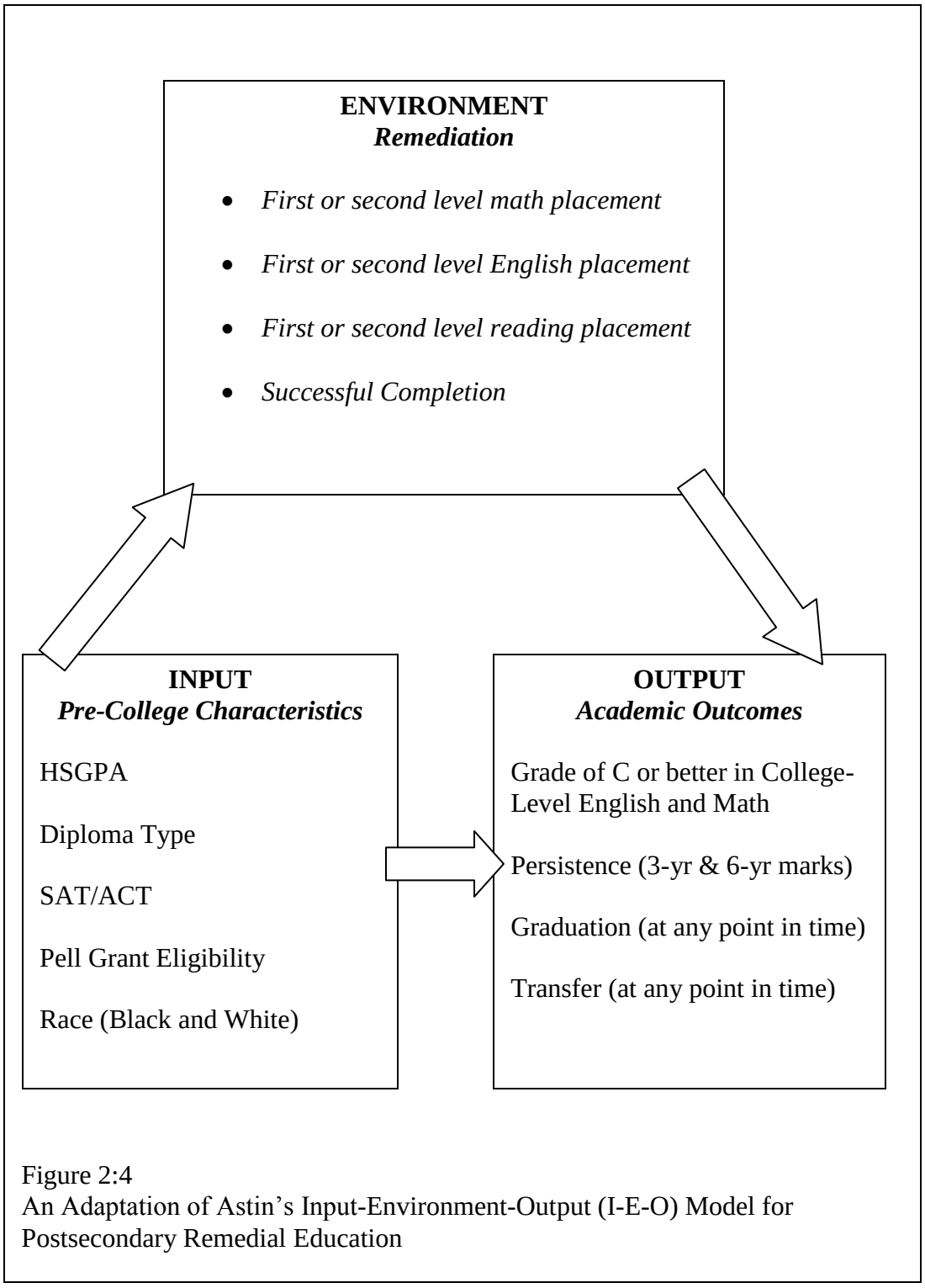

Figure 2:4
An Adaptation of Astin's Input-Environment-Output (I-E-O) Model for Postsecondary Remedial Education

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

Overview

The purpose of this study was to examine the effects of pre-college factors on remediation placement and outcomes and the impact of being an Black male and remediation placement on the academic outcomes of African American males in a two-year college environment. The study utilized a non-experimental, quantitative approach and employed regression and bi-variate correlation statistical models. This chapter describes the methods that were used to answer the research questions. The following research questions form the basis of this study:

1. For students enrolled in remediation, what is the impact of certain pre-college attributes (i.e., HSGPA, SAT/ACT scores, diploma type, being a Black male, Pell Grant eligibility) on remedial course placement and outcomes (outcomes as defined by the successful completion of remediation)?
2. For those students who were enrolled in remediation, what is the impact of being a Black male and remedial course placement on academic outcomes (outcomes as defined by C or better in college-level math and English as well as persistence, graduation and/or transfer)?

The chapter is divided into seven sections: (a) setting of the study; (b) study site remedial program curriculum and policies; (c) design of the study; (d) sample selection; (e) data collection and analysis; (f) definition of terminology; and (f) limitations of the study.

Setting of the Study

The site for this study was an associate degree-granting, urban, multi-campus institution in the Southeastern United States. In the fall of 2010, the institution had an enrollment of over 25,000 students, of which 45.6% are classified as full-time and 54.4% are classified as part-time. According to the college's Office of Institutional Research and Planning (OIRP), in fall 2010 61.5% of the enrolled students were female and 38.5% were male. Additionally, the ethnic composition consisted of 7.8% Asian; 40.8% African American; 6.5% Hispanic; 0.3% Native American; 29.6% White; 3% Multiracial; and 12% Unknown/Undeclared. The following tables show the enrollment data for the cohort study years.

Table 3:1 Study Site Enrollment by Gender and Enrollment Status

Year (Fall)	Total Enrollment	Full-time	Part-time	Male	Female
2002	17,573	46%	54%	38%	62%
2003	18,986	45%	55%	37%	63%
2004	20,316	45%	55%	38%	62%

Source: Office of Institutional Research & Planning at Study Site

Table 3:2 Study Site Enrollment by Ethnicity

Year (Fall)	American Indian/Alaskan Native	Asian	Black (Non-Hispanic)	Hispanic	Multiracial	White (Non-Hispanic)
2002	0.2%	9.5%	33.5%	3.7%	4.8%	48.2%
2003	0.3%	9.7%	34.6%	4.0%	5.7%	45.8%
2004	0.3%	9.6%	34.5%	4.1%	6.1%	45.3%

Source: Office of Institutional Research and Planning at Study Site

Unknown/undecided data is not listed in the table, but made up the remaining enrollment percentage.

The institution serves as a transfer engine for the state in which it is located. On average, 19% of the student population in the system transfer to four-year institutions that

are internal to the institutions' governing system. Data on the percentage of transfers to institutions external to the system was not available.

As previously noted, the populations of two-year colleges are more diverse compared to four-year institutions, often including a wider range of student characteristics in terms of age, academic ability, educational goals, motivation to achieve, family support and obligations and socioeconomic status than four year colleges and universities. Two-year colleges are a vital point of access to higher education for low-income and minority students. Many of these students would likely not be in college if two-year colleges—or similar institutions—were not available (Alfonso, 2004; Rouse, 1995). Students at two-year colleges are more likely to be academically underprepared for the rigorous curriculum offered at senior institutions and therefore require remediation. Two-year institutions in the state where the study site institution is located are the primary source of remedial courses and programs. This institution was selected for the study because of its high percentage of minority and low-income/Pell eligible students, many who are academically underprepared and required to enroll in remedial courses. Further, many African Americans begin their college education at two-year colleges, thus it provides an appropriate setting to study African American males (NCES, 2009; Phillipe, 1995).

Study Site Remedial Program Curriculum and Policies

The site for this study was an associate degree-granting, urban, multi-campus institution in the Southeastern United States. The Office of Institutional Research and Planning for the study site reported that during fall 2010, 5,430 students were enrolled in at least one remedial course. Specifically the breakdown of enrollment in each subject

area included 1,118 in reading; 1,483 in English; and 4,824 in math. Table 3:3 shows number and percentage of students enrolled in remedial courses during the study period. These numbers are duplicate counts that include students who may be enrolled in multiple remedial courses simultaneously.

Table 3:3 Enrollment in Remedial Courses at Study Site

Year (Fall)	Total Enrollment in Remedial Courses	Math	Math %	English	English %	Reading	Reading %
2002	3,583	2,861	79.8%	1,129	31.5%	860	24.0%
2003	4,105	3,501	85.3%	1,104	26.9%	764	18.6%
2004	4,510	3,978	88.2%	1,222	27.1%	851	18.0%

Source: Office of Institutional Research & Planning at Study Site.

Minimum guidelines for developmental programs are set by the governing system to which the institution reports. The governing system's Academic Affairs Handbook indicates that the developmental programs are intended to serve students who were not adequately prepared for core curriculum courses and who required additional preparation in the areas of reading, mathematics, English (writing). Programs exist at all of the system institutions, but the two-year schools are designated as the primary source for developmental instruction. In most cases, students must complete all required developmental courses before they are considered for admission to one of the system regional, state or research institutions. Administrative procedures for the developmental program include:

- Determination of placement in and exit from developmental program
- Organization of the staff who will administer and monitor the program
- Minimum curriculum requirements for each area
- Grading structure for developmental courses

- Guidelines for developmental program suspension and re-entry

The governing system's Academic Affairs Handbook states that institutions have the option of providing developmental courses in a centralized (separate) or decentralized (within collegiate-level programs) program. However, all the programs must address the structure of the program, including leadership, organization, and assessment. Additionally, the plans should address the faculty chosen to teach the developmental courses and their evaluation and tenure, the advisement of the developmental program students and the structure used to design, monitor, and change the curriculum. Procedures for the developmental program must be consistent with the policies and procedures of the governing system and approved by the institution's chief academic officer and president. Developmental courses at the study site are offered through collegiate level programs. Specifically, developmental courses in math are offered through the mathematics department and English (writing) and reading developmental courses are offered through the Humanities department.

Douglas Ruch (2005) in his thesis "Learning Support Mathematics Program Evaluation" assessed whether the remedial math program at the institution in this study successfully prepared students to take courses in the core curriculum by comparing students who required math remediation with those who enrolled directly into college level math. The results of the assessment revealed that 79%of the students who enrolled directly into entry college level math passed the course and 69% of the students who initially enrolled in remedial math then enrolled in the entry college level math successfully passed the course. Ruch (2005) explains the process to determine if students were required to enroll in developmental courses included placement exams that were

administered prior to registration for classes. The placement scores on the exams determined the area or areas and level of development studies that were required or the exemption from the developmental courses. The Computerized Adaptive Placement Assessment and Support Systems (COMPASS) exam, a product of ACT, Inc., is a computer-based program that the governing system continues to use as a placement tool for students whose native language is English. The English as a Second Language placement test is used for students who are non-native speakers of English. COMPASS provides placement and exit testing for students in English (writing), reading, and mathematics. After completing the remedial coursework, the student was required to take the COMPASS as an exit exam. The scores used to exit the remedial area were the same as those used for exemption. Exit from remedial courses meant that the student had completed all required coursework and scored at exemption level on the COMPASS and was eligible to take collegiate level courses in English and mathematics. During the study period the minimum score for students at institutions in the governing system to exempt English remedial coursework was 60, to exempt reading remedial coursework was 74, and to exempt mathematics remedial coursework was 37. During the study period, students' ACT or SAT test scores as well as their College Preparatory Curriculum (CPC) status were used to exempt the student from taking the COMPASS placement English and reading exams. Students who exempted from remedial courses were eligible to take collegiate level courses in English. However, during the study period, all students were required to take the COMPASS math exam regardless of their SAT or ACT math scores. The CPC refers to the minimum number of high school units in English and mathematics that are required for high school graduation. Students who satisfied all

required CPC units in English could exempt the English and reading COMPASS placement exams by scoring a 430 or higher on the SAT verbal section or scoring 20 or higher on the ACT Verbal section. The governing system provides that institutions may set higher standards than these minimums (Ruch, 2005).

Students who placed into remedial courses must meet with an advisor prior to registration. The advisor assists the students with interpreting their placement scores and the policies pertaining to the developmental education program. Advisement continues each semester until the student has successfully completed all remedial areas (Ruch, 2005).

The grading structure for the remedial courses is as follows: an A, B or C indicates a passing grade, an F indicates that the work was not satisfactory and the course must be repeated, a W indicates withdrawal prior to the midterm, and a WF indicates that the student withdrew from the course after the midterm. In addition an IP (In Progress) grade is for exit level remedial courses and indicates that the course must be repeated. The IP grade specifically indicates that although the student received a passing letter grade in the course, they did not pass the COMPASS exam to successfully exit the course. All grades in the remedial courses, with the exception of W, count as attempts. College level courses follow the A, B, C, D, and F grading structure. The grades of W and WF indicate withdrawal in the same way as with the remedial courses (Ruch, 2005).

Students were allowed three attempts to successfully exit a remedial area. In order to exit from a specific area, the student must complete the required courses in the area with a grade of A, B, or C. Additionally, at the completion of the higher level course, students take the COMPASS exit exam. Students who do not pass the exit exam

must repeat the course and the grade is recorded as IP. Those who fail to exit on the third attempt are placed on suspension for three years. This prohibits students from enrolling in any of the governing system institutions for three years from the term of suspension. Students may appeal for a fourth attempt in an area if they are at the exit level in that area only and have no other remedial requirements. If the student does not exit on the fourth attempt, they will be on suspension for three years with no further appeal. In the 2004 summer session, institutions were given the option to allow an appeal for a fifth attempt in an area (Ruch, 2005).

Because the institution under study has multiple campuses, it does not strictly follow the developmental structure outlined by the governing system. The organizational structure of the developmental education program at the site during the study period was as follows:

- The Director of developmental studies reported to the Assistant Vice President for Educational Affairs. The Director monitored the college's adherence to the governing system's policies and procedures for developmental studies.
- Selected Humanities faculty members were responsible for teaching remedial English and reading courses. They also assisted in the advisement of students who placed into these areas.
- Selected mathematics faculty members were responsible for teaching remedial mathematics courses. They also assisted in the advisement of students who placed into this area.
- Counselors in the campus Advising and Counseling Services were available to students who had not chosen a faculty developmental studies advisor.
- The Learning and Tutoring Center labs were available for students who required additional tutorial assistance in English, reading, and mathematics.

This organizational structure was identified as one of the common structures of developmental programs in previous research on these programs (Boylan, 1999; Greene, Lewis & Parsad, 2004).

Courses and Grading Structure

Table 3:4 below shows the three areas of remedial studies and the courses in the sequence for each area at the institution in the study during the study period. They were graded on the scale outlined by the governing system.

Table 3:4 – Remedial Courses at the Study Site

English	Reading	Mathematics
ENGL 0098 – Basic Composition	READ 0097 – Basic Reading Skills	MATH 0097 – Beginning Algebra
ENGL 0099 – Pre-College Composition	READ 0098- Advanced Reading Skills	MATH 0098 – Intermediate Algebra

During the study period, a review of the common course outlines for MATH 0097 and MATH 0098 revealed that the second course built upon the first course. The expected academic outcomes for each course were also reflected in the entry-level competencies of the subsequent course. Specifically, the expected outcomes for MATH 0097 were the same as the entry-level competencies for MATH0098 and the expected outcomes for MATH 0098 were the same as the entry-level competencies for the gateway course MATH 1111 (College Algebra). These expected outcomes were the same for ENGL0098, ENGL0099 and ENGL 1101 (English Composition). The relationship between expected academic outcomes from one course to the entry-level competencies of the next course in the sequence supports student success. According to Boylan (1999), "the exit standards for developmental education are consistent with the entry standards for the mainstream college curriculum" (p.9).

A Higher Education Seminar (HEDS 1011) course was required for all students who placed into two remedial courses at the lower level. This course, for which students earned two credit hours that did not count toward graduation, was designed to help

students with the transition to college, improve study skills, and familiarize students with the academic and student support services available at the college. The course was also open to college-level students whom felt they would benefit from the course content.

During the study period, there were no substantive changes made to the curriculum of the remedial program.

Design of the Study

The specific aim of this study was to assess how certain pre-collegiate factors affect remediation. The study further aimed to assess how being a Black male and remediation placement affect academic outcomes. A multiple linear regression analysis was used to determine 1) if placement in first or second level remedial courses and successful completion of the remediation courses could be explained by specific pre-college variables HSGPA, SAT/ACT scores, high school diploma type, race (Black and White), and Pell Grant eligibility; and 2) if successful completion of college-level math and English (grade of C or better) could be explained by being a Black male and placement level in remediation courses. The logistic regression analysis was used to determine if persistence (at 3-year and 6-year), transfer (at any point in time), and graduation (at any point in time) could be explained by being a Black male and placement in remedial reading, English or math courses. The input factors for this study were selected based on their posited influence on the outcome measures of student academic success as outlined in the literature. This model allowed for the examination of input and environment and outcome variables as outlined by Astin (1993), and as adapted to this study in the conceptual framework.

Multiple linear regression was chosen to identify the collective and separate effects that the independent variables had on the continuous dependent variables (Agresti, 2007; Cohen, Cohen, West & Aiken, 2003):

Pre-college factors → remedial placement
Pre-college factors → successful completion of remedial coursework
Race & Remedial placement → successful completion of college-level English
Race & Remedial placement → successful completion of college-level math

Although we cannot infer causation in correlational research designs such as this, the relationships revealed among the variables of interest in this study can suggest causation, assuming relevant factors are statistically controlled.

To address specific dichotomous dependent variables for hypothesis 2, logistic regression was chosen because it provided an indication of the relative importance of each independent variable, or the interaction among the independent variables on a categorical dependent variable (Pallant, 2006):

Race and Remedial Placement → persistence, transfer, graduation

According to Cabrera (1994) logistic regression provides an appropriate statistical method for analyzing how a set of variables in a model influences the probability of that particular educational event and it also provides an indication of the adequacy of the model by assessing goodness of fit.

The research design had several strengths. First, it allowed for a broader study involving a greater number of subjects than a qualitative approach, thus enhancing the generalizability of the results to African American male students at the study site. Second, the design allowed for greater objectivity because the research results are relatively independent of the researcher. Third the design allowed for greater accuracy of results because it provides precise, quantitative numerical data. Finally, because the

researcher shares the same ethnic background as the subjects of interest, the research design allowed the researcher to avoid personal bias by allowing for distance from the subjects.

Sample Selection

The target population was selected from a two-year associate-degree granting institution in the Southeastern United States. The entire eligible population for this study consisted of a sample of all Black and White male students in the 2002, 2003, and 2004 cohorts placed in reading, math and/or writing remedial courses at the time of matriculation. The subjects were both full-time and part-time students who were enrolled for the first time at the study site institution during each specific academic year. The cohort sample was further defined as having United States citizenship and having entered the college with a remedial requirement in math, reading and/or writing. All of the students in the sample were native English speaking students required to take the COMPASS placement exam.

The study years were selected in order to include standardized test scores (ACT and SAT) as pre-college factors. The study periods of 2002-2004 were the three years immediately prior to a policy instituted by the college's governing board that changed admission requirements. Beginning in fall 2005, standardized test scores (SAT and ACT) were no longer required for admission to the college. This policy change reduced the number of possible records that could be retrieved and used in this study and potentially reduced the size of the data set. To adjust for this limitation, this study focused on the students enrolled in 2002, 2003 and 2004 cohort years. A total of number of subjects for all three cohort years are was 1,792 with 704 of the subjects being Black males and 1,088

of the subjects being White males. Table 3:5 shows the specific number of subjects by race for each year:

Table 3:5 Number and Percentage of Study Subjects by Race

Year (Fall)	Total Number of Subjects	Total Black Male	% Black Males	Total White Males	% White Males
2002	591	227	38.4%	364	61.6%
2003	528	220	41.7%	308	58.3%
2004	673	257	38.2%	416	61.8%

Although guidelines for the number of cases required for multiple regression analysis vary by author, Stevens (1996) recommends that "for social science research, about 15 subjects per predictor are needed for a reliable equation" (p. 72). Stevens further concludes that 15 subjects per variable would yield a small amount of shrinkage (<.05) with 90% probability if the squared multiple population correlation is .50. This result is also supported by Cohen and Cohen's (1983) formula for determining the number of cases needed for regression analysis of sets of independent variables. An assumption of logistic regression is a large sample size. If this rule is not met, high standard errors may result and hinder the reliability of predictive estimates. Hosmer and Lemeshow (2000) recommend a minimum of 10 cases per independent variable when conducting logistic regression. Therefore, the sample size was sufficient for this study.

Precautionary measures were taken to exclude the personal identity of any of the subjects included in the populations of this study in order to protect the students' identity. The data set was compiled by extracting information from the institution's student information database. The data consisted of the students' demographic and background characteristics, term by term courses and academic performance (course grades), and Pell eligibility.

Data Collection and Analysis

The data described above were retrieved by the Office of the College Registrar from the institution's transactional student information database used by the college to collect and manage student data. This area manages all student records from admission to graduation. Prior to data collection, permission from the study site's Institutional Review Board was granted. The Office of the College Registrar sent the researcher a password-protected Microsoft Excel file with de-identified student data. The explanatory variables for the model include race (Black and White), high school GPA (HSGPA), SAT Verbal scores, SAT math scores, ACT verbal scores, ACT math scores, high school diploma type, Pell Grant eligibility, course number, the term course was taken, and the grade earned for each course. Additional data were obtained by the Office of Information Technology's search of the National Student Clearinghouse database to determine if students transferred and or graduated from any institution other than the one in this study. Data from the National Student Clearinghouse was added to the original data file by the Office of Information Technology at the study site.

Multiple linear regression and logistic regression were utilized in SPSS 17.0 to test the following hypotheses based on the literature review:

H1) Selected pre-college variables will have a statistically significant impact on remediation placement and outcomes, and

H2) Being a Black male and having remediation placement will have a statistically significant impact on success in college-level math and English, persistence, graduation or transfer.

Race is a dichotomous variable with the reference group being White male (0=White, 1=Black). Additionally Pell Grant eligibility (0= No, 1= Yes) and high school diploma type (0= Non-college Prep, 1= College Prep) were converted into dichotomous variables. Continuous variables were kept as whole numbers. As very few students took both the SAT and ACT exams, a final "standardized test" variable was created transforming ACT verbal and math scores into SAT verbal and math scores to create one variable by utilizing the conversion table provided by ACT (www.act.org; see Appendix A). All remedial courses were converted into categorical variables including 0=Not Required/College Ready; 1=Level 1; 2=Level 2. Remedial placement levels for reading, English and math were the dependent variables. Dependent variables of Completion of Remediation and Course Grade in college-level math and English were coded as follows A= 4, B= 3, C= 2, Did Not Complete =0. Graduation, Transfer and 3-year persistence/6-year persistence were all converted to dichotomous variables (0=No, 1=Yes). The coding for independent and dependent variables is presented in Table 3:6. Descriptive statistics which provided insights on the general characteristics of the study subjects are discussed in Chapter 4.

Table 3:6 – Description and Coding of Study Variables

Variables	Description and Coding	
Race White Black	 0 1	Independent Variable- Hypothesis 1
HSGPA	Not Coded	Independent Variable- Hypothesis 1
SAT Verbal	Not Coded	Independent Variable – Hypothesis 1
SAT Math	Not Coded	Independent Variable – Hypothesis 1
Diploma Type Non-College Preparatory	 0	Independent Variable- Hypothesis 1

College Preparatory	1	
Pell Grant Eligibility		Independent Variable-Hypothesis 1
No	0	
Yes	1	
Remedial Math Level		Dependent Variable-Hypothesis 1
Not Required/College Ready	0	
Level 1	1	
Level 2	2	Independent Variable-Hypothesis 2
Remedial Reading Level		Dependent Variable-Hypothesis 1
Not Required/College Ready	0	
Level 1	1	
Level 2	2	Independent Variable-Hypothesis 2
Remedial English Level		Dependent Variable-Hypothesis 1
Not Required/College Ready	0	
Level 1	1	
Level 2	2	Independent Variable-Hypothesis 2
Completion of Remedial Reading – Level 1		Dependent Variable-Hypothesis 1
A	4	
B	3	
C	2	
Did Not Complete	0	
Completion of Remedial Reading – Level 2		Dependent Variable-Hypothesis 1
A	4	
B	3	
C	2	
Did Not Complete	0	
Completion of Remedial English – Level 1		Dependent Variable-Hypothesis 1
A	4	
B	3	
C	2	
Did Not Complete	0	
Completion of Remedial English – Level 2		Dependent Variable-Hypothesis 1
A	4	
B	3	
C	2	
Did Not Complete	0	
Completion of Remedial Math – Level 1		Dependent Variable-Hypothesis 1
A	4	

B	3	
C	2	
Did Not Complete	0	
Completion of Remedial Math – Level 2		Dependent Variable-Hypothesis 1
A	4	
B	3	
C	2	
Did Not Complete	0	
Course Grade in College-level math (Algebra)		Dependent Variable-Hypothesis 2
A	4	
B	3	
C	2	
Did Not Complete	0	
Course Grade in College-level English		Dependent Variable-Hypothesis 2
A	4	
B	3	
C	2	
Did Not Complete	0	
Persistence 3-year mark/6-year mark		Dependent Variable-Hypothesis
No	0	
Yes	1	
Graduation		Dependent Variable-
No	0	Hypothesis 2
Yes	1	
Transfer		Dependent Variable-
No	0	Hypothesis 2
Yes	1	

Missing data were excluded pairwise using SPSS. Cases were excluded only if they were missing the data required for the specific analysis. To determine the accuracy of the model an analysis of residuals, curvilinearity, the existence of outliers, heteroscedasticity, and omission of important variables was conducted.

Definition of Terminology

The following definitions were used for the purpose of this study.

African-American males – Individuals who self-identified as males of African descent enrolled in the institution where the research was conducted. For the purpose of this study, African American males included only those students who were native English speakers.

Pre-college variables – The characteristics a student brought before entering college. For the purpose of this study these variables include:

1. HSGPA
2. SAT/ACT scores
3. Diploma Type
4. Pell Grant eligibility
5. Race (Black and White)

Standardized Test Score – A student's score on the American College Test (ACT) or the Scholastic Aptitude Test (SAT) according to the official records of the Office of the College Registrar. For the purpose of this study a "standardized test" variable was created transforming ACT verbal and math scores into SAT verbal and math scores to create one variable by utilizing the conversion table provided by ACT (www.act.org; see Appendix A).

Remedial Education – Education intended to remedy a situation; that is, to teach students what they should already have learned. For example, reading classes at the college level are considered remedial because most students learn to read in elementary school.

Remedial Program at Study Site – The governing system's Academic Affairs Handbook for the study site institution indicates that the developmental programs are intended to serve students who are not adequately prepared for core curriculum courses and require additional preparation in the areas of reading, mathematics, English (writing).

Remediation Placement – After the assessment of strengths and weaknesses in English (writing), reading and mathematical skills, students are placed in the proper sequence of remedial courses.

Remedial Course Levels – Each area of remediation, English (writing), reading and math involved a sequence of courses that included both an entry level course and an exit level course.

Remedial Completion – According to the academic catalog for the study site institution, to complete remediation, students must earn a C or better in the last level of the remediation course and pass all appropriate exit criteria for these courses.

Academic Outcomes – Grade of C or better in College Algebra and English Composition I; graduation at any point in time from either the study site institution or another two-year or four-year institution; transfer at any point in time to either two-year or four-year institution.

Persistence – For the purpose of this study, persistence is defined as those students who were still enrolled in any institution at the 3-year mark and the 6-year mark.

Limitations of Study

There are a number of factors that must be taken into consideration when interpreting the results of this study. This study focused on African American male students at the institution which is the site for this study during the 2002, 2003 and 2004

academic years. With such a limited population the results of this study will be specific to African American male students at the institution in those years. Therefore, the generalizability of the study findings will be limited and caution should be exercised when applying the results to other institutions and other time periods. Additionally, the results will be limited as they will provide numerical descriptions rather than detailed narratives and will provide less elaborate accounts of the subjects' perceptions. The selection of variables included in this study was influenced by theoretical and pragmatic considerations. This study was limited to selected background and academic variables for which data were available in the student information system at the study site and that had been shown to be of importance in earlier research. Finally this research used only secondary data that included measured behaviors such as GPA and background characteristics. This study did not assess the impact that psychological factors might have on academic outcomes.

CHAPTER 4

RESULTS

This chapter presents the findings from the statistical analysis and treatment of the data with respect to the two research questions. First, descriptive statistics, frequencies and percentages of the total sample are reported for the independent variables. Finally, results from the multiple linear regression and logistic regression are reported. The presentation of the results is organized around tables and figures and is addressed to each research question to provide a thorough examination of the analyses.

Demographic Profile of Study Subjects

The sample consisted of all Black and White males enrolled in remedial studies during the 2002-2004 academic years for a total of 1,792 students, 704 African American males and 1,088 White males. An analysis of the missing cases using the listwise approach revealed that SAT Verbal, SAT math and HSGPA were the only variables in the data set with missing cases. This is expected since the data set included students with a non-college preparatory diploma type. Table 4:1 provides a comparison of the means between the listwise deletion sample and the overall sample. As can be seen in Table 4:1, there are similarities in the means for each sample.

Table 4:1 Sample Comparisons

Indicator	Listwise Sample = 1556	Overall Sample = 1792
SAT Verbal Mean	432.91	430.20
SAT Math Mean	424.75	424.75
HSGPA Mean	2.20	2.17

Because of the nature of the study and the indicators of interest, missing data were excluded pairwise for each analysis using SPSS. Cases were excluded only if they were missing the data required for the specific analysis. Pre-college demographic and academic variables included race (Black and White), HSGPA, standardized test scores, diploma type, and Pell Grant eligibility. Remediation variables included reading, math and English requirements and completion. Table 4:2 which provides descriptive information for pre-college variables for research question one, shows that the sample consisted of 39.3% Black male students and 60.7% White male students. The percentage of students who qualified for and received the Pell Grant was 26.3 % (n = 472). However, this percentage may not include those students who qualified for the Pell Grant but did not apply for financial aid. The mean HSGPA was 2.17 and the standard deviation was .87053. The frequency for SAT Verbal was 1725 with a minimum score of 200 and a maximum score of 720. The average SAT Verbal score was 430 with a 72.289 standard deviation. The frequency for SAT Math score was 1,556 with a minimum of 200 and a maximum score 660. The average SAT math score was 424.75 with a standard deviation of 72.396. The number of subjects with a college preparatory high school diploma was 54.7% (n = 980) with 45.3% (n = 812) of the sample having a non-college preparatory diploma.

Table 4:2 Descriptive of Pre-College Variables

Variable	Frequency	Percent	Mean	Standard Deviation
Cohort:				
2002	591	33.0		
2003	528	29.5		
2004	673	37.6		
Race:				
Black	704	39.3		
White	1,088	60.7		

Pell Grant Eligibility: Yes No	 472 1,320	 26.3 73.7		
HSGPA: Minimum 0.00 Maximum 4.44	1,792		2.1705	.87053
SAT Verbal: Minimum 200 Maximum 720	1,725		430.20	72.289
SAT Math Range: Minimum 200 Maximum 660	1,556		424.75	72.396
Diploma Type: College Prep Non-College Prep	 980 812	 54.7 45.3		

Correlation of the hypothesis one variables (pre-college) excluding cases listwise is provided in Table 4:3. Caution should be used when applying the correlations to the individual regression results as the correlations are less suggestive of causation.

4:3 Correlation of Pre-College Variables

		Race*	**Pell Grant Eligibility**	**SAT Verbal**	**SAT Math**	**HS GPA**	**HS Diploma Type**
Race*	Pearson Correlation Sig. (2-tailed)	1	.372** .000	-.293** .000	-.360** .000	-.033 .194	.060*** .017
Pell Grant	Pearson Correlation Sig. (2-tailed)	.372** .000	1	-.149** .000	-.131** .000	-.018 .488	-.028 .274
SATVerbal	Pearson Correlation Sig. (2-tailed)	-.293** .000	-.149** .000	1	.475** .000	-.016 .534	.003 .903
SATMath	Pearson Correlation Sig. (2-tailed)	-.360** .000	-.131** .000	.475** .000	1	.095** .000	.198** .000
HSGPA	Pearson Correlation Sig. (2-tailed)	-.033 .194	-.018 .488	-.016 .534	.095** .000	1	.421** .000
HS Diploma Type	Pearson Correlation Sig. (2-tailed)	.060*** .017	-.028 .274	.003 .903	.198** .000	.421** .000	1

*Black = 1; White = 0
**Correlation is significant at the 0.01 level (2-tailed)
***Correlation is significant at the 0.05 level (2-tailed)
c. Listwise N = 1556

Table 4:4 provides frequencies and percentages for the remediation independent variables for research question two. For remediation reading, 70.8 % (*n* = 1268) did not place into remediation; 18.8% (n = 337) were initially placed in the Level 1 course; and 10.4% (n = 187) were initially placed in the Level 2 course. Of those students who placed into English remediation, 28.7% (n = 514) were initially placed in the Level 1 course and 16% (n = 287) were initially placed in the Level 2 course. The remaining 55.3% (n = 991) did not place into English remediation. For math remediation, 15.9% (n = 285) had no requirements. The largest percentage of students (58.6%) were initially placed in the Level 1 math remediation course (n =1050) and 25.5% (n = 457) were initially placed in the Level 2 course. Of the 337 students enrolled in Level 1 reading remediation, 87% (n = 294) completed the level. Completion rates for Level 2 reading remediation included students who were initially placed in both Level 1 and Level 2 courses and yielded a success rate of 74.8% (n = 302). Completion rates for remedial English Level 1 were 85.8% (n = 441) yes completed and 14.2% (n = 73) no completed. Just as with Level 2 reading remediation completion, remedial English Level 2 completion rates included students who were initially placed in both Level 1 and Level 2 remedial English with the results showing a 69.3% (n = 445) completion rate. The majority of the students in Level 1 math remediation completed the course (68.2%) with 31.8% of the students not completing the course. Level 2 math remediation completion rates also included students initially placed in both Level 1 and Level 2 math remediation. The majority of the students completed Level 2 math remediation (71.8%).

Table 4:4 Descriptive of Remediation Variables

Variable	Frequency	Percent
Remediation Reading Placement Level*		
Not Required	1,268	70.8
Level 1	377	18.8
Level 2	187	10.4
Remediation English Placement Level*		
Not Required	991	55.3
Level 1	514	28.7
Level 2	287	16.0
Remediation Math Placement Level*		
Not Required	285	15.9
Level 1	1,050	56.6
Level 2	457	25.5
Reading Level 1 Completion		
No	42	12.5
Yes	295	87.5
Reading Level 2 Completion**		
No	102	25.2
Yes	302	74.8
English Level 1 Completion		
No	73	14.2
Yes	441	85.8
English Level 2 Completion**		
No	202	30.7
Yes	455	69.3
Math Level 1 Completion		
No	334	31.8
Yes	716	68.2
Math Level 2 Completion**		
No	315	28.2
Yes	803	71.8

*Initial Enrollment

**Includes student initially enrolled in Level 1 and Level 2 courses

Correlation of the hypothesis two variables (race and remediation placement level) excluding cases listwise is provided in Table 4:5.

4:5 Correlation of Race* and Remediation Variables

		Race*	Reading Placement	Math Placement	ENGL Placement
Race*	Pearson Correlation	1	.128**	.031	.102**
	Sig. (2-tailed)		.000	.000	.000
Reading Placement	Pearson Correlation	.128**	1	-.224**	-.310**
	Sig. (2-tailed)	.000		.000	.000
Math Placement	Pearson Correlation	.031	-.224**	1	-.278**
	Sig. (2-tailed)	.188	.000		.000
ENGL Placement	Pearson Correlation	.102**	.310**	-.278**	1
	Sig. (2-tailed)	.000	.000	.000	

*Black = 1;White = 0
**Correlation is significant at the 0.01 level (2-tailed)
Listwise N = 1792

Results of the Analysis

The primary purpose of this study was to determine if selected pre-college variables and being a Black male would have a statistically significant impact on placement and outcomes in remediation reading, English and math. The second purpose was to determine if being a Black male and remediation placement would have a statistically significant impact on success in college level math and English, persistence, graduation or transfer. The results for the two hypotheses are presented below with reviews of the methods used to test each hypotheses and a description of the findings.

Hypothesis 1

The first hypothesis was that selected pre-college variables would have a statistically significant impact on remediation placement and outcomes.

A multiple linear regression analysis was conducted with the pre-college variable set, containing HSGPA, SAT Verbal and SAT Math scores, Pell Grant eligibility, race (Black and White), and Diploma Type. The multiple linear regression analysis allowed

for the assessment of all variables combined on remediation placement and outcomes. Table 4:6 presents the results of the remediation reading placement.

Table 4:6 Regression of Remediation Reading Placement

Variable	B	SE	β	t	Sig.
HSGPA	-042	.023	-.046	-1.806	.071
SAT Verbal	.005	.000	.443	16.800	.000
SAT Math	-.001	.000	-.049	-1.769	.077
Pell Grant	.037	.044	.020	.829	.407
Black	.066	.043	.041	1.547	.122
Diploma Type	.051	.041	-.032	-1.248	.212

Note: R^2 = .191, F (6, 1549) = 60.986, p = .000;
*p < .05
**p < .001

The results in Table 4:6 reveal that the model for the dependent variable of Remediation Reading Placement explained 19.1% of the variance and was significant at the .000 level. The multiple regression coefficients indicated that when all other variables in the model are controlled, SAT Verbal was the only significant independent variable, β = .443, t (16.800), p = .000. The other variables in the set did not make a statistically significant unique contribution.

Table 4:7 Regression of Remediation English Placement

Variable	B	SE	β	t	Sig.
HSGPA	.003	.025	.003	.138	.891

SAT Verbal	.005	.000	.450	17.351	.000
SAT Math	.000	.000	.034	1.257	.209
Pell Grant	-.027	.048	-.014	-.567	.571
Black	-.031	.047	-.017	-.655	.512
Diploma Type	-.080	.045	-.045	-1.781	.075

Note: R^2 = .216, F (6, 1549) = 71.092, p = .000;
*p < .05
**p < .001

Table 4:7 provides the results of the Remediation English Placement. The model explained 21.6% of the variance in remedial English placement with a significance level of .000. As with the remediation reading placement, the multiple regression coefficients indicated that when all other variables in the model are controlled, SAT Verbal made the strongest unique contribution to explaining the dependent variable, β = -.450, t (17.351), p = .000. No other variables in the model made a statistically significant unique contribution.

Table 4:8 Regression of Remediation Math Placement

Variable	B	SE	β	t	Sig.
HSGPA	.025	.022	.029	1.145	.252
SAT Verbal	-.002	.000	-.155	-5.840	.000
SAT Math	.004	.000	.379	13.650	.000
Pell Grant	-.041	.042	-.024	-.969	-.333
Black	-.040	.041	-.026	-.984	.325
Diploma Type	.297	.039	.197	7.559	.000

Note: R^2 = .185, F (6, 1549) = 58.415, p = .000;
*p < .05
**p < .001

Table 4:8 summarizes the analysis results for Remediation Math Placement indicating that the independent variables in the model explained 18.5% of the variance. The model was significant at the .000 level. An analysis of the multiple regression coefficients indicated that when all other variables in the model are controlled, SAT Math made the strongest unique contribution to explaining the dependent variable, β = .379, t (13.650), p = .000, followed by Diploma Type, β = .197, t (7.559), p = .000, and SAT Verbal, β = -.155, t (-5.840), p = .000. The remaining variables in the set did not make a statistically significant unique contribution. The negative SAT Verbal coefficient indicates that as SAT Verbal scores decrease, students are more likely to place into remedial math.

Table 4:9 Regression of Remediation Reading Level 1 Completion

Variable	B	SE	β	t	Sig.
HSGPA	.204	.090	.144	2.266	.024
SAT Verbal	-.001	.001	-.065	-.978	.329
SAT Math	.001	.001	.080	1.149	.251
Pell Grant	.165	.172	.059	.962	.337
Black	.473	.167	.188	2.834	.005
Diploma Type	.034	.161	.014	.209	.835

Note: R^2 = .068, F (6, 283) = 3.441, p = .003;
*p < .05
**p < .001

Table 4:9 provides the results for the linear regression of Remediation Reading Level 1 Completion. The model was significant at the .003 level and explained 6.8% of the variance for completion of Level 1 Remedial Reading. As can be seen in Table 4:9 being Black made the strongest unique contribution to explaining the dependent variable, $\beta = .188$, t (2.834), $p = .005$. HSGPA made the second strongest unique contribution to explaining the dependent variable, $\beta = .144$, t (2.266), $p = .024$. No other pre-college variables made a statistically significant unique contribution.

Table 4:10 Regression of Remediation Reading Level 2 Completion

Variable	B	SE	β	t	Sig.
HSGPA	.256	.089	.160	2.890	.004
SAT Verbal	.002	.001	.098	1.709	.088
SAT Math	.004	.001	.185	3.057	.002
Pell Grant	-.229	.169	-.072	-1.351	.178
Black	.270	.165	.094	1.637	.103
Diploma Type	-.050	.159	-.018	-.318	.750

Note: $R^2 = .133$, F (6, 349) = 15.329, $p = .000$;
*$p < .05$
**$p < .001$

Table 4:10 summarizes the analysis results for Remediation Reading Level 2 Completion indicating that the independent variables in the model explained 13.3% of the variance. The linear regression model was significant at the .000 level. Both SAT Math ($\beta = .185$, t (3.057), $p = .002$) and HSGPA ($\beta = .160$, t (2.890), $p = .004$) made unique contributions to explaining completion of level 2 remedial reading.

Table 4:11 Regression of Remediation English Level 1 Completion

Variable	B	SE	β	t	Sig.
HSGPA	.258	.068	.193	3.787	.000
SAT Verbal	-.001	.001	-.039	-.742	.459
SAT Math	.001	.001	.081	1.459	.145
Pell Grant	.120	.130	.046	.925	.355
Black	-.003	.126	-.001	-.021	.983
Diploma Type	.122	.122	.052	1.002	.317

Note: $R^2 = .060$, $F(6, 444) = 4.698$, $p = .000$;
*p < .05
**p < .001

The results in Table 4:11 reveal that the multiple linear model for the dependent variable of Remediation English Level 1 Completion explained 6% of the variance and was significant at the .000 level. An analysis of the multiple regression coefficients indicated that when all other variables in the model are controlled, HSGPA made the strongest unique contribution to explaining the dependent variable, $\beta = .193$, t (3.787), $p = .000$. No other pre-college variables made a statistically significant unique contribution.

Table 4:12 Regression of Remediation English Level 2 Completion

Variable	B	SE	β	t	Sig.
HSGPA	.274	.069	.173	3.980	.000
SAT Verbal	.002	.001	.111	2.458	.014

SAT Math	.002	.001	.088	1.849	.065
Pell Grant	-.060	.132	-.019	-.460	.646
Black	.257	.128	.091	2.007	.045
Diploma Type	.291	.123	.105	2.368	.018

Note: R^2 = .116, F (6, 578) = 12.654, p = .000;
*p < .05
**p < .001

Table 4:12 provides the analysis results for the linear regression of Remediation English Level 2 Completion. The model explained 11.6% of the variance and yielded a significance level of .000. Table 4:12 further reveals that the analysis results indicated that HSGPA, SAT Verbal, Diploma Type and being a Black male all had significant positive regression weights after controlling for the other variables in the model.

Table 4:13 Regression of Remediation Math Level 1 Completion

Variable	B	SE	β	t	Sig.
HSGPA	.105	.053	.070	1.968	.049
SAT Verbal	-.001	.001	-.033	-.898	.370
SAT Math	.004	.001	.218	5.595	.000
Pell Grant	.210	.102	.071	2.061	.040
Black	.189	.099	.071	1.909	.057
Diploma Type	.254	.095	.097	2.664	.008

Note: R^2 = .086, F (6, 885) = 13.794, p = .000;
*p < .05
**p < .001

Table 4:13 summarizes the analysis results for Remediation Math Level 1 Completion. The multiple linear regression model with all six predictors produced R^2 = .086, F (6, 885) = 13.794, p = .000. The R^2 indicated that the pre-college variables accounted for 8.6% of the variance in Remediation Math Level 1 Completion. An analysis of the multiple regression coefficients indicated that when all other variables in the model are controlled, SAT Math made the strongest unique contribution to explaining the dependent variable, β = .218, t (5.595), p = .000, followed by Diploma Type, β = .097, t (2.664), p = .008, then Pell Grant, β = .071, t (2.061), p = .040, then finally HSGPA, β = .070, t (1.968), p = .049,. SAT Verbal and being a Black male did not make a statistically significant unique contribution.

Table 4:14 Regression of Remediation Math Level 2 Completion

Variable	B	SE	β	t	Sig.
HSGPA	.101	.051	.069	1.990	.047
SAT Verbal	.000009701	.001	.006	.153	.878
SAT Math	.003	.001	.150	3.970	.000
Pell Grant	.194	.097	.067	2.002	.046
Black	.211	.094	.081	2.243	.025
Diploma Type	.238	.091	.093	2.624	.009

Note: R^2 = .063, F (6, 963) = 10.746, p = .000;
*p < .05
**p < .001

The results in Table 4:14 show that the linear regression model for the dependent variable of Remediation Math Level 2 Completion explained 6.3% of the variance and

was significant at the .000 level. As can be seen in Table 4.14, all of the variables, with the exception of SAT Verbal, made unique contributions to explaining the completion of level 2 remedial math after controlling for the other variables in the model.

Hypothesis 2 – Part 1

The second purpose of this study was addressed with the second hypothesis being a Black male and remediation course placement will have a statistically significant impact on success in college-level math and English, persistence, graduation or transfer. Two approaches were used to address this hypothesis, a multiple linear regression analysis and a logistic regression analysis.

A multiple linear regression analysis was conducted with the independent variable set, containing being a Black male, reading placement, English placement and math placement. The multiple regression analysis allowed for the assessment of all variables combined on success of college level math and English courses (as determined by grades of A, B or C). The multiple linear regression coefficients were analyzed with their corresponding significance level to determine the statistical significance of the independent contributions of the variables. The results of the multiple linear regression analyses for completion of college-level English and math indicated that they contributed positively to variation in the dependent variable when holding all of the variables constant. The results of the regression analyses are presented in tables 4:15 and 4:16.

Table 4:15 Regression of College Level English Completion

Variable	B	SE	β	t	Sig.
Reading	.076	.092	.026	.823	.410

English	.094	.085	.036	1.103	270
Math	-.114	.113	-.032	-1.014	.311
Black	-.217	.081	-.082	-2.683	.007

Note: R^2 = .010, F (4, 1098) = 2.860, p = .022;
*p < .05
**p < .001

The results in Table 4:15 reveal that the multiple linear regression model for the dependent variable of College Level English Completion explained 1% of the variance and was significant at the .022 level. Table 4:15 shows that being a Black male had a significant positive regression weight (β = -.082, t (-2.683), p = .007) after controlling for the other variables and made the strongest unique contribution to explaining the dependent variable. This indicates that the Black male students were less likely to complete college-level English.

Table 4:16 Regression of Completion of College Level Math

Variable	B	SE	β	t	Sig.
Reading	.016	.114	.005	.140	.889
English	-.117	.106	-.042	-1.110	.267
Math	-.212	.140	-.056	-1.518	.129
Black	-.328	.101	-.116	-3.264	.001

Note: R^2 = .018, F (4, 793) = 3.732, p = .005;
*p < .05
**p < .001

Table 4:16 provides the results of the Completion of College Level Math. The multiple linear regression model with all for predictors produced R^2 = .018, F (4, 793) =

3.732, p = .005. The R^2 indicated that the independent variables explained 1.8% of the variance in College Level Math Completion. An analysis of the multiple regression coefficients indicated that being Black made the strongest unique contribution to explaining the dependent variable, β = -.116, t (-3.264), p = .001.

Hypothesis 2 – Part 2

A multiple logistic regression was conducted with the remediation variable set containing reading, English and math placement and being a Black male to address the second part of hypothesis two. The logistic regression analyses allowed for the assessment of how well the independent variables (remediation placement and being a Black male) predicted or explained the categorical dependent variables of persistence (at 3-year and 6-year); transfer (at any point in time); and graduation (at any point in time). The Wald criterion was analyzed with its corresponding significance level to determine the statistical significance of the relative importance of each of the independent variables. The analysis also provided a summary of the accuracy of the classification of cases. Tables 4:17 through 4:21 present the results of the regression analyses for part two of hypothesis 2.

Table 4:17 Regression of Persistence at 3 Years

Variable	B	SE	Wald	Sig.	Exp(B)	95% C.I.	
						Lower	Upper
Reading Remediation	.016	.118	.019	.890	1.016	.807	1.280
English Remediation	-.092	.109	.712	.398	.912	.736	1.129
Math Remediation	-.347	.141	6.052	.014	.707	.536	.932
African American	-.392	.105	13.846	.000	.676	.550	.831
Constant	-.163	.152	1.143	.285	.850		
-2 Log, Likelihood	2289.559						

Cox and Snell R^2	.012						
Nagelkerke R^2	.017						
Homer and Lemeshow Test	.984						
% Correctly Predicted	65.4						
Note: N = 1792; *p< .05 **p< .001							

A logistic regression analysis was conducted to explain student persistence at three years using remedial reading, English and math placement and being a Black male as independent variables. Table 4:17 presents the results of the analysis. A test of the full model against a constant only model was statistically significant, indicating that the independent variables did reliably distinguished between students that persisted at the 3-year mark from students that did not persist at the 3-year mark (Chi square = 21.848, p = .000 with df = 4). Nagelkerke's R^2 of .017 indicated a weak relationship between the model and the dependent variable. Success overall predicting the groups was 65.4% (100% for did not persist and 0% for persisted). Although the full model was statistically significant, adding the independent variables to the model did not increase the overall percentage of correctly classifying the cases. The score on the Wald criterion demonstrated that being a Black male (B = -.392, p = .000) and math remediation placement (B = -.347, p = .014) made a significant contribution to predicting persistence at three years. The results indicated that Black male students were less likely to persist than White male students and that students placed in remedial math were less likely to persist at three years compared to those students who did not place into remedial math. Reading and English placement did not contribute significantly to the model. Exp(B) values indicated that if a student is Black or has a remedial math placement, he is less

likely to persist at the 3-year mark. As the likelihood of being an African American male student and needing remedial math increased, the odds of persisting at three years decreased by a factor of .676 and .707 respectively, with all other factions being equal. The confidence intervals for being Black (.550 to .831) and math remediation placement (.536 to .932) were statistically significant.

Table 4:18 Regression of Persistence at 6 Years

Variable	B	SE	Wald	Sig.	Exp(B)	95% C.I.	
						Lower	Upper
Reading Remediation	-.137	.113	1.486	.223	.872	.699	1.087
English Remediation	.005	,104	.002	.965	1.005	.819	1.232
Math Remediation	-.266	.140	3.601	.058	.767	.583	1.009
African American	-.315	.099	10.124	.001	.730	.601	.886
Constant	.664	.151	19.324	.000	1.943		
-2 Log, Likelihood	2433.945						
Cox and Snell R^2	.009						
Nagelkerke R^2	.012						
Homer and Lemeshow Test	.999						
% Correctly Predicted	57.0						
Note: N = 1792; *p< .05 **p< .001							

Table 4:18 reveals that the logistic regression analysis that was performed to explain persistence at the 6-year mark was statistically significant (Chi square = 16.417, p = .003 with df = 4). As with persistence at 3 years, the Nagelkerke's R^2 of .012 indicated a weak relationship between the model and the dependent variable. The strongest predictor of persistence at 6 years was being Black (B = -.315, p = .001) indicating that African American male students were less likely to persist at the 6-year mark. As the

likelihood of being a Black student increased, the odds of 6-year persistence decreased by a factor of .730 (or approximately 27%), with all other factions being equal. The model correctly classified 57% of the cases. The confidence interval for Black students (.601 to .886) was statistically significant.

Table 4:19 Regression of Graduation from Study Site

Variable	B	SE	Wald	Sig.	Exp(B)	95% C.I.	
						Lower	Upper
Reading	-.162	.193	.702	.402	.850	.582	1.242
English	-.383	.177	4.660	.031	.682	.482	.965
Math	-.593	.217	7.484	.006	.553	.361	.845
African American	-.382	.173	4.869	.027	.683	.487	.958
Constant	-1.376	.232	35.114	.000	.252		
-2 Log, Likelihood	1147.113						
Cox and Snell R^2	.010						
Nagelkerke R^2	.020						
Homer and Lemeshow Test	.788						
% Correctly Predicted	90.0						

Note: N = 1792;
*p< .05
**p< .001

The results of the logistic regression analysis to predict graduation from the study site showed that the full model, which considered all the four variables together, was statistically significant. The model correctly classified approximately 90% of the cases. The "pseudo" R estimates indicated that the model explained between 10% (Cox & Snell R Squared) and 20% (Nagelkerke R Squared) of the variance in graduation from the study site. As can be seen from Table 4:19, remedial math placement (B = -.593, p = .006), being Black (B = -.382, p = .027) and English remediation placement (B = -.383, p

= .031) were the strongest predictors of graduation from the study site. Exp(B) values indicated that if a student is African American or was placed in remedial math or English, he is less likely to graduate from the study site. For example, the odds of graduating from the study site are decreased by a factor of .553 if the student took remedial math compared a student who did not take remedial math, controlling for all other variables in the model. Further the odds decreased by .682 if the student took remedial English and by .683 if the student is Black compared to a student not take remedial English and a White male student, controlling for all other variables in the model.

Table 4:20 Regression of Graduation from 4-Year Institution

Variable	B	SE	Wald	Sig.	Exp(B)	95% C.I.	
						Lower	Upper
Reading	-.545	.164	10.998	.001	.580	.420	.800
English	-.440	.143	9.341	.002	.644	.485	.854
Math	-.663	.181	13.407	.000	.515	.361	.735
African American	-.275	.136	4.083	.043	.759	.581	.992
Constant	-.623	.194	10.347	.001	.536		
-2 Log, Likelihood	1593.855						
Cox and Snell R^2	.021						
Nagelkerke R^2	.035						
Homer and Lemeshow Test	.635						
% Correctly Predicted	83.0						

Note: N = 1792;
*p< .05
**p< .001

Table 4:20 presents the results of a logistic regression analysis conducted to explain student graduation from a 4-year institution. The results indicated that a test of the full model was statistically significant (Chi square = 38.010, p = .000 with df = 4).

This implied that the odds of student graduating from a 4-year institution were related to the four independent variables, remedial reading placement, remedial English placement, remedial math placement and being a Black male. Success overall predicting the groups was 83%. Wald statistic indicated that remedial reading (B = -.545, p =.001), math (B = -.663, p = .000), English (B = -.440, p = .002) placements and Black students (B = -.275, p = .043) all made a significant contribution to predicting graduation from a 4-year institution. The results show students who took any of the remedial courses were less likely to graduate from a 4-year institution. The results further show that the Black male students were less likely to graduate from a 4-year institution. Exp(B) values indicated that if a student has a remedial reading, math or English placement or is a Black male, he is less likely to graduate from a 4-year institution. As the likelihood of being an African American male at the study site and needing the remedial reading, English or math increased, the odds of graduating decreased by a factor of .759, .580, .515 and .644 respectively, with all other factions being equal. The confidence intervals for being Black (.581 to .992), reading (.420 to .800), math (.361 to .735) and English (.485 to .854) were statistically significant.

Table 4:21 Regression of Transfer

Variable	B	SE	Wald	Sig.	Exp(B)	95% C.I.	
						Lower	Upper
Reading	-.095	.112	.727	.394	.909	.731	1.132
English	-.010	.103	.010	.920	.990	.808	1.212
Math	-.120	.137	.766	.381	.887	.678	1.160
Black	-.245	.098	6.225	.013	.783	.645	.949
Constant	.308	.148	4.342	.307	1.361		
-2 Log, Likelihood Cox and Snell R^2	2472.982 .005						

Nagelkerke R^2	.006						
Homer and Lemeshow Test	.938						
% Correctly Predicted	53.6						

Note: N = 1792;
*p< .05
**p< .001

A logistic regression analysis was conducted to explain transfer from the study site using remedial reading, English and math placements as independent variables. A test of the full model against a constant only model was not statistically significant, indicating that the independent variables did not reliably explain the variance on transfer and distinguish between students that transferred from students that did not transfer (Chi square = 8.522, p = .074 with df = 4). Therefore, no further analysis for this model is presented. The results of the analysis on transfer are presented in Table 4:21.

Summary

This chapter presented findings of the research based on the results of the data analysis. The meaning and implications of these findings within the context of existing literature will be discussed in Chapter 5. That chapter will further discuss implications for research, policy and practice based on the findings.

CHAPTER 5

DISCUSSION

The findings of the study are intriguing, generally supporting earlier research but also providing some surprises. In this chapter, the findings are summarized and discussed in relation to the initial hypotheses, then some implications for practice, policy, and further research are suggested.

This study examined the effects of high school characteristics on remediation placement and outcomes and the impact of remediation placement on academic outcomes in a two-year college environment with particular attention to African American males. Of specific interest are: 1) the influences of high school GPA, high school diploma type, SAT/ACT scores, being a Black male and Pell eligibility on remediation enrollment and outcomes; 2) the overall rate of success evidenced by performance in college-level math and English courses upon exiting remedial studies; and 3) the overall rate of success evidenced by persistence to graduation or transfer after exiting remedial courses. The following questions guided this study:

1. For students who are enrolled in remediation, what is the impact of selected pre-college attributes (i.e., HSGPA, SAT/ACT scores, diploma type, race (Black and White), Pell Grant eligibility) on remedial course placement and outcomes?
2. What is the impact of being a Black male and remedial placement on academic outcomes (outcomes as defined by C or better in college-level math and English as well as persistence, graduation and/or transfer)?

The population for this study consisted of 704 Black male and 1088 White male students who attended a two-year institution and were placed into reading, English (writing) and/or math remedial courses at the time of matriculation.

The conceptual model for this study was Astin's (1993) Input-Environment-Output Model whereby pre-college factors represented the input, remedial placement and outcomes represented environment, and success in college-level math and English, persistence, graduation and transfer represented the output.

Summary of Findings

The pre-college variables included in the study had a significant impact on remediation placement in all three areas (reading, English and math). Not surprisingly, SAT Verbal provided the best explanation for why students placed into both remediation reading and English. SAT math provided the best explanation for why students required math remediation. These outcomes aligned with the academic policies of the study site which played a significant role in how students were placed in remediation. For example, SAT Verbal was significant in determining placement of both English and reading remediation. This outcome mirrored the policies of the study site since SAT Verbal scores were used to determine if students were required to take the COMPASS reading and writing (English) placement exams. If students did not score well on the SAT Verbal then they were less likely to obtain a score on the COMPASS reading and writing exam to exempt them from remedial courses. The same is true for the SAT math scores and the COMPASS math exam.

The effect of diploma type on math remediation requirement was also significant. Significance of diploma type indicated that more students without a college preparatory

diploma would require math remediation. This is most likely due to the fact that non-college preparatory curriculums did not require the same number and level of math courses as the college preparatory track. Further, students were required to have a minimum number of high school units in English, and mathematics (CPC) to be exempted from taking the COMPASS exam. Students with a non-college preparatory diploma were less likely to have the required number of units in English and math and subsequently were placed into remedial studies.

Interestingly, SAT Verbal scores had an effect on math remediation placement. However, this is understandable since the exam which is used to determine remediation placement requires the ability to read and comprehend what is read.

The analyses of remediation completion yielded both expected and unexpected results. Not surprisingly, HSGPA consistently showed up as making a unique contribution to explaining remediation completion. As the HSGPA rose it became more likely that students would complete the remediation level. An unexpected result was that the Black male students were more likely than White male peers to complete Remedial Reading Level 1, Remedial Level 2 English, and Remedial Math Level 2. Equally as surprising was that SAT Math best explained student completion of Level 2 Reading Remediation. This result may be considered an anomaly that cannot be explained based on the variables in the model.

The impact of being a Black male student and remediation reading, English and math placements were statistically significant at explaining student's completion rates of college-level English or Math. The results indicated that Black males were less likely than White male students at the study site to successfully complete college-level English

and math courses. For both the 3-year and 6-year persistence marks, being a Black male student made the most significant contribution to predicting persistence. This revealed that the Black male students in the sample were less likely to persist than White male students. Further, students placed into remedial math were less likely to persist at the 3-year mark.

The direct effect of remediation on graduation from the study site indicated that students who were required to take remedial math and English and the African American male students in the study were less likely to graduate from the study site. The results of graduation from a 4-year institution revealed that students required to enroll in any of the remediation courses were less likely to graduate from a four-year institution. In addition, Black male students were less likely to graduate from a four-year institution than White male students.

Discussion of the Findings

On the basis of this study, two general conclusions about the cohorts can be deduced regarding the study findings. First, academic preparation outweighed being a Black male student and socioeconomic status in strongly influencing the types of remediation placement and the overall student success in remediation. Swail, Redd, and Perna (2003) state:

> Research shows that the level of academic preparation in high school is positively related to high school graduation rates, college entrance examination scores, predisposition toward college, college enrollment, representation at more selective colleges and universities, rates of transfer

> from a two-year to a four-year institution, progress toward earning a bachelor's degree by age 30, college persistence rates, and college completion rates. (p.vi)

Swail et al. (2003) suggested that completing a rigorous academic curriculum during high school appears to be a more important predictor of persistence in college than test scores, especially for African American and Hispanic students.

Academic preparation in high school is a critical juncture for students as they position themselves to enroll in the higher education environment. A review of the literature appears to indicate that a major contributing factor in preparing students for college is the rigor of their pre-college curriculum, regardless of their race, gender, income, or almost any other background variable. Further, the results of the study indicate that as part of a rigorous academic preparation curriculum, reading is a critical skill necessary for success in both reading content and math courses.

The second conclusion that can be deduced based on the findings of this study is that Black males in remediation do not do as well as their White male counterparts in completion of college-level math and English and persistence to graduation from both two-year and four-year colleges. The achievement of African American males in this study is consistent with the trends of underachievement of this group when compared to other ethnic and gender subgroups in institutions of higher education. The academic challenges that Black male students face in college is multiplied when they are required to complete developmental course sequences. Required enrollment in remedial courses

further contributes to their disproportionately low performances on academic outcome measures.

Although the study site is a large transfer engine for the students it serves, race and remediation placement do not provide any explanation on transferring to a four-year institution. There are several possible reasons to explain this finding. First, remediation requirements may have limited the transfer options for some students. The institution in this study was part of a larger system of public 2-year and 4-year colleges and universities. Other institutions in the system also required remedial studies for academically underprepared students. Four-year institutions required that students complete the remediation requirements prior to transfer. These policies limited transfer options within the system. Second, as was previously discussed, placement in remedial math courses impact persistence. The number of students who were required to either drop-out or stop-out because they could not successfully complete their developmental course sequence may have impacted the number of transfer students. Finally, students who transferred to institutions that were not included in the National Student Clearinghouse database would not be included in the results.

Limitations

This study has several limitations. First, it is important to remember that this study uses only secondary data that includes measured behaviors (HSGPA, standardized test scores, diploma type, college grades) and background characteristics (race and Pell Grant eligibility) to determine remediation placement levels and academic outcomes. This study does not address the factors that contribute to remediation requirements and compare students who placed into remediation with those who did not.

Second, this study does not allow for a more thorough investigation of additional cognitive and non-cognitive pre-college factors that may impact the study outcomes.

Third, the study does not address some of the attitudinal, psychological, and social factors such as motivation, self-confidence, self-efficacy, and family support that may influence student persistence. While the significance of academic preparation on outcomes cannot be ignored, deficits that emerge from lack of motivation, self confidence, self efficacy and family support may play more of a role in persistence and degree completion for some students than others.

A fourth limitation of the study is that the persistence model does not address students who stopped out for any given time and then returned to the study site in an effort to persist towards degree attainmnet or transfer. Further, although this study contributes to the current literature on graduation rates for students in remediation, the study did not follow students beyond six years. Therefore, some of the study subjects may have completed their associate's or bachelor's degrees at some point beyond the timeframe for this study.

Finally, this study is limited to Black and White male students with English as a primary language who were required to enroll in remediation courses based on various assessments at a specific study site in the Southeast region of the United States. Other ethnic groups or female students were not included to determine the impact of pre-college factors and remediation on students beyond those in identified in the study.

Implications for Research, Policy, Practice

The findings of this study should form the basis for further study of the impact of pre-college factors, remediation, and being a Black male on student success in a two-year college setting. First, the emerging theme of academic preparation in the study supports the assertion of researchers such as Kaye, Lord and Bottoms (2006), Venezia (2006) and Mortenson (2006) that academic preparation is critical to college student success. Given that what is expected of students to be successful in college is similar to what is expected for high school success, it is reasonable to continue to focus attention and future research on academic preparation factors. Future research can focus on the factors that have the greatest impact on preparing students for success in college.

Second, because of the significance of current assessment tools for determining remedial placement, future research comparing pre-college, measurable behavior (HSGPA, standardized test scores, academic curriculum) with placement assessment scores for students who place into remediation with those who do not may aid in understanding the predictability of the placement assessment tool. This type of analysis would contribute to the discussion on the validity of current placement assessment tools and the recommendation that they should be supplemented with high school transcripts for planning appropriate courses for students.

The study outcome revealing the contribution of SAT Verbal scores to placement in remedial math supports research on the relationship between reading and mathematics achievement (Fuchs, Fuchs, Eaton, Hamlett, & Karns, 2000; Helwig, Rozek-Tedesco, Tindal, Heath, & Almond, 1999). Several researchers posit that a student's level of reading proficiency can be a strong indicator of mathematical success (Jiban & Deno,

2007; Lamb, 2010). A third area of consideration for future research is an expanded evaluation of the relationship between reading proficiency, math success and degree completion. Further research in this area could help identify strategies for improving student success.

Fourth, continued research on remediation should be conducted to determine the impact on minority student persistence and overall academic success in the two-year college setting. Two-year colleges are a gateway to education for many minority student groups. The findings here which revealed that Black males were less likely than White males to complete college-level English and math at the study site align with current research on the high number of minority students enrolled in remediation and their low success rates (Astin, 1998; Collin, 2009). The Complete College America (2012) report also concluded that historically underrepresented groups like African Americans, Hispanics, and low-income students are more likely to require remediation. Dawson-Threat (1997) further concluded that remedial courses have a negative effect on Black males and more evaluation should be done to determine their effectiveness. The study by Bailey, Jeong, and Cho (2008) on remediation referral, enrollment and completion of course sequences as part of the national community colleges initiative, *Achieving the Dream: Community Colleges Count*, also indicated the negative impact of remediation on completion of college level courses. The results of the study indicate that almost half of those who completed the remediation sequences did not go on to pass the first college-level course. Specifically only 15% of all students referred to math remediation passed a college-level math course within three years and about 20% of students referred to reading remediation courses passed an English gatekeeper course within the same period.

Although the study by Baily, et al. (2003) did not specifically focus on minority students, they state that the Achieving the Dream colleges served substantially higher proportions of Black and Hispanic students and more closely represented an urban, low-income, and minority student population than do community colleges in the county as a whole.

Fifth, there are several environmental factors not included in the study that may have aided in better understanding student outcomes in remediation. One factor for future research consideration is a comparison of students in remedial courses taught by full-time and part-time faculty. Other environmental topics for future research consideration include a comparison of students who received tutoring from the Learning and Tutoring Center with those who did not; comparison of students who consistently attended advising sessions with their staff or faculty advisor with those who did not; and comparison of students who participated in a HEDS course with those who did not. Some of these environmental factors are considered part of the broader developmental education process (i.e., tutoring, advising, HEDS) that can yield positive outcomes for students in remediation courses who take advantage of them. Including these environmental factors in future research can help determine other influences of remediation outcomes beyond those discussed in this study.

Finally, as previously noted, this study did not address some of the attitudinal, psychological and, social factors such as motivation, self-confidence, self-efficacy, and family support that may influence student persistence. Hence additional qualitative research should be considered to look beyond remediation and identify attitudinal measures, psychological and social influences that may contribute to African American male students' persistence to degree completion. The use of a qualitative method can

provide the how and why of student success and offer more insight in strategies to improve completion rates for Black male students.

Several findings of this research could also guide college administrators in shaping policy and practices to address the challenges experienced by students who place in remediation. First, this study attempted to examine the impact of selected pre-college factors on remediation placement and outcomes and the impact of being a Black male and remediation on selected academic outcomes using Astin's (1993) Input, Environment and Output (I-E-O) as the conceptual framework. Given that research on the impact of remediation in a two-year college environment is extremely limited, this study extends the scope of remediation research to include the African American male student population. The findings here offer practitioners some insight into the factors that contribute to student success in remediation and overall academic achievement.

Second, the key implication from this study that high school academic preparation contributes more than race and socioeconomic status in determining student remediation outcomes align with prior findings that when academic preparation related variables are controlled, the effects of ethnicity on college persistence and academic success disappear. This finding reminds practitioners and policy makers of the significant relationship between high school preparation and college readiness. Although not a surprising result, it does affirm the importance of improving the performance of the K-12 sector and enhancing collaborations between high school and institutions of higher education.

Third, various researchers posit that students fail or succeed for a myriad of reasons. It would be useful to examine the impact of the various support services offered at the study site as well as other institutions to determine if they contribute to the

students' ability to successfully complete remediation, gatekeeper courses and degree attainment. These services include advisement, tutoring services, and enrollment in First Year Experiences courses and programs. Such an analysis would allow for a closer examination of the support services that have the greatest impact on students successfully completing remedial education courses. Practitioners in higher education could use this information to develop strategies designed to improve the persistence and completion rates for all students.

A fourth implication for practice involves a review of the previous and current remedial curriculum and placement requirements. Recently the institution study site made substantive changes to the remedial course curriculum and requirements. During fall 2012, the institution moved from two remedial courses per area to one course in each area. Further, the math department at the study site instituted a self-paced, computer-based classroom format for students in the remedial math course. In addition, the institution replaced the Higher Education Seminar (HEDS) course with a first year experience course with a different curriculum and focus than the previously offered HEDS course. Research comparing the previous two level remediation sequences with the current remediation format could be beneficial in determining which remediation program structure yields the best results for student success. The College Board Advocacy and Policy Center report (2012) indicates that students who attend colleges that offered only one level of remediation had considerably higher sequence completion rates than students at colleges with multiple levels of remedial education.

In addition to a review of the previous and current remediation structures, research should be conducted on the impact of this policy change on students who no

longer meet the admissions criteria because of low COMPASS scores. The current policy denies students admission if they do not make certain scores on the placement exam. Students are also denied admission if they place into more than two remediation areas. This is the first time in the history of the study site that students are denied admission based on placement scores. A policy which denies students, many who have historically been marginalized in society, the opportunity for remediation challenges the original and long-standing mission of the two-year college. The policy further raises the issue of social justice and inequality. As part of their denial letter, students are encouraged to consider applying for admission to technical schools which have less rigorous admissions criteria. Suggesting that less academically prepared students, who are often from low-income and minority populations, enroll in technical schools may be considered by some as limiting their academic and career opportunities.

Finally, practitioners and policy makers should rethink the use of a three-year metric for evaluating graduation success rates in the two-year college sector. It is important to note that the normative graduation time for community colleges is defined as two years of full time enrollment. However most community college students take much longer than two, three or even four years to complete an associate's degree because they are required to complete remedial courses in addition to attending part-time. The findings of this study contribute to the current research that suggest that remediation slows or halts students' progression towards degree completion especially for students who are African American, Hispanic or low-income. A 2012 study by the College Board Advocacy and Policy Center supports the findings of this study with regards to the impact of remediation on persistence in a two-year college environment. The study entitled, The

Completion Arch: Measuring Community College Student Success explains that because many of the students enroll less than half time and most students must take at least one remedial course, six years may not be long enough for community college students to complete their educational goals. In addition, the findings of the Complete College America (2012) study indicated that only 9.5% of students placing into remediation graduated with an associate's degree in three years. For students requiring remediation at the four-year college, only 35.1% graduated with a bachelor's degree in six years. The reports goes on to say that graduation odds are especially low for students who are African American, Hispanic, older or poor with only 7.5% of full-time and 2.1% of part-time African American students graduating with an associate's degree in three years.

As the public debate on the benefits and challenges of remediation continues, groups of students struggle to get over the remediation hurdle, succeed in gatekeeper courses and persist to degree completion. Studies such as this one that provides research on the impact of remediation on a historically marginalized segment of students are vital to two-year college administrators. The insights offered in this study can enhance two-year college services and programs and provide institutions with more tools to meet the challenge of improving the academic success of African American male students.

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APPENDIX A

SAT/ACT MATH AND READING CONVERSION TABLE

ACT	SAT
36	800
35	770-795
34	745-765
33	720-740
32	700-715
31	680-695
30	665-675
29	645-660
28	625-640
27	605-620
26	585-600
25	565-580
24	595-560
23	525-540
22	510-520
21	490-505
20	470-485
19	450-465

18	430-445
17	410-425
16	385-405
15	360-380
14	335-355
13	310-330
12	280-305
11	200-275