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READY OR NOT, HERE COMES COLLEGE: A COMPARATIVE CORRELATION
STUDY OF COLLEGE READINESS IN BLACK AND HISPANIC STUDENTS
WHO TAKE ADVANCED LEVEL CLASSES.

by

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A dissertation submitted in partial fulfillment of the requirements
for the degree of Doctor of Education
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ABSTRACT

The purpose of this study was to investigate how participation in advanced level courses impacts college readiness in students of color, specifically Black and Hispanic students. High school students have a variety of advanced level classes to choose from, including but not limited to: Advanced Placement (AP), International Baccalaureate (IB), Dual Enrollment (DE), Advanced International Certificate of Education (AICE) and Advancement via Individual Determination (AVID) classes. These types of advanced classes not only prepare students for college but also allow them to earn college credit through participation in courses of college level rigor while still in high school. However, the number of students of color enrolled in advanced level classes has historically been substantially lower than that of their White counterparts (Kerr, 2014). Special incentives, grants, and funding have been put in place both at the state and federal levels to increase the number of students of color participating in these advanced classes. AVID is specifically designed to help increase college readiness for the most underrepresented student groups. In the past, the federal government, state policymakers, and companies such as College Board have started programs geared toward increasing AP and IB offerings for disadvantaged students and the number of students who take these courses (Iatarola, Conger, & Long, 2011). As a result of this effort, there has been a rise in participation in AP programs across the country with respect to Black and Hispanic students. This study was conducted to investigate how these advanced level courses impacted the level of college readiness among students of color in the fastest growing school district in Northeast Florida. The researcher aimed to determine if there was a

difference in college readiness between students of color who take advanced level classes as opposed to those who do not. The principle purpose of this study was to examine the relationship between Black and Hispanic high school student participation in advanced academics and their college readiness.

The following research is dedicated to my family for all of the sacrifices and support that you have knowingly and unknowingly given to me. As I have pursued my advanced degree, I have been able to maintain my desire to see this through to completion because of you.

To my children, Mariyah Celeste, Nyobi Devindra, Anakin Soopayah, Nigel David Junior, and Chael Blaze, I love you with all my being; you all bring me so much pride and joy in your own unique ways. Mariyah, I learned to be a man and a father with you by my side. Nyobi, you allowed me to know that I could love more than one child with the same amount of fervor. Anakin, you brought to me the pride of being the father of a son; I will always remember the day. Nigel, well, I never knew what it was like to see myself in action until I met you. Chael, you are my little prince and I am so glad to be your father. In time, I hope you all grow to be as proud of me as I am of you. Please know that as long as I have a breath I will always be here to support and guide you through life. May you always be happy, go far in life, and be patient and accepting of all those you encounter.

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CHAPTER 1 INTRODUCTION

Background

In the last decade, the United States Department of Education (USDOE) increased its focus on high school reform in an effort to create and align Kindergarten through 12th grade (K-12) standards and college expectations (Roderick, Nagoaka, & Coca, 2009). In 2009, the ACT reported that more states were implementing standardized testing to expand the number of students prepared for and with access to postsecondary education. Moreover, in recent years, policymakers and educational leaders alike established graduation requirements that ensured students would be ready for college or career (Stetser & Stillwell, 2014).

In the state of Florida, the aforementioned has been referred to as college and career readiness. For the 2014-2015 school year, the state of Florida had a graduation rate of 77.8% (Florida Department of Education [FDOE], 2015a). According to the FDOE (2015) website, 62.4% of those high school graduates were considered college and career ready (2015). A 2014 report published by ACT found that in Florida, 71% of White students were considered college ready in English, while 28% of Blacks and 46% of Hispanics were considered college ready. The same report showed that 33% of all students were college ready in mathematics, with 47% of White students, 12% of Blacks and 27% of Hispanic students being college ready. These data are displayed in Tables 1 and 2

Table 1

English College Readiness Among High School Students, by Race

Race	Percentage College Ready
White	71
Black	28
Hispanic	46

Table 2

Math College Readiness Among High School Students, by Race

Race	Percentage College Ready
White	47
Black	12
Hispanic	27

According to the FDOE (2016), college and career readiness is defined as follows:

Students are considered college and career ready when they have the knowledge, skills, and academic preparation needed to enroll and succeed in introductory college credit-bearing courses within an associate or baccalaureate degree program without the need for remediation. These same attributes and levels of achievement are needed for entry into and

success in postsecondary workforce education or directly into a job that offers gainful employment and career advancement. To be considered college and career ready, students must demonstrate mastery of the Florida Postsecondary Readiness Competencies in English and Mathematics that have been identified through a cross-sector collaborative effort by Florida's K12, college and university faculty. (para. 2)

The school district that was the primary focus of this study is located in Northeast Florida. The school district consists of 36,593 students, of which approximately 11,270 were high school students at the time of the study (FDOE, 2016a). For the 2015 - 2016 school year, the school district's high school graduation rate was 90.5%, and the state average was 77.8%. Similarly, with 77.8% of students graduating college and career ready, the district surpassed the state average of 62.4% (FDOE, 2016d).

Statement of the Problem

Every year the nation graduates 80% of its high school seniors. Further examination of the data reveals that 86% of Whites, 69% of Blacks, and 73% of Hispanics graduate (Stetser & Stillwell, 2014). The same report, published by NCES), showed similar numbers across the state of Florida, with 75% of all students graduating, of which 80% were White, 64% were Black, and 73% were Hispanic. The school district in this study has been the top-rated school district in Florida for eight years, since the 2008-2009 school year (FDOE, 2016). Despite this, the achievement gap between many of the subgroups has not closed; the subgroups that have been making progress have only

done so by a small percentage. White students have been graduating at a rate of 88% in contrast to their Black counterparts' rate of 69%.

As Roderick et al. (2009) noted,

Over the past several decades, high school students' college aspirations have increased markedly, and gaps in educational aspirations across race and ethnicity and income have fallen dramatically. But significant, and in some cases widening, gaps remain in college readiness, access, and success across these groups. (p. 185)

The aforementioned gap is due in part to the inequity of educational opportunity between students of color and White students. In support of this, researchers who have tracked students over time found that a major factor contributing to the underachievement of Black students is underrepresentation in advanced level academics and overrepresentation in remedial level courses (O'Connor, Mueller, L'Heureux Lewis, Rivas-Drake, & Rosenberg, 2011). Without equal access to educational opportunity and resources, students of color will continue to lag behind with respect to college readiness. Contreras (2011) stated that limited access to curriculum represses the ability of students who are already underserved, causing them to miss out on the chance to experience a college-going atmosphere that can better prepare them for college. Measures must be put in place so that all students can begin to have the same opportunity.

Purpose of the Study

The principle purpose of this study was to examine the relationship between high school Black and Hispanic student participation in advanced academics and their college readiness. The primary research question was: "What relationship, if any, exists between

students of color participating in advanced academic program (AP, IB, DE, AICE, AVID) and their level of college readiness?” According to the ACT college readiness standards that are based on high school performance and rigor of courses, Blacks, Hispanics, and American Indians score much lower than their White peers, and this suggests a lesser level of college preparation (Contreras, 2011). This study’s key purpose was to build on the research that exists about the participation of students of color in advanced programs and their college and career readiness by examining the course history and standardized test results of high school students in a specific school district in Northeast Florida.

Theoretical Framework

Access to and participation in advanced level academic programs, such as Advanced Placement (AP), International Baccalaureate (IB), Dual Enrollment (DE), Advanced International Certificate of Education (AICE) and Advancement via Individual Determination (AVID) is one of the primary means to closing the achievement gap between White students and students of color. As such, investigating the extent to which participation in advanced level academics results in college readiness in students of color is critical. Research exists detailing how advanced academics affect minority student achievement, but more can be done with respect to how it affects minority student preparedness as it relates to college readiness. Therefore, the researcher employed a quantitative design to answer the research questions that follow.

Research Questions

The following quantitative research questions guided this study:

1. What relationship, if any, exists between the participation of students of color in advanced academic programs (AP, IB, DE, AICE, AVID) and their college readiness?
2. What relationship, if any, exists between Black students' participation in advanced academic programs (AP, IB, DE, AICE, AVID) and their college readiness?
3. What relationship, if any, exists between Black male students' participation in advanced academic programs (AP, IB, DE, AICE, AVID) and their college readiness?

Significance and Need for the Study

This study's significance and need is built on the premise of adding additional insight into the long-standing issue of achievement gap among students of different races and ethnic backgrounds. More specifically, this study sought to determine to what extent participation in advanced academic courses had an effect on the college and career readiness of students of color. The review of the literature on educational opportunities, the challenges of culture versus education, advanced academics in high school (AP, IB, DE, AICE, AVID), standardized test scores, and graduation and college readiness are discussed in Chapter 2. Outcomes and conclusions drawn from this study may further the existing body of research in the areas of college and career readiness as it relates to students of color. Additionally, findings may also provide awareness to the school district

studied in its efforts to better understand the effects of high school students of color who participate in advanced academic courses, and how their participation correlates to college and career readiness.

Assumptions

1. It was assumed that the college readiness criteria set forth by the state of Florida was sufficient in that it prepares students for academic success at all colleges and universities.
2. It was assumed that the overall quality of education with respect to school facility, teacher quality, resources, and curriculum were the same or adequately similar at all the schools.
3. It was assumed that by analyzing the data through a quantitative multiple regression statistical test, the findings would show that students of color who participated in at least two years of advanced academics in high school would be college ready at a rate higher than students of color who did not participate.

Limitations

1. This study was limited to one school district located in northeast Florida.
2. This study was limited to the high schools located within the target school district in Northeast Florida.
3. This study was limited to high school seniors who were categorized as Black and Hispanic American students within the minority student population.

4. This study was limited in that the findings for the school district were not generalizable because it did not provide a typical representation of diversity; there was a low minority rate with more than 85% of students identified as White and a poverty rate of less than 20%.
5. This study was limited to a convenience sample in that readily accessible data were collected from one school district.

Definition of Key Terms

ACT: Formerly known as American College Testing, the company's name was shortened to ACT in 1996 to better represent its programs that go beyond a college entrance test. ACT is a college readiness or college admissions and placement test taken by high school students (ACT, 2016).

Advanced International Certificate of Education or AICE: AICE is an international curriculum and examination program modeled on the British pre-college curriculum (FDOE, 2011).

Advanced Level Academics: Students enrolled in Advanced Placement, International Baccalaureate, Dual Enrollment, Advanced International Certificate of Education, and/or Advancement via Individual Determination qualified for this study.

Advanced Placement or AP: The College Board's Advanced Placement Program is a program developed to enable willing and academically prepared students to pursue college-level studies (College Board, 2016b).

Advancement Via Individual Determination or AVID: The AVID College Readiness System works to ensure students are college ready by equipping them with the

skills, academic behaviors, and college knowledge necessary to succeed at every level from elementary school to college (AVID, 2016). For this study, AVID was considered as advanced level academics because a requirement of participating in AVID in the district studied was to also enroll in an advanced level course in every core subject.

At-Risk: For the purposes of this study, the term at-risk refers to any students who at the time they entered high school were not proficient in either FCAT 2.0 Reading or FCAT 2.0 Mathematics.

College readiness: According to FDOE (2016a),

Students are considered college and career ready when they have the knowledge, skills, and academic preparation needed to enroll and succeed in introductory college credit-bearing courses within an associate or baccalaureate degree program without the need for remediation. These same attributes and levels of achievement are needed for entry into and success in postsecondary workforce education or directly into a job that offers gainful employment and career advancement. To be considered “college and career” ready, students must demonstrate mastery of the Florida Postsecondary Readiness Competencies in English and Mathematics that have been identified through a cross-sector collaborative effort by Florida’s K12, college and university faculty. (para. 2)

Dual Enrollment or DE: A program in which students enroll part-time at a college or university where they take classes that count toward high school graduation as well as earn the student college credit at the same time (University of Central Florida, 2016).

Florida Comprehensive Assessment Test or FCAT 2.0: Measures student achievement of the “Next Generation Sunshine State Standards” in reading, mathematics and science (FDOE, 2016b).

Florida Standards Assessment or FSA: This assessment measures education gains and progress of Florida students in English Language Arts (ELA), mathematics, and end-of-course (EOC) subjects (Algebra 1, Algebra 2, and Geometry) (FDOE, 2016c).

International Baccalaureate or IB: The IB Diploma Program is a rigorous pre-university course of study leading to internationally standardized tests. The program’s comprehensive two-year curriculum allows its graduates to fulfill requirements of many different nations’ education systems (FDOE, 2011).

Minority student: For the purposes of this study, a minority student will refer to one who is either Black, a person having origins in any of the black racial groups in Africa, or Hispanic American, a person of Spanish or Portuguese culture with origins in Mexico, South or Central America, or the Caribbean Islands, regardless of race (Illinois Student Assistance Commission, 2016).

Post-Secondary Education Readiness Test (PERT): Florida's customized common placement test, with the purpose of determining accurate course placement based on a student's skills and abilities. The PERT is administered to students in public high schools and Florida College System institutions to determine readiness for college level courses (FDOE, 2015b).

Scholastic Aptitude Test (SAT): The SAT is a globally accepted college admission test created by The College Board that tests a student's knowledge of reading, writing, and math and how the knowledge is applied (College Board, 2016a).

Student of Color: To be determined a student of color, a student must be designated as Black or Hispanic.

Organization of the Study

This chapter has provided a perspective for the study, presented the problem, and outlined the research questions, significance, assumptions, limitations, and key terms of the study. Chapter 2 synthesizes the existing literature as it relates to the problem within the study. Chapter 3 details the methodology used to conduct the study, the population, college readiness determination, data collection and analyses. Chapter 4 presents the results and findings of the data analyses. Chapter 5 contains a discussion of the study, conclusions, and further implications for research.

CHAPTER 2 REVIEW OF LITERATURE

Introduction

Chapter 2 is a review of the literature as it relates to this study. This literature review offers a broad perspective of the existing research that focuses on minorities, participation in advanced academics, college readiness, and their relation to one another.

The purpose of this causal comparative correlation study was to explore the influence advanced level courses have on the college readiness of students of color. More specifically, the researcher examined if enrollment in advanced level courses produced a more college-ready student and if students of color who enrolled in advanced classes were considered as college-ready as their White classmates.

The advanced level programs and courses that were considered in this study were the Advanced Placement (AP), International Baccalaureate (IB), Dual Enrollment (DE), Advanced International Certificate of Education (AICE) and Advancement via Individual Determination (AVID) programs. Courses such as these are intended to provide students with increased rigor, make the transition from high school to college smooth, and boost college graduation rates (Estacion, Cotner, D'Souza, Smith, & Borman, 2012). This study focused on the high school students in a fast-growing school district in Northeast Florida. At the time of the study, the school district had seven high schools, all of which offered students advanced level courses.

Most high school students in America express an interest in attending college. However, there still exists a large gap in achievement by income and race (Pathways to College Network, 2007). Historically, minorities have been underrepresented in advanced

level classes (Borland, 2004). Additionally, the transition for some students to college or career can be challenging, particularly when they are not aware of what is required for college level courses (FDOE, 2015a). Furthermore, students are at different levels of readiness for college based on race and income status; the education system struggles to prepare students of color and poor families for the next stage after high school (Presley & Gong, 2005). The level of rigor that students receive in their high school classes has a direct correlation to college success (Hallett & Venegas, 2011). Students who graduate with better scores, grades, and advanced coursework have a greater probability of entering and completing college than those who do not (Roderick et al., 2009).

This review of literature explores several themes in order to clearly demonstrate the current performance of students of color in both advanced level courses and on college readiness examinations, as well as to define what barriers may keep Black and Hispanic students from enrolling in advanced level classes in the first place. Themes include background on educational opportunities, culture versus education, culture versus expectations, advanced academics in high school (AP, IB, DE, AICE, AVID), standardized test scores, and graduation and college readiness.

Background on Educational Opportunities

From their first day of school, students of color fight for the opportunity to be given the same academic possibilities as their White classmates. Black and Hispanic students are consistently underrepresented in the top 10% of their classes, a trend that is not only displayed in high school but is apparent as early as kindergarten (Olszewskie-Kuilius & Clarenbach, 2012). This tendency can be related to the educational

opportunities provided to students of color versus those provided to their White counterparts. Race can play a role in the amount of educational opportunities provided to a student, as can parental education, family income, and school composition. According to White & Tesfaye (2011),

Less than one-third of White and Asian public high school students attend a school that [our] principals classify as ‘worse off’. Less than one-fourth of Black and Hispanic high school students attend a school that [our] principals classify as ‘better off’. (p. 4)

Not only are students of color attending worse off schools, students of color are also being assigned to lower quality teachers than their White classmates. Presley & Gong (2005) reported that Black students are less likely to have access to high quality teachers than their White counterparts in a study determining the Teacher Quality Index (TQI) among Illinois high schools. The researchers found that 24% of Black students statewide were attending schools that employed teachers that were in the lowest 10% of the TQI in the state (Presley & Gong, 2005). There was also a relationship between attendance rates of students of color and high poverty students and the ranking of a school on the TQI: the higher the number of minority and high poverty students, the lower the school was ranked. Furthermore, even the more affluent Black students were more likely to attend a school ranked at the bottom of the TQI than their White counterparts (Presley & Gong, 2005).

Not only have students of color been assigned to classes taught by lower quality teachers, they have typically been offered fewer opportunities to participate in advanced

level academics. It begins with low expectations of students of color in comparison to the expectations of their White fellow students. Students of color have often been pushed toward more general education classes, but their White peers have been encouraged to participate in advanced classes with a more rigorous curriculum (Pathways to College, 2007). If a student lives in a high poverty, low-income area, the chance of advanced level classes being offered at their school decreases significantly. According to O'Connor et al. (2011), there are a limited number of advanced classes offered at schools with high minority populations and Blacks continue to be underrepresented in advanced and gifted classes, even at schools that are predominantly White. This explains why as recently as 2003, Blacks only represented 8% and Latinos only 15% of all students enrolled in gifted programs, but White students represented 74% (Contreras, 2011).

Although some may see that student attitude can be a limiting factor in types and frequency of opportunities offered to a child, teacher attitude is also crucial in the amount and type of educational opportunities offered to students. Kuman, Karabenick, & Burgoon (2015) found that student characteristics, including race and socioeconomic status, have an effect on a teacher's attitude and expectations of students, and that it was common for White teachers to stereotype students of color, especially Black students from low-income families, believing that they are "lazy, loud and less intelligent" (p. 534) and are typically the source of classroom disruption. Teacher attitude also affects how teachers assess and place their students. Glock, Krolak-Schwerdt, & Pit-ten Cate, (2015), in a study of 64 teachers' attitudes toward their students in relation to their teaching practices regarding grading, tracking and placement, found that race and

ethnicity affected the decision these teachers made regarding their students of color. Teachers were more likely to grade their students not based on the work they actually completed, but based on how they expected the student to perform on the given assignment. Furthermore, students of color were more likely to be incorrectly placed, usually lower than where the students should have been. Students of color were more likely to have their achievement tracked and analyzed than their White classmates (Glock et al, 2015). By tracking students, teachers created a system where minorities continually had their educational opportunities limited while also experiencing intensified racial and social class differences between students of color and White students within the classroom and school setting (Bernhardt, 2013).

Teacher attitude can also directly affect the learning environment and influence the types of relationships and levels of respect between students of different race and socio economic groups. Kuman et al. (2015) found that teachers who let racial beliefs guide their instructional practice were less likely to create a healthy learning environment for all students. This included downplaying the importance of mutual respect among students. This not only negatively impacts the classroom environment but also limits the relationships and trust the students of color build with both their teachers and their peers. Not only does this type of classroom environment not foster personal development between students, it also limits the cultural scope of curriculum. Kuman et al. (2015) reported that this type of bias reduced the number of academic opportunities presented to students, because teachers were less likely to make an effort to make the curriculum enriching and relevant to students of all cultures.

Culture and Education

Researchers have studied the effects racial identity has had on Black students (O'Connor et al., 2011). Sohn (2011) stated that the “fear of acting White” (p. 218), prevents Black students from working hard in school and trying to be academically successful. The author also contended that Black students who are academically successful are often derided as “acting White.” Friends play a very big role with peers; they are often used as a barometer for social acceptance (Cunningham, Corprew, & Becker, 2009). As such, many Black students become unwilling to compromise their identities, resulting in an opposition to school so as to not cross the cultural borders accompanied by the pressure to “act Black” (O'Connor et al., 2011).

Black students often feel that academic success is in conflict with being Black and that schooling is the White domain that forces Blacks to act White in order to be academically successful (O'Connor, et al., 2011). This can especially be the case when students of color are conflicted between behaviors attributed to their racial or ethnic group and those believed to be necessary for achieving academic success (Chambers, Huggins, Locke, & Fowler, 2014). The same authors also stated that historically, many people have adopted the idea that Blacks, as a result of trying to be academically successful, become estranged from their peers and lose the characteristics associated with their race; rather, they speak properly, speak softly, are courteous, and never exhibit spontaneous behaviors. This mindset can be challenging because it denies young minorities a normal perspective of their own. In its place, they compare their experiences

of what should be normal to that which they observe in White children (Spencer, Noll, Stoltzfus, & Harpalani, 2001).

Culture and Expectations

O'Connor et al. (2011) observed that Black students may not enter school with the idea that being black conflicts with academic success; rather, they may be reacting to how schools align race and achievement. Additionally, other factors such as teacher expectations, types of courses, quality of teacher, and external pressures like work and home-related issues may affect students' performance (Presley & Gong, 2005).

Cunningham et al. (2009) added that children form and develop self-images and their own expectations of themselves based not only on teachers but on parents and peers. They also stated that past successes and challenges can be a factor in developing self-image and personal expectations.

According to Gill and Reynolds (1999), teachers' expectations can produce self-fulfilling prophecies by evoking the level of achievement that is in line with what they expect. Gill & Reynolds also claimed that there is evidence showing that teachers behave differently with students depending on their expectations. For example, the teacher may praise certain students less often and criticize them more; students may not be called on as often to answer questions and may be given brief and less precise feedback. A teacher's failure to be aware of the differences in cultures and the many reasons why students may not "get it" underscore the extensiveness of stereotypes (Spencer et al., 2001).

The relationship between academic expectations and academic performance are connected in that they both contribute to one another (Cunningham et al., 2009). As children grow, they may develop notions about their own capabilities which may, in turn, affect future school performance (Gill & Reynolds, 1999). Although a teacher's perception of a student may not be completely inaccurate, it may also not be a perfect reflection of a student's true effort (Wildhagen, 2012). Instilling values in students that foster expectations of academic success and college may help students become more engaged in their academics, especially when they are from urban areas (Cunningham et al., 2009). Teachers, guidance counselors, parents, and stakeholders must believe that all students can achieve academic success and that all must be college and career ready (Pathways to College Network, 2007).

Background on Advanced Academics in High School (AP, IB, DE, AICE, AVID)

Advanced Placement (AP)

Advanced Placement (AP) classes were created by a group of prep school teachers who recommended that high schools “recruit imaginative teachers and they encourage seniors to engage in independent study and college-level work, and that achievement exams be used to allow students to enter college with advanced standing” (Byrd, 2007, p. 8). There is no prescribed curriculum or course material for AP classes nor is there specific training for instructors. Instead, instructors develop their own curriculum and syllabus and submit it to the College Board, the agency that oversees AP courses, for approval (Barnard-Brak, McGaha-Garnett, & Burley, 2011). There are currently 37 courses and examinations in which students may enroll. Students can take as

few or as many AP classes in high school as they wish. At the end of each course, students take that course's AP examination, which is scored on a scale of 1 – 5. A score of 3 or higher will earn the student college credit (Barnard-Brak et al., 2011). As of 2013, the number of students taking AP examinations had doubled to 28% of students at 12,705 high schools in the United States (McKillip, 2013). During the 1955-1956 school year, 1,229 seniors from 104 schools took 2,199 AP examinations with 130 college accepting AP examinations for college credit. Although AP courses were originally intended for high school seniors, the accessibility of AP courses to underclassmen increased, and this increased enrollment in AP classes to 10-20% of the student body at high schools across the United States. In 2006, 1.3 million students took 2.3 million AP examinations, which was an increase of 105,066% from the 1950s (Kyburg, Hertzberg-Davis, & Callahan, 2007). Though it was previously thought the benefit of taking AP courses applied to only those students who scored a 3 or higher on the AP examination, it has been found that even students who score a 3 or less on AP examinations were twice as likely to graduate from college in five years than students who had not taken AP courses (McKillip, 2013). In response to the increase in enrollment in AP courses, the Federal Government allocated \$3 million in 1998 and \$4 million in 1999 to increase minority participation in AP courses and examinations (Kyburg et al., 2007). As a result, between 1999-2002, minority student and low-income student participation increased by 77% and 100% respectively, which was a greater increase than the 48% increase in total overall participation for AP examinations during the same time period. Additionally, by 2006, the number of AP examinations taken by African-Americans also increased 250%, from

34,514 examinations taken by Black students in 1997, to 120,674 examinations taken by Black students in 2006 (Kyburg et al., 2007). These data are displayed in Figure 1.

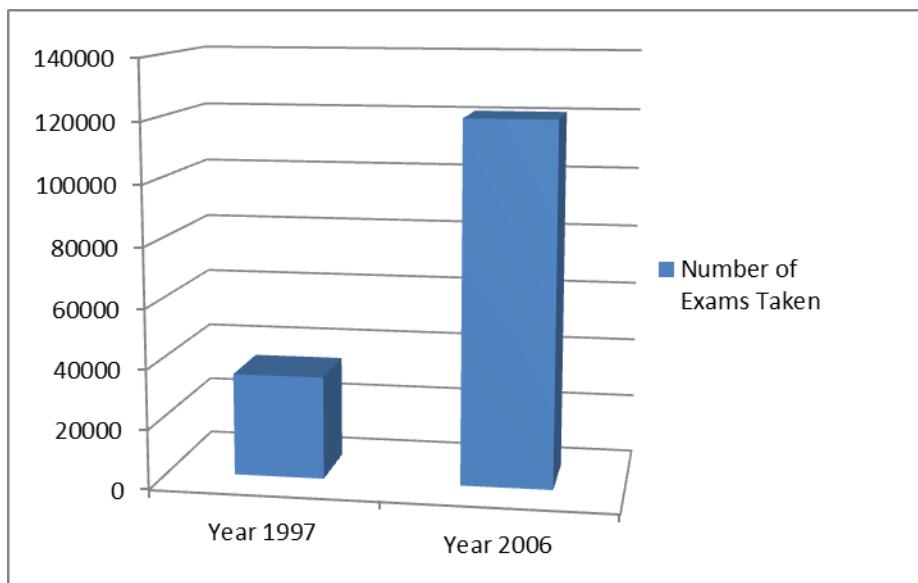


Figure 1. Number of AP Examinations Taken by Year for Black Students

Advanced Placement classes have become a sign to students and parents of a strong curriculum and course offerings that offer students the educational opportunity to increase their knowledge and earn credit for college. However, students of color have been the least likely students to enroll in these classes and those who do are the least likely to take and pass the AP examination and earn college credit. Of the 133,047 Black students who took an AP examination in 2008, only 25% earned a score of 3 or higher to actually pass the examination (Contreras, 2011). Additionally, schools in low income and high poverty areas have not offered as many AP courses as schools in high income, low

poverty areas, and this has limited the accessibility of these classes to students of color. There has been a push to increase the number of AP courses offered in low income, high poverty schools, in hopes that this will also improve the rate at which students of color are accepted to higher ranked, more selective universities nationwide. However, the issue that arises has been that the students enrolled in AP courses at low income, high poverty schools have not been given the same caliber of course work as their counterparts which, in turn, decreases their chances at scoring a passing grade on the AP examination and earning college credit (Hallett & Venegas, 2011). An AP program of less rigor puts students of color who do continue on to college at a continued disadvantage since they also lack some of the knowledge that they are expected to have acquired during the participation in the course (Hallett & Venegas, 2011). Thus, the issue has not only been the limited number of students of color enrolled in AP courses but also the quality of the program. According to Contreras (2011), though low income, high poverty schools have begun to add AP classes and course offerings, it seems that this is just being done to fulfill state and federal requirements and not so much to help students gain the knowledge and college credits from enrollment in AP classes.

International Baccalaureate (IB)

The International Baccalaureate (IB) is a pre-university course of study in which students may enroll during their last two years of high school (Hertzberg-Davis & Callahan, 2007 Hill, 2012). The IB program's mission statement states that the program

aims to develop inquiring, knowledgeable, and caring young people who create a better and more peaceful world through intercultural understanding and respect. To this end, the IB works with schools, governments, and international organizations to develop challenging programs of international education and rigorous assessment. These programs encourage students across the world to become active, compassionate, and lifelong learners who understand that other people, with their differences, can also be right (Hill, 2012, p. 343).

Developed in 1962, the IB program sought to achieve three main objectives:

- (1) to provide an education that places emphasis on critical thinking skills,
- (2) to promote intercultural understanding and provide students with an international perspective, (3) to provide a diploma which would be recognized for entry to high education around the world (Hill, 2012, p. 342).

The IB program requires students to study six subject areas: language, individuals, & societies, mathematics and computer science, the arts, experimental science, and a second language. It focuses less on reciting facts or stating opinions, and instead on critical thinking required to support facts and opinions with sound supporting, evidence-based arguments (Hill, 2012). Originally used in international schools as a way for students to participate in a curriculum that would satisfy college entrance requirements in their home countries, the IB program has shifted from being a program solely offered at international schools to an international program for all schools (Hill, 2012). In 1999, there were 268 schools with IB programs in the United States. In 2009,

the United States had 1,090 schools with IB programs and of the 87,800 students enrolled worldwide in IB programs, 49,100 were from the United States. Of all IB schools, 38% are located in the United States; and Florida has the ninth largest block of IB schools worldwide (Bunnell, 2011). Increased support by both state and the Federal Government can be attributed to the growth in IB schools and programs in the United States. In 2003, the U.S. Department of Education gave a \$1.17 million grant to schools in Arizona, Massachusetts, and New York to help increase the availability of IB program and schools to low-income students. As of 2008, 92% of IB schools in the United States were public schools (Bunnell, 2011).

Dual Enrollment (DE)

Dual Enrollment is a program where high school students can take college level courses to earn college credit and satisfy high school and college graduation requirements simultaneously (Wyatt, Patterson, DiGiacomo, 2015). Students are able to take classes at their own high school, at a college campus, or online (Wyatt et al., 2015). Aside from being able to earn college credit, dual enrollment programs also assist students in successfully transitioning from high school to college by presenting what is expected of them and what they will need to do to succeed in college while still in high school. Additionally, dual enrollment programs have been shown to motivate students to participate in more rigorous course work while in high school and have also been found to increase college retention (Pretlow & Wathington, 2014).

During the 2002-2003 school year, 1.1 million high school students nationwide were enrolled in dual enrollment programs. By the 2010-2011 school year, the number

doubled to two million high school students enrolled in dual enrollment programs (Ari, 2015). According to Pretlow and Wathington (2014), 46 states currently have dual enrollment policies in place. Nationally, schools offer more dual enrollment programs and courses than Advanced Placement (AP) or International Baccalaureate (IB) courses (Bramucci, 2014). Students who enroll in dual enrollment courses do not affect enrollment in AP or IB courses, as dual enrollment is a different type of program (Bramucci, 2014). While AP and IB programs are those with universal courses offered throughout the nation, dual enrollment does not have a nationwide model that is implemented at all schools offering dual enrollment programs (Pretlow & Wathington, 2014). There are some dual enrollment programs in school districts that are targeted at students who come from low-income families, are struggling academically, or are a minority (Bramucci, 2014). For example, the Concurrent Course Initiative (CCI) is a program that focuses on enrolling students from low-income backgrounds, students who struggle academically, and students who belong to a demographic population that is typically underrepresented in college. Of the students who participate in the CCI program, 60% have been found to earn an A or B in their college course work and enroll in four-year colleges and universities at a higher rate than their peers who did not participate in CCI (Bramucci, 2014). Additionally, CCI students who do enroll in college directly from high school earn 20% more credit after two years of college than their peers (Bramucci, 2014).

Hoffman (2005) examined Dual Enrollment among minorities in the state of Florida and reported that of Black students who enrolled in dual enrollment programs,

77% went on to attend college, whereas 45% of black students who did not participate in dual enrollment programs attended college. Of Hispanic students, 69% who took Dual Enrollment classes in high school attended college, whereas 54% of those who did not take Dual Enrollment classes enrolled in college (Hoffman, 2005). However, Dual Enrollment programs vary from state to state and even district to district, so there have been very few studies that have provided evidence or even enrollment numbers for minority students versus non-minority students (Pretlow & Wathington, 2014).

Advanced International Certification of Education (AICE)

Advanced International Certification of Education (AICE) programs are based on Britain's A & AS level examinations that are assessed by the University of Cambridge (Blazer, 2011). The AICE curriculum emphasizes "higher level thinking, oral and writing skills, problem solving, real world application, independent skills, teamwork and international understanding" (Blazer, 2011, p. 9). AICE programs feature a four-year high school curriculum which is comprised of prep level classes during 9th and 10th grades, and participation in the AICE diploma program during the 11th and 12th grades (Blazer, 2011).

In order for students to receive an AICE diploma, they must complete six full-credit AICE courses and examinations. The student must enroll in one math and science, one language and one arts and humanities course and may then choose three additional courses from any of the other 46 content areas (Blazer, 2011). AICE also offers flexibility in its course offerings that allow students to design curricula that also focus on their individual interests (Sismey, Shaw, & Barnhill, 2012). There are three levels of

AICE diplomas: Distinction, Merit, and Pass. The level of diploma that students earn is based on the amount of points they accumulate through course work and examinations. Course work is expected to display “analysis, synthesis, evaluation, knowledge, understanding and application” (Blazer, 2011, p. 9).

Examinations are scored on a scale of A through E, with A being the highest and E being the equivalent of a C or a 3.0 on Advanced Placement examinations. E is the lowest passing score accepted in order to receive an AICE diploma. Through AICE, students have the opportunity to earn up to 45 hours of college credit in high school (Blazer, 2011). International AS level examinations can earn one full credit, and International A level examinations can earn double credit (Sismey et al., 2012).

The FDOE conducted a pilot study comparing the AICE program to the International Baccalaureate (IB) program to determine the level of college readiness AICE would offer to high school students (Sismey et al., 2012). The FDOE found that AICE had the same degree of academic rigor as the IB program and that both programs featured “high academic standards, real world applications and international perspectives” (Sismey, et al., 2012, p. 5). Florida provides the same level of funding for A and AS level AICE courses as it does for IB and AP programs (Sismey et al., 2012). Students who take AICE courses have a significantly higher first-year college GPA than those students who did not take any advanced level classes in high school (Sismey et al., 2012).

Advancement via Individual Determination (AVID)

The Advancement Via Individual Determination (AVID) is a nationally recognized in-school intervention program put in place to foster the academic talents and aspirations of high achieving students of color so that they can continue on and be successful in their post-secondary careers. AVID began in 1980 as a response to voluntary desegregation in San Diego schools and was designed as a way to support learning in student groups that have historically been unrepresented at four-year colleges (Bernhardt, 2013; Huerta, Watt & Reyes, 2013). As of 2013, 4,800 schools in 48 states had AVID programs. Programs such as AVID build relationships and peer networks that help support a student in school, especially when that support is not given at home (Contreras, 2011). AVID begins to identify students starting in the Grade 4 and continues to work with these students for the remainder of their primary and secondary school careers. What also makes AVID unique is that the intervention program targets students who are considered average, but with the proper support, guidance, encouragement and opportunity, will be able to meet the high expectations of the program to achieve academic success both in school as well in their post-secondary careers (Contreras, 2011). Enrolling mostly low-income and students of color, AVID seeks to motivate, support and increase opportunities for these students to perform well in elementary, middle, and high school and continue their success in college (Bernhard, 2013). After students' teachers or parents recommend them for enrollment in AVID, they go through an interview process to ensure not only that the student is interested in participating, but that the student is a good fit and is committed to the program. The program is not strictly

academic. It also focuses on social growth, increased participation in extracurricular activities, both at school and in the community, and family involvement in the students' education. AVID requires parents to sign a contract to show support for their student's college aspirations. It also provides students and their families with information not only about education, but also about college entrance requirements, costs and financial aid (Bernhardt, 2013). In California, this level of support, education, and knowledge, both in and out of school, has shown that AVID students enroll in college and complete college level courses at a higher rate than students who were not enrolled in AVID (Huerta et al., 2013).

Standardized Test Scores

In order for students to be admitted to college, they must take one of the two college entrance examinations: the Scholastic Aptitude Test (SAT) or the ACT (formerly known as American College Testing) examination. The College Entrance Examination Board, now known as the College Board, was founded in 1900. The SAT was created and first administered in 1926 as a way for students to display their intelligence. If students did well, they would be eligible to go to college and further their education (Hoover, 2007). The SAT was modeled after the Army Alpha test which was used to measure the IQ of army recruits during World War I. The goal of the SAT has been to measure aptitude which is the ability to learn. This has been accomplished by examining a student's ability to think critically and use reasoning skills. Depending on when the SAT was taken, the test was made up of either two sections, mathematics and critical reading,

or if taken more recently, three sections, with an added writing component (Anderson, 2010).

The first administration of the ACT took place in 1959. The test was created as a competitor test to the SAT and aimed to measure student achievement in terms of level of student understanding (Anderson, 2010). The original ACT was made up of four sections: English, mathematics, natural science and social studies. In 1989, a reading section replaced the social studies section and natural science was changed to science reasoning and focused on a student's ability to problem solve (Zwick, 2007). Nationally, up until 2011, more students had elected to take the SAT than the ACT, but this has changed in recent years with the ACT being the more popular of the two (ACT, 2015).

Standardized testing made its national debut in 1914 when the National Education Association (NEA) formally supported the use of achievement testing in schools. Between 1918 and 1931, the number of standardized tests given in the United States increased from 100 to 1,300 (Maranto, 2015). After the release of "A Nation at Risk" in 1983, standardized tests, especially in mathematics and science, have been used to determine overall success and achievement of students in the United States. As Maranto (2015) reported, every president since Ronald Reagan has included monitoring and testing of American students' achievement in mathematics and science in some way. The introduction of No Child Left Behind (NCLB) in 2001, which stated that all children in the United States would be proficient in reading and mathematics by the 2013-2014 school year, added the use of standardized testing in the United States. This law mandated that states would monitor the progress and achievement of all students through

state-created annual assessment tests (USDOEa, 2015). NCLB not only put pressure on students to perform but, because of federal funding tied to the results and annual progress on these tests, also put pressure on teachers, schools, and school districts to perform (Maranto, 2015). Title 1, which was introduced as part of the Elementary and Secondary Education Act of 1965, was designed as a way to give schools in urban or low-income areas additional funds to help level the academic playing field so that all students, regardless of where they lived, would have the same academic opportunities (USDOEa, 2015). However, at the time of the study, Title 1 funds were being tied to NCLB and the funding a Title 1 school received was based on the school's performance on the state's annual achievement test which was measured in terms of Annual Yearly Progress or AYP (Maranto, 2015). A school that fails to meet its pre-determined AYP target faces different levels of consequences, with loss of funding being a main one (Maranto, 2015).

According to the ACT (2012), 27% of low income students met the ACT benchmarks in reading, 16% in mathematics, and 11% in science on the 2010 ACT. However, this trend of Black and Hispanic students failing to meet standardized benchmark levels has emerged as early as middle school. The ACT conducted a test to track student achievement beginning in Grade 8 in which the EXPLORE assessment test, was used to compare students' performance on the ACT as 12th graders. Findings were that as 8th graders, just 24% of Black students and 26% of Hispanic students were considered "on target" in reading, 15% of Black and 21% of Hispanics were on target in mathematics and 4% of blacks and 7% of Hispanics were on target in science (ACT, 2012). Conversely, 43% of blacks and 42% of Hispanics were categorized as "far off

track” in reading; 50% of blacks and 41% of Hispanics were far off track in mathematics; and 74% of blacks and 67% of Hispanics were far off track in science (ACT, 2012). It also seems that students who were far off track in 8th grade had very little, if any, chance of getting back on track and passing the ACT by the time they reached 12th grade. Of the students who were deemed far off track on the EXPLORE assessment as 8th graders, only 10% were able to meet the ACT reading benchmarks, only 3% were able to meet the ACT mathematics benchmarks and only 6% were able to meet the ACT science benchmarks as 12th graders (ACT, 2012).

Table 3

Percentage of Grade 8 Students “On Target” on the ACT by race and subject

	Reading	Mathematics	Science
Black	24	15	4
Hispanic	26	21	7

Table 4

Percentage of Grade 8 Students “Far Off Track” on the ACT by race and subject

	Reading	Mathematics	Science
Black	43	50	74
Hispanic	42	41	67

The location of the school where students attend is also a factor: the higher poverty, lower income area the school is in, the less of a chance do these students have to

pass the ACT. Schools where between 50-100% of all students were economically disadvantaged, only 6% of students classified as “far off track” in Grade 8 met the ACT reading benchmarks, 3% met the ACT mathematics benchmarks, and 3% met the ACT science benchmark (ACT, 2012).

Minorities have scored lower than White students on the ACT, and this has also been the trend in SAT scores. According to Harvey (2013), Blacks consistently scored between 152.16 to 221.68 points lower on the SAT than their White counterparts during the 10-year period from 2001-2002 to 2010-2011. Additionally, there was an average of 25.33 between the percentage of black students and the percentage of White students who scored at or above the ACT/SAT criterion during the same 10-year period, providing further evidence that the gap between the scores of Black and White students has not decreased, but rather has increased (Harvey, 2013). From 1988 to 2005, the gap between the average Black and average White student scores increased from 186 points to 204 points (Theodore Cross, 2005). Not only did the scoring gap increase, the average SAT score for Black students barely changed during the same time period. In fact, the average Black SAT score went from a combined score of 847 in 1988 to just 846 in 2005, an increase of just 1.4% (Theodore Cross, 2005). In a study where the SAT scores of students applying to five highly selective universities were compared, it was found that of students who scored over 1,200 on their SAT, 75% of those students were White, and only 20% of those students were Black (Jencks & Phillips, 1998). This demonstrates that overall White students have had a history of scoring higher than Black students.

Graduation and College Readiness

College readiness is used to determine the level at which a high school student is prepared to continue on to, and be successful at, a postsecondary institution without being enrolled in any remedial classes (usually for mathematics and English). Students are able to demonstrate their academic knowledge and skills on a number of college readiness examinations. In Florida, this examination is the Postsecondary Education Readiness Test (PERT) that students take during their high school career “to determine readiness for Intermediate Algebra and Freshman Composition” (FDOE, 2016, para. 2). Based on the scores, a student is deemed as college ready or could be advised to enroll in additional preparatory classes that would be beneficial before enrolling in college (FDOE, 2015).

Based on a study from the Pathways to College Network (2007), the idea of going to college is one that 83% of high school students hold as an expectation once they complete high school. However, although 76% of White high school students do go on to institutions of higher education, only 52% of Blacks, and 56% of Hispanics join them. Only 47% of students from the lowest income quartile (up to \$36,174 a year) attended college, but 85% of students who came from homes where the annual household income was at least \$96,000 enrolled in college (Pathways to College, 2007). This 2007 study gave rise to several issues related to students’ desire and ability to go on to college.

One issue is lack of information for students of color and their families. Students living in urban communities have not historically had knowledge of the college admittance process, what is required and what test scores are necessary to gain college acceptance (Roderick et al., 2009). This leaves these students in the dark about what is

required, as well as what types of preparatory classes can be taken to help increase the chances of performing well on both college readiness tests and college entrance examinations.

Examining ACT college readiness benchmarks from 2009, the English benchmarks were only met by 41% of students of color who took the test. Only 18% of students of color met the mathematics benchmarks; only 27% met the reading benchmarks; and only 9% of students of color met the science benchmarks. Only 7% of students of color successfully met all (English, mathematics, reading and science) of the benchmarks (ACT, 2010). Students of color were found to be two to four times less likely to be deemed as college ready. In addition, students of color were also less likely to be enrolled in core curriculum classes that would prepare them to be college ready: Only 64% of Black students and 67% of Hispanics were enrolled in this type of curriculum (ACT, 2010).

Since 2001, lawmakers and legislatures have mandated the use of standardized tests to monitor student progress, as well as meet graduation requirements. Schools are required to have a certain percentage of students pass these examinations each year, and students are expected to pass these examinations every year. If they do not, they run the risk of not earning a high school diploma. Policymakers have often tended to hold schools to unrealistic expectations, expect unrealistic performance and results from students, offer unrealistic rewards, and impose detrimental consequences upon both students and teachers at schools that fail and continue to fail to meet annual goals (ACT, 2012). It has also been determined that the pressure of state standardized tests used as a

graduation requirement has actually increased the dropout rate among minorities, Black males in particular. For states that have annual achievement tests that students are required to pass in order to graduate high school, Black males have been found to be 5.2 times more likely to drop out of school than their White counterparts. For states with annual achievement tests that have been defined as rigorous, that rate jumps to 7.3 times more likely to drop out of high school (Walden & Kristsonis, 2008). This could be one of the reasons why the graduation rate, which had been steadily declining nationwide since 1984, has decreased since the passage of NCLB (Walden & Kristsonis, 2008).

Summary

The significant gap between White students and Black and Latino students is well known in public education. Students of color do not fare as well as their White counterparts in areas such as standardized testing, graduation, academics, and college (Vega, Moore & Miranda, 2015). Modern day education has been permanently changed by the era of accountability, which started with the passage of the No Child Left Behind Act (NCLB). This act claimed its primary objective was to close the achievement gap, which has been defined as the difference in test scores between White and Black and Latino students (Chambers et al., 2014).

This literature review has provided an in-depth look into the current issues faced by students of color in schools and how these issues directly affect students' chances at college entry and success. Each section of the literature review addressed literature relevant to the problem statement, purpose of the study, research questions, and the

theoretical framework. The study was focused on the relationship that may exist between students of color participating in advanced courses and college readiness.

An increase in access alone will not remove the inequity that exists for many students in urban schools (Hallett & Venegas, 2011). This access has to be complemented with quality instruction, curriculum resources, and tutoring to raise achievement (Contreras, 2011). Research offers convincing evidence that shows when minority children are exposed to more rigorous academics, accompanied with high expectations, they achieve at higher levels (Pathways to College Network, 2007). As such, students should receive a more culturally responsive curriculum for all subjects that is integrated into the learning process, and more culturally diverse teachers must be recruited (Olszewski-Kuilius & Clarenbach, 2012).

The problem, the purpose, and research questions for the study are restated in Chapter 3 which contains a comprehensive explanation of the research methods and design of the study. The collection of data, the analysis of the data, the population and sample, assumptions and limitations, and ethical considerations are discussed in detail along with the strategies used to determine the validity of the research findings as they relate to the research questions.

CHAPTER 3 METHODOLOGY

Purpose of the Study

The purpose of this study was to explore what effect, if any, the participation of students of color in advanced level academics in high school had on their college readiness. The researcher compared students of color who participated in advanced level courses to students of color who did not, as well as white students. The specific research problem was that Black and Hispanic students were not graduating from high school college ready at the same rate as their White peers.

Research Design

The study employed a comparative correlation design in order to first determine if there is a relationship between students of color who participated in advanced academic programs and students of color who were college ready. Similarly, the researcher also sought to determine if there was a relationship between Black students and Black male students who participated in advanced academic programs and college readiness.

For the purpose of this study, advanced classes were defined as enrollment in any of the following program offerings: Advanced Placement (AP), International Baccalaureate (IB), Dual Enrollment (DE), Advanced International Certificate of Education (AICE) and Advancement via Individual Determination (AVID) classes. College ready was defined as students who “have the knowledge, skills, and academic preparation needed to enroll and succeed in introductory college credit-bearing courses

within an associate or baccalaureate degree program without the need for remediation” (FDOE, 2015, para. 2).

Research Questions

The following research questions were addressed:

1. What relationship, if any, exists between the participation of students of color in advanced academic programs (AP, IB, DE, AICE, AVID) and their college readiness?
2. What relationship, if any, exists between Black students’ participation in advanced academic programs (AP, IB, DE, AICE, AVID) and their college readiness?
3. What relationship, if any, exists between Black male students’ participation in advanced academic programs (AP, IB, DE, AICE, AVID) and their college readiness?

Research Hypotheses

The following research hypotheses were created in accordance with the research questions and in conjunction with the review of literature:

Hypothesis 1: There is no statistically significant relationship between students of color who take advanced academic programs (AP, IB, DE, AICE, AVID) and their college readiness

Hypothesis 2: There is no statistically significant relationship between Black students who take advanced academic programs (AP, IB, DE, AICE, AVID) and their college readiness

Hypothesis 3: There is no statistically significant relationship between Black male students who take advanced academic programs (AP, IB, DE, AICE, AVID) and their college readiness

Sample

The sample for this study included selected high school students from a school district located in Northeast Florida. The original data set included 16,211 students from 31 different schools. However, to avoid extraneous variables over which the researcher had no control, students who took advanced level courses before high school and students who did not attend high school with their cohort for all four years in this school district were eliminated. The remaining 12,541 students that made up the sample were seven high schools, an alternative center, home school, virtual school, and a group of alternative school settings which was listed as group K in the data. No Charter Schools were included in the data set, as student data were not available to the researcher.

District Demographics

At the time of the study, the school district in which this study was conducted was the fastest growing in the state of Florida. The school district was diverse, consisting of students coming from homes in small farming communities, tourist areas, and million-dollar beach front properties. The county's population in which the school district resides,

consisted of approximately 217,919 residents, of which, 89.7% were White, 5.7% were Black, 4.6% Asian and other minority, and 5.8% identifying as Hispanic or Latino ethnicity. The school district was the largest employer in the county, employing some 4,388 people. There were 18 elementary schools (K – 5th grade), three K-8 schools, seven middle schools (6th – 8th grade), seven high schools (9th – 12th grade), one alternative center, six charter schools, and three juvenile justice facilities. The school district did not differ much from the county in its demographics; of the roughly 36,005 students enrolled, 85.74% were White, 7.3% were Black, 3.79% were Asian; 8% identified as Hispanic, 2.74% as multiracial, and .43% as other minorities. Approximately 25% of the district's students qualified for free or reduced-price meals. In all, the students represented 112 different countries and 76 different languages.

Procedures for Data Collection

The data were collected with the permission of the University of Central Florida's Institutional Review Board and in conjunction with the school district through the Planning, Accountability & Assessment Office. Student privacy was protected by the removal of student names and identification numbers prior to the researcher's receipt of the raw data. Therefore, all data were deidentified at the time of receipt. The provided data consisted of student demographic data including high school attended, gender, age, race/ethnicity, and at-risk status. Graduation data consisted of diploma type, final GPA, withdrawal codes, cohort entry date, cohort exit date, and if a student graduated with their cohort or not. Additional data provided to the researcher included courses taken, the years courses were taken, course description, course type (AP, IB, DE, AICE, AVID), the

number of each type of course taken, and the total number of advanced level courses taken. Finally, assessment data were included for all students from the Florida Comprehensive Assessment Test (FCAT), End of Course (EOC) examinations, and concordant scores from other recognized standardized tests such as the Post-secondary Education Readiness Test (PERT), Scholastic Aptitude Test (SAT), or ACT. Graduation statistics over a five-year period, from the 2010 – 2011 to 2014 – 2015 school years, were also included. Combined, all of the different data sets helped the researcher determine if a student was college ready or not according to the definition and guidelines set forth in this study. Additionally, the data assisted in defining, categorically, the racial/ethnic group of each student.

Academic Programs

For this study, the advanced academic programs in consideration were Advanced Placement (AP), International Baccalaureate (IB), Dual Enrollment (DE), Advanced International Certificate of Education (AICE) and Advancement via Individual Determination (AVID). Collectively, these programs serve to provide students with rigorous courses of study that will better prepare students who wish to pursue college after high school.

Standardized Tests

The Florida Comprehensive Assessment Test (FCAT) was first administered to students in 1998 as a way to gauge students' performance as it related to the Sunshine State Standards. With the implementation of the No Child Left Behind Act of 2001, the

state began to retool the performance indicators to better align the FCAT with NCLB. Prior to the 2003, the data for Adequate Yearly Progress (AYP) was not reported to school districts. Beginning in 2003, AYP data by subgroups was provided to school districts. In 2011, the FCAT transitioned to FCAT 2.0; and with the new version of this test came changes to the scales used to determine if a student was proficient or non-proficient. Also, End of Course (EOC) examinations for mathematics and science were introduced into the high school system in 2011 and 2012 respectively, eliminating the need for the mathematics and science sessions of the FCAT. The Post-Secondary Education Readiness Test (PERT) is a customized placement test whose purpose is to determine placement for students when entering college. The PERT, through legislation, can be used to determine college readiness in mathematics for high school students who achieve a concordant score. The SAT is a test created by College Board that is widely used for college and university entrance. Similarly, the ACT is a test used for admissions and placement in to colleges and universities. Much like the PERT, both the SAT and ACT can be used to determine college readiness in reading for students through a concordant score.

Participants

A total of 16,211 students' data was collected and provided to the researcher for use in the study. Many of the students were removed from the data set due to not meeting the requirements set forth by the researcher. Students who did not attend high school in the district for all four years, were removed. Some students were in the initial data set because they took advanced academics in elementary or middle school; however, because

they did not attend high school in the studied district, they were removed. Additionally, some students were removed who had incomplete data, making it impossible to determine academic status or college readiness. As such, 12,541 students' data remained and were used in part for the analysis. A goal of this study was to have a confidence level of 95%, with an alpha level of .05. While it is often considered sufficient to use a sample size of 30 in order to be able to conclude statistical significance, it was determined that a minimum of 50 students per subgroup would be required for the study to be valid. The researcher collaborated with the school district office of accountability to collect and disaggregate the necessary data for the study. Once collected, the data for both participation in advanced academic programs and college readiness were classified as nominal data and placed into an electronic spreadsheet. After the data were collected and classified, statistical analyses were conducted to determine correlations between the students of color and the variables. The statistical tests employed were the Chi Square Test for Independence and Pearson Correlation in order to first determine if there was a relationship, and second, to determine if there was a correlation between variables. This was determined through interpreting the statistical tests results and looking at statistical significance and effect size.

Data Analysis

For the purpose of the study, the independent variable was advanced classes and the dependent variable was college readiness. The researcher analyzed these variables with respect to the different race/ethnicities of the high school students. To determine if there was a relationship between the two variables, students of color who take advanced

classes and students of color who are deemed college ready, the researcher ran a Chi Square Test for Independence. To determine if there was a correlation, the researcher ran a Pearson Correlation statistical test.

Students are deemed college ready when they have successfully met the requirements set forth by the FDOE. This includes receipt of a standard high school diploma, which can be attained by having at least a 2.0 GPA, passing the state required standardized test in English/language arts (Grade 10), mathematics (Algebra 1), science (Biology), or receiving a concordant score through PERT, ACT, or SAT. These data were aggregated as part of the determination of college readiness. Additional requirements for a student to be considered college ready are earning 24 credits: four in language arts, four in mathematics, three in social studies, three in science, one in physical education, one in fine arts, and eight electives, with at least one course being completed via online learning.

Assumptions and Limitations

As previously stated, the researcher assumed that the college readiness criteria set forth by the state of Florida was sufficient in that it prepares students for academic success at all colleges and universities. It was assumed that the overall quality of education with respect to school facility, teacher quality, resources, and curriculum were the same or adequately similar at all the schools. The researcher's hypotheses assumed that by analyzing the data through a quantitative multiple regression, the findings would show that students of color who participated in advanced academics in high school would be college ready at a rate higher than students of color who did not.

This study was limited to a school district in Northeast Florida. Student data collected for the study were limited to the high schools within the northeast Florida School District. Only high school seniors who were categorized as Black and Hispanic were contained within the “students of color” student population. White students and students of other ethnicities were also used in the data analysis, comparing them to students of color to determine if a relationship existed.

The researcher made efforts to collect a sample that was of statistically significant size. However, the sample only represented students from one county in one state. As such, the results may not be generalizable to students from other districts in the state or in other states.

Ethical Considerations

The data collected were conveyed in a collective format and coded so that schools, students, and academic programs maintained anonymity. All policies and procedures (criteria) of the University of Central Florida for research involving human subjects were followed and honored in the collection, development, and reporting of the research.

CHAPTER 4 RESEARCH FINDINGS

Introduction

This study examined what relationship, if any, exists between students of color, Black students, Black male students, and their participation in advanced academic programs (AP, IB, DE, AICE, AVID) and their college readiness. The study was directed by the research questions:

1. What relationship, if any, exists between the participation of students of color in advanced academic programs (AP, IB, DE, AICE, AVID) and their college readiness?
2. What relationship, if any, exists between Black/African-American students' participation in advanced academic programs (AP, IB, DE, AICE, AVID) and their college readiness?
3. What relationship, if any, exists between Black/African-American male students' participation in advanced academic programs (AP, IB, DE, AICE, AVID) and their college readiness?

Chapter 4 includes a report of the analysis of data and findings, including student count by school, student count by race/ethnicity, total number of advanced courses taken by student, total courses taken by program type, and the statistical analyses used to describe the relationship and correlation with respect to the research questions. Results of these analyses are presented using tabular displays supported by accompanying narrative explanations.

Overview of Analysis of Data

SPSS (version 23) was utilized to gather and sort the data. Once organized and coded, the data were used to run a Chi-square Test for Independence to determine if a relationship exists between advanced academic programs and college readiness for Students of color, Black students, and Black male students. According to Tabachnick and Fidell (2007), the Chi-square Test for Independence is used by a researcher when looking for a relationship between two categorical variables. Additionally, a Pearson Correlation statistical test was run to determine the relationship between the two variables. Pallant (2013) stated that the Pearson Correlation analysis describes the strength of the relationship between two variables.

Chi-square Test for Independence

For the purpose of this study, the researcher used rules for interpretation for the Chi-square Test for Independence from Pallant's 2013 *SPSS Survival Manual*. To be considered statistically significant, the asymptotic significance (2-sided) for the Chi-square needs to be less than .05. The asymptotic significance (2-sided) for the Chi-square can be found in the Chi-square Tests table of the analysis. Effect size is measured by the phi coefficient; this correlational coefficient ranges from 0 to 1. Effect sizes are categorized and can be seen in Table 5. The phi coefficient can be found in the Symmetric Measures Table of the analysis

Table 5

Effect Size for Chi-square Test for Independence

Effect	Phi Coefficient
Small	.01
Medium	.03
Large	.05

Pearson Correlation

Pearson Correlation was interpreted using the *SPSS Survival Manual* (Pallant, 2013) as well. The first thing to look at is the N value in the Correlations Table to see if it is the correct value and that no cases are missing. The second step is to determine the direction of the relationship, which can be interpreted by looking to see what sign is in front of the correlation coefficient in the Correlations Table. When the sign in front of the correlation coefficient is negative, this suggests a negative correlation between the two variables; if positive, the relationship between the two variables is positive. The third step in interpreting a Pearson Correlation is to consider the strength of the relationship between the two variables. This ranges from -1 to 1. A value of 0 would indicate no relationship at all, 1 indicates a perfect positive correlation and similarly, -1 represents a perfect negative correlation. The strength of the relationship is categorized and can be seen in Table 6. Lastly, to determine the significance (Sig. 2 tailed) in the Correlations Table, the value needs to be $p < .01$ to be considered as significant.

Table 6

Strength of Relationship for Pearson Correlation

Strength	Pearson Correlation (r)
Small	r = .10 to .29
Medium	r = .30 to .49
Large	r = .50 to 1.0

Note. Data sets with large sample sizes may show statistical significance due to the large *N*.

Sample Profiles

The tables in this section help to paint the picture for the schools, students, and academic programs involved in this study. Each table shows frequency and percentages for their respective topic and is accompanied by a written narrative.

Table 7 shows the total number of students included in the final data set by school. A total of 12,541 students from seven different high schools, virtual school, homeschool, an alternative center, and juvenile justice facilities was included in the data and used for the analyses

Table 7

Student Count by School

School Code	N	%	Valid %	Cumulative %
A	2,128	17.0	17.0	17.0
B	1,922	15.3	15.3	32.3
C	1,619	12.9	12.9	45.2
D	2,059	16.4	16.4	61.6
E	1,990	15.9	15.9	77.5
F	1,764	14.1	14.1	91.6
G	262	2.1	2.1	93.6
H	155	1.2	1.2	94.9
I	6	.0	.0	94.9
J	246	2.0	2.0	96.9
K	390	3.1	3.1	100.0
Total	12,541	100.0	100.0	

Note. K represents six combined schools of an alternative setting.

Table 8 represents the total student count by race/ethnicity for the students included in the final data set. Of the 12,541 total students used in this study, 10,270 students were White (81.9%), 1,037 students were Black (8.3%), 865 students were Hispanic (6.9%), and 369 students were identified as other races (2.9%).

Table 8

Students by Race

Race	N	%	Valid %	Cumulative %
White	10,270	81.9	81.9	81.9
Black	1,037	8.3	8.3	90.2
Hispanic	865	6.9	6.9	97.1
Other	369	2.9	2.9	100.0
Total	12,541	100.0	100.0	

Table 9 is a representation of the total number of advanced level courses taken by students. Of the 12,541 students included in the data set, over half of the sample population, 6,765 students (53.9%), did not enroll in advanced level courses at all during high school. In contrast, 5,776 students (45%) were enrolled in advanced level courses. Of this number, 3,803 students took between one and nine advanced level courses throughout their high school careers, 1,722 students took between 10 and 19, and 251 students took between 20 and 28 advanced level courses.

Table 9

Total Number of Advanced Level Courses Taken by Student

Advanced Level Courses Taken	N	%	Valid %	Cumulative %
0	6,765	53.9	53.9	53.9
1	657	5.2	5.2	59.2
2	489	3.9	3.9	63.1
3	451	3.6	3.6	66.7
4	390	3.1	3.1	69.8
5	393	3.1	3.1	72.9
6	438	3.5	3.5	76.4
7	431	3.4	3.4	79.9
8	332	2.6	2.6	82.5
9	222	1.8	1.8	84.3
10	193	1.5	1.5	85.8
11	176	1.4	1.4	87.2
12	224	1.8	1.8	89.0
13	241	1.9	1.9	90.9
14	236	1.9	1.9	92.8
15	166	1.3	1.3	94.1
16	135	1.1	1.1	95.2
17	126	1.0	1.0	96.2
18	113	.9	.9	97.1
19	112	.9	.9	98.0
20	85	.7	.7	98.7
21	73	.6	.6	99.3
22	40	.3	.3	99.6
23	31	.2	.2	99.8
24	16	.1	.1	100.0
25	3	.0	.0	100.0
26	2	.0	.0	100.0
28	1	.0	.0	100.0
Total	12,541	100.0	100.0	

As shown in Table 10, students in the sample were most widely enrolled in AVID (Honors) courses, with 41.7% of students (5,235 students total) enrolled in AVID (Honors) classes. AP courses had the second highest sample student enrollment, with 3,629 students (28.9%) taking at least one AP class during their high school careers. Dual Enrollment was the third most enrolled-in type of advanced course, with 1,517 students (12.1%) participating. Second to last was IB, with 557 students (4.4%) of the sample students enrolled. AICE had the smallest student enrollment, with only 3.5% (442 students) enrolling in an AICE course during high school.

Table 10

Advanced Programs by Type

Program	N	%
AICE	442	3.5
AP	3,629	28.9
Dual Enrollment	1,517	12.1
AVID	5,235	41.7
IB	557	4.4
Total	11,380	90.6

Data Analysis

Research Question 1

What relationship, if any, exists between the participation of students of color in advanced academic programs (AP, IB, DE, AICE, AVID) and their college readiness?

H₀: There is no statistically significant relationship between students of color who take advanced academic programs (AP, IB, DE, AICE, AVID) and their college readiness.

Tables 11-17 show the results of the analysis of data used to respond to Research Question 1. As shown in Table 11, the total number of students of color included in the data set was 1,902.

Table 11

Students of Color Total Count

		N	%	Valid %	Cumulative %
Valid	1	1,902	100.0	100.0	100.0

A Chi-square Test for Independence was calculated comparing students of color who participated in advanced level programs and their college readiness. The asymptotic significance (2-sided) for the Chi-square was $p < .05$ (see Table 14) with an effect size (Phi Coefficient) of .357 (see Table 15). The significance (2-tailed) for the Pearson Correlation was $p < .01$, and the effect size was .290 (see Table 17). This indicates a small correlation between students of color who participated in advanced level programs and college readiness. Also indicated was that the null hypothesis could be rejected and that there was a statistically significant relationship between students of color who participated in advanced level programs and college readiness. Students of color who participated in advanced level programs were more likely to be college ready than students of color who did not participate in advanced level programs.

Table 12

Case Processing Summary (Chi-square Test for Independence) for Students of Color

	Valid		Cases Missing		Total	
	N	%	N	%	N	%
Advanced Courses*	1,902	100.0	0	0.0	1,902	100.0
College Ready						

Table 13

*Strength of Relationship for Pearson Correlation Advanced Courses:
College Ready Cross tabulation (Chi-square Test for Independence)
for Students of Color*

			College Ready		
			0	1	Total
Advanced Courses	0	Count	399	760	1,159
		% within Advanced Courses	34.4%	65.6%	100.0%
		% within College Ready	93.2%	51.6%	60.9%
		% of Total	21.0%	40.0%	60.9%
	1	Count	29	714	743
		% within Advanced Courses	3.9%	96.1%	100.0%
		% within College Ready	6.8%	48.4%	39.1%
		% of Total	1.5%	37.5%	39.1%
Total		Count	428	1,474	1,902
		% within Advanced Courses	22.5%	77.5%	100.0%
		% within College Ready	100.0%	100.0%	100.0%
		% of Total	22.5%	77.5%	100.0%

Table 14

Chi-Square Tests for Students of Color

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	241.880 ^a	1	.000		
Continuity Correction ^b	240.133	1	.000		
Likelihood Ratio	290.929	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	241.753	1	.000		
N of Valid Cases	1902				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 167.19.

b. Computed only for a 2x2 table

Table 15

*Symmetric Measures (Chi-square Test for Independence)
for Students of Color*

		Value	Approximate Significance
Nominal by	Phi	.357	.000
Nominal	Cramer's V	.357	.000
N of Valid Cases		1,902	

Table 16

Descriptive Statistics (Pearson Correlation) for Students of Color

	Mean	Std. Deviation	N
College Ready	.77	.418	1,902
Number of Advanced Courses Taken	2.81	4.938	1,902

Table 17

Correlations for Students of Color

		College Ready	Number of Advanced Courses Taken
College Ready	Pearson Correlation	1	.290**
	Sig. (2-tailed)		.000
	N	1902	1902
Number of Advanced Courses Taken	Pearson Correlation	.290**	1
	Sig. (2-tailed)	.000	
	N	1902	1902

**. Correlation is significant at the 0.01 level (2-tailed).

Research Question 2

What relationship, if any, exists between Black students' participation in advanced academic programs (AP, IB, DE, AICE, AVID) and their college readiness?

H₀: There is no statistically significant relationship between Black students who take advanced academic programs (AP, IB, DE, AICE, AVID) and their college readiness.

Tables 18-24 show the results of the analysis of data used to respond to Research Question 2. As shown in Table 18, the total number of Black/African-American students included in the data set was 1,037.

A Chi-square Test for Independence was calculated comparing Black students who participated in advanced level programs and their college readiness. The asymptotic significance (2-sided) for the Chi-square was $p < .05$ (see Table 21) with an effect size

(Phi Coefficient) of .356 (see Table 22). The Sig. (2-tailed) for the Pearson Correlation was $p < .01$, and the effect size was .299 (see Table 24). This indicates a small correlation between Black students who participated in advanced level programs and their college readiness. The null hypothesis can be rejected, concluding that there was a statistically significant relationship between Black students who participated in advanced level programs and their college readiness. Black/African-American Students who participated in advanced level programs were more likely to be college ready than Black students who did not participate in advanced level programs.

Table 18

Black Student Total Count

		Frequency	%	Valid %	Cumulative %
Valid	1	1,037	100.0	100.0	100.0

Table 19

Case Processing Summary (Chi-square Test for Independence) for Black Students

	Valid		Cases Missing		Total	
	N	%	N	%	N	%
Advanced Courses College Ready	1037	100.0	0	0.0	1037	100.0

Table 20

Advanced Courses College Ready Cross tabulation (Chi-square Test for Independence) for Black Students

			College Ready		
			0	1	Total
Advanced Courses	0	Count	306	426	732
		% within Advanced Courses	41.8%	58.2%	100.0%
		% within College Ready	94.7%	59.7%	70.6%
		% of Total	29.5%	41.1%	70.6%
	1	Count	17	288	305
		% within Advanced Courses	5.6%	94.4%	100.0%
		% within College Ready	5.3%	40.3%	29.4%
		% of Total	1.6%	27.8%	29.4%
Total		Count	323	714	1,037
		% within Advanced Courses	31.1%	68.9%	100.0%
		% within College Ready	100.0%	100.0%	100.0%
		% of Total	31.1%	68.9%	100.0%

Table 21

Chi-Square Tests for Black Students

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	131.769 ^a	1	.000		
Continuity Correction ^b	130.085	1	.000		
Likelihood Ratio	160.251	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	131.642	1	.000		
N of Valid Cases	1,037				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 95.00.

b. Computed only for a 2x2 table

Table 22

Symmetric Measures (Chi-square Test for Independence) for Black Students

		Value	Approximate Significance
Nominal by	Phi	.356	.000
Nominal	Cramer's V	.356	.000
N of Valid Cases		1037	

Table 23

Descriptive Statistics (Pearson Correlation) for Black Students

	Mean	Std. Deviation	N
College Ready	.69	.463	1,037
Number of Advanced Courses Taken	1.81	3.893	1,037

Table 24

Correlations for Black Students

		College Ready	Number of Advanced Courses Taken
College Ready	Pearson	1	.298**
	Correlation		
	Sig. (2-tailed)		.000
	N	1037	1037
Number of Advanced Courses Taken	Pearson	.298**	1
	Correlation		
	Sig. (2-tailed)	.000	
	N	1037	1037

** . Correlation is significant at the 0.01 level (2-tailed).

Research Question 3

What relationship, if any, exists between Black male students' participation in advanced academic programs (AP, IB, DE, AICE, AVID) and their college readiness?

H₀: There is no statistically significant relationship between Black/African-American male students who take advanced academic programs (AP, IB, DE, AICE, AVID) and their college readiness.

Tables 25-31 show the results of the analysis of data used to respond to Research Question 3. As shown in Table 25, the total number of Black male students included in the data set was 621.

A Chi-square Test for Independence was calculated comparing Black male students who participated in advanced level programs and college readiness. The asymptotic significance (2-sided) for the Chi-square was $p < .05$ (see Table 28) with an effect size (Phi Coefficient) of .361 (see Table 29). The Sig. (2-tailed) for the Pearson Correlation was $p < .01$, and the effect size was .296 (see Table 31). This indicates a small correlation between Black male students who participated in advanced level programs and college readiness. Therefore, the researcher was able to reject the null hypothesis and conclude that there was a statistically significant relationship between Black male students who participated in advanced level programs and their college readiness. Black male students who participated in advanced level programs were more likely to be college ready than black male students who did not participate in advanced level programs.

Table 25

Black Students Total Count

		N	%	Valid %	Cumulative %
Valid	1	621	100.0	100.0	100.0

Table 26

Case Processing Summary (Chi-square Test for Independence) for Black Male Students

	Valid		Cases Missing		Total	
	N	%	N	%	N	%
Advanced Courses*	621	100.0	0	0.0	621	100.0
College Ready						

Table 27

Advanced Courses College Ready Cross tabulation (Chi-square Test for Independence for Black/African-American Students)

			College Ready		
			0	1	Total
Advanced Courses	0	Count	250	242	492
		% within Advanced Courses	50.8%	49.2%	100.0%
		% within College Ready	96.5%	66.9%	79.2%
		% of Total	40.3%	39.0%	79.2%
	1	Count	9	120	129
		% within Advanced Courses	7.0%	93.0%	100.0%
		% within College Ready	3.5%	33.1%	20.8%
		% of Total	1.4%	19.3%	20.8%
Total		Count	259	362	621
		% within Advanced Courses	41.7%	58.3%	100.0%
		% within College Ready	100.0%	100.0%	100.0%
		% of Total	41.7%	58.3%	100.0%

Table 28

Chi-square Tests for Black Students

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	80.780 ^a	1	.000		
Continuity Correction ^b	78.987	1	.000		
Likelihood Ratio	96.516	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	80.650	1	.000		
N of Valid Cases	621				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 53.80.

b. Computed only for a 2x2 table

Table 29

Symmetric Measures for Black Students

		Value	Approximate Significance
Nominal by	Phi	.361	.000
Nominal	Cramer's V	.361	.000
N of Valid Cases		621	

Table 30

Descriptive Statistics (Pearson Correlation) for Black Students

	Mean	Std. Deviation	N
College Ready	.58	.493	621
Number of Advanced Courses Taken	1.04	2.848	621

Table 31

Correlations for Black Students

		College Ready	Number of Advanced Courses Taken
College Ready	Pearson Correlation	1	.296**
	Sig. (2-tailed)		.000
	N	621	621
Number of Advanced Courses Taken	Pearson Correlation	.296**	1
	Sig. (2-tailed)	.000	
	N	621	621

**. Correlation is significant at the 0.01 level (2-tailed).

Additional Analyses

To see if there may be a difference in effect size between White students and Hispanic students as compared to students and students of color, the researcher determined that it would be beneficial to run the same statistical analyses with the other

subgroups. The goal was to determine if students of color benefit more, in terms of college readiness, from taking advanced level programs than White students and to what extent Hispanic students alone may benefit.

Additional Analysis: Hispanic Students

The findings of the additional analysis for Hispanic students are displayed in Tables 32-38. Table 32 shows the total number of Hispanic students included in the data set was 865.

A Chi-square Test for Independence was calculated comparing Hispanic students who participated in advanced level programs and college readiness. The asymptotic significance (2-sided) for the Chi-square was $p < .05$ (see Table 35) with an effect size (Phi Coefficient) of .291 (see Table 36). The significance (2-tailed) for the Pearson Correlation was $p < .01$, and the effect size was .236 (see Table 38). This indicates a small correlation between Hispanic students who participated in advanced level programs and college readiness. Hispanic Students who participated in advanced level programs were more likely to be college ready than Hispanic students who did not participate in advanced level programs.

Table 32

Hispanic Students Total Count

	N	%	Valid %	Cumulative %
Valid 1	865	100.0	100.0	100.0

Table 33

Case Processing Summary (Chi-square Test for Independence) for Hispanic Students

	Valid		Cases Missing		Total	
	N	Percent	N	Percent	N	Percent
Advanced Courses* College Ready	865	100.0%	0	0.0%	865	100.0%

Table 34

Advanced Courses College Ready Cross tabulation (Chi-square Test for Independence) for Hispanic Students

		College Ready		
		0	1	Total
Advanced Courses	0			
	Count	93	334	427
	% within Advanced Courses	21.8%	78.2%	100.0%
	% within College Ready	88.6%	43.9%	49.4%
	% of Total	10.8%	38.6%	49.4%
	1			
	Count	12	426	438
	% within Advanced Courses	2.7%	97.3%	100.0%
	% within College Ready	11.4%	56.1%	50.6%
	% of Total	1.4%	49.2%	50.6%
Total	Count	105	760	865
	% within Advanced Courses	12.1%	87.9%	100.0%
	% within College Ready	100.0%	100.0%	100.0%
	% of Total	12.1%	87.9%	100.0%

Table 35

Chi-square Tests for Hispanic Students

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	73.495 ^a	1	.000		
Continuity Correction ^b	71.720	1	.000		
Likelihood Ratio	81.955	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	73.410	1	.000		
N of Valid Cases	865				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 51.83.

b. Computed only for a 2x2 table

Table 36

Symmetric Measures for Hispanic Students

		Value	Approximate Significance
Nominal by	Phi	.291	.000
Nominal	Cramer's V	.291	.000
N of Valid Cases		865	

Table 37

Descriptive Statistics (Pearson Correlation) for Hispanic Students

	Mean	Std. Deviation	N
College Ready	.88	.327	865
Number of Advanced Courses Taken	4.01	5.729	865

Table 38

Correlations for Hispanic Students

		College Ready	Number of Advanced Courses Taken
College Ready	Pearson Correlation	1	.236**
	Sig. (2-tailed)		.000
	N	865	865
Number of Advanced Courses Taken	Pearson Correlation	.236**	1
	Sig. (2-tailed)	.000	
	N	865	865

**. Correlation is significant at the 0.01 level (2-tailed).

Additional Analyses: White Students

The findings of the additional analysis for White students are displayed in Tables 39-45. Table 39 shows the total number of White students included in the data set was 10,270.

A Chi-square Test for Independence was calculated comparing White students who participated in advanced level programs and their college readiness. The asymptotic significance (2-sided) for the Chi-square was $p < .05$ (see Table 42) with an effect size (Phi Coefficient) of .240 (see Table 43). The Sig. (2-tailed) for the Pearson Correlation was $p < .01$, and the effect size was .210 (see Table 45). This indicates a small correlation between White students who participated in advanced level programs and their college readiness. White students who participate in advanced level programs were more likely to be college ready than White students who did not participate in advanced level programs.

Table 39

White Students Total Count

	Frequency	Percent	Valid%	Cumulative%
Valid 1	10270	100.0	100.0	100.0

Table 40

Case Processing Summary (Chi-square Test for Independence) for White Students

	Valid		Cases Missing		Total	
	N	%	N	%	N	%
Advanced Courses* College Ready	10,270	100.0%	0	0.0%	10270	100.0%

Table 41

Advanced Courses College Ready Cross tabulation (Chi-square Test for Independence) for White Students*

			College Ready		
			0	1	Total
Advanced Courses	0	Count	960	4497	5457
		% within Advanced Courses	17.6%	82.4%	100.0%
		% within College Ready	87.8%	49.0%	53.1%
		% of Total	9.3%	43.8%	53.1%
	1	Count	134	4679	4813
		% within Advanced Courses	2.8%	97.2%	100.0%
		% within College Ready	12.2%	51.0%	46.9%
		% of Total	1.3%	45.6%	46.9%
Total	Count		1094	9176	10270
	% within Advanced Courses		10.7%	89.3%	100.0%
	% within College Ready		100.0%	100.0%	100.0%
	% of Total		10.7%	89.3%	100.0%

Table 42

Chi-Square Tests for White Students

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	589.196 ^a	1	.000		
Continuity Correction ^b	587.641	1	.000		
Likelihood Ratio	666.199	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	589.139	1	.000		
N of Valid Cases	10270				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 512.70.

b. Computed only for a 2x2 table

Table 43

Symmetric Measures for White Students

		Value	Approximate Significance
Nominal by	Phi	.240	.000
Nominal	Cramer's V	.240	.000
N of Valid Cases		10270	

Table 44

Descriptive Statistics (Pearson Correlation) for White Students

	Mean	Std. Deviation	N
College Ready	.89	.309	10270
Number of Advanced Courses Taken	3.75	5.598	10270

Table 45

Correlations for White Students

		College Ready	Number of Advanced Courses Taken
College Ready	Pearson Correlation	1	.210**
	Sig. (2-tailed)		.000
	N	10,270	10,270
Number of Advanced Courses Taken	Pearson Correlation	.210**	1
	Sig. (2-tailed)	.000	
	N	10,270	10,270

**. Correlation is significant at the 0.01 level (2-tailed).

Additional Analysis: All Subgroups

Table 46 indicates that all subgroups show a correlation between students who participated in advanced level programs and their college readiness; As indicated in Table 6, the effect sizes were “small” in all cases. Though not significant, Table 46 shows that Black students benefited slightly more than the other groups.

Table 46

Pearson Correlation Value by Subgroup

Race/Ethnicity	Pearson Correlation
Students of Color	.290
Black/African-American	.298
Black/African-American Male	.296
Hispanic	.236
White	.210

Figure 2 represents the percentage of students by subgroups that were college ready. CR Adv were students who were college ready and participated in advanced academic programs. In contrast, CR N Adv were students who were college ready and did not participate in advanced academic programs.

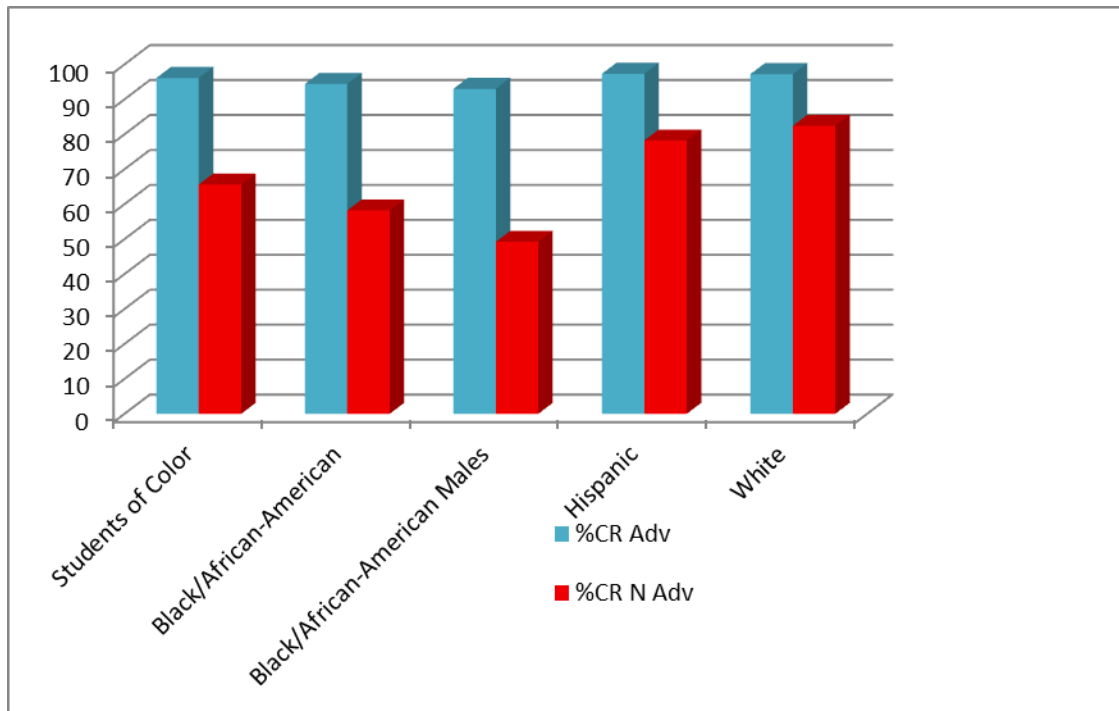


Figure 2. Subgroup College Ready Percentage by Program Level

Table 47 provides percentages and raw numbers for these same categories by subgroups. In some cases, there were large differences in college readiness. For instance, 93% of Black males were college ready when participating in advanced academic programs, but only 49.2% were college ready when not in advanced academic programs, a 43.8% difference. This discrepancy is much smaller for White students who were 97.2% college ready when taking advanced courses and 82.4% college ready without taking advanced courses, a difference of only 14.8%.

Table 47

Subgroup College Ready Percentage and Numbers by Program Level

Subgroup	%CR Adv	%CR N Adv	# CR Adv	Total # CR Adv	#CR N Adv	Total #CR N Adv
Students of Color	96.1	65.6	714	743	760	1159
Black/African-American	94.4	58.2	288	305	426	732
Black/African-American Males	93	49.2	120	129	242	492
Hispanic	97.3	78.2	426	438	334	427
White	97.2	82.4	4679	4813	4497	5457

Note. CR Adv = college ready and participated in advanced academic programs.

CR N Adv = college ready and did not participate in advanced academic programs.

Summary

This chapter discussed the purpose of the study which was to determine (a) if there was a relationship and (b) a correlation between advanced academic programs and college readiness among students in different subgroups. Although both the statistical tests run (Chi-square Test for Independence and Pearson Correlation) determined statistical significance and a correlation for students who participated in advanced level programs and their college readiness, it could not be determined that any one subgroup of students had a statistically significant benefit more than the others. The effect sizes for the Pearson Correlation were all close and in the “small” range for correlation between variables. However, when looking at the data in Table 47, it is clear that although there was a positive correlation between participation in advanced academic programs and college readiness for all subgroups, for some cases, namely Black students and specifically Black males, the benefits can be far greater.

CHAPTER 5 SUMMARY, DISCUSSION, AND CONCLUSIONS

Summary of the Study

The purpose of this study was to explore if there was an effect for students of color who participated in advanced level academic programs in high school as it relates to college readiness. The researcher compared students of color who participated in advanced level programs to students of color who did not, as well as White students who did and did not participate in advanced academics. The specific research problem was that Black and Hispanic students graduate from high school prepared for college at a much lower rate than their White counterparts.

The outcome of this study has produced useful information that was relevant to the school district that was the target of the study. The results of the study can also prove to be important in the decision making process for other school districts in the state of Florida as they relates to advanced level programs and opportunities for students of color.

The following research questions directed this study:

1. What relationship, if any, exists between the participation of students of color in advanced academic programs (AP, IB, DE, AICE, AVID) and their college readiness?
2. What relationship, if any, exists between Black/African-American students' participation in advanced academic programs (AP, IB, DE, AICE, AVID) and their college readiness?

3. What relationship, if any, exists between Black/African-American male students' participation in advanced academic programs (AP, IB, DE, AICE, AVID) and their college readiness?

Summary of Methodology

Data collection was completed with the permission of the University of Central Florida Institutional Review Board and the school district's Planning, Accountability & Assessment Office. In order to guarantee the privacy of all students, student names and identification numbers were removed before the school district turned over the data to the researcher, and all data were deidentified at the time of receipt. The provided information consisted of student demographic data which included high school attended, gender, age, race/ethnicity, and at-risk status. Graduation data consisted of diploma type, GPA, entry and withdrawal dates and codes, and other data necessary for the researcher to determine college readiness. Other data provided comprised what courses the student participated in, the course type (AP, IB, DE, AICE, AVID), and the numbers of each type of course along with the total number of advanced level courses taken by the student. Students' testing data were also collected and included within the data set to further assist in determining the college readiness of each student. Finally, graduation statistics spanning a five-year period, from 2011 to 2015, were provided to the researcher. Collectively, all the data permitted the researcher to determine if a student was college ready using the definitions and guidelines provided in this study. By running a Chi-square Test for Independence and Pearson Correlation, the researcher was able to categorically determine by racial/ethnic group that there was a statistically significant relationship between

advanced academic programs and college readiness. Additionally, there was a statistically significant correlation found between advanced academic programs and college readiness for all subgroups tested in the study.

Discussion of the Findings

Research Question 1

What relationship, if any, exists between the participation of students of color in advanced academic programs (AP, IB, DE, AICE, AVID) and their college readiness?

Based on the findings of the research, there was a statistically significant relationship between students of color who participate in advanced academic programs and college readiness. The results of the Chi-square Test for Independence calculated the Asymptotic Significance (2-sided) for the Chi-square to be $p < .05$ with an effect size (Phi Coefficient) of .357. In addition, the significance (2-tailed) for the Pearson Correlation was found to be $p < .01$ with an effect size of .290. These results indicate there was a statistically significant relationship between the enrollment of students of color in advanced level courses and their college readiness. The effect size of .290 was determined to be small for advanced level courses and college readiness for students of color.

These findings were in line with those of the College Board (2014) noting there is a distinct educational advantage in terms of college readiness for students who participate in advanced level courses. Part of the reason why this relationship exists is because advanced level courses are a way to align high school standards to those that students will encounter once they enter college (Rice University, 2013).

Research Question 2

What relationship, if any, exists between Black students' participation in advanced academic programs (AP, IB, DE, AICE, AVID) and their college readiness?

The findings of the research determined that there was a statistically significant relationship between Black students who participated in advanced academic programs and college readiness. The results of the Chi-square Test for Independence calculated the asymptotic significance (2-sided) for the Chi-square to be $p < .05$ with an effect size (Phi Coefficient) of .356. Also, the significance (2-tailed) for the Pearson Correlation was found to be $p < .01$, and the effect size was .299, indicating a small correlation between Black students who participated in advanced level programs and college readiness.

In reporting their study, Theokas and Saaris (2013) stated that in 2012, the College Board found that 72% of Black students nationwide who took the PSAT scored at a level that would indicate the ability to participate in advanced level coursework. Additionally, they found that enrolling in advanced level coursework, such as the AP and IB program, influenced college readiness in the Black students who participated in those programs. The aforementioned study is in agreement with the findings of this study.

Research Question 3

What relationship, if any, exists between Black male students' participation in advanced academic programs (AP, IB, DE, AICE, AVID) and their college readiness?

The findings of this study suggest that there was a statistically significant relationship between Black male students who participated in advanced academic programs and college readiness. The Chi-square Test for Independence revealed the

asymptotic significance (2-sided) for the Chi-square was $p < .05$ with an effect size (Phi Coefficient) of .361. The significance (2-tailed) for the Pearson Correlation was calculated as $p < .01$ and the effect size was .296, indicating a small correlation between Black male students who participated in advanced level programs and college readiness.

Bryant (2015) stated that part of the reason black males are not successful in college is because they do not have equal access to rigorous, advanced level courses that are vital to preparing students for college. The findings in this study suggest that by providing students more access to Advanced Placement, International Baccalaureate, Dual Enrollment, AVID and AICE courses, there would be an increase in the college readiness of Black males. It could also eliminate the need for Black males to enroll in remedial courses in college, a factor that has been found to be important in determining whether or not students will successfully complete college. Bryant found that Black males who take advanced level courses in high school, and as a result are college ready, do not need to take remedial classes once enrolled in college, thus making them more likely to graduate from college.

Implications of the Study

There are a few implications that the researcher derived from this study based on the research, limitations discussed in Chapter 1, and the conclusions. The researcher believes that the advanced level courses need to be made available to students at all high schools. Participation in advanced level courses has proven to be statistically significant with a small correlation to the college readiness of a student. In order to work toward all students in Florida being college ready as they exit high school, participation in advanced

level courses need to be offered and encouraged. A study conducted by Chajewski, Mattern, and Shaw (2011) also strengthens what the researcher's results showed: There is a direct link between participation in AP courses and an increase in SAT scores. SAT scores are an integral part of the college readiness calculation in the state of Florida.

In addition to making advanced level courses available in all high schools, school districts should also look to use existing programs as advanced level courses. Although AVID may not generally be seen as a program that offers students an opportunity at the advanced level track while in school, the school district used in the study utilizes AVID as an academically advanced level program. All students who participate in AVID must also, as a requirement, take advanced level courses in all core subject areas. Other school districts could follow the model of the sampled school district to increase the advanced level courses available to students by using many of the existing programs that they may already have in place.

Schools and their respective districts can place an emphasis on at-risk students and students of poverty and offer them more opportunities to pursue advanced level academic programs. In practice, teachers should hold the same expectations for students of all races and income levels, as this will increase the overall number of students who are college ready when exiting high school. It can be argued that early and frequent exposure to advanced academics offers students a better chance at college readiness and success. Therefore, schools should begin to expose students of color to advanced academics as early as elementary school and provide them with the organization and skills necessary to succeed.

Recommendations for Future Research

This study examined the relationship between participation in advanced level courses and college readiness. Suggested recommendations for future research include:

1. Expanding the scope of this study to other school districts in the state of Florida to see if the results in this school district of minority students who participate in advanced academic programs are, in fact, similar across the state of Florida.
2. Expanding this study to include students who take advanced level courses in middle school as well as high school to see if such an expansion increases the likelihood of students being college ready.
3. Conducting a national study to examine if participation in advanced level coursework increases the probability of being considered college ready across the United States.
4. Investigating participation in only one type of advanced level course (i.e. AP) to determine if such participation leads to an increase in being considered college ready as compared to students who only participated in another type of advanced level courses (i.e. IB). This proposed study could also consider if students who participated in more than one type of advanced academic program were more often college ready than students who only participated in one type of advanced academic program.
5. Examining if the number of advanced level courses a student takes impacts college readiness. Are students who take between one and five advanced level

courses college ready at the same rate as those who take between six and ten advanced level courses?

6. Giving consideration to the utilization of a qualitative approach which may yield additional insights and lead to a more comprehensive understanding of the relationships among the variables.
7. Investigating further how AP and other advanced level programs differ based on school and location. There are no clear standards and expectations in all cases for these programs. Depending on the teachers' ideas of rigor and expectations of students, the level of rigor can vary greatly.

Conclusion

This study was primarily conducted to determine if there was a relationship that exists between students of color who participated in advanced academic programs and college readiness. All students in this study were from a school district located in Northeast Florida. Based on the analysis of the data collected and a review of the associated literature, the researcher was able to ascertain the following conclusions:

1. It was found that there was a statistically significant relationship between students of color who participated in advanced academic programs (AP, IB, DE, AICE, AVID) and their college readiness.
2. It was found that there was a statistically significant relationship between Black students who participated in advanced academic programs (AP, IB, DE, AICE, AVID) and their college readiness.

3. It was found that there was a statistically significant relationship between Black male students who participate in advanced academic programs (AP, IB, DE, AICE, AVID) and their college readiness.

In summary, this study resulted in data that can be used by the target school district as well as other school districts, gaining additional insight into the effect that advanced academic programs have on students of color and their college readiness. Adopting and maintaining advanced academic programs for all students should be a focus of all school districts. School districts should be cognizant that their direct attention to increasing the number of students of color participating in advanced academic programs has the potential to have a substantial positive effect on their college readiness, as seen in Figure 2. Students of color who took advanced courses were college ready at a rate of 96.1%, as opposed to students of color who did not and were college ready at a rate of 65.6%. This represents a difference of 30.5% between readiness of the two groups. Results of existing research and those of the current study indicated that students of color need more access to advanced academic programs. It can be argued that participation in advanced academic programs has a substantial and profound effect on the number of students of color who are college ready at the end of high school.

APPENDIX
INSTITUTIONAL REVIEW BOARD APPROVAL



University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901, 407-882-2012 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

NOT HUMAN RESEARCH DETERMINATION

From : **UCF Institutional Review Board #1**
FWA00000351, IRB00001138

To : **Nigel D. Pillay**

Date : **October 04, 2016**

Dear Researcher:

On 10/04/2016 the IRB determined that the following proposed activity is not human research as defined by DHHS regulations at 45 CFR 46 or FDA regulations at 21 CFR 50/56:

Type of Review: Not Human Research Determination
Project Title: Ready or not, here comes college: A casual comparative correlation study of college readiness in students of color who take advanced level courses
Investigator: Nigel D. Pillay
IRB ID: SBE-16-12382
Funding Agency:
Grant Title:
Research ID: N/A

University of Central Florida IRB review and approval is not required. This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are to be made and there are questions about whether these activities are research involving human subjects, please contact the IRB office to discuss the proposed changes.

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

A handwritten signature in black ink, appearing to read "Patria Davis", written over a horizontal line.

Signature applied by Patria Davis on 10/04/2016 02:40:27 PM EDT

IRB Coordinator

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