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THE IMPACT OF AFTER SCHOOL TUTORING ON MATH ACHIEVEMENT:
PERCEPTIONS OF AFRICAN AMERICAN MALES AND THOSE WHO TEACH
THEM

by

Eric L. Brown

A dissertation presented in partial fulfillment
of the requirements for the degree of

Doctor of Philosophy

May 2017

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UNIVERSITY OF SAN DIEGO
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MATH ACHIEVEMENT: PERCEPTIONS OF AFRICAN
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DATE: April 11, 2017

ABSTRACT

Despite increases in overall academic achievement, African American males continue to struggle in the area of mathematics. Data from the National Assessment of Educational Progress (NAEP) indicates that eighth grade African American males had the lowest levels of mathematics success of all subgroups in 2013, with only 13% performing at or above the proficient performance level in math. An approach to increasing the academic achievement of African American males has been to provide extended learning time beyond the typical secondary education experience. After school programs are one such example. Many studies indicate that after school programs have had some positive effects on math achievement. However, missing from the literature are qualitative studies that examine the impact of after school programs specifically on math achievement for African American males from the perspectives of the students and teachers involved in the programs. This qualitative study explores the experiences and perceptions of five African American male middle school students and three math teachers who tutor in an after school program at one middle school in southern California. The purpose of the study was to understand, from their perspective, the factors that were internal and external to the after school program that supported or challenged math achievement. Document analysis, observations of students' regular math class and after school class, and participant interviews revealed the influence that teachers, pedagogy, attendance, peers and educational structure had on student engagement and students' intrinsic motivation to learn math. This study exposes the complexity of raising math achievement even when students are given a second chance. It has important implications for

educators, school program directors and school administrators who are engaged in efforts to increase the math achievement of African American male students.

DEDICATION

To Zach

Success is not final, failure is not fatal. It is the courage to continue that counts.

Don't let anybody take your manhood.

To Danene

I could not have made it without you. Thank God for you. I love with everything I have.

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A special thank you to my mother, “JB.” I thank God daily for giving her to me as my mother and for giving her the wisdom to raise me up “right.” Her unwavering support and belief in me brought me through particularly dark and uncertain moments—finishing this work was no exception. She has inspired me to work hard and reach as high as I desired and continues to be my greatest inspiration. I only needed to look at her ability to persevere and fight through hard times to keeping getting back up when I was knocked down and drive on. I love you Momma.

This work is dedicated to my sons, Nick and Zach. The greatest responsibility I have undertaken in my life has been to raise these boys to become men and to serve them as a role model, mentor, and father. They are both destined for great things and I am humbled and honored to see them grow.

I would like to express my appreciation for my committee members for their patience and ability to hold me accountable. Their ability to thoroughly challenge my ideas and findings while being the most supportive team possible made this experience one I will always cherish and value.

I am grateful and forever indebted to the many Soldiers and *Friends* I have served with—as battle buddies and through fraternal bonds. We have endured hardness and embraced the struggle; persevering through experiences that ultimately prepared me for this moment. Again, I am humbled and honored to have known and served with so many noble, like-minded individuals.

To my brothers: Steve, Lucky, Vincent and Jimmy. Your triumphs, trials and tribulations made my path in life so much smoother. Often when I think of “standing on

the shoulders of giants,” I know that none of what I have been able to do in life would have been possible without you guys.

Lastly and certainly not the least, a very special dedication of this work goes to my wife, Danene. This journey would not have been possible without her at my side for constant encouragement and for also being out front, on point, and directing traffic for me. Without question, writing this dissertation was a challenging and lonely experience; I was able to persevere with her help and guidance.

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CHAPTER ONE: INTRODUCTION

Over the last decade, despite increases in overall academic achievement, the majority of students continue to have problems in the area of mathematics. The National Assessment of Educational Progress (NAEP, 2014) showed no change in mathematics proficiency levels from between 2009 and 2013 and only marginal progress since 2005, with student proficiency levels increasing only 3% during this timeframe, from 23% to 26%. This figure represents a 1% increase over the 2005 percentage, reflecting the marginal improvement in mathematics achievement in the United States over the last decade (NAEP, 2014). Over the same timeframe, African American students' mathematics achievement increased over 30 points on average, as NAEP (2014) data shows the highest scores for fourth and eighth graders since 1978. However, the results indicated that African Americans had the lowest levels of mathematics success, with only 13% performing at or above the proficient performance level in 2013.

Several other indicators of mathematics achievement—college test scores, advanced placement (AP) classes and test scores, and overall grade point averages (GPA)—tell a similar story for African American students. Although Scholastic Assessment Test (SAT) scores have improved for African American students since 1988, the gap between Black and White scores has actually increased, with an almost 200 point gap between the two groups (Buchmann, Condrón, & Roscigno, 2010). While placement and performance in AP classes for African American students has steadily increased since the mid-1990s, studies show that these students make up approximately 7% of all students taking AP classes, and under 5% of science, technology, engineering, and math (STEM) courses (Cross, 2008; Davis, Slate, Moore, & Barnes, 2015).

When disaggregating the data further by gender, African American males are far worse off, with lower test scores on standardized math tests when compared to virtually all other segments of the student population (Schott Foundation, 2015). Further, African American males still have the greatest risk of failing or dropping out of school altogether (Heinrich, Meyer, & Whitten, 2010; Ponjuan & Saenz, 2011; Stetser & Stillwell, 2014).

Some research suggests that the problem here is the increasing portion of the student population generally, and African American males in particular, who come from lower socioeconomic backgrounds and are under prepared to take the academically rigorous college preparation courses that are geared toward producing high-level achievement in the area of mathematics (Kern, Thukral, & Ziebarth, 2012). This lack of preparation often either leads to African American male students' placement in lower-level math courses or failure in higher-level courses. The lower-level courses do not adequately prepare students for college-track courses and can lead to students discontinuing their education, dropping out of school or forgoing college, limiting their abilities to compete in an increasingly competitive job market (Catterall, 1985; Eckholm, 2006; Fox & Swatt, 2008).

Students' lack of academic achievement also has a negative effect on a school's, and even a school district's, overall academic performance. In an era when funding is dependent on assessment measures, which are also reported in daily newspapers, low academic performance can affect schools' funding and reputations (Lawrence-Lightfoot, 2008). Many schools have faced declining enrollment, increased competition for students from charter schools, and an overall negative impact on their reputations, particularly in urban settings (Lawrence-Lightfoot, 2008; Murnane, 2013).

In the United States, African Americans and Latinos represent the majority of lower socioeconomic students, and, not surprisingly, both groups rank at or near the bottom of academic achievement in mathematics in virtually every evaluation and research study focused on mathematics achievement over the last decade (Carter, Skiba, Arredondo, & Pollock, 2016; Crawford, 2011; Hemphill & Vanneman, 2011; Schott Foundation, 2015). More than 75% of African American children born between 1985 and 2000 grew up in “high disadvantage”¹ neighborhoods (Prager, 2011), and some are now current high school and college age students.

African American male students’ lack of achievement is noteworthy due to the cultural and social impact of their limited progress. For example, African American males are disproportionately represented in crime rates across the nation (Kearney, Harris, Jácome, & Parker, 2014). While there are many reasons for this (Alexander, 2012), the limited or lack of education of these individuals virtually assures their high representation in crime statistics (Kearney et al., 2014; Mauer, 1990). Low education levels have limited the employability and impacted the prospects for future career and life goals for many African American males, making crime a more viable option (Fox & Swatt, 2008). Over the last 30 years, federal and state policies such as the “War on Drugs” and the “Three Strikes Law” of 1994 have driven up the incarceration rate, as many of the policies disproportionately affect men of color (Alexander, 2012). Over the same time period, there was nearly a nearly a 70% chance that an African American male without a high school diploma will be imprisoned by his mid-thirties (Kearney et al.,

¹ “High disadvantaged” neighborhoods are characterized by high levels of unemployment, welfare, poverty, single-parent families, segregation and density of children under Age 18. Five percent of that cohort of White children grew up in such neighborhoods.

2014). In support of the importance of education in lowering crime and incarceration rates, Noguera (2003, 2012) found increases the math achievement of African American males was related to lower crime and incarceration statistics, a greater likelihood of college attendance, and greater career success.

In the next several decades, many of the jobs generated in the United States will require individuals who are mathematical problem solvers (Boaler, 2008). Many of the future jobs and some present jobs require individuals to use math in unstandardized methods and procedures, particularly with regard to the increased use of technology in many career fields, requiring a solid familiarity in the subject (Cavanagh, 2007; Dickman, Schwabe, Schmidt, & Henken, 2009). With significant numbers of workers retiring over the next 10 years, the United States is facing a serious challenge in preparing students to meet workplace demands in an increasingly complex, knowledge- and technology-based, global economy. Employers consider problem-solving and critical-reasoning skills essential in a global economy. An updated jobs and education requirements study that outlined educational attainment and educational demand found that by 2020, 65% of all jobs in the economy will require postsecondary education and training beyond high school, making advanced degrees a necessity (Carnevale, Smith, & Strohl, 2013). Of all occupations, 70% considered mathematical knowledge to be either very important or extremely important to success (Carnevale et al., 2013). Job openings in healthcare, community services, and science, technology, engineering, and math (STEM) will grow the fastest among occupational clusters (Carnevale et al., 2013).

In recent years, private foundations and local, state, and federal officials have called for urgent measures to subvert troubling trends in mathematics and reverse the

pattern of low education for African American males. Studies indicate a general consensus that early intervention within schools may be the most effective way to prevent some of the academic and social problems facing males of color during adulthood (Crosnoe, Leventhal, Wirth, Pierce, & Pianta, 2010; Dupere, Leventhal, Crosnoe, & Dion, 2010). In August 2011, New York City Mayor Michael Bloomberg announced, billionaire philanthropist George Soros and Bloomberg were donating \$200 million and redirecting another \$500 million of public funds to a variety of initiatives addressing the “crisis” confronting Latino and African American males (Rogers, 2015). Primary within these initiatives was a focus on improving educational success through after school programming.

Similar initiatives have been launched in communities throughout the country, leading to a greater focus and participation in charter and private schools. Major foundations in education have simultaneously shifted away from funding traditional educational institutions towards support for organizations that could create competition for the public sector (Reckhow & Snyder, 2014).

Some educators have explored single-sex education as a method to address the educational and social challenges facing African American and Latino males. Many schools have been designed for men of color as a result, with varying degrees of success (Pahlke, Hyde, & Allison, 2014). These schools serving these students have designed curriculum, created mentoring and rites of passage programs, and implemented counseling and recreation services without the benefit of clear and compelling research to support the design of these interventions.

While there has been a wide variety and focus on initiatives to improve the

academic achievement of African American males, one approach to increase the academic achievement of African American males has been to provide more academic opportunity beyond the typical secondary education experience (e.g., Monday through Friday, multiple class periods), extending the school day through the implementation of after school programs, otherwise known as “extended learning.” Advocates of extended learning claim extended-day learning, in general, and the 21st Century Community Learning Centers Program (21st CCLC) in particular, could potentially help students academically, specifically in reading and mathematics (After School Alliance, 2009; Apsler, 2009; Black, Somers, Doolittle, Unterman, & Grossman, 2009). The goal of 21st CCLCs is to provide academic enrichment opportunities during non-school hours for children, specifically students who attend schools in high-poverty areas and schools with substantial numbers of low-performing students (After School Alliance, 2011). These after school academic enrichment opportunities typically focus on reading and math.

Historically, substantial amounts of federal and state funds have been dedicated to after school programs with the goal of improving academic achievement of economically disadvantaged students. This group includes African American males (After School Alliance, 2011; Huang & Dietel, 2011). The Every Student Succeeds Act (ESSA) provides billions of dollars designated for after school programs to specifically focus on STEM.

Statement of the Problem

Over the last several decades, billions of dollars have been allocated to sustain the 21st CCLC program and show positive results in terms of increasing academic achievement (After School Alliance, 2011; James-Burdumy et al., 2005). The research

findings regarding the impact of after school programs on African American males' academic success are, at best, mixed. A number of these studies conducted regionally have shown some positive impact on increasing academic success for African American males (Crawford, 2011; Fashola, 1998, 2003; Goerge, Cusick, Wasserman, & Gladden, 2007; Hall & Gruber, 2007). However, it should be noted that these studies have been conducted primarily in the elementary grades and have been quantitative in nature. Missing from the research are qualitative studies at the secondary level that examine the impact of after school program on math academic achievement from the perspective of those individuals in the programs. To make programs more effective, it is critical to gather perspectives of individuals involved in the programs. A qualitative approach to this problem will help reveal these perspectives.

While the literature demonstrates there has been limited success for after school program in improving academic achievement at the elementary and secondary levels of education, mathematics achievement has not been a focal point in research reported in the literature (Beckett et al., 2009; Crawford, 2011; Fashola, 2003; Goerge et al., 2007; Goldschmidt, Huang, & Chinen, 2007). In addition, there has been limited research focused on secondary school programs and on whether such programs lead to improvement in mathematics performance for African American males².

² Examination conducted through a keyword search of Educational Resources Information Center (ERIC) and the Proquest Dissertation database. Keyword search terms included *after school programs, out of school time (OST), extended learning, secondary education, and mathematics and African American males*. Also, the research conducted by professional organizations focused on after school, out of school time (OST), and extended school day activities was examined and considered. These included the After school Alliance, National Institute on Out of School Time (NIOST), California After school Network (CAN), the National After School Association, the Wallace Project, and the Harvard Family Research Project (HFRP).

This study analyzed academic achievement data, observational and interview data from African American males and who participated regularly in an after school program designed to improve their math achievement, and observational and interview data from teachers in these programs. The findings for this study provide insight for developing effective extended learning programs that address the academic needs of African American male students informed by both student and teacher perspectives.

Research Questions

The following research questions were used to guide the study:

1. How do African American males, enrolled in an after school program, describe the influence of the program on their math achievement?
2. What is the perspective of the math teachers and program staff on the influence of the after school program on the math achievement of the African American male students?

Purpose of the Study

The purpose of this study is to better understand the impact of an after school program on the math achievement of African American male students from the perspectives and experiences of African American male students, their math teachers, and staff working in the after school program. The study seeks to contextualize the factors of a successful after school mathematics intervention and their influence on African American male students within a secondary school setting. By identifying the factors participants view as helpful in achieving higher levels of success in mathematics, this case study explores after school program and the school success in improving the ability to assist male African American students. It adds more generally to a larger body of

knowledge concerned with raising the math achievement of African American males as well as improving after school program and math education.

Definitions of Key Terms

The terms used in this study will include but are not limited to the following:

After school program: After school program is the general term used to describe an array of safe, structured programs that provide children and youth ages kindergarten through high school with a range of supervised activities intentionally designed to encourage learning and development outside of the typical school day. The terms *out-of-school time* (OST) and *expanded learning opportunities* (ELOs) are sometimes used interchangeably with the term after school program (Little, Wimer, & Weiss, 2008).

Expanded learning opportunity: Also called *extended learning time* (ELT), the term ELO refers to any educational program or strategy intended to increase the amount of time students are learning, especially for the purposes of improving academic achievement and test scores, or reducing learning loss, learning gaps, and achievement gaps (ESSA, 2016).

Out-of-school time: OST programs provide regularly scheduled, structured, and supervised activities where learning opportunities take place outside the typical school day. OST programs may occur before school, after school, weekends, or during seasonal and track breaks (National Institute on Out-of-School Time, 2003).

Math achievement: Math achievement measures math content learned over a given timeframe. Typically, math comprehension is measured by the standards that guide the curriculum used. For this study, math achievement was measured by grade reports and class exams.

Limitations of the Study

The findings from this study provide insight into the factors that contribute to the successes and challenges of the after school program at Portal Hill Middle School (PHMS)³ in their attempts to successfully improve the academic mathematics performance for African American male students at PHMS. However, there are a number of limitations that need to be addressed. The case study design limits the generalizability of a study. The results and conclusions are contextual, drawn from a specific location (Yin, 2013). Moreover, the small percentage of African American male students at the school limited the number of potential participants in the study.

Another limitation was the focus of the school concerning the use of tutoring after school. While the school sees the overall benefit to hosting an after school program, the specifics of the program content and process are not clear nor are they consistently monitored by the school. The tutoring program specifically was not closely regulated nor monitored by the school administration. Tutoring was initially intended only for those students formally enrolled in the after school program and therefore was not monitored regularly by the school administration; the program was responsible for monitoring student attendance. The program evolved over time, allowing any student the opportunity to go to tutoring. The researcher was unable to verify the self-reported attendance from the students and teachers.

³ Portal Hill Middle School (PHMS) – serves as pseudonym for the school site of the research. The use of a pseudonym is needed to preserve the anonymity and confidentiality of the participants and the location of the research. This is done to ensure the data collected cannot be traced back to through various forms of dissemination.

Positionality of the Researcher

As an African American male, I am aware of the many potential cultural and societal biases that may be present in the educational setting and everyday life. While my awareness helps me to remain attuned to indicators related to these biases, I had the goal of remaining neutral in my effort as a researcher. However, implicit bias was inevitably at play as subconsciously I wanted to protect the student participants and identify racial biases I perceived to be present. I wrote weekly reflections on this potential bias, as it was a pivotal component as to the purpose of this study. I expected to make strong connections with the student participants and this would aid me in the interview process, as the students would give more consideration to their answers when prompted. I also understood that these connections could influence the resulting analysis. Some of the students assumed I had a similar background as them, being an African American male raised in the same geographical area. My background was as similar as it was unique from the students' experiences, allowing me to deepen the rapport with the students, increasing the safe and secure feeling with my presence, thereby enhancing the interviews.

My relationships with the staff were also an asset. Most of the teacher and staff participants seemed trusting of me. Therefore, they were more likely to be open and honest in sharing their thoughts, their opinions, and information regarding math tutoring for African American males in the program than if I were an outsider coming into the school to investigate their program.

Delimitations

The researcher chose to focus specifically on after school math programs. This was done in an effort to fill a gap in the literature with regard to improving academic achievement for African American males in secondary education. Therefore the researcher purposefully limited the population under study to African American males. The use of observations, official documents, and participant interviews were purposely used in an effort to triangulate the data gathered for this study. These methods were chosen as a result of the potential population size at the location and time constraints.

Organization of the Study

This dissertation is organized into five chapters. Chapter 1 provides an overview of the components of the study. This includes the statement of the problem and the purpose for the study. The research questions and definition of terms are addressed. The limitations and delimitations of the study are also defined.

Chapter 2 includes a review of the literature on African American males' academic achievement, the importance of mathematics, and the potential opportunity that after school program offer in supporting mathematics achievement for African American males. A review of the literature in these areas was explored for information directly related to the study. The review also demonstrates an existing void describing after school program through the experiences of African American male participants and their math teachers.

Chapter 3 provides a discussion of the methodology used in this study. It examines the role of the researcher and then outlines the research methodology utilized in the study. The methodology is divided into four sections: research design, data collection

procedures, data analysis, and issues related to reliability and validity.

Chapter 4 presents the qualitative findings that emerged from this study. The first section consists of student profiles that were developed to introduce the student participants who shared their experiences and aided this research. The next section consists of an analysis of the data collected from interviews with the student participants followed by interviews with their math teachers and after school program staff.

The purpose of Chapter 4 is to establish an understanding of the thematic analysis to be detailed in Chapter 5.

Lastly, Chapter 5 provides a discussion and conclusions from the findings of the research. A summary of the purpose of the study, the methodology, findings and conclusions and the significance of the study is provided. Implications of the study are addressed in addition to suggestions for future research.

CHAPTER TWO: LITERATURE REVIEW

Increasing segments of the elementary and secondary student population are coming from lower socioeconomic, disadvantaged backgrounds and are ill prepared for rigorous academic programs, college, lucrative future careers, and jobs (Goldschmidt et al., 2007; Harry & Klingner, 2014; Milner, 2007). This lack of preparation often manifests in poor performance academically, as many students from low socioeconomic backgrounds are minorities (Dupere et al., 2010). An example of this is seen in recent data from the American College Testing (ACT) assessment, where the percentage of African American students in 2013 who are college-ready in English, math, reading, and science courses ranged from 17% in Massachusetts to only 3% in Mississippi (ACT, 2015b). Benchmark scores are minimum scores on an ACT subject-area test that indicate a 50% chance of obtaining a B or higher, about a 75% chance of obtaining a C or higher in the corresponding college course (ACT, 2015a). The ACT is scored on a scale of 1 to 36. The benchmark score for college math was 22. The average score for African American students who took the test was 17. Only 14% of African American ACT test takers were deemed college ready in mathematics. Data gathered from the SAT is similar, with African American males averaging a math score of 436 compared to the overall average of 514 (College Board, 2013). These low scores are indicative of low application and acceptance rates of these student populations into colleges and provide a measure of their ability to complete college.

Secondary schools have attempted to address this issue with varying degrees of success. One approach has been through extending the school day, using time outside of regular school hours to improve achievement (After School Alliance, 2011; Beckett et al.,

2009; Hall & Gruber, 2007; Harvard Family Research Project [HFRP], 2003).

After school programs (also called out-of-school-time) incorporate what is commonly referred to as a youth development approach. This approach focuses on what children and youth need as they mature into responsible and caring adults. The National Collaboration for Youth Members defined the youth development approach as an engagement strategy which prepares children and youth “to meet the challenges of adolescence and adulthood through a coordinated, progressive series of activities and experiences which help them to become socially, morally, emotionally, physically and cognitively competent” (Hall & Gruber, 2007, p.2).

Despite the important role most after school program have in American society, there is no consensus on a “best” type or approach of after school program due to the varied emphasis and intent of the programs (Fashola, 1998, 2003; Goerge et al., 2007; Goldschmidt et al., 2007; Halpern, 2002; Lauer et al., 2006). This is in large part due to the diversity of the country, differences by state, and the leadership within the states and school districts. For example, a rural town or city has different needs from an after school program than a program located in a densely populated inner-city location. Remote rural areas have some of the highest levels of poverty and the cycle of poverty is much more difficult to end (After School Alliance, 2007). While the components of an after school program are generally the same for most programs—academic, recreational and cultural—the focus on the components varies, and how different states, communities, and schools view the importance of each of those components also varies as the needs of the communities varies.

The No Child Left Behind Act of 2001 (NCLB) and the newly enacted Every

Student Succeeds Act of 2015 (ESSA) both placed an emphasis on expanding extended learning time, or after-school programs, in an effort to assist schools in increasing academic achievement for their most disadvantaged students—a category that the majority of African American males fall under in secondary education. Many after-school programs use focused academic instruction (i.e., tutoring) to improve students' academic achievement. The methods for increasing academic achievement during after-school programs for students in secondary education are under increasing scrutiny as educators seek to engage the effectiveness of these methods. However, the current body of research on after school programs, while increasing, is limited in its scope and qualitative research focus.

The purpose of this paper is to investigate influences and factors related to the impact of after school academic interventions on African American males' mathematics achievement in secondary education. It explores, both the factors that support and those that challenge achievement, from the perspectives of the students, math teachers, and after school program staff. While OST programs include before school, and after school, and summertime programs, the focus of OST interventions for the purpose of this study will concentrate on after school programs as many of these programs are situated at school sites and are used to improve academic achievement.

This literature review is divided into three sections. The first section focuses on African American males and the factors that contribute to their detrimental status in society. The second section discusses the importance of mathematics and its relationship to academic and career success. The third section provides an overview of after school programs as a tool to improve the mathematics achievement for African American males.

African American Males

For decades, African American males have been described as uneducable, dysfunctional, and dangerous (Jackson & Moore, 2006; Noguera, 2003b; Parham & McDavis, 1987). These perspectives have demonized African American males and resulted in many African American males feeling the challenges to their success are insurmountable. African American males are overrepresented in crime statistics and incarceration numbers and see lower graduation rates and college attendance (Kearney et al., 2014). According to some research, the limited or lack of education of these groups virtually assures their high representation in crime statistics (Kearney et al., 2014; Mauer, 1990). The lack of educational opportunities for this group impacts not only their lives, but also society more generally, as the lack of an African American male presence in a community may inhibit economic growth and cultural stability. Incarceration leaves many African American families with a sole provider, decreasing the potential of economic stability and a forced matriarchal family structure as a result (Alexander, 2012; Howard, 2013). There is wide ranging recognition of the need to increase the academic achievement of African American male youth (Howard, 2013; Ladson-Billings, 2011; Noguera, 2003; Stinson, 2013). Much more needs to be done to address the plight of this marginalized group.

Negative outcomes for African American males are not reflective of their potential but a direct result of systemic and structural denial of equitable supports and resources needed to be fully engaged and succeed (Schott Foundation, 2015). Differing political perspectives point to both structural and agency-related factors for the crisis in the education of African American males. Historical examples of structural barriers for

African American male advancement can be seen in geographical location, particularly in the urban vs. suburban settings. Suburbs have long been associated with wealth, home ownership, and quality education with better secondary schools leading to increased access to college (Clapson, 2003). Having a college education increases the opportunity for a high paying salary position. The opposite story is told for most urban settings: poverty, lower performing schools, limited access to college, and, ultimately, diminished likelihood of obtaining high paying jobs (Marable, 2015; Sawhill, 1996). Although recent population projections place more minorities in the suburbs of the United States, with 35% of the suburban population identify as such in the most recent Census, the population in many suburbs, historically, has been white (Howell & Timberlake, 2014). African Americans and Latinos overwhelmingly populate urban settings, with 58 of the major metropolitan areas in the U.S. were “majority minority” in 2010 (Frey, 2011).

Systemic and Structural Inequality

Numerous studies have found that African American males have suffered academically from systemic and structural inequality in the U.S. education system (Fenning & Rose, 2007; Noguera, 2003; Schott Foundation, 2010, 2015). The Schott Foundation (2015) report showed African American males are four times more likely than their peers to be suspended or expelled. Additionally, other disciplinary policies in the education system that are centered on weapons and drugs have disproportionately affected minority populations, particularly minority males (Fenning & Rose, 2007; Wallace, Goodkind, Wallace, & Bachman, 2008). These types of inequities in the nation’s elementary and secondary education systems lead to increased exposure of minorities to the criminal justice system: the creation of the school-to-prison pipeline

(Skiba, Arredondo, & Williams, 2014).

In 1980, approximately 10% of young African American men who dropped out of high school were in prison or jail. This incarceration rate climbed to 37% by 2008 (Western & Pettit, 2010). There is nearly a 70% chance an African American man without a high school diploma will be imprisoned by his mid-thirties (Kearney et al., 2014).

Arrests are more prevalent among African American males and have been since the end of slavery (Alexander, 2012; Moynihan, 1997; Western & Pettit, 2010). Many in this demographic were arrested and imprisoned for minor offenses (e.g., loitering, vagrancy, jaywalking) and then used as labor on plantations (Alexander, 2012). Many southern U.S. states used minor infractions as a means to detain African Americans. Once in the system, African Americans had to perform hard labor in order to pay off their legal debts associated with being a prisoner (Alexander, 2012; Moynihan, 1997).

In the United States today, the school-to-prison pipeline is still in place, as minor charges and offenses trap many minorities into the criminal justice system. Alexander (2012) argued the “War on Drugs,” a moniker used by the Reagan Administration in the 1980s to focus on reducing illegal drug trade, overwhelmingly targeted and negatively affected poor disenfranchised communities, particularly African American males. The effect on African Americans and overall society is evident, as school-aged children of incarcerated parents have been shown to be more likely to demonstrate weak academic performance and have emotional and behavioral problems (Murray, Farrington, & Sekol, 2012).

The national graduation rate for all groups of students in the United States has increased dramatically over the last 15 years, with an approximate rate of 79% for students attending school without breaks from ninth grade through twelfth grade (Schott Foundation, 2015). The graduation rate for African American males has increased as well, with an increase of approximately 13 percentage points to roughly 59% over the same time period (Schott Foundation, 2015). It is important to note that recent changes in high school graduation requirements, which include more rigorous math and science, reflect the increasingly competitive nature of society and college admission requirements (Bound, Hershbein, & Long, 2009; Wechsler, 2014). In California, for example, more school districts are requiring students to take college preparation courses, which matches coursework requirements for admission to the University of California system, in order to graduate from high school. These requirements, known as A-G, require students to take three years of increasingly rigorous math courses. This type of requirement combined with the implementation of the Common Core academic standards can lead to some students, particularly African American males, to choose to drop out of high school rather than meet the challenge of the coursework (Plunk, Tate, Bierut, & Gruzca, 2014).

African American students are underrepresented in AP and gifted programs. They are less likely to be enrolled in rigorous coursework, including the key disciplines of science and math, and are more likely to drop out of high school (Allen, 2015; Davis, Ajzen, Saunders, & Williams, 2002; Ladson-Billings, 2000). They are therefore less likely to attend and graduate from college. In 2013, African Americans were 14.5% of the graduating high school class and they made up approximately 9% of all AP test takers

(College Board, 2014). College Board 2016 AP data reflects 8,052 African American males took an AP exam in mathematics while 3,200 received a score of three or higher.

Tougher requirements appear to have had a particularly negative effect on the high school graduation rates of African American males. Data collected from 48 states showed African American males remain at the bottom of four-year high school graduation rates in 35 of those states (Schott Foundation, 2015).

Opportunities have disproportionately lagged behind for decades for boys and young men of color, particularly in African American and Latino communities. According to Reyes and Stanic (1985), men of color have dealt with prevalent discrimination within the United States, which has limited many of them from social mobility through limited access to educational and employment opportunities. This lack of mobility is evidenced through the reality that disproportionately more African Americans and Latinos continue to live in high-poverty inner cities (U.S. Census Bureau, 1990, 2010). Multiple studies from the U.S. Department of Education (2001) have results show clear links indicating student and school poverty adversely affecting student achievement (Bergeson, 2006; Brooks-Gunn, Duncan, & Maritato, 1996).

The number of jobs that once provided middle-class wages to workers without any postsecondary education or without a high school diploma has sharply declined, resulting in severe consequences for young men of color (Wimer & Bloom, 2014). Employers offering jobs that require skills beyond the high school level are increasing, while the supply of these skills among most low-income men of color has lagged (Spaulding, Lerman, Holzer, & Eyster, 2015).

Each year's class of dropouts can cost the country over \$200 billion during their

lifetimes in lost earnings and unrealized tax revenue (Catterall, 1985; Rumberger, 2011). Dropouts earn roughly \$10,000 less a year than a high school graduate. Dropouts have higher unemployment rates and are more likely to be incarcerated. Over 80% of the incarcerated population is high school dropouts (Rumberger, 2011). While African American males are approximately 6% of the U.S. population (Frey, 2011), the statistics are very worrisome for dropouts of color: 22% of people jailed in the United States are African American males who are high school dropouts (Kearney et al., 2014; Mauer, 1990).

African American males are severely impacted the lack of educational opportunities and supports. Not only do they experience higher dropout rates and lower college attendance rates, but also the lack of educational opportunities directly affects their abilities to pursue career opportunities and well-paying jobs. African American males are then more susceptible to incarceration due to the lack of opportunities and historical, systemic targeting in the criminal justice system.

Education and Inequality

Education has structural inequality as well. African American students face challenges unique to them as students in U.S. schools at all levels of the system by virtue of their social identity as African Americans and by the way the African American identity has been a source of devaluation in historical and contemporary American society (Martin, 2008). Research suggests minority males, particularly African American males, receive harsher disciplinary action in schools than their White counterparts (Skiba, Michael, Nardo, & Peterson, 2002). Research repeatedly demonstrates African American and Latino males are two to four times more likely to receive disciplinary action in as

their White counterparts (Skiba et al., 2011). While there are many structural and societal causes that provide the basis for low academic achievement for these subgroups, disciplinary issues impact grade-level competency with many African American males entering high school with math and reading competencies one to three years behind grade level (Howard, 2013).

Success in math has long been identified as a “gatekeeper” to academic success and college admittance. Students have a limited time to complete mandatory math coursework requirements for high school graduation and college admission: most four-year colleges or universities require three years of math beyond algebra. High poverty schools often cannot offer the minimum level of classes needed to meet college requirements, including AP classes, advanced, and honors coursework. The importance of math in particular is discussed more fully in future sections.

African American males tend to perform more poorly in math and science than do students from other racial groups, and these disparities in achievement increase with grade levels (Noguera, 2003). Research also suggests African American males, despite some positive progress over the last decade; continue to be underrepresented in gifted and advanced courses and overrepresented in special education (Kunjufu, 2005; Schott Foundation, 2015). Research has shown African American males are often labeled or placed into special education programs as a method to avoid teaching them in a regular classroom environment (Harry & Klingner, 2014). One study examined 18,000 students in 39 schools of an urban K-12 school system. Descriptive analysis showed racial minority risk varied across 7 disability categories, with males and students from low-income backgrounds at highest risk in most disability categories (Sullivan & Bal, 2013).

Another study conducted on several suburban school districts found that minority overrepresentation in special education was attributed to cultural deficit thinking in educators' construction of student abilities, the existence of inadequate institutional safeguards for struggling students, and attempts at addressing disproportionality often result in institutional "fixes" but not necessarily changes in the beliefs of education professionals (Ahram, Fergus, & Noguera, 2011). This removal from regular educational curriculum and placement in special education typically occurs in the early school years, elementary and middle school levels, placing these students further behind by the time they reach high school.

Poor academic performance among African American students stems from a variety of sources, particularly in the approach teachers take in delivering content to these students (Jackson, 2009). Academic performance for African American students is enhanced and positively influenced when teachers push students to envision life beyond their current situation; when teachers work with African American students to increase self-awareness relative to others; and when both teacher and student work to demonstrate care (Milner, 2007). Such pedagogy is often missing because of a lack of African American teachers (Kafele, 2012). Role models are a way to promote education and to demonstrate positive ways to grow and develop.

Because African American males are more likely to be disciplined and receive placement into special education programs, they experience barriers in keeping up with age-appropriate competencies that grow exponentially each year. A lack of representation in teaching faculties leave African American male students without African American role models at school, which leaves another important support mechanism vacant. These

structural issues in primary and secondary education strongly impact African American male students and their abilities to develop mathematical competencies.

Importance of Mathematics

Current Status of Mathematics

A robust mathematics curriculum in high school is widely considered the gatekeeper to college entrance and successful career advancement (Kim, Kim, DesJardins, & McCall, 2015; Lowe & Kantor, 1995; Martin, Gholson, & Leonard, 2011; National Council of Teachers of Mathematics, 1989). Research suggests that taking more mathematics in high school is a precursor of academic success and can influence success in the workplace, which can lead to earning higher levels of income (Rose & Betts, 2001).

Mathematics achievement success has long been associated with the number of mathematics courses taken and the amount of time spent studying (Noble & Schnelker, 2007; Secada, 1992). Bob Moses, a civil rights leader, has often asserted that algebra has always been critical to accessing higher level math, leading to increased educational and economic opportunity (Ladson-Billings, 1998). Moses started the Algebra Project, an organization that uses mathematics as an organizing tool to ensure quality public school education to disadvantaged students. The objective of the Algebra Project is to prepare disadvantaged middle school students to move into high school ready to do college-preparatory (college-prep) work and from high school into college prepared to engage in college-level work (Moses & Cobb, 2002). Studies on participants in the Algebra Project show significant levels of success. Research from Lesley College found 92% of Algebra Project graduates in Cambridge, MA enrolled in upper-level math courses in ninth grade.

In 1997, King Middle School in San Francisco had 56% of its' Black graduates whose math teachers were trained in Algebra Project techniques taking college-prep math courses in ninth grade, compared to the local average of 24% (Moses & Cobb, 2001). These students' abilities to master math concepts in the middle school years allows them access to more rigorous math courses in their high school years, increasing their opportunities for college admission.

Since the release of *A Nation at Risk* (National Commission on Excellence in Education, 1983), a report from President Reagan's National Commission on Excellence in Education, many Americans have been concerned about the mathematics achievement of youth. Controversial international comparison studies with other industrialized nations further reveal poor mathematics achievement of American secondary school students (National Center for Education Statistics [NCES], 1999). The Program for International Student Assessment (PISA) is a worldwide exam administered every three years that measures 15 year olds in 72 countries. When examining comparable samples from countries that participated in the PISA exam in both 2012 and 2015, the US ranking fell to 35th from 28th in math (Organization for Economic Cooperation and Development [OECD], 2016). The United States underperformed the OECD average in math. The United States has consistently remained in the bottom tier of the comparative assessment for over the last decade (OECD, 2016; Pena-Lopez, 2012). The National Governors Association (NGA) and Council of Chief State School Officers (CCSSO) both maintained U.S. international competitiveness and improved performance on the PISA assessment requires a rigorous national curriculum, particularly in English and mathematics (Mathis, 2010). While the differences are significant, the pattern of

underachievement in American students is not evenly distributed across all demographic groups (Matthews, Carpenter, Lindquist, & Silver, 1984; Oakes, 1990). Specifically, the average mathematics literacy score was 419 for African- American students, compared to the average of 499 for White students (Kastberg, Chan, & Murray, 2016).

Math Impact for African Americans

While African American students have made great strides in improving academic scores and achievement over the last several decades (Schott Foundation, 2015), test scores show, along with most U.S. students, there is still significant progress to be made in the area of mathematics. In 2011, the NAEP showed that 49% of all African American eighth graders were below a basic level of achievement. In 2013, the number of African American 12th graders was at 62% below basic (NAEP, 2014). This suggests that the longer African American students are in school, the less well they perform academically in math compared to benchmarks.

The mathematics achievement gap is often addressed by school districts eager to increase student performance, thus increasing the academic achievement of minority subgroups. The impact in math is particularly important because studies show strong math skills are predictive of success in high school and college attendance (Linden, Herrera, & Grossman, 2011). Additionally, math curriculum has a strong effect on the probability of graduating from college (Rose & Betts, 2001). Therefore, math is important and any type of gap seen in math achievement between white and minority students can lead to later disparities in employment opportunities, particularly in engineering and technology careers (Mau, 2003).

Numerous studies provide insight on methods to improve mathematics

achievement for African Americans (Fashola, 2003; Goerge et al., 2007; Howard, 2013; Jackson & Moore, 2006; Ladson-Billings, 2009; Martin et al., 2011). A study on the relationship of racial academic stereotypes and school efficacy revealed youth mentoring programs and educators who work with urban African American male adolescents can play a key role in challenging stereotypes and shaping beliefs about academic success (Ellis, Rowley, Nellum, & Smith, 2015). Other studies advocate for the establishment of academic communities within a school setting as a way to increase math competency (Walker, 2012). These communities provide an alternative space to the family or home structure to create intentional environments where learning can flourish. Various peer mentoring or tutoring programs have proven to be successful in improving the academic performance of the participants (Bowman-Perrott et al., 2013).

One in-school community program, the Advancement Via Individual Determination (AVID) program, has been implemented in schools to promote academic achievement. It has shown success in improving academic outcomes for disadvantaged students. Mehan, Villanueva, Hubbard, and Lintz (1996) found when African American students were given support through AVID, they improved their likelihood of attending college compared to the national average for African American students. These programs and supports have proven to be effective in increasing academic success for their students; however, they reach small numbers of the students. The limited breadth of such in-school programs, such as AVID, has led some educators to argue for out of school programs, particularly after school programs.

After School Program

After school programs serve children and youth of all ages, and encompass a broad range of focus areas, including academic support, mentoring, youth development, arts, sports, and recreation. After school programs have been a focal point for community members, families and politicians since the early 1990s when the 21st Century Community Learning Centers (21st CCLC) Act was incorporated into the Improving America's School Act of 1994 (Phillips, 2010). The 21st CCLC Act's initial purpose was to use school sites as havens of learning for entire communities, not just elementary and secondary students. Subsequent reauthorizations of the Elementary and Secondary Education Act provide more funding for 21st CCLC, shifting management and objectives of the program to state education agencies. Progressively over time, the focus of 21st CCLC changed from using schools and expanded to local community centers as well. The goals of 21st CCLCs shifted as well, moving from an overall community resource towards having a more targeted mission of providing greater support for academic achievement for children, particularly those who attended high-need schools (After School Alliance, 2011; Phillips, 2010). The No Child Left Behind (NCLB) Act reauthorized 21st CCLC making 21st CCLC the only federally funded source dedicated exclusively to after school program. Each state receives federal funds based on its share of Title I funding for low-income students (After School Alliance, 2015). The 21st CCLC received over \$1 billion dollars in funding nationwide in 2014.

Out-of-school-time (OST) programs vary in goals and in structure, across districts and across states. There are essentially two types: a school-based extended learning time (ELT) program that is directly tied to the school day, occurs after regular school hours,

and is usually located at the school, and a community-based after school program that can be housed at the school or may be located off-site (Fashola, 2003). Although these programs cover students from kindergarten through twelfth grade, many programs focus on elementary and middle grades. The majority of after school program address three areas of practice: academic, recreational, and cultural (Fashola, 2003). Generally, programs are designed to increase academic achievement, decrease participation in risk behaviors, increase career awareness and access, and increase personal and social skill development (Fashola, 1998; Lind et al., 2009). OST programs cultivate supportive relationships between staff and youth participants, provide rich and varied academic activities, offer additional enrichment opportunities, and foster strong connections within schools and with local community organizations (Vandell, Reisner, & Pierce, 2007). Programs of this nature address the needs of the students served and the activities in the program reflect extended learning from the regular school content, project-based learning that may or may not be aligned with the school content, and intentional learning of nonacademic activities for social skills improvement (Noam, Biancarosa, & Dechausay, 2003).

Research up to this point has indicated similar characteristics for the majority of OST programs, and they are housed primarily in the elementary and some in the middle school environment. There has been little focus on what OST programs look like at the high school level.

Impact on Academic Achievement

While many OST settings are designed or seen as safe havens for students when not at school or at home, many parents, educators, and politicians see these settings as

vital to bridging the achievement gap for underperforming and low income students (Halpern, 2002). Increasingly, the focus of these programs has shifted to evaluating their impact on increasing academic achievement (After School Alliance, 2011; Halpern, 1999; James-Burdumy et al., 2005). OST can be used as an opportunity to supplement learning from the school day and to provide targeted assistance to students with educational needs that may not have been addressed in the classroom (Beckett et al., 2009). Researchers conducted a study on after school program consisting of third and fourth elementary school students and fifth and sixth grade middle school students across 14 cities, including 35 after school programs. It showed there are positive impacts of after school programs on youth development, including reducing detrimental behaviors, improving grades, and increasing math achievement scores (Vandell et al., 2007). This study also showed the impact of after school program was greater for low-income compared to middle-income students (Vandell et al., 2007). This fact is important when assessing the influence of after school program on African American male students. While this study did not disaggregate data for race and gender, over 60% of African American students come from low-income families (Jiang, Granja, & Koball, 2017). After school program offer great promise for this population.

Program evaluations of after school program are varied and have often been conducted on a regional level. Lauer et al. (2006) analyzed 35 OST studies centered on inclusion criteria that included some type of direct assessment of students' academic achievement in reading, mathematics, or both. Other criteria included low socioeconomic status and racial or ethnic minority background. These meta-analyses indicated small but statistically significant positive effects of OST on both reading and mathematics

achievement. Although the majority of the research conducted was focused in the elementary school setting, the largest mathematics impact was seen at the secondary level. One of the 22 mathematics studies within the meta-analyses revealed positive effects on mathematics achievement by male and female participants in a summer school OST.

Crawford (2011) conducted a meta-analysis study to focus on math and reading achievement in grades K-8 and found statistical significance between the after school program and math and reading achievement. The overall results for reading and mathematics combined indicated after school program have a positive impact on student academic outcomes. In particular, the study found one of the drivers for after school program—providing students with more time to learn the curriculum—was confirmed in the analysis. While the research provides insight into effective programs, it is limited as it used only quantitative methods.

After school program provide mathematics learning opportunities to support the academic needs of struggling students. Studies conducted by the Institute of Education Sciences outlined recommendations for designing academically oriented programs (Beckett et al., 2009):

1. Align OST programs academically with the school day.
2. Maximize student participation and attendance.
3. Adapt instruction to individual and small-group needs.
4. Provide engaging learning experiences.
5. Assess program performance and use the results to improve the quality of the program.

These recommendations have been adopted by an increasing number of schools, districts, and community-based organizations running after school and summer learning programs with a goal of improving academic performance (Stonehill et al., 2009).

The purpose and scope of the majority of after school program explored in this literature review were regional or city specific. As schools and communities attempt to meet the needs of their constituents, the type of students that schools might target for services can vary. This can pose difficulty in assessing the general impact of OST programs (Little et al., 2008; Redd et al., 2012). Despite the longstanding existence of after school program, evaluation of after school program has been limited and inconsistent (Fashola, 1998; HFRP, 2003).

Previous research indicates there is significant contextual variation across programs. Program structures are not uniform and will vary based on the site, needs of the students and families, funding and staffing concerns (Fashola, 2003; Little et al., 2008). With this variation comes the need to provide insight on effective practices for African American males in after school programs. Research thus far has been limited or non-existent on the specific impact on this demographic.

African Americans After School

Some research has suggested African American parents tend to have a higher percentage of nonstandard work schedules—outside a typical, daytime, Monday to Friday workweek: evening, nights, weekends, and rotating shifts (Li et al., 2014). Many parents cite the need for a second or part-time job or to defray or avoid childcare expenses accrued their work schedules (Barnett & Gareis, 2007; Wight, Raley, & Bianchi, 2008). Some parents' work schedules dramatically impact interaction with their children and

result in a less academically supportive home environment (After School Alliance, 2011; Fashola, 2003).

Research demonstrates that students whose parents are more involved in their children's schooling earn higher grades and have fewer self-control difficulties at school (Baker & Stevenson, 1986; Grolnick, Benjet, Kurowski, & Apostoleris, 1997). After school program have shown great potential in assisting African American families in addressing these concerns. Research shows that one in four African American children use some type of after school program (After School Alliance, 2014).

Schools and districts use OST, such as after school program and summer schools, to supplement the education and wellbeing of all students, particularly disadvantaged and low-achieving students (Lauer, 2003). After school program are often implemented in response to studies that show increases in homicides involving African American males, both as victims and perpetrators, during after school hours (Fox & Swatt, 2008). This indicates that OST is a critical time for crime for African American males who do not have access to after school program.

Some programs call specific attention to the involvement of African American students. Providing educational after school program in a school-based setting provides African American male students with qualified teachers and trained staff who can work with much smaller groups of students to enrich their experiences in the areas of academics, culture, and social interaction with peers (Fashola, 2003). In the After School Matters program in Chicago, youth who participated at the highest levels tended to demonstrate the fewest course failures and also had higher graduation rates than similar youth who did not participate in the program (Goerge et al., 2007). A review of

Louisiana's 21st CCLC program found academic gains significantly related to levels of participation in the after school program. Students who participated in the after school program for 30 or more days had a statistically significant improvement in academic performance. While the gains found in Jenner and Jenner's (2004) study were in reading, not math, the potential for mathematics achievement exists. Los Angeles's BEST program revealed that greater participation was significantly related to positive achievement on standardized tests of mathematics, reading, and language arts (Huang & Dietel, 2011).

The purpose for many after school program goes beyond the need for increasing academic achievement. Bridging gaps between students' needs at home and outside of school are, at times, critical to promoting greater levels of academic achievement. The intent of after school program must shift to address the specific needs of their students and having an after school program that intentionally targets African American students to participate can prove critical. Some research has indicated the necessity of having cultural connections to the students. Culturally relevant pedagogy can serve as an extension of this connection in the effort to improve academic achievement.

There is a significant need for after school programs that address the overall needs of African American male students. While high-academic-achieving students have been documented from this group, more must be done to support the academic achievement of this group as a whole, as they remain largely unable to achieve academically on the level of many of their peer groups. Much of the lack of academic success is related to non-academic factors and makes up the purpose of many after school programs: decrease participation in risk behaviors and offer a safe environment during after school hours.

Culturally Relevant Pedagogy

Culturally relevant pedagogy (CRP), also described as culturally responsive pedagogy (Gay, 2010), pertains to classroom practices that draw meaningfully on the culture, languages, and experiences that students bring to the classrooms in order to increase their engagement and academic achievement for students of color (Ladson-Billings, 1995). CRP is defined as empowering students intellectually, socially, emotionally, and politically by using cultural referents to impart knowledge, skills, and attitudes (Ladson-Billings, 1995). Her definition of CRP rests on three criteria: (a) students must experience academic success, (b) students must develop and/or maintain cultural competence, and (c) students must develop a critical consciousness through which they challenge the current status quo of the social order (Ladson-Billings, 1995). Generally, CRP assists schools and teachers as they work to develop classroom culture and structure that is reflective of the students they serve.

The research indicating the importance of multiculturalism and CRP in raising student achievement is growing, particularly in the area mathematics (Delpit, 2006; Ladson-Billings, 1995; Martin, 2008). The need for this practice is confirmed by demographic statistics that show students of color make up over 50% of the nation's school population (Zeichner, 2012) and more of the student population will come from the most disenfranchised sections of our society in the near future (NCES, 2015; Zeichner, 2012). Without action, incarceration levels, dropout rates, and inability to engage in global competitiveness will continue to plague our society and further marginalize minorities.

While there has been considerable debate as to how to address this type of

instruction in teacher preparation and how to implement in existing classrooms (Ladson-Billings, 2014; Delpit, 2006), there are effective examples of culturally relevant pedagogy taking place across the United States. One example of this has been seen in the Algebra Project started by Robert Moses in 1990. In one study of the project, educators used a culturally relevant approach to building competency in mathematics for primarily minority students (Silva, Moses, Rivers, & Johnson, 1990). Through the use of a five-step curriculum process, the educators embedded students' cultural understandings in the lessons to promote learning. Moses's curriculum is comprised of five important steps:

1. Physical events
2. Pictorial representation / modeling
3. Intuitive language / "people talk"
4. Structured language / "feature talk"
5. Symbolic representation.

Children share a common experience, which, through a series of steps they would gradually express in more abstract language until their experience was finally expressed in a mathematical statement (Hollins, 2015). Key findings from the project indicated the importance of teacher involvement and teacher training to successfully empower students.

Some research has pointed out that most schools are ill equipped to address the need for CRP (Delpit, 2006; Martin, 2008). Many teachers, new and old, have very little multicultural experience and training (Sharma, 2011). According to Chisholm (1994), preservice teachers need to acquire multicultural competencies, the ability to be functional in cross-cultural settings, and the abilities to interact and communicate

effectively with culturally diverse students and their parents (Sharma, 2011). Ladson-Billings (2009) implored teacher preparation programs to develop connections between cultural relevance and the academic success of culturally diverse students.

Many teachers, in their efforts to reach minority or disadvantaged students through kindness, virtually stop teaching or lower standards (Delpit, 2006). One study on comforting struggling students showed that some teachers having an entity (fixed) theory of math intelligence and subsequently comforted students, which actually lowered their students' motivation because they had perceived their teacher had low expectations for their success (Rattan, Good, & Dweck, 2012).

High expectations are needed to promote high achievement in mathematics for struggling students (Ladson-Billings, 1998; Silva et al., 1990). Carol Dweck (2008) found adults' feedback practices and adults own mindsets could influence students to think about math in different ways. The benefits to promoting this growth mindset include a belief that talent can be developed, ability can be built, and mistakes are opportunities to promote development; a growth mindset instills a belief that success comes from effort (Dweck, 2006).

Educational leaders and politicians have attributed the lack of learning by minorities to socioeconomic reasons (Howard, 2008). This problem is compounded by indications that most new teachers (who may actually have had exposure to multicultural education) do not want to teach in urban areas. Zeichner (2012) conducted a study that showed only 15% of participating teachers would work in high-need areas. The primary reason given for avoiding high-need schools was the desire to teach students similar to them.

In conclusion, some after school program are seen as effective methods for improving academic achievement for disadvantaged students. Community stakeholders and the education community at large see these programs as valuable, thus the increased focus and funding of after school programs. The level of participation or attendance by students was a key variable in determining the level of academic improvement in much of the reviewed research. Much of the literature reviewed yielded little insight into the impact of math tutoring on the math achievement for African American students, highlighting the need for this study.

CHAPTER THREE: METHODOLOGY

The purpose of this study was to better understand the impact of an after school program on the math achievement of African American male students from the perspectives and experiences of the students, their math teachers and program staff. This study examines experiences and program-related descriptions used by these participants to develop a thorough understanding of the impact of this after school program on the math achievement of a group of African American male students enrolled in the after school program.

The study focused on developing rich and thick descriptions of how the after school program influenced the math achievement of African American males at Portal Hill Middle School (PHMS). In order to extract the experiences and perceptions of the students and staff, the following research questions framed the study.

1. How do African American males, enrolled in an after school program, describe the influence of the program on their math achievement?
2. How do the after school program teachers and program staff describe the influence of the after school program on the math achievement of the African American male students?

This chapter discusses the role of the researcher and outlines the research methodology in four sections: research design, data collection procedures, data analysis, and the delimitations and limitations of the study.

Role of the Researcher

As the researcher, I am the primary instrument for data collection and analysis (Merriam, 2009). My role in this research was to observe the behavior of and interview

the student participants, math teachers, and after school program staff for this study. This study included classroom and after school program observation and participant interviews.

As part of the interview process, I had a responsibility to reduce my personal biases. My role as a former teacher at the school meant that I had a working relationship with many of the staff at PHMS. However, it is important to note I had no previous interaction with the student participants. It was critical, therefore, that I purposefully take steps to maintain objectivity. To that end, I kept a journal to document events and I used analytic memos to assist in analyzing my observations and interviews. This strategy also aided me as I continued observing the school site and conducting the interviews. I used audio recordings to provide an accurate description and record of what was said in the interviews. I also conducted member checking to make certain that I was accurately representing responses.

I was aware my own personal experiences with utilizing math tutoring after school throughout my education presented some potential for biasing my assumptions about what constitutes good and bad math tutoring. I experienced the benefit of math tutoring and was very much a willing participant, frequently attending my schools' after school program. I attribute much of my ability to progress through my secondary education and into college due to the benefits of tutoring. While it is unlikely to remove every bias, I was diligent about being true to what I was seeing and hearing rather than imposing what I had experienced in my own education.

The topic of improving academic achievement for African American males in secondary education is of interest to me because of my career in education. I taught math

at the middle and high school levels for over six years before moving into school administration. I have served as an after school math tutor and I know one of the biggest challenges in secondary education is centered on moving the bar for African American male students and increasing their academic success.

Since I have been a member of the target population for this study, I was motivated to conduct this research to understand how other after school program support success and how they are challenged in their efforts. With this understanding, I hope to inform educators who design academic supports that will improve educational attainment for a greater number of African American youth.

Research Design

This study utilized a qualitative case study design that examined the experiences and perceptions of selected African American male students, their math teachers, and after school program staff at one middle school. Qualitative research is described as an encompassing interpretive technique that seeks to come to terms with the meaning of the situation in the real world rather than its frequency (Merriam, 2009). Qualitative research allows researchers to gain new perspectives on known phenomenon, or to collect more detailed information. While I have some knowledge of the benefits of math tutoring, I wanted to develop a greater understanding by documenting the experiences and perspectives of the African American male students, their math teachers, and after school program staff.

A case study design should be considered if the researcher cannot manipulate the behavior of those involved in the study or wants to cover contextual conditions because the researcher believes they are relevant to the phenomenon under study (Yin, 2003), as

was the case with this study. Case study research uses a variety of evidence from different sources, such as documents, artifacts, interviews, and observations (Yin, 2003). This case study is centered on one after school program in one middle school with a focus on the perspectives of the participants as to how the program impacts the math achievement of the African American students. Gaining the perspective of the participants and providing them the opportunity to voice their stories supports the overall picture of the after school program at PHMS. A case study design is helpful when you want to examine a case within its real-life context (Yin, 2003). It is particularly helpful in bounding this study of how math tutoring is experienced by the participants in the after school program at PHMS only.

The units of analysis for this study are the African American male students. Their perspectives, those of their math teachers, and an after school program staff member select after school program staff at PHMS were gathered to understand the students' experiences (successes and challenges) in the program and the program's effects on their math achievement.

Site Selection

The site of this study was in a large, urban school district in a seaside community in Southern California. Approximately 41% of Portal Hill Middle School (PHMS) students are on the Free and Reduced Lunch (FRL) program. It is located minutes from several large military installations with roughly 18% of the school population coming from military families. With a school population of 778 students, African American males make up approximately 6% of the school population. School attendance records indicate the overall student population is diverse, consisting of the ethnic distribution of:

1% Asian, 8% African American, 38% Latino, 47% White, and 6% declaring two or more races.

The after school program at PHMS was selected because of its proximity to the researcher and the diverse student population it serves. The site was optimal for the study as the researcher had working relationships with one of the school's vice principals and two of the school's math teachers. The after school program at PHMS was well established and has an average of 12-15% of the school population attending daily. After school program data shows the after school program has 115 students enrolled, nearly 15% of the student population. The demographic distribution was 57% White, 17% African American, and 26% Latino.

Math is offered five of six periods during the school day. Each math class in both grades seventh and eighth has 30-36 students. The math classes are "mainstreamed," which means they may include students identified as special needs in the general education math class. The math program at PHMS incorporates the Common Core State Standards for Mathematics and the Standards for Mathematical Practice. The school uses The Big Ideas Math program for its math curriculum, which is a research-based curriculum providing a rigorous, focused, and coherent curriculum for middle school students. Since all math teachers in the after school program are also teachers at PHMS, they use the same curriculum and course pacing guide after school. This allows any math teacher in the after school program to help any students who attends the program.

The after school program at PHMS is ran by PrimeTime, an extended day program that runs before and after school. It is a program that creates a physically and emotionally safe environment conducive to learning while improving academic and

social skills. PrimeTime adds a strong youth development focus, including life skills, positive communication, conflict resolution, goal setting and decision-making. A central tenet of the PrimeTime program is to offer 60 to 90 minutes of academic support in the areas of reading, math, writing and science.

Data Collection Procedures

This study received approval from the Institutional Review Board (IRB) of the San Diego Unified School District on August 30, 2016, and from the University of San Diego on October 5, 2016. Permission was sought from both boards due to the inclusion of minors in this study.

Phase one of the study consisted of collecting background data on the school and the after school program. For the purposes of this study, background data was collected from the 115 student participants in the after school program. Background data included grade point averages (GPAs), current math grades, homework completion percentages, current math levels for each student participant, and previous reporting period math grades (to gauge current progress).

Phase two included classroom and after school program observations, interviews with the student participants, their math teachers, and the after school program staff members. The rich descriptions that arose from this research would highlight the lived experiences (Creswell, 2009) of the participants and provided greater insight into their perceptions of the impact of the after school program on students' math achievement.

Using a combination of school documents, observation data, and interview transcripts also allowed for triangulation of the data. This provided a more complete and richer view of the phenomena being studied, as well as added greater insight in order to

address the study's research questions.

Participants

This study included after school program students, teachers, and staff as participants. After receiving IRB approval, the following steps were taken to recruit participants for the study.

Student participants. The student participant sample for this study was selected using a purposive sampling method, which is used when a researcher aims to understand or gain insight to a specific population, as in this study (Merriam, 2009). Purposive sampling was chosen because the sample provides the researcher with information about the phenomena (McMillan & Schmacher, 1997).

Participants were selected from an analysis of the academic data obtained in phase one. The student population was analyzed and 44 African American males were identified. After consultation with school administration, and potential participants were eliminated from consideration for the study who were not regular school attendees, would be unable to participate as a result of special circumstances, were not enrolled in regular or advanced math courses (e.g., special education students), and/or were unable to attend after school programming due to disciplinary actions. Once the potential list was created, it consisted of all African American males in regular or advanced math courses, attending the formal after school program or using after school math tutoring a total of 30 African American male students were identified as potential participants for the study.

After creating the initial list of potential participants, additional classroom and after school program observations were conducted to determine how many participated or were enrolled in the after school math tutoring program. As the observations did not

eliminate the number of potential participants, the school counselors and principal were asked for assistance in selecting the final participants for this study. The math teachers, counselors and school administration served as key informants due to their knowledge of the African American male students at Portal Hill Middle School. These key informants were useful in providing additional insight and understanding about the African American males at this school (McMillan, 2004). Discussions with the school administration revealed that while 13 of the potential students were enrolled in a regular math class, they did not participate in math tutoring, as a result of their 504 or Individualized Education Plan (IEP)—formal plans to help special education students with learning and attention issues. This group of students was removed from the pool of potential participants. An additional four students were part of a recent discipline board and were ineligible for extracurricular activities on school grounds at the time of study.

Eight of the potential participants were enrolled in the after school program and were given a formal presentation on the study and its purpose. They were given an introduction packet consisting of an introduction letter, a parent consent form (see Appendix A), a child consent form (see Appendix B), and self-reported demographic information (see Appendix C) about the student. (The remainder of the demographic information was obtained from PHMS.)

The selection process for the remaining participants began with a flyer (see Appendix D) directing students to contact the researcher if they were interested in participating in the study. These students were not formally enrolled in the after school program and the flyer served as introduction to the study. The school principal and the students' math teachers also emailed and called the parents of all potential candidates

regarding the proposed study. All of the potential participants who did not participate in the after school program obtained an information packet to take home. The introduction packet stated that a follow-up phone call would be received if the researcher had not heard from potential participants within two weeks. Five of the potential participants opted out and three never responded to the follow-up phone call requests for participants. A total of six students returned their forms, agreeing to be part of the study. One of the participants began the interview but was disenrolled from school the same day, leaving five participants for the study. Of the five, three were regular after school participants and two were not.

The introduction letter was used to inform the potential participants and parents of the purpose, intent and importance of the study, and procedures and conditions of students' participation. The researcher obtained signed parent consent and signed child consent from all students who agreed to participate in the study.

Teacher participants. The math department consisted of six teachers, three in seventh and three in eighth grade. All teachers consented to participate in the study if the African American male students from their classes were selected as participants. Three of the math teachers served in a dual role as after school program staff and were paid a certain number of hours to teach for the academic portion of the after school program. All of the math department teachers had a tutoring schedule for students after school in addition to any formal after school program hours.

Ultimately, two math teachers were called for interviews, as they were the only math teachers with students who participated in the study. One math teacher, who also

worked as an after school staff member as a math tutor, was also selected because of her interaction with the student participants.

An initial meeting place, time, and date was established at the convenience of both the researcher and participant. Rooms were reserved near the students' after school classroom or the library, depending on availability and/or participant preference, with consideration for minimizing distractions. The math teachers were interviewed in their classrooms either after school or during their assigned free period during the school day. All math teachers and program staff were given a consent form to sign and return to me (see Appendix E).

Instrumentation

The instruments used to collect data for the study included official and unofficial documents, classroom and after school program observations, and interview protocols. Some information was provided by PHMS while the researcher collected the rest.

Documents. PHMS provided official documents in order to build a detailed description of student achievement and behavior at the school, in the participants' math classes, and in the after school program. To determine student achievement, official documents were reviewed including historical transcripts, grades, test scores, and teacher reports on homework completion. To assess student behavior, the researcher examined official documents from school and after school tutoring attendance. The researcher also reviewed citizenship grades and disciplinary records.

Observations. Observations can be useful to researchers in a variety of ways. They provide researchers with strategies to check for nonverbal expression of feelings, determine patterns of interaction, grasp how participants communicate with each other,

and check for how much time is spent on various activities (Gray, 2013; Schmuck, 1997). Participant observation allows researchers to get a feel for processes, organization, relationships and communication, and local cultural parameters (Gray, 2013). A researcher can observe events that participants may be unable or unwilling to share in an interview setting. They can also observe situations informants have described in interviews, thereby affirming information and/or exposing distortions or inaccuracies in descriptions provided by those informants (Gray, 2013).

During phase one, observations occurred three times a week for approximately two and a half weeks. Observations of the school site and after school program were done to gain an overall picture of the role of the after school program and math tutoring at the school site. Both the school site and the math class environment were observed for participant interactions with peers and teachers. The researcher took notes of participants' behaviors and their interactions with teachers and peers. Participants were also observed during the after school program and tutoring sessions.

The researcher observed math teacher and program staff interactions with the student participants obtaining information about frequencies, types, and levels of student interactions with regard to mathematics. This practice determined which of the math teachers and program staff members to interview in phase two.

To ensure the data from the observations was captured, the researcher kept field notes of each observation. The field notes were analyzed and coded, identifying themes related to the research questions of the study. The observations were critical to enhancing the interview guides for the study participants.

Interviews. Semi-structured interviews were chosen for this study, as they are well suited for interviewing individuals and provide in-depth data. Semi-structured interviews are typically conducted only once, and generally last about 30 minutes to no more than an hour (Kvale & Brinkman, 2009). With both student and adult participants, the researcher used a semi-structured, qualitative, general interview approach.

Semi-structured interviews are based on an interview guide, which is a presentation of questions or topics the researcher plans to explore. Two different interview guides were used: one for the students (see Appendix F) and one for the math teachers and after school program staff (see Appendix G). The interview guides were developed to guide the interviews and the questions were developed to gain deeper insight into the participants' experiences and perceptions on the impact of math tutoring at PHMS. The interview questions were derived from the research questions, the literature review, the document data, and observations from phase one. In an effort to align the interviews with the purpose of the study, the interview questions were an attempt to understand the lived experiences of the participants (Kvale & Brinkmann, 2015). The questions were also created after a review of the themes within the literature related to the successful teaching of African American male students—culturally relevant pedagogy, teacher perceptions, school environment and math tutoring. Participants were asked about their perceptions on the impact of math tutoring and its overall effectiveness for African American male students at PHMS. The researcher used additional follow-up questions during the interviews to clarify or to have a participant expand on a particular response. All interview questions were initially reviewed by a group of doctoral

candidates and university professors on multiple occasions to confirm the questions were appropriately designed to elicit responses related to the research questions of the study.

To ensure the interview data was captured effectively, all interviews were recorded in lieu of handwritten notes (Kvale, 2009). The recording of the interview allowed for the researcher to focus on the interview content and the non-verbal prompts from the participant, which were recorded in the field notes following the interview.

Each interview lasted 30 to 60 minutes. There were a total of five student interviews, two math teacher interviews, and one interview of a math teacher serving in the role of an after school math tutor. While the one after school program member interviewed also served as one of the school's math teachers, her role as it relates to this study was as an after school math tutor. Her perspective and interactions with the students are taken from that lens.

Follow-up interviews were conducted for each participant for clarification and validation of themes that were emerging during my data analysis. Each additional interview lasted up to 30 minutes. The transcribed interviews were utilized to identify and/or confirm emergent themes that were determined by the participants.

Data Analysis

Documents

Document analysis requires data be examined and interpreted in order to elicit meaning, gain understanding, and develop empirical knowledge (Corbin & Strauss, 2008). The analytic procedure entails finding, selecting, appraising (Labuschagne, 2003), and synthesizing data contained in documents. Official documents were used in phase one of this study to describe student achievement and assess student behavior. The

researcher examined data related to transcripts, grades, test scores, and teacher grade reports on homework completion to assess student achievement. The researcher also examined documents in order to assess student behavior. These documents included citizenships grades, school attendance, tutoring attendance and disciplinary records. From these documents, descriptive data was generated for potential student participants. Table 1 details the student participants' academic data from the official documents.

The data in Table 1 reveals a wide range of math ability and current course progress. Math grades ranged from grades B to F while grades from the previous semester ranged only between B and D. Homework completion percentages were vastly different, from 20% to 100%, and overall GPAs range from 1.5 up to 3.5.

Interview Analysis

Each interview was digitally recorded and transcribed verbatim by a professional transcriber. The participants had the opportunity to review transcripts of the interviews to ensure accuracy. While none of the students chose to review the transcripts, one math teacher asked to check her answers and made no changes. Participants were asked if they were willing to be contacted for follow-up interviews in order to clarify their responses, if needed. After each interview, the researcher labeled field notes and transcripts with pseudonyms.

The analyses of the student and the math teacher interviews described the after school tutoring programs' impact on the students' math achievement from each of their perspectives. In qualitative research, some data analysis is simultaneous with data collection (Merriam, 2002). As the interviews were conducted, adjustments were made in subsequent interviews in an effort to gather more reliable, detailed data.

Table 1

Academic Data

Participant	Current Math Grade	Homework Completion %	Previous Math Grade	Overall GPA
Beaumont	F	20%	C	1.5
Al B	B	80%	C	3.5
Louis	B	100%	B	3.33
Earl	C	20%	D	2.67
Greg	F	75%	B	1.5

Note: Current math grade are cumulative grades from the current term based on participation, homework completion, test scores, quizzes and class projects. Homework completion % is the percentage of assigned homework that had been turned in for grading as reported by teachers in that class. Previous math grades are grades from the previous grading period (for comparison). Overall GPA is the student's academic GPA on a 4-point scale.

Qualitative data analysis methods were utilized to analyze the data (Creswell, 2009; Merriam, 2009). The data analysis procedures used in this study consisted of:

1. The researcher read the professionally recorded transcripts multiple times and listened to the recordings in order to become familiar with the data.
2. While some codes had been identified in relation to the research questions, additional codes and categories were identified in the transcribed interviews.
3. Codes and categories were refined and grouped.
4. The first three steps were repeated as codes and categories were constantly compared.
5. Once the data reached saturation, the researcher examined the codes and categories for an emergent description of the findings (Merriam, 2009).

Some codes were developed from the research questions in order to organize and sort data, which allowed summaries and synthesis of the observations and initial interviews (Saldaña, 2010). The questions from the interview guide were divided into pre-established categories. These categories included: after school pedagogy, student

engagement, peer influence, racial concern/bias, cultural relevance, and after school pedagogy. They provided the opportunity to assign some of the pre-codes to the data on the first read. Boyatzis stated in Saldaña (2010) this is done by perusing the data and noting “codable moments.” Descriptive coding was used to further develop categories. Descriptive coding is useful as it can summarize the primary topic of the excerpt (Saldaña, 2010). When the descriptive coding became inadequate, the researcher switched to in vivo coding. In vivo coding was helpful because it allowed the researcher to keep the spirit and voice of the interviewee and the overall conversation in the interview (Saldaña, 2010). The meaningful units or codes were noted along with the descriptive and in vivo codes in the interviews and field notes.

Finally, second cycle coding involved the creation of new categories, which incorporated several of the pre-established categories. This is where all codes were grouped into the pre-established categories of the study, as well as additional codes that emerged before categories were finalized.

The information gathered in the interviews was used to inform the questions for the follow-up interviews, which yielded a level of saturation with regard to the number of codes and categories identified. Categories were analyzed to create themes and ultimately provide a description of the perceptions and experiences of the study participants.

Trustworthiness

To establish trustworthiness for this study, it was critical to adhere to measures of credibility, transferability, dependability, and confirmability to establish a high level of rigor. Credibility in qualitative research approximately corresponds to internal validity in

quantitative approaches; transferability to generalizability; dependability to reliability; and confirmability to objectivity (Lincoln & Guba, 2000).

This qualitative study documenting the experiences and perceptions of African American male students and their math teachers used an audit trail to promote trustworthiness. An audit trail can be defined as a transparent description of the research steps taken from the start of a research project to the development and reporting of findings (Lincoln & Guba, 1985; Malterud, 2001). These are records that are kept regarding what was done in an investigation.

Credibility was achieved through consistent observation of the school site, the after school program, and the participants. Consistent use of peer debriefers, which included a mix of doctoral candidates and individuals with Ph.Ds., throughout the study, from the design of the interview guide questions to the classification of codes and themes, provided outside confirmation of methods, analysis, and results.

Peer debriefing of the data collection and data analysis occurred simultaneously throughout the research process. Peer debriefing supports the credibility of the data in qualitative research and provides a means toward the establishment of the overall trustworthiness of the findings (Lincoln & Guba, 1985). Peers supported the researcher in this work to ensure personal perspectives and values were identified and the data was accurately interpreted.

From the beginning, the case study design was not intended for the purposes of transferring or generalizing these findings. However, gathering and identifying critical information about the researcher, the participants, the contextual situation, various processes, and student-teacher relationships relative to math and tutoring allows the

reader to decide how to use the findings of this study to inform after school efforts in other schools to improve math achievement among African American males (Lincoln & Guba, 2000).

The dependability of this study was achieved through verification of the processes of the research design, detailed accounting of coding, and formulation of the emergent themes. The researcher achieved this goal through detailed field notes, analytic memos and the creation of a coding framework. Additionally, the researcher relied on multiple peer debriefings to maintain impartiality in the study.

The use of peer debriefing and triangulation of data sources was critical to corroborating the processes and findings of the study. While impossible to completely eliminate bias in the study on the part of the researcher, digitally recording interviews and professionally transcription, utilizing member checking and documenting codes and themes of the study allowed were critical steps towards improving confirmability.

Summary

The research study sought to explore the experiences and perceptions of selected African American male students, their math teachers, and one after school program math tutor at PHMS. This qualitative research study included five African American male students, two math teachers, and one after school program staff member all of whom were involved in math tutoring after school at PHMS. The math teachers taught the five students during the school day and served as their math tutors after school. The after school staff member, while also a math teacher at PHMS, participated in the study only as an after school program math tutor. She did not teach or interact with the student participants during the school day. All participants met IRB qualifications and the

researcher obtained necessary consent forms for the study.

Data was gathered through a review of official documents obtained from PHMS. The researcher also made multiple observations in the math classes of the students and their math teachers and the math tutoring after school. Observational notes were made of participant behaviors, interactions with teachers and with their peers. Participant interviews were conducted with each participant as they shared their experiences and perceptions on math tutoring as it related to the students' math achievement. The researcher kept field notes of all observations and interviews in addition to creating analytic memos related to the participants and math tutoring. All data was analyzed through a qualitative data analysis process that identified codes, categories and emergent themes. Each of the steps was made explicit and helped to ensure the validity of the study.

CHAPTER FOUR: FINDINGS

This chapter presents the findings from participant observations, interviews, and document analysis as they relate to the research questions designed for this study. The chapter consists of two sections. First, profiles are provided to introduce the student participants who shared their experiences and were the focus of this research. Teacher profiles are also outlined to add depth to the overall picture of the math classes and after school tutoring. The second section consists of an analysis of the data collected from interviews with the student participants, their math teachers and observations of the students' math classes and after school tutoring sessions.

Student Profiles

The after school program has served close to 150 PMHS students so far in the 2016-2017 school year, approximately 20% of the school's population. Of those 150 students, 30 were African American males. This research study has included five of these African American students.

As a result of my observations, interviews, and document analysis, the following student profiles emerged. They provide some detail regarding their academic and personal background.

Beaumont

Beaumont is an African American, 14-year-old, eighth-grade student. He is currently enrolled in a regular math class and his current semester grade is an F. His overall GPA is a 1.5. He has dreams of attending college, playing football, and becoming a chemical engineer. He wants to play varsity sports when he goes to high school next year. He states that being a student at PHMS has taught him the importance of grades and

education and how it will impact his immediate future. He knows he needs to increase his GPA and semester grades if he wants to meet the standards for playing sports in high school. Beaumont's parents are both in the military, and the family resides in local military housing. He has attended local schools since first grade.

In general, Beaumont loved PHMS and felt comfortable. He commented, "The kids and teachers are mostly pretty cool, you know, nice. I have rarely had any problems, we [students] are all like, the same." This statement by him refers to his ethnicity as an African American as the same as other students at the school in classrooms and the after school program.

Beaumont believed ethnicity and race were not barriers in everyday activities and in social interactions. He stated his math teacher, Ms. Pruitt, treated all the students the same and few, if any, societal barriers were seen in the classroom. While Ms. Pruitt was aware of the needs of her students as individuals, she did not switch her approach to teaching or method of interaction for individual students; she did not use class time to address individual student issues. "Ms. Pruitt doesn't really care who you are—we are just students—when you are in her class. It's all about the work."

Beaumont considered himself very smart, just misunderstood by his teachers. "I learn differently" was a common statement heard from him during two interviews. He saw his teacher as nice and felt like he had a relationship with her, albeit somewhat professional, based on my observations. Beaumont's understanding of Ms. Pruitt's role was that she is not there as his friend, so his uncaring description of her is more of students' unwillingness to bring personal issues unrelated to math to her attention.

Beaumont liked it when his teacher paid him personal attention and was frustrated

when he does not get that level of attention during his math class. He did not enjoy discussing math content in front of the entire class although his math teacher often told the class to ask questions aloud so that all students might hear and possibly learn something they may not already know. As a result of his frustration with his class environment he did not complete his homework. He explained the situation, “If she doesn’t explain things to me in class, it’s hard to go home and do the work. My mom works a lot and my Dad isn’t very good at math. I usually don’t do [homework] unless I go to tutoring and get the extra help.” His parents strongly encouraged him to go to tutoring as much as possible, since they were not able to give him much help. Beaumont was quick to recognize the impact of his lack of work on his math grades. “My grade is made up of my homework and test scores... quizzes too, so I know that I have an F, ‘cause I’m not doing my work.”

A review of Beaumont’s attendance record indicated Beaumont attends tutoring four times a week and goes to math tutoring three days a week, on average. Observations of tutoring sessions revealed he spent 30-45 minutes in math tutoring. Beaumont rarely had the materials he needed to participate and usually spent that time “preparing” to work. He was often off-task, interacting with his friends as they worked, inevitably pulling them off-task as well. The teacher was available but usually spent her time with students doing actual work. Typically, by the time he was ready to work, it was time for him to leave.

Al B

Al B was an African American, 14-year-old, eighth-grade student who was

enrolled in a regular math class and was earning a B in the class. He came from an upper-middle socioeconomic class family. Both of his parents worked full-time jobs and his mother was a local attorney and his father is a physician's assistant. He enjoyed football and basketball and had plans to play them as much as he could in high school and in college, after which he planned to go into the military or the medical field.

He maintained a 3.5 GPA and knew he needed to get his math grade higher in order to keep his overall GPA high. He explained, "Grades are important to me because my parents' rules are really based off how well we (me and my sister) do in school. They are always around but with work, and they have their own school stuff, so it's how they know we are behaving or not—grades."

Al B also wanted to compete with his peers, "We compete in everything, girls, grades and sports. I know that I can beat them in everything. Math is the only challenge." He stated he "enjoys doing his math work and most of the time, it's with [his] buddies, after school." For Al B, the best part about his classes were having his friends are around. He enjoyed the school environment and had no apparent problems socially. "Everyone here is cool, teachers, principals. The kids are crazy, but no one is really hatin'. All the drama, its usually girl drama, no racial stuff other than like trash talk."

A review of attendance records indicated Al B was consistent in his attendance after school—attending two to three times per week for math tutoring. He explained, "Classes are big, especially math. It's hard for me to focus and she goes fast. I almost have to go to tutoring, if I want to pass." However, during the timeframe of this research study, he averaged attending once a week due to his sports schedule as his youth team made the playoffs. When Al B did attend tutoring sessions, he worked effectively with

his peers to complete math homework and project work on the classroom netbooks. He was always able to complete his homework before leaving tutoring. His teacher spent around five to seven minutes of time with him during tutoring, usually making sure he understood his classwork or had clear, understandable study notes from math class.

Louis

Louis was an African American, 13-year-old, seventh-grade student who was enrolled in a regular math class and had a B for his current grade. His overall GPA was 3.33. He was thinking about going into the Navy after graduating from high school.

Louis enjoyed the middle school, having transferred here from a different state as his father was a Marine stationed in San Diego. It was easy to make friends and it shocked him, given the many problems he had with other students at his old school. “There were fights almost every day, kids getting bullied and in trouble. The teachers weren’t nice at all, mostly because of the drama all the time.” He mentioned how happy he was to have nice [good] teachers and friends.

He said, “Everything in class is about learning, my old school we always had the discipline stuff, not here though. Kids start messing around in Ms. Haley’s class, she sets them straight right away. It almost never happens, because we’re always doing fun or cool stuff. Kids want to learn here.” Louis talked a lot about another one of his teachers who helped him focus on school:

I came to this school [PHMS] after school had already started, in October—no friends. Mr. Lopez made sure I caught up in every class, that I met the right friends. I couldn’t get stuff done if Mr. Lopez wasn’t always trying to help. I can

go to his class before school and during lunch and he will take time to help me finish stuff, my parents really like him.

Louis' parents were very involved in his life and they kept him focused on school. When discussing involvement with the after school program he explained, "I can't always stay after school, I live far and I have to walk. So I really try to take good notes and ask questions in class. If I have to stay after, its usually for a short time and like once a week."

Analysis of attendance records shows that Louis has gone to tutoring once a week since arriving to PHMS. He was observed on five different occasions in math tutoring; he typically spent 30-40 minutes going over his notes either with his teacher or his classmates. He was often the person writing or rewriting the math problem on the whiteboards, making sure he understood the content before he left.

Earl

Earl was an African American, 14-year-old, eighth-grade student who had a D in a regular math class. His overall GPA was 2.67. Earl's parents are divorced and he rides the school bus to school. His mother worked full-time and his father was deployed at the time of the study. His mother took the school option for him to attend PHMS.

He explained his experience in math: "Math is my worst subject. My math teacher is terrible and can't teach." He immediately talked about how they just take notes and do worksheets. "My teacher usually doesn't explain much, [I] just take notes and try to finish our worksheets. I have to work with my friends, other kids, to try to understand. Hopefully, I'm in the right group [students that work vs. play]." From his comments and from observations of Earl in his math class, he had a lot of friends in the class so math

work didn't always get done, especially during the time he was in the work groups observed.

Earl was often frustrated with school, much of it stemming from not having assistance outside of school. He explained it this way:

My mom gets home late and doesn't have time or know how to help me. She is usually cooking dinner or with my little brother and sister. My dad has been deployed since last year and won't be back until later this year, so it's rough.

Earl wanted to go to tutoring, felt like the help is there and, when he went, he did better in class. He had a tough time consistently going to tutoring, however. There was no local public transportation and he lived far from school. Earl was picked up from school as part of a carpool from his neighborhood and explained his attendance problem this way:

I can't always go [to tutoring], like I have been twice this month only because I can't just walk home. But it's easier there, the math. Ms. Pruitt actually has to help you, because not that many kids are there.

Earl also wanted to attend tutoring because he knows his friends go there to get work done. He believed working with them on math homework was helpful as well.

My mom says I gotta work harder to get my grade up. My friends from class go to tutoring and they get A's and B's. I know if I get there, they will help me to understand if the teacher doesn't.

An analysis of attendance records reveals that Earl's average attendance was between one and two days a week. I observed him in five different sessions of math tutoring during my school observations, each day he was late by 10 or more minutes. He would come in off-task and distracting others. His teacher did a good job of preparing for

her students by having copies of her class notes for students to copy or to refer to while doing their homework or re-working problems from class. In a 30 to 60 minute tutoring session, she would spend approximately 10 minutes with Earl just to make sure he had his class notes or that he took the time to copy her notes.

Greg

Greg was an African American, 13-year-old, seventh grader who has an F in his regular math class and an overall GPA of 1.0. He was failing most of his classes and had a negative view of school, except his math class. He missed many days of school due to illness; he was out almost a month. He remarked:

School sucks, I'm really behind. I mean, my friends are cool, I know everyone.

The teachers are ok, some are mean but those are the ones that don't care about anything, so yea, it sucks. Ms. Haley really tries to make it fun—math class—I give her points for that.

Greg's mother was often at the school, mostly because of his behavior and grades, trying to get him caught up. "My mom wants me to do well, so she makes sure I'm getting fair treatment. I tell her it's me, not the teachers—I just don't like school." Greg's mother enrolled him in the after school program when she began to work longer hours. They live in the local beach area. He went to tutoring often, stating it is the only time he can get help:

Regular class is fun, but I don't learn or do anything. We go fast, class is busy [lots of students, activities], so I get distracted. After school, I can get homework and stuff done. I go almost daily. There's not that many kids there, so my teacher can get me alone and I can catch up.

He noted the next day in math, after math tutoring, he would have all the answers. “It makes me feel good, knowing what’s going on in class. I can answer questions to stuff, it’s just clearer for me when I stay after school.”

Greg is a regular attendee of the after school program, attending every day he goes to school. He received an award for his attendance from the program. He usually spent the full hour in math tutoring, primarily due to his teacher going over every homework problem with him, showing him how to use his notes to progress through the work. He generally turned his homework in; however, if he had to take it home it usually did not come back the next day.

Teacher Profiles

It is important to gain an understanding of the math teachers involved in the study. There were a total of 28 full-time teachers at PHMS; 23 were female. There were only four teachers with less than five years teaching experience while all others have 10 or more years of teaching experience. There were six math teachers at PHMS, two of whom were new hires. A total of three math teachers were participants: two served as regular math class teachers and after school tutors while the third math teacher served only as an after school program tutor as none of her regular students participated in this research. All three had over 10 years of experience teaching math.

Ms. Haley

Ms. Haley was a White math teacher who had been teaching middle school math for over 20 years, 15 of which had been at PHMS. She had always been a middle school math teacher, having taught grades five through nine. In addition to math, she had taught

various types of study skills classes, including Advancement Via Individual Determination (AVID) support classes.

Ms. Haley was a very warm and welcoming teacher and made it a point to greet every individual who entered her classroom. Before her regular math classes, Ms. Haley stood at her door at the beginning of each class, greeting every student with a warm hello and a quick question about their morning while shaking their hand or giving them a hug. She stated:

I let them know I always appreciate who they are. I like to know they're okay and I do that by speaking to them about something other than math first. Students usually come in, very excited, talkative, and happy. The class at that moment has been described as organized chaos—students are simultaneously taking out work, putting problematic questions on the board or preparing to ask questions verbally. I have been able to get them to begin with homework questions or we can go right to asking questions about the agenda of the day. They have learned to discuss the homework on their own.

She started her classes in a typical manner—a review of homework or a warm-up activity, introduction to the lesson objective, guided work, individual or group activity, and then a closing. However, how those activities occurred in her classes was quite interactive and student-led. Some students chose the problems and worked solutions; others asked questions; and Ms. Haley hovered and roamed throughout the class. She usually opted for small group activities, monitoring student progress as they interacted with their peers to work on math.

Ms. Haley had Louis and Greg in two different math classes. She offered math

tutoring three days a week specifically for the after school program for an hour and she typically stayed after school for two hours as many students spend the entire time in her tutoring class whether they are in the after school program or not. After school, Ms. Haley's approach was almost the same, except that she was much more involved with guiding students through the work. She sat and led small groups or work one-on-one with a student at the whiteboard. She made herself available to all students for tutoring every day of the week, as needed. When Louis and Greg went to tutoring, it was always to Ms. Haley's math tutoring sessions after school. Her average regular day class size was approximately 33 students. Her after school sessions typically had approximately 10 to 15 students.

Ms. Pruitt

Ms. Pruitt was a White math teacher who had been teaching math and computer science for 21 years. She had taught math at both the middle-school and high-school levels and had also taught a number of math content areas, from sixth-grade math to statistics. The majority of her experience was at private, Catholic schools. This was her second year teaching math at PHMS. She taught five periods of math and had two computer science classes.

Ms. Pruitt was very businesslike and had a methodical approach to teaching as evidenced by her classroom routines and structure. She was observed on several occasions lecturing individual students on consequences, stating, "The rules are the rules." Her expectation was every student would know the rules around behavior and math work in her class. No situation nor specific circumstances changed her rules. Ms. Pruitt had a variety of procedures and routines for her students to follow, beginning as

soon as the students entered the classroom. Students were expected to be prepared for class daily. Class began with a review of homework, if it was assigned the day before. She called on students at random for answers to specific questions or to comment on the lesson. She assigned students numbers that were called randomly by her selection of a popsicle sticks with the student numbers on it. The atmosphere of her classes could be described as having a quiet hum: students anxiously shuffle papers and take out materials.

Ms. Pruitt stated:

I want all of my students participating. Some are more willing than others and with 33 students on average in each class; it's easy to get looked over. This method [of random assignment] no one knows who's next. [It] keeps them all on their toes, and if not knowledgeable at least they have to make an attempt at being aware.

Small group arrangements were observed on occasion but seemed not to be the norm as Ms. Pruitt typically did direct instruction before assigning class work to be done individually. She stated it was often a challenge to arrange small groups due to her large classes in a confined area: her average class size was 33 students. After school, Ms. Pruitt focuses on small work groups for her students, grouping them by need or content area. She tended to spend her time with the students who asked the most questions or who seemed to be paying attention. The students who got her attention were usually off-task from the very beginning. She tolerated these disruptions briefly, usually quieting students with a look.

Ms. Pruitt's student participants involved in this study were Al B, Beaumont, and Earl. They went to after school tutoring with her although Al B and Beaumont would

sometimes opt to go to Ms. Jackie for after school sessions. Beaumont was often assigned to Ms. Pruitt at the request of his parents for mandatory tutoring. Ms. Pruitt typically had five to 10 students in her after school tutoring.

Ms. Jackie

Ms. Jackie was an African American math teacher who has been in education for over 25 years. She started teaching math in middle school before moving to high school to teach for 18 years. The research took place during her second year back in middle school. She had taught math or math support her entire career with a focus on math intervention support classes.

Ms. Jackie spent a great deal of time learning about her students. The first weeks of each semester were spent on team building for each class. She commented:

I have found [it] so much easier to teach when I have a good relationship with my students and they have respect for each other. It all takes time and I use a good bit of the first weeks do this.

Students did a lot of group work in her classes. After reviewing homework or warm-up work at the beginning of class, they typically went right to group work. Ms. Jackie spent time with each group. Sometimes she would pull out groups to work with her, depending on the class. Her class sizes averaged 33 students. Her primary goal was to deliver content as individualized as needed. When the students had a particularly complex concept Ms. Jackie often delivered her content in several modalities in her attempts to reach all students.

While none of the student participants in this study were in her regular math class, Ms. Jackie had tutored Al B, Louis, and Beaumont throughout the semester. Al B came to

her at odd times relative to the normal tutoring schedule (i.e., Ms. Pruitt was not tutoring that day or he came in for the last hour of tutoring), and Ms. Jackie accommodated his schedule. Beaumont had been assigned to Ms. Jackie for tutoring due to the interactions that had occurred between his parents and the school administration. His parents were not happy with his grades and behavior issues and wanted him switched out of certain classes. The compromise was to allow him to attend specific tutoring sessions with Ms. Jackie, when possible. Louis and his mentor, Mr. Lopez, worked out a program to pair Louis up with Ms. Jackie in a support class, so he felt as comfortable with her as with Ms. Pruitt. Ms. Jackie typically has 10 to 15 students in her after school tutoring class.

Student and Teacher Perceptions

This section consists of an analysis of the data collected from interviews with the student participants, their math teachers, and one after school program math tutor who is also a PHMS math teacher. Document review of the after school program's policies and student attendance records, as well as observations of both the students' math classes and after school tutoring sessions, supplement the data gathered from the interviews to inform the thematic analysis of the perceived impact of tutoring on math achievement by the students and their teachers.

Student Interview Analysis

The responses from the student interviews, along with an analysis of attendance records, grades and observations suggest six emergent themes. These themes expose the factors that help to account for students' progress or lack of progress in math: (a) using of the same curriculum and teaching in the after school program with a significantly smaller class size were critical components for students' progress in math; (b) the pedagogy used

in the after school program had a profound effect on the students' engagement in math; (c) the relationship the student was able to have with the after schoolteacher had a key influence on the student's engagement in math; (d) students' attendance was motivated by parents, mentors and their own individual agency; (e) the student's relationship with peers determined the level of success in the after school program; and (f) the ethnicity of the students did not appear to influence the type of interaction or experience that the students had in their after school tutoring class.

Math curriculum. The use of the same curriculum and class size both in class and after school is critical for students' progress in math. The student participants consistently stated that it was helpful and necessary to have the same math curriculum taught during the school day to also be taught in the after school program for the curriculum to be accessible and learning to be improved. Using the same math curriculum helped with homework completion and deepened comprehension. Fashola's (1998) research on out-of-school-time (OST) programs concluded that successful programs were the ones that focused on increasing academic achievement and provided a strong link to the school-day curriculum.

The quote matrix in Table 2 provides examples of the students' statements regarding the importance of being exposed to the same math curriculum in the after school program that they were learning in their school-day math class. Al B's straightforward comment reveals the value of tutoring for him in terms of revisiting the math curriculum. Greg's comment in the table shows that the power of the tutoring class to help him gain understanding is in being able to see the curriculum in a different environment.

Table 2

The Importance of Math Curriculum

Student Participant	Supportive Statement
Beaumont	I usually don't know what is happening a lot during class...I am kinda late usually or not paying attention. After school I can copy the <i>same</i> notes from the class and ask questions more.
Al B	I know I can stay after and get whatever information I missed in class...it's the same math.
Louis	I know it (math) better after going to tutoring. I get to see the same stuff again, and that's helpful. We use the exact same book, same notes, so yea I can get to understand by the time I'm done, usually.
Earl	I go to tutoring 'cuz I know I will get to see the stuff we learned in class that day. I don't like math [class], but I get the chance to maybe get it if I go to tutoring.
Greg	In tutoring, [the teacher] shows us how to do it better than what I see in class. We end up going over a lot more math than just the notes from the classroom.

In addition to curriculum consistency across contexts, class size impacted the delivery of the math curriculum and thus student learning. It was clear from classroom observations and the comments made by several of the student participants that in their regular math class with approximately 35 students, they were often distracted or unable to take notes. Students explained it was difficult to listen to the teacher and take notes due to the close proximity of many students. Beaumont stated:

It is so easy to not pay attention—four of my friends are in my math class—it's hard to focus sometimes. I forget I should be taking notes or doing work. If we aren't talking we are doing something crazy [silly] to make class go by faster.

Earl's seat was moved several times in attempts to help him stay on task. He commented, "People are always talking, even when Ms. Pruitt is talking. Not really being rude, most

of the time they are talking about math. Even that can throw you off—sometimes I just stop writing and listen.” As a result, students misunderstood the math lesson. Student engagement suffered because of the distractions by their peers in classes that are so large.

The size of the class also often hindered getting immediate or timely help or attention from the teacher as she was unable to adequately and consistently address the needs of each student while maintaining the pace of the lesson. The consequence for the study participants was that they were off task while waiting for help or guidance. Al B was quick to ask his peers for assistance with in-class work because he felt his teacher would not make it to his group before class was dismissed. “Whenever kids start asking for help, the last groups never get the help, because she always runs out of time. I wish we had less kids in here.” Beaumont was often off-task and easily distracted by the large peer work groups that he was often placed in. Groups usually had four students in each group.

Large class sizes during the day prompted students to attend after school math where four of the participants identified that the small group size and one-on-one instruction in those classes improved their understanding. Beaumont commented, “I’m gonna go to tutoring to make up what I missed because I’m lost.” He then attributed the reason why he missed information to the teacher’s inability to not get to his table because she was helping so many other students. Students were challenged to learn the curriculum when their regular math classes were so large. In contrast, their learning in the after school program was deepened when the curriculum was the same, class size was smaller and they had a second chance at learning the content.

After school pedagogy. The pedagogy used in the after school program had a

profound effect on the students' ability to comprehend the math content and maintain that comprehension. Educational researchers have often pointed out the ways in which a teacher interacts with students and organizes instruction are critically important aspects of helping each child learn (Tharp et al., 2003). Research also suggests the approach to learning in an after school learning environment should be different from the pedagogy that occurs during the regular school day in order for the learning to be effective in this extended learning situation (Beckett et al., 2009; Little, 2009). The students in this study agreed. Overall, the students talked about the important role that the method of teaching played in the after school program and how it affected their ability to comprehend the math content and deepen their understanding of the math concepts. How teachers teach—the quality and style of their teaching—proved vital to learning.

Many of the study participants struggled in regular math classes for various reasons, including, for several, their math skills were below grade level. Classroom distractions, the difficult level of the math curriculum, as well as the teacher's pacing of the daily lesson limited the students' ability to keep up, causing students to remain on certain problems or content while the class moved on, and they found themselves further and further behind.

Although curriculum was the same between regular math classes and the after school math classes, observations of teacher pedagogy across the two learning environments showed students experienced different pedagogical approaches and this difference worked in their favor. Earl, for example, noted Ms. Pruitt was much more patient after school and the pace is slowed down, making it less confusing for him. In observations, more one-on-one assistance was apparent during tutoring, something not

apparent during classroom observations. In all cases, PHMS teachers shifted their pedagogy such that after school math classes looked very different from regular math classes. Table 3 indicates students' perceptions of the varying teaching approaches used in math tutoring after school and how much they appreciated the difference.

After school tutoring at PHMS provides students with an additional opportunity to connect with their math teacher or, at a minimum, greater exposure to academic content. After school tutoring can be more personal as there are generally fewer students present, and the approach to math can usually be personalized to individual student ability levels. After school pedagogy is a critical component of math tutoring for the student participants. For these students, often the absence of adequate class management and other issues heavily influence regular math class pedagogy and limit the value and impact of the pedagogy. While the participants have varying degrees of academic success in math, they all responded in a more positive engaged manner when they saw a positive, brighter side to their math teachers in the after school setting. Teachers were able to spend quality time in a one-on-one session and monitor small group work.

While PHMS does not require its teachers to follow a specific lesson plan, regular math lesson plans generally followed a typical pattern: review homework concerns, introduce the lesson and/or a warm up activity, present a math activity on content objective (i.e., direct instruction, small group activity, note-taking), allow for individual work, and deliver a closing. As teachers held to their lesson plan and a pacing guide that required they cover material quickly and move on, student participants tended to rely on math tutoring after school to solidify or to go over any math content they may have missed or did not understand. The teachers' change in pedagogy after school facilitated

Table 3

The Need for Different After School Pedagogy

Student Participant	Supporting Statement
Al B	Ms. Pruitt is so much more relaxed after school, there're less kids around and that's helpful. We only do homework after school though. She likes us to use our notes to do the work; I'm not really learning it, yet.
Earl	It takes a lot for me to get how to do some of the math. When I go after school, Ms. Pruitt is really patient, most of the time. Sometimes I can get one-on-one help or if a few of us have the same question, it will just be us. She goes slowly too, a lot slower than in class, so I'm ok with going.
Greg	Ms. Haley goes over problems step-by-step. I don't like staying but I know I can get good help—Ms. Haley really does class differently after school. One time, we just did it outside, sitting on the grass doing work while she just helped everyone.

their learning. During after school tutoring, students were able to ask questions and get detailed answers, often times seeing multiple examples, something that could not be done in the regular class. Al B commented:

I couldn't ask a lot of questions in my math class, usually 'cuz I gotta get work done before class ends. After school, I ask questions, she answers. Usually, she or someone can take a problem on the board, and explain it.

Teachers were also able to implement technology, manipulatives, and, at times, allow students to discover real world examples of math content more fully in the after school hours. This kind of pedagogy was rarely possible in regular math classes.

Beaumont stated:

I go to tutoring because I can usually get on a computer or do math differently from class. She has a lot of stuff that helps you see math, like fractions and algebra—uhm, letters [variables]. We made cupcakes once. Fun with Fractions,

she called it. It made fractions a lot more interesting.

Students described the after school tutoring pedagogy and environment as more interactive than the regular classroom. Observations also showed a change in pedagogy after school as Ms. Pruitt spent an after school session with Greg and some other students researching Pythagoras and drawing examples of their research. Her goal was to have them teach the class the theorem from their understanding of it. This was a time-consuming approach that would have taken many regular class sessions. However, after school she was able to walk them through various versions of the theorem at a leisurely pace, helping them build understanding.

The majority of the student participants believe their math achievement improved because they had the same teacher for math tutoring. The three student participants that indicated improved math achievement had higher grades or grades that were improving. Greg, whose grade had dropped since the last grade report, continued to struggle but, from his statement in Table 4, he appreciated the review he was able to get from his regular math teacher during tutoring. The importance of having the same teacher available for tutoring was seen as a benefit for three of the participants because they were able to review material covered in class. Table 4 presents statements made by students who view having the same teacher for after school tutoring as a benefit.

There were some other students, however, who expressed more mixed sentiments. Earl indicated having the same math teacher for the class and during after school tutoring was a negative. He stated:

I don't really like my teacher and I have to go to tutoring with her. Tutoring is kinda boring 'cuz I know Ms. Pruitt is going to do the same stuff. Sometimes it's

Table 4

Same Teacher for Tutoring

Student Participant	Supportive Statement
Al B	We get the same stuff she taught in class. So if I missed something or she couldn't finish it or whatever, a lot of times I can ask about it and she will remember. That's one good thing about going.
Louis	I like going to tutoring because it's gonna be Ms. Haley there. She knows me and knows how to me to understand my math. I don't always get it all in class and she remembers what I was messing up on usually.
Greg	Math is clearer for me after school. Ms. Haley can slow down for me or just spend that extra time, when I'm there. Just seems like I talk to her a lot more after school than during class. I still don't really get it, but I like her going over the notes at least.

just the same lesson or homework. I lose focus 'cuz it ends up being like, a lot of math.

Earl was a student who would benefit from the option of attending after school tutoring with a different teacher. His attendance in tutoring was infrequent as he averaged about once a week. While his family had transportation challenges, Earl felt his tutoring teacher was not providing an environment conducive enough for Earl to want to participate.

Another student participant saw having the same teacher as both negative and positive. Beaumont stated:

I think seeing Ms. Pruitt two times a day isn't always a good thing—she has bad days sometimes. I don't always go her tutoring. Ms. Jackie is sometimes better for me to understand the math but she's not around after school a lot.

Beaumont appreciated being able to have “someone else” to go get help from as his teacher was not always helpful, not always available, or had too many students in tutoring for it to be of help to him. However, Beaumont was quick to recognize that he might not

get information from Ms. Jackie that is relevant to his regular class. He stated, “Ms. Jackie doesn’t know what exactly Ms. Pruitt is covering, I can miss stuff sometimes.” Observations supported this as several sessions observed with Ms. Jackie found Beaumont working on an unrelated computer program, rather than the content of the day in Ms. Pruitt’s class.

Students’ comments suggested while clearly some feel having the same teacher was extremely beneficial, other students disagreed. To them, having the same teacher meant that tutoring was more of the same unhelpful support. While students had differences on their perception of after school pedagogy, they agreed how they were taught affected their ability to improve comprehension and deepen their understanding of math.

Relationship building with African American males. The students’ relationships with their after schools teacher was another key influence on their after school tutoring experiences and their overall math achievement. Thompson (1998) said, “The most powerful weapon available to secondary teachers who want to foster a favorable learning climate is a positive relationship with our students.” Students in this study support that claim.

One of the most important influences on student engagement during tutoring was students’ perceptions of their teachers. In an after school tutoring session, Beaumont’s demeanor and work ethic changed when his teacher sat with him and discussed her college basketball days. That ten-minute conversation was clearly influential as he began to complete his work, offering to do problems on the board and verbally explain his work. He stated, “I did not know she knew so much about basketball. My dad played in

school too. Who knew she was actually cool.”

In contrast, I observed Al B have a negative interaction with his regular teacher. She chastised him publicly in front of his classmates for getting out of his seat (during his regular math class) and he then seemed reluctant to work further in class and later chose not to attend after school tutoring that day. Student engagement is an important component in improving academic achievement. The relationship existing between the student participants and their math teacher was a factor into their level of engagement in their learning.

Student comments added complexity to the student-teacher relationship and its influence on their willingness to attend the program. The teachers’ temperaments and availabilities influenced the students’ perceptions of the quality of the teachers, their abilities to connect with the teacher, and their motivations to attend after school tutoring. Student participants stated they did not want to attend tutoring if they knew their teacher was not having a good day or they had an altercation with the teacher during the school day (e.g., referral, detention). Greg commented, “I know when Ms. Pruitt is having a bad day... kids get sent to the office for every little thing. [That’s when you] definitely won’t see me in tutoring, [I] just will be wasting my time.”

If students are choosing not to attend math tutoring when they need the additional help, they are not developing or improving their math knowledge. Worse, they made decisions to not meet with nor engage with their teachers if they suspected the teachers were upset. Louis mentioned how he will just sit there and be quiet if he has gotten in trouble or yelled at. He stated, “I will say something in class or we [students] all are laughing at something, upsetting her. I get the eye or worse, sent out [of class]. When I

come back, I'm done." Students' math achievement cannot improve if circumstances are such that they are choosing to not engage with their teacher or not attend after school tutoring. Teacher temperament plays a key role in their decisions to attend.

Interviews revealed the temperament of the teacher during class and tutoring was extremely important to the students. A positive teacher temperament was one that meant teachers were able to connect with their students. Kohn (1996) stated, "Children are more likely to be respectful when important adults in their lives respect them. They are more likely to care about others if they know they are cared about" (p. 111). The disposition of the teacher set the tone for the class period and the school day. Louis, for example, commented on his teacher's friendly attitude towards him and how it made him feel that the entire class was motivational, making him want to learn. He stated:

We come into class and Ms. Haley is hugging, high-fiving or something every time, everyone. I get to class early just so I can talk to her about my favorite show that she likes to hear about. She makes you want to work, and do A LOT of work in her class. It's hard, but Ms. Haley says that what we need to get ready for high school and college. She is the reason I decide to try to get to math tutoring, when I need it.

In contrast, in Al B's case, as his after school teacher was his regular day teacher and he felt that she did not care whether he was there or not, so he did not want to attend. He explained it this way:

Sometimes, I don't think Ms. Pruitt cares if I'm here or not. I think it's the same for most of the students in the class too. We just do math, we don't really talk about much else. Class is really boring, like her. I can go to tutoring, get the help I

need. I don't 'want' to go, cuz I know it's not going to be that much different from class, except for a lot less kids.

Teacher temperament played a role in the motivation and willingness of the student participants to engage in mathematics. If they perceived a supportive, inviting, and caring teacher it affected their desire and motivation to make the effort to achieve. Conversely, a less supportive, unapproachable, unfeeling teacher elicited the similar feelings and attitudes that inhibited the learning of the student.

Although the goal of the after school math program was to improve math achievement, the actual outcome of the program did not necessarily result in greater math achievement for all students. There was however a significant increase in after school attendance over the time of my study and a much higher level of classroom engagement. Student engagement has long been positively correlated with academic achievement (Hecht, 1978; Lahaderne, 1968; Skinner, Wellborn, & Connell, 1990). The relationship students were able to have with their after school math teacher proved to be a significant factor in students' engagement with math.

Going to tutoring makes me better. Students perceived their attendance in math tutoring positively impacted their achievement in math class. Four of the participants noted the impact their attendance made on their progress in math class. A cursory review of the tutoring attendance data supports this finding: the students, as students with high attendance levels—three sessions per week average—show more improved math achievement when compared to those with low levels of attendance—two sessions per week average—over the progress report period. While a correlation cannot be determined based on this limited data, observations of students indicated students who attended math

tutoring were able to apply concepts in the math classroom that they learned and practiced in math tutoring the night before. Table 5 reflects student perceptions on the importance of attendance.

Student participation in the after school tutoring attendance varied greatly. Al B, who attended three days a week on average, had the highest math grade and scores. His comment in Table 5 shows he clearly correlated his attendance in tutoring to his improved math grade. Beaumont's comment also indicates he recognized the value of tutoring. Similarly, Greg's and Earl's academic data and teacher comments show they believed steady improvements in their math classes were due in large part to their regular attendance in the after school program.

Greg was motivated to attend because he realized the benefit of doing so. Greg stated:

I go to tutoring all the time now. I didn't know Ms. Haley was there as much as she is. My friends go see her before school too. They say it's better but I don't know. I'm already going after school every day almost now, so I'm good with that for now.

As a consequence of his participation, Greg, while having a low grade in math, had done historically well in math. He had a B on the last grade report. He commented:

My parents want me to go to tutoring and I want to go too. I know I gotta keep my grades up and I know that tutoring will help. It can be easy to, you know, not to do stuff in class and at home. I can make up a lot of missed info there [tutoring].

Greg wanted to improve his grade and understanding, which made after school valuable to him. Louis also saw the benefit of tutoring but had limited ability to attend, stating,

Table 5

The Importance of Attendance

Student Participant	Supportive Statement
Al B	I used to go all the time, like 2-3 times a week and I had an A in class. I usually do the example problems on the board in class. Now, I go like once a week and my grade is a B I do a lot after school with sports, so my grades are hurting some.
Greg	I go to tutoring a lot. I just need to focus better but I'm there 2 or 3 times. It helps me get my homework done, helps my grade. I'm able to help explain some of the problems the next day in class
Earl	I used to go like once a week. I don't always have a ride, so I have to walk. My mom wants me to go so she started picking me up so I go 2-3 times now, so my grade is getting better.
Beaumont	I know if I go to tutoring more my grade will get better. I just have to stop messing around when I go. My teacher doesn't help the ones that are screwing around – I get kicked out a lot [laughing].

I'm kinda new to school so I haven't gone to tutoring a lot. I know that if I go, my teacher will be there to help me out with math. It's like a fallback [after school] for me, cuz I have to go home when my ride shows up.

Louis grades had been consistent and on the last grade report, he had a B in math. He had done well in math and seemed aware of how to maintain his grade.

Attendance varied across students, but some of students' failure to attend must be attributed to not being able to stay after school. Students with consistent attendance generally had higher grades while those with low attendance had lower grades.

External help and support coupled with motivation. Students who went to math tutoring more often were those whose parent(s) or mentor(s) strongly recommended they attend or made them go. Four participants identified parents or family as key

individuals they would turn to for academic assistance or guidance while one participant identified a trusted adult mentor at PHMS.

Al B explained his dad's push for him to attend tutoring was couched in his own regrets as a student: "My dad wishes he had listened when he was in school. He was an athlete but had so-so grades. He needed all the help there was. He is always reminding me to get help so my grades stay up." Earl's mom also encouraged attendance. He explained his mom wants him to be successful in math:

My mom wants me into college, says that math is important. She says if I go to tutoring it will be easier to do when I get home. I know she can only help me so much so getting tutoring makes better for me.

In addition to supporting after school math program attendance, members of the participants' family were very influential in the learning process and provided recommendations for students on what to do to improve their math achievement (e.g., talk to the teacher or attend tutoring).

Two of the student participants were not given a choice to go to tutoring by their parents—attendance was mandatory. Beaumont stated:

I have to go to tutoring. My mom said I have no choice because I'm doing so bad in math. I don't mind, but I know I got other stuff to do so I wouldn't really go if my mom wasn't making me.

Louis' parents also make him go, especially since his access to tutoring is sporadic with transportation limitations. He commented:

I don't get to really choose, if I have the time and a ride, I stay after school for tutoring, usually in math. My parents say school gets harder and I might not like

math as much. But I have good grades, so I want them to stay there. My dad says going to tutoring whenever I can will help. So, yea, they make me.

While several of the student participants were required to go to tutoring by their parents, other students explained that the choice was also theirs. Some students voluntarily went to math tutoring because they perceived it to be critical to their success in math. Al B was one of the higher performing students in the study and his grades were very important to him, as evidenced through observations and from an analysis of his interview. He knew tutoring would help keep his grade up. He stated:

I want to play sports so my grades have to get better and Math is one of the worst ones. My mom and dad told *me* to figure it out and they know tutoring is there, so I go. They see me going and I can see my grade going up, so I keep going.

Al B's and Greg's attendance rates were the highest of the student participants and were among the highest of all after school program attendees at PHMS. While required to go by their parents, both students were observed as making the most of the opportunity. This effort was observed in the regular math class as both students participated in math class, assisted in-group work and asked on-task relevant questions.

Mentor. In addition to teachers and parents, other adults, sometimes considered mentors by the students, were successful in motivating student attendance in the tutoring program. As previous research has shown, mentors positively impact a student's emotional and academic success (Murray & Malmgren, 2005).

One participant identified a trusted adult mentor at PHMS that he turned to for guidance and help. Louis stated:

I'm not the best at math and can't make it to tutoring all the time. Mr. Lopez

keeps me on track, making sure I get to my math teacher whenever there is free time to help me catch up—he looks out [for me].

Having a mentor was critical for math success and overall achievement for Louis. It proved critical to increasing his attendance for math tutoring. As a new student at the school, he spent a lot of his free time in his mentor's classroom initially because he did not have any friends. His English teacher, Mr. Lopez, made sure he had support as Louis worked to catch up in his classes. Louis stated:

My mom wants me to do well, but she was never really good at school she says. She doesn't know how stuff really works up here and she doesn't have time to come and check all the time. I don't get along with my math teacher but Mr. Lopez has always been cool; he's my English teacher. When I get mad or down, I go hang with him. He always helps me. He is the one always asking me about my grades, and that I need to get to math tutoring.

Having a mentor helped him focus on academics math in particular. The mentor understood Louis' issues and needs and was able to provide appropriate guidance and motivation for him to seek out the assistance he needed to improve his math achievement after school.

Peer influence. Students' relationships with their peers contributed to their levels of success in the after school program. The participants in this study shared that peers influenced them either positively or negatively. Several students revealed that their peers aided in motivation causing them to focus on school and utilize tutoring. Al B, one of the stronger mat students, commented:

I like tutoring because of my friends. A lot of them have good grades and I know

they do their work. In math tutoring, me and two of my friends always go together. It's a chance to hang out but still get work done. Plus, the way [my friends] explain work, I really get it. So when the teacher's way doesn't work out, I know they can help me to understand.

Greg offered a similar statement, stating:

My friends can help me a lot. I always get help from them, in class and at tutoring. Math is easier, when I get them to explain. Sometimes, we mess around and don't get work done. That's when I don't get my work done and usually don't turn it in.

For Greg, interactions with his peers proved to be both beneficial but also, in some cases, impediments to his engagement. This is consistent with research that suggests that while some peers encourage friends to skip school or engage in unhealthy activities, there are also peers who pressure their friends to focus on academics (Juvonen, Espinoza, & Knifsend, 2012).

Observations of the math classes and the after school tutoring program in addition to interviews with all participants revealed that often, peers negatively influenced student participation by causing them to go off-track during class and math tutoring. Research has shown that youth who are members of more academically-oriented peer groups do better in school, whereas those who are members of more alienated, academically-challenged groups do worse and are more likely to get into trouble (Hattie, 2008). This was the case for Beaumont, who complained of being off-task as a result of his friends. He stated, "Me and my friends go to tutoring and we end up off task. We get in trouble sometimes, and Ms. Pruitt won't help us. Worse, she starts kicking people out. We don't

get a lot done, sometimes”.

The type of peer influence displayed in the after school tutoring program ultimately impacted the amount of assistance given by the after school math tutor and consequently student’s overall achievement. The after school math teachers were often hesitant or unwilling to, at times, help the student-participants in this study, all African American males, who were off task or who were not attempting to finish their work. In contrast, the student-participants who were working with peer groups and on task received attention and detailed assistance on their work or on homework problems. The teachers’ unwillingness to help students was not isolated to just the African American male participants but any off-task student in math tutoring. Teachers repeatedly chose to work with students who were active participants.

The impact of race. Long-held beliefs suggest what is good for the majority (e.g., White) of students, in theory, should work for African American students (Perry, Steele, & Hilliard, 2004). As described in the review of the literature for this study, many African American students have been victimized by systemic and structural denial of equitable supports and resources needed to be fully engaged and succeed academically and professionally (Schott Foundation, 2015). However, in this study of all African American males, it appeared that because they were all instructed similarly and given the same amount of attention as their White classmates and classmates of other races, race did not seem to be a significant factor at play in math tutoring, according to the student participants.

In Table 6, Louis’ comments from his interview indicated the level of fairness he believed his teacher demonstrated. He saw her expressing how important every student is,

Table 6

The Impact of Race

Student Participant	Supportive Statement
Beaumont	Kids clown each other all the time about everything; that's just how it is. White, Black, Mexican, whatever, friends just will clown. Teachers don't really pay attention, cuz' everyone is doing it and no complaints. It's [race] not affecting me in the class cuz' I know my teacher will help me—all the time. I just gotta go get the help from her.
Al B	No one really focuses on race. We know who the smart kids are and they come from everywhere. Actually, the two smartest kids are Black and Mexican. You just gotta basically do the work, work hard and listen.
Louis	Ms. Haley would never be on some racial stuff. She is always talking about how important we all are—some of us are gonna be big time and the only way to figure it out is to make sure we are all ready. That's one reason why I go to math tutoring—my teacher. I know she cares.
Earl	It's mostly White kids at our school, and in tutoring. Most of my friends are white; my teacher doesn't really care about all that. I get the same help they get. I don't think it is a big deal at all- my grades aren't because I'm Black.
Greg	I kinda feel like we are all just kids... in class and in tutoring. The ones that are paying attention, asking questions- those are the people getting help. Me being Black- no big. When I mess around in tutoring and don't get my work done or get help it's because me and friends—they're White—are not doing the right thing.

no matter who or what ethnicity they may represent. Al B's comments in Table 6 also showed his beliefs about race at PHMS. His comment on the smartest kids is reflective of the environment that is supported in his math class (i.e., anyone can be smart and do math). The students themselves claimed they did not feel that their race played a role in how they were taught. They never felt they were singled out because they were African American by a math teacher or by after school personnel. While the student-participants needed help for some math learning, they witnessed White students who also needed

help. All students seemingly received the same attention and the same referrals to come to after school math tutoring. Observations of the math classes and the tutoring sessions showed all students using the same curriculum and receiving the same types of instruction during classes and after school. Table 6 summarizes student comments on their feelings about the role of race in their after school experience.

It appeared from observations and students' comments, teachers were being inclusive of all students in math tutoring. It cannot be assumed, however, that their interactions with students were conclusively without bias. Villegas (1991) noted ignoring cultural differences of students could lead to underestimating the academic potential of minority students. Additionally, previous research has shown teachers are not colorblind (Pollock, 2006) and expectations often differ across race, class, and gender. In observations of these classroom and tutoring sessions, however, no evidence that teachers attended differently to students' needs by racial group was apparent.

Summary of Student-Participant Interviews

An analysis of student participant interviews revealed students perceive after school math tutoring as having a positive influence on their academic disposition in math class and their overall math achievement. Their positive dispositions regarding math led to greater levels of engagement and participation, which ultimately impacted, to some degree, their math achievement. Students mentioned motivation from family members, mentors, and individual agency to attend more often. They realized consistent attendance was critical to staying focused and improving their learning. They also realized when they worked with peers in a positive manner, it helped them derive a greater benefit from math tutoring after school. After participation in the after school program, students were

able to work at a higher level the next day in their math class and turn in homework to better their grade. They also recognized the impact of not attending tutoring and the negative effect peers often had on their ability to succeed in math.

Teacher Interview Analysis

The student participants' regular math teachers and an after school math tutor who participated in this study shared their perceptions and experiences regarding the impact of after school tutoring on the math achievement of the African American male students in this study. The following five key themes emerged from the interviews with these educators as they identified the factors that facilitated successful math achievement: (a) all students benefited from knowing tutoring and teachers were available to provide additional help; (b) after school teachers implemented different pedagogies than those used during the regular math classes to improve student progress; (c) after school tutoring needed to be focused specifically on improving math achievement; (d) the teachers worked to ensure instruction was delivered equitably across all students rather than adopt more culturally responsive pedagogies (CRPs), with a few exceptions; and (e) teachers believed the impact of math tutoring on math achievement was not effective overall.

A Second Chance for Students

The math teachers in this study all felt that it was important that all students knew that tutoring and teachers were available after school. They had been making strides towards changing the image of math after school. Often, the PHMS tutoring program had been labeled as a program only for struggling students. Many also translated that into after school tutoring being a program only for brown or poor kids. Ms. Haley worked to challenge this label. She stated:

I want all my students to know that I am here for them. With the after school program, it used to be only the low socioeconomic students would participate. Things have changed and more of a variety of students are around after school, but it [the diversity of attendees] could still be better.

The purpose of the PHMS after school program was to provide a safe learning environment after school for *all* students. The after school program was advertised as providing a safe place for extracurricular activities and tutoring, which is available for multiple subjects, giving it value to a wide range of students. While the non-academic component of the program was the most appealing aspect for students to stay after school, there was a significant focus on academics, particularly in math and English language arts (ELA) content.

For many students, after school math tutoring provided a second chance to learn. All math teachers held tutoring sessions throughout the week for the after school program specifically, and then, for their own students who were not affiliated with the after school program. While the emphasis of after school math tutoring was typically centered on problematic content, all levels of assistance were offered in the tutoring sessions. Observations of the after school program designed to support math revealed those who attended the math tutoring attendance mirrored the school's general population demographics—the attendees represented different ethnicities and came from various socioeconomic levels. Ms. Jackie usually had between 7-15 students attending tutoring on a given day. Some even came when they were not encouraged to do so. She stated, “Many times students just show up. Some I know I didn’t tell to come to tutoring and they aren’t regular after school students. Heck, they aren’t even doing badly in math. But

they come because they know we're here" to help them. Ms. Pruitt echoed the statement:

Many of our kids are in the after school program [stay after school] because of the extracurricular component—they get to play with their friend for hours. Since the after program does require them to have specific academic time—homework help, tutoring, etc., we can get extra time to cover math. It's good to hear that students will request to be released to me to get help.

Students who stayed after school at PHMS and took part in any of the after school programs were required to take part in tutoring or some sort of study for a minimum amount of time. On any given day, most of the math department was available after school for tutoring, and teachers could ask the after school staff to send certain students to math or the students can request to go to their math teacher. Giving students a second chance to learn math increases the likelihood that their achievement will improve.

Pedagogy Matters

Teachers agreed with the perception reported previously in this chapter that they use different pedagogies during after school tutoring from the pedagogies they use during their regular day class to improve student academic progress in math. These teachers felt it was important to do so because many of the after school students were the same ones they taught during the school day; the students had seen them teach once already that day; and the teachers needed to change it up.

During observations of the students' regular math classes, routines were in place to ensure students were exposed to and progressed through the math content that needed to be covered daily. This led to more direct instruction and more timed activities. From the teacher's perspective, this helped the teacher cover the needed material within the

given timeframe, even if students were unable to finish tasks in the allotted time. During tutoring after school, teachers felt they could take a more hands-on approach to teaching their students. Through small groups no larger than four students and one-on-one instruction, math teachers spent time explaining concepts more thoroughly and reviewing material in a variety of ways. Ms. Haley stated:

The structure in math tutoring is very different. I expect my students to be proactive during this time. They need to ask specific questions—about the homework, about the class material covered that day or even get practice work. I may cover some of the homework but my goal is to make sure they have a great grasp of the content I need them to know. A lot also depends on which students show up, and how many.

Depending on the number of students that attended her tutoring, Ms. Haley was able to focus on specific problem areas for students or could cover more generalized material using more direct instruction if she had a larger group. Her tutoring sessions ranged from 9 to 20 students after school.

Ms. Pruitt made a similar statement regarding her after school pedagogy. Her class sizes after school ranged from five to 10 students a session.

My students know they have to come with specific content questions. I want to know how well they understood what we covered in class and see how they attempt to apply the knowledge—they can show me through completing homework problems or verbally by explaining something we discussed in class.

The math teachers were also able to approach the curriculum from different directions.

Ms. Haley used more “manipulatives”—physical objects that are used as teaching

tools to engage students in the hands-on learning of mathematics—and integrated technology into the after school class, much more so than what she does in her classroom. The smaller class size seemed influence her instructional decision-making. She explained:

I have fewer students and some come just to do homework. So when I get some that really struggle, like Greg, I can get him one on one and show him the manipulatives. He can see how they relate to the formulas or his notes. It really makes a difference, sometimes.

As part of her after school math tutoring, Ms. Jackie typically addressed several learning modalities as well. In several tutoring observations she approached students with a kinesthetic focus approach to teaching. Ms. Jackie explained:

Research says students learn differently, of course. To me, its common sense to try and reach the students from a different perspective. I realize they have been seated all day for the most part. I try to give them more games and drawing activities that covers the current math they are encountering whenever possible.

The teachers' descriptions of their classes suggested, in these instructional spaces, teaching and learning were less direct instruction and more student centered and personalized. Ms. Haley described her pedagogical approach during her after school class. She used her knowledge of her students, and this age group of students in general, to make them really enjoy coming to her class after school for help.

I'm usually playing some music, I may have snacks depending on how many students show up, just letting them breathe a little. We only have about an hour to

90 minutes but I will spend the time up front to get them to really push to stay on task and get work done the rest of the available time.

Teachers often lamented the need to move through the content during the regular math classes, combined with the size of some these classes, made it critical to utilize less “distracting” methods of instruction to keep students on task. Ms. Haley stated:

It’s easier to “play” with ideas after school, most of these students struggle during the day, after school is a good time to figure out what works. I just know that the amount of time I spend after school with a few students doing things to make math more engaging I wouldn’t always have time to do in the regular class period. I reach out and try to engage [with students] differently at times, just not as often as I may need to.

It is evident to the teachers that the pedagogical approach used after school made a difference in student engagement, and the more focused and less “distracting” methods used during the school day were not as effective for some students, particularly the student participants who come to math tutoring. With a greater focus on small groups and one-on-one instruction after school, an increase in student engagement was apparent. It was unclear, however, whether this after school pedagogy deepened students’ learning. Academic progress grades and test scores suggest it did not, which will be discussed in Chapter 5.

A Second Chance for Teachers

Knowing the student’s level of understanding, which was assessed daily in the regular class allowed teachers to focus on the specific areas of students’ confusion and scaffold the support they need, and, in theory, lead to improved math achievement.

Teachers worked with these students during regular math; they understood where the students were struggling but still may not have been able to address it during class. After school tutoring not only gave students a second chance to learn, but teachers were given a second chance to teach the students.

On numerous occasions during the after school program, Ms. Pruitt asked Beaumont to rewrite notes he missed in class or to write review problems on the board for other students, knowing he had missed the answers to these very same problems during her regular class. Ms. Pruitt confirmed the notion that after school math tutoring gave her a second chance to teach to her students' needs.

One way I analyze my students' understanding is through their homework. If I notice consistent problems in basic math skills, for example, I know I can help them in that specific area if they come to tutoring. That work will show up almost immediately in class or future assignments.

Ms. Haley focused on specific tasks that students had self-identified as areas of concern.

Time is limited and students who come with specific questions can really take advantage of the extended time with me. There is always something that stops us from really maximizing the entire allotted amount of time so we really have to get that "one" topic they are struggling with in order to have a successful session.

Sometimes teachers are teaching students that they had not seen during the regular school day and thus are more challenged to know exactly how best to help them. Ms. Jackie started with what the students should know and directed her tutoring sessions from that perspective.

I often tutor students that I don't teach during the school day. Unless they have

specific questions about homework or a concept they may be struggling with, I cover material that I know they are working on currently or soon will be. I'll get students because they know I will reiterate math they already have seen, just presented differently. It helps build their confidence and competency.

According to these teachers, having many different students after school was not ideal. Math improvement was more likely if they had the students earlier in the day and could hit the ground running after school. These teachers believed the teacher had to know their students, at least academically, in order to make a tutoring session worthwhile. Being able to immediately get a student on a topic improved student engagement in tutoring and had a better chance of impacting math achievement.

The Role of Culturally Relevant Pedagogy in the After School Math Program

Research suggests effective teaching practices to promote achievement, particularly for African American students, include establishing a family and community classroom environment with a teacher presenting a caring attitude, offering verbal affirmations, and using culturally relevant pedagogy (Haynes, 2008; Howard, 2006). Culturally relevant pedagogy (CRP) is a term created by Ladson-Billings (1995) to describe “a pedagogy that empowers students intellectually, socially, emotionally, and politically by using cultural referents to impart knowledge, skills, and attitudes” (pp. 17-18).

Classroom observations and interview analysis revealed while several of the math teachers used strategies that research suggests to be effective at improving achievement for African Americans, none of the teachers described or identified their teaching strategies to be CRP. All three math teachers felt that their pedagogy was just good

teaching and it was what all their students required to improve their math achievement. Several teachers, however, provided important examples in some of their teaching that are representative of CRP and its impact on the student participants' engagement and math achievement.

Current teacher pedagogy. The pedagogical approaches the teachers used were the same techniques that have been shown to improve student engagement and increase learning for all students. For example, having a caring teacher has been shown to be of value to all students (Noddings, 1988; Valenzuela, 2010). The teachers interviewed did not believe they used any special pedagogy for African American males. Although Ms. Haley and Ms. Jackie did not use the term CRP, they did, however, state the use of different approaches or change of pedagogy during after school tutoring versus their regular classroom.

Ms. Haley began her regular class at the door, greeting every student with a handshake or hug depending on who they are. She stated, "Some want to be recognized, some want the good morning love. By now, I know who needs what." Her regular classroom is student-centered—students are given daily class duties and routinely perform them from the start of class. This can be as simple as ensuring each table has the required supplies to start the lesson (e.g., graph paper) to being assigned the explanation of a difficult homework problem. She consistently placed students in pairs or small groups, depending on the activity. After school, she employed many of the same techniques but often used less of a direct instructional approach and focused more on small group instruction and one-on-one instruction. She stated, "I have more flexibility after school, but some of the students need a brief reminder or just for me to show them

in order to get going.” Her class routines and norms of her regular class and style of teaching were similar but much more focused and refined after school. Her pedagogy after school was highly collaborative, exclusively group work or one-on-one instruction.

Ms. Jackie spent a significant amount of time listening to her students. She provided them writing prompts that require discussion. She stated, “Getting them to talk is easy, so why not build them up.” Building their confidence in themselves and each other allowed her to move through content, and her students knew to see her after school for additional help if it did not get addressed during the regular class. She commented:

By now, students know how class operates, we have some concepts or example problems that I explain or they explain to each other and they will work in groups to finish them. I know who doesn’t get the content; I have them work with me for some time before I get into the other groups.

After school Ms. Jackie essentially does the same, chatting her students up; the conversation rarely started about math but always ending on math and what they are doing to improve their progress.

Ms. Pruitt typically began her class seated at her desk or at the whiteboard. She began teaching or giving instruction as soon as the bell rang, if she hasn’t already posted the agenda on the front board. Her actual interaction was dependent on her students. If they had questions or comments, she readily addressed them. If she perceived a student needed attention (i.e., emotional, not on-task), she addressed the student appropriately. She was mindful of her lesson objective and the intended result of each lesson. Beaumont remarked, “Ms. Pruitt don’t play. You ain’t ready in her class, might as well not go.” My observations of her class confirmed his perceptions, as she seldom deviated from her

lesson plan. Timed activities, limited question and answering sessions, and always ending class with an exit slip or reflection from students were all elements of her daily lessons. Ms. Pruitt's pedagogy after school was perhaps the most similar to her regular class pedagogy, but she provided more time for question and answer sessions and gave students free time to spend on particular activities, such as classwork or homework completion.

Culturally relevant pedagogy in teaching practice. While CRP was not formally in place at PHMS, several principles of CRP were observed. One of the underlying principles of CRP is that curriculum connect to students' cultural background to help them understand the relevance of the curriculum. CRP is often in evidence when teachers demonstrate care for their students and their needs lead to positive emotions from the student that empowers and motivates learning (Gay, 2010).

Ms. Haley seemed to borrow some of the underlying ideas behind CRP, without identifying it as such, when she described how she used basketball references from LeBron James, music from rappers Drake or Nicki Minaj, skateboarding or local beach references to engage students. She stated:

I have to be up on current trends my students care about. I won't know unless I constantly interact with them and learn who they are. I find out things that are common to all of them and I use it in my teaching.

Her approach to teaching was an attempt to respond to the students' culture. As a result, her students were drawn into her class community and focused on why they were there—to learn math. She indicated her students responded to the cultural references she used. She commented, "I get great responses from all my kids after school when I'm playing

some Drake or Chance after school. We segued into a lesson on statistics using numbers of new rappers annually.” While these strategies addressed surface-level culture, what she did with the students as she taught and interacted with them both in class and after school creates a deeper relationship and creates self-awareness and confidence in the student participants. Ms. Haley’s understanding of inclusion extended to paying attention to culture and the individual’s background. She frequently used cultural references to hook students into a lesson. She stated getting to know the students—their backgrounds, where they come from locally and globally, their interests—is essential to being able to really teach them math. Ms. Haley commented:

It’s one thing to get to know their ethnic background, it’s obvious in some cases, but to really know the kids is so important to me especially in our area of town. So many come from really rough situations. It’s very challenging because many of the stories are so unexpected. Drug backgrounds, homelessness, and abuse—we see it all.

Her decision to focus on her students collectively came from an ice breaker activity in her early teaching career, where students had to fill-in a sheet with different demographic indicators (e.g., how many brothers, animals in the house) that described them away from school. When she found out in one class how many lived with non-parents and single parents, she decided to make it a point to focus on commonalities among her students. This resonated with students. They took pride in being in her classes and see themselves as her students and as a result, better learners. Louis commented, “Ms. Haley makes you feel special as soon as you walk in the door, that’s why I get there fast, I want to show her

my work!” Louis’ statement confirmed Ms. Haley’s acknowledgement of student culture not only in her relationship building but weaved into her pedagogy.

Ms. Jackie almost singularly focused on individual stories and backgrounds to build her community of learners. She consistently pointed out ways math is used in other countries as a way to draw students into discussing their backgrounds in attempt to make math connect to their perception of the world. Ms. Jackie tutored several of the study’s student participants in her after school math tutoring. She felt similarly to Ms. Haley in that pedagogy needed to be based on the student as an individual.

Many come after school for different reasons. Having an approach or plan overall is good, but to be effective you need to switch it up. That means you have to *know them*. Today’s kids have so much going on too. You have to consider a lot of factors if you want to achieve a level of success, especially in math- so many don’t think they can do it. I spend a lot of time building their self-esteem. I may not touch the content on a given day, just trying to break through and bond with them. It is not an easy thing to do.

This approach suggested some evidence of a pedagogy that is more aligned to culturally relevant pedagogy. Reaching out to today’s student by validating them not as a monolithic group but as individuals seems essential. According to Ms. Jackie, she always tried to focus on the student to push their advancement in math and this was part of her teaching.

Absence of culturally relevant pedagogy. Ms. Pruitt focused on delivering curriculum for the whole class equally, not on individual needs. Access to the curriculum looked different in her after school classes compared to the other teachers. In these

classes, while there was an open class environment with student discussion and various activities, there was no evidence of any attempt to use CRP or to connect teaching to a student's individual or cultural background. Ms. Pruitt's approach to teaching was similar in after school tutoring to the regular math class. According to the African American male students in this study, she views them as just students; not overly concerned about their backgrounds and individual circumstances. Students' lack of relationship to their teacher and consequently to math limits their potential for engagement and affected their motivation to learn. Ms. Pruitt's stated goal in teaching math was described, quite simply, as improving math achievement for all her students and she embedded this argument as she discusses teaching students in her interview. She explained:

I focus on my students equally. I weigh certain factors, for example socioeconomics, but I still stay focused on the curriculum and what they need to know regardless of where they come from. It's tough but it works. If I spend too much time on the individual stories, I'd lose focus on what I need to accomplish, which is ultimately to teach math and develop their learning.

This approach is in contrast to some of the current research related to reaching this generation of students, specifically African Americans. Teaching is about relationships and when students can identify with the school, they identify as learners (Nieto, 1999). While Ms. Pruitt viewed her approach as effective; conversely, the student participants in her math classes believed her approach to teaching and class environment were not conducive to their learning. This was evidenced by their lack of desire to participate in her class, including numbers of participants off-task in class and in math tutoring and low

attendance in her after school tutoring. Ms. Pruitt's students instead sought out Ms. Jackie's tutoring sessions.

All three teachers, in general, saw the students at PHMS as a homogeneous group, although their pedagogical approaches to reaching them differed. For Ms. Jackie and Ms. Haley, this meant acknowledging individuality in their students and, when necessary, connecting students to math and the real world through students' backgrounds. Ms. Pruitt's view on teaching for "today's" students, which also included African Americans, meant there was no need to focus on any one ethnic group. She was convinced that good teaching and content knowledge allowed her to focus on methods that she viewed as effective for all students. Considering the size of the population of African American males at PHMS, teachers believed that focusing on all struggling students, on a regular basis was warranted, rather than attempting to reach African American males with special pedagogy. Ms. Pruitt stated:

There aren't a lot of those [Black] students in my tutoring to be honest. I do have a lot that are doing well; some of those are Black boys. I don't care who they are, to be honest. If they come to get help in math, get in and stay focus then I will help them all day.

The contrast between teachers such as Ms. Haley and Ms. Pruitt suggest ignoring students' individualities and unwillingness to see and acknowledge differences in students may hide unconscious bias and miss educational opportunities to better student outcomes. As Walker-Tileston and Darling (2015) suggested, ignoring cultural differences could lead teachers to underestimate minority students, impacting their academic potential. This disposition runs counter to some important research that points

out African American students need to have a connection to their school or teacher to have greater academic success (Ladson-Billings, 1995). Teachers must be empathetic with students and realize that creating an environment that is not only physically safe, but also emotionally and psychologically safe, is paramount to encouraging students to be resilient in the classroom (Brooks & Goldstein, 2008).

In Ms. Pruitt's classes, student participants don't feel empathy from her and it impacts their level of academic success. Earl stated, "I'd rather go to Ms. Jackie, she cares more about kids... Ms. Pruitt just wants the work turned in completed." Beaumont, while completely disconnected from school academically, as evidenced by his low GPA, was even more disconnected from Ms. Pruitt's math class. He stated several times regarding her "not caring so why should he?" His low desire to attend and make tutoring more successful was a result of her attitude towards him in the classroom.

The direct consequences of these teachers' pedagogical decisions for math achievement were not clear from this study and from the analysis of the teachers themselves. The differences in pedagogy across teachers, particularly in the case of Ms. Haley and Ms. Jackie when compared to Ms. Pruitt, however, seem to be related in meaningful ways to students' willingness to engage in math instruction. While the teachers in general seemed to understand how changing their pedagogical approach could lead to improving teaching effectiveness and higher capacity for student achievement, greater consideration needs to be given to the context and the type of students they teach, as teachers seek to make their practices more effective.

Tutoring Effectiveness

Despite all the factors these math teachers identified as supporting math learning, in general, the teachers believed the impact of math tutoring on student math achievement was not effective for the African American males they served. In fact, the math teachers questioned the effectiveness of the tutoring sessions for all their students. Even though the math teachers implemented many of the research-based suggestions for an academically-based program (Beckett et al., 2009)—having increased participation, improved grades, and overall improved student disposition toward math—the math teachers wondered if content knowledge was improved or enhanced for their students. Some of the student participants continued to have low standardized test scores and math grades although admittedly many students at PHMS also have low math test scores and grades with or without participation in after school tutoring. Ms. Haley commented:

I know my students are learning overall. But some that are really struggling come to tutoring all the time. They are *still* struggling. It's very frustrating. Greg, for example had an F until very recently. He gets *a lot* of help in tutoring. His work gets done, but his quiz scores and tests scores are still low. I know he needs additional help, more than what I am providing for sure.

Ms. Pruitt agrees. She also questions whether her students are benefiting mathematically from the after school program.

My students take advantage of tutoring but many use it just to get the homework done. That's fine, because that's one of the benefits of coming to tutoring, homework completion. I can see the benefits in my class, homework gets turned in, and students can show me they know what we are doing, even how to do the

math. But, I know some are just going through the motions and it just makes you wonder if they really get it. I know Earl struggles; he tries but he struggles. If you ask him too many questions or come from different directions, he can lose his focus and that's after being tutored. We may look at giving him a math support class during the school day next semester.

Accounting for the differences in the participants' level of math achievement could be a result of many different causes that go beyond after school math tutoring and the scope of this study. While the teachers' pedagogical styles were different, there are a multitude of other factors not addressed by the after school program that may impact the participants' math achievement. These factors include large class sizes, teacher insensitivity to students' culture, students' level of effort, parental education and income level, and time family members are able to devote to support and reinforce learning (National Education Association, 2013).

Summary

The purpose of this chapter was to present findings from student interviews, math teacher and program staff interviews, as well as field observations of regular day math classes and after school math tutoring classes. The chapter began with detailed profiles of the student participants. The chapter then examined the participants' perceptions and experiences of these classes designed to support math learning. Patterns in participants' comments were themed to help answer the research questions surrounding the perspectives of the student participants and their math teachers on the impact of after school tutoring on the math achievement of the African American male students.

Student interviews exposed six themes: (a) using of the same curriculum and

teaching in the after school program with a significantly smaller class size were critical components for students' progress in math; (b) the pedagogy used in the after school program had a profound effect on the students' engagement in math; (c) the relationship that the student was able to have with the after school teacher had a key influence on the student's engagement in math; (d) students' attendance was motivated by parents, mentors, and their own individual agency; (e) the student's relationship with peers determined the level of success in the after school program; and (f) the ethnicity of the students did not appear to influence the type of interaction or experience that the students had in their after school tutoring class. The analysis of student interviews showed the math teachers at PHMS saw value in after school tutoring. Students saw tutoring as an additional opportunity to explore the content from their regular math classes in an environment that allowed more time and personal attention. Students recognized their friends as both supports and distractions during after school tutoring. Many were compelled to attend by mentors or family members and seemed to notice a difference in their performance in their regular math classes after they attended after school tutoring.

The math teacher and after school program staff interviews revealed the following five themes: (a) all students benefited from knowing that tutoring and teachers were available to provide additional help; (b) after school teachers implemented a different pedagogy from that used during the regular day math class to improve student progress; (c) after school tutoring needed to be focused specifically on improving math achievement; (d) the teachers worked to ensure instruction was delivered equitably across all students rather than adopt more CRP, with a few exceptions; and (e) teachers believed the impact of math tutoring on math achievement was not effective overall. While the

teachers also saw value in after school tutoring, they also voiced concern over the progress of the students. They saw the benefits of students having access to the tutoring program and recognized their different approaches to instruction after school appeared to construct a more inclusive learning environment that was more engaging for students. However, test scores in math were still low, particularly for disadvantaged and minority students.

The teachers all believed they knew their students and were generally able to use that knowledge to increase student participation and engagement. However, only Ms. Jackie and Ms. Haley actually saw the benefits and sought to use the knowledge gained in getting to know students' background, taking it into consideration when lesson plans were made. Ms. Pruitt believed the individual student backgrounds were important, but made little effort to incorporate that knowledge into her teaching. PHMS math teachers in general seemed to make no specific effort to adjust teaching for African American students, and instead, if they addressed students' backgrounds, they were more likely to focus on what they considered to be "today's" student with assumptions there was a more monolithic identity that encompassed students more generally.

Further discussion of these findings and their implications for policy and future research are presented in Chapter 5.

CHAPTER FIVE: DISCUSSION

This chapter begins with a restatement of the purpose of this study and a review of the methodology and results. Next, a summary of the findings and their relationship to the research questions is detailed. Implications and recommendations based on the findings are provided for educators and school administrators to increase student engagement and support math achievement for African American male students. Lastly, suggestions for future research are presented.

Purpose of the Study

The purpose of this study was to better understand the impact of after school math tutoring on the math achievement of African American male students from the perspectives and experiences of African American male students and the teachers who teach them. This study focused on one after school program, designed to improve students' math learning, at one middle school in southern California. Students, their math teachers, and the staff who worked in the after school program were observed and interviewed. Their accounts of their experiences were examined to develop a more thorough understanding of the impact of the program on the students' math achievement.

Review of the Methodology

The study was conducted in two phases. Phase one consisted of document analysis: the gathering and review of after school program data on student demographics, attendance in math tutoring, and academic data. Initial observations of teacher pedagogy and student participation in regular math classes also occurred in phase one. In phase two, observations of the participants' regular, school day math classes and their after school tutoring sessions continued and semi-structured individual interviews with the students,

their math teachers, and a math teacher who served as an after school program tutor were conducted. The interviews were audio taped and transcribed. Data analysis procedures were then applied to all data. A summary of these results is included below.

Summary of Findings

The first research question was “how do African American males, enrolled in an after school program, perceive the influence of the program on their math achievement?” Six themes emerged from the student interviews. The emergent themes were: (a) the use of the same curriculum and teaching in the after school program with a significantly smaller class size were critical components for students’ progress in math; (b) the pedagogies used in the after school program had a profound effect on the students’ engagement in math; (c) the relationship the student was able to have with the after school teacher had a key influence on the student’s engagement in math; (d) students’ attendance was motivated by parents, mentors, and their own individual agency; (e) the student’s relationship with peers determined their level of success in the after school program; and (f) the ethnicity of the students did not appear to influence the type of interaction or experience that the students had with their teacher in their after school tutoring class.

The second research question asked, “How do the math teachers and program staff perceive the influence of the after school program on the math achievement of the African American male students?” The teacher interviews revealed the following: (a) all students benefited from knowing tutoring and teachers were available and willing to provide additional help; (b) after school teachers implemented a different pedagogy from that used during the regular day math class to improve student progress; (c) after school

tutoring needed to be focused specifically on improving math achievement; (d) the teachers worked to ensure instruction was delivered equitably across all students but did not intentionally use culturally responsive pedagogy (CRP), with a few exceptions; and (e) teachers believed the impact of math tutoring on math achievement was not effective in raising grades.

Interestingly, the perceptions of the African American male students and their math teachers and after school program staff, as to the factors that supported math learning, were remarkably similar. There were, however, some important differences.

Comparing Teacher and Student Perspectives

The students and teachers in this study perceived the impact of after school math tutoring on math achievement in similar and different ways. Commonalities across the two groups were found in their perceptions regarding the value of using a different pedagogy in after school tutoring from the pedagogy that was used during the regular math class. The groups agreed that offering a second chance for students to revisit the curriculum was extremely helpful. The students and teachers agreed on the importance and of establishing a solid student-teacher relationship and its importance in learning math during the school day and after school. There was also general agreement across the participant groups that race did not factor into teaching in the after school tutoring program. Students and teachers believed all students were treated the same.

Different After School Pedagogies and a Second Chance

Student and teacher participants both agreed the more relaxed environment and having fewer students in the after school program offered greater opportunity for one-on-one or small group instruction and thus, helped students grasp the math content. All of

the students, regardless of current academic progress in math, agreed attending tutoring meant they would be taught differently and this difference could improve their learning. The teachers made a point to have math instruction look different after school. Whether that manifested itself with the addition of technology, manipulatives, group work, or greater interaction with the students, three teachers agreed that math after school needed to be different in order to improve math achievement. Ms. Pruitt was the exception. She felt it was less important to change her pedagogy.

The use of a different approach to learning energized students and teachers to an extent, increasing engagement on the students' parts and increasing interactions of the teachers with the students. This finding confirms earlier research on after school programs (Afterschool Alliance, 2014; Fashola, 2003) that suggests increased achievement results from using different approaches to teaching students during extend learning time.

Teachers and students agreed having a second chance at learning content was one of the main benefits of the after school program. Whether it was as simple as completing homework, note taking, or reintroduction of content, students had greater exposure to the same content. Guided by research-based strategies (Cross, Gottfredson, Wilson, Rorie, & Connell, 2010) the PHMS administration purposely directed the after school program to build on school day content. Accomplishing this was relatively easy since the after school program employed PHMS teachers to serve as tutors for the academic component of the program. Students could revisit the curriculum in a less hectic environment when teachers were not subject to the same pressures as teaching the regular class. The teachers were able to use their regular curriculum as the foundation for math and the after school

program did not have to provide a new curriculum or academic enrichment activity, leaving lesson planning to the teachers. This worked in the after school setting because teachers, for the most part taught their own students. The students at PHMS somewhat enjoyed staying after school because it was often coupled with using the library computers, going to club meetings, and band practice. Many times, students engaged in these extracurricular activities after tutoring was complete.

While using the regular-school teachers served as a benefit to the overall structure of the program, a potential drawback to that approach was that PHMS teachers were not necessarily hired with the expectation they would agree to change the pedagogy in the after school program to create a more interactive learning environment. As a result, there was variation across teachers in their willingness to diverge from their normal practices of direct instruction. Ms. Haley and Ms. Jackie intentionally worked to individualize instruction after school for students, using known gaps in learning from the school day and identifying trouble spots they noticed from teaching the curriculum during the school day to inform their teaching. Ms. Pruitt did so to a lesser degree, maintaining, for the most part, a direct instruction approach, which she believed was the most effective way to deliver the content students needed. This approach had consequences. Fewer numbers of students were willing to attend her after school class. Ms. Pruitt's tutoring consistently suffered and played a role in her student participants' inconsistent or low level of attendance as students often choose Ms. Jackie's class instead. Student statements suggested Ms. Pruitt's pedagogical approach impacted their engagement and achievement in her regular class as well.

Although this sample size is small, it suggests students gravitate toward pedagogy

that is more interactive and more personalized. What is unclear is the overall impact of using this pedagogy on students' math achievement. As explained later in this chapter, despite the change in pedagogy, the students in this study who struggled the most in math experienced only minor improvement in their grades.

Relationship Building

Many of the student participants felt they benefited from the strong, personal relationships they were able to create with their teachers. Greg and Louis, for example, recognized the effort made by Ms. Haley to make these important connections and therefore held her in high regard. Ms. Haley and Ms. Jackie agreed relationships were key to student engagement. They worked to build solid, positive relationships with their students, and they incorporated the knowledge they had of their students into lessons both during the regular and after school classes. Ms. Haley believed it was important because it would help students to engage in their math content. Finding ways to connect with students made learning experiences more positive. Ms. Haley described this connection with students as reaching “today’s” students. Connecting her classes to her students using cultural or current social references was evident from observations. Student participants valued being treated the same as all the other PHMS students and said it motivated them to want to try and learn math. Like Ms. Haley, Ms. Jackie looked to develop relationships and student-centered approaches, and both Beaumont and Earl claimed this approach was the reason they favored going to her after school tutoring sessions when possible.

In contrast to the other teachers, Ms. Pruitt did not feel it was as important to know each student because she believed she needed to primarily teach all students in the same way. She had an exchange with Beaumont, which he identified as “incredible,” and,

perhaps temporarily, changed his view of Ms. Pruitt and her teaching. He had a ten-minute conversation with her during tutoring about her college basketball days. After which he replied, “I did not know she knew so much about basketball. My dad played too. Who knew she was actually cool?” For that tutoring session, Beaumont’s demeanor and work ethic changed in a positive manner and he made significant progress on his math work. Ms. Pruitt did not seem to capitalize on the breakthrough and instead, she continued to focus on teaching and interacting with him in her usual manner, which was more focused on the curriculum and direct instruction, and not individually linked to Beaumont’s style of learning nor his needs. Beaumont then reverted to his less engaged pattern of behavior.

There were differences across teachers in the importance they placed on getting to know their students as individuals with diverse backgrounds and concerns. The extent to which this impacted student learning is less clear. The grades listed in Table 7 do not show a definitive relationship between progress in math and teacher pedagogy.

After School Tutoring and Race

The issue of race did not appear to be a factor for the students nor the teachers. This was unexpected as some of the lowest performing math students at PHMS are African American and previous research has suggested the low performance of African American students may be related to teacher expectations, which are often influenced by notions of race, gender, and class (Johnson, 2007; Landsman & Lewis, 2006). Racism is a socially constructed part of American culture and is now imbedded, covert and evolved in virtually every institution in America, particularly education (Bell, 1992; Feagan, 2006; Sue, 2010). The majority of teachers at the school are White and thus do not share

Table 7

Final Progress Report

Regular Day Teacher	After School Teacher	Student Participant	Math Grade			Semester Final Exam
			Progress Report 1	Progress Report 2	Semester Grade	
Pruitt	Pruitt/Jackie	Beaumont	C	F	F	F
Pruitt	Pruitt/Jackie	Al B	A	B	A	A
Haley	Haley	Louis	n/a	B	B	A
Pruitt	Pruitt/Jackie	Earl	C	D	D	C
Haley	Haley	Greg	B	F	B	A

the same racial background as these students. It seemed plausible, therefore, that race either implicitly or overtly played a role in constructing teaching and learning. However, both groups of participants believed that it did not impact the teaching nor learning in the after school program. As the findings from this small sample run contradictory to much of the literature, a more in-depth extensive study would be necessary to determine whether race influenced the experiences recounted by these participants.

Interviews and observations showed Ms. Haley and Ms. Jackie prioritized the importance of connecting with all students to make math more engaging. There were, however, missed opportunities that could have helped to bridge culture and achievement gaps. CRP, for example, offered the potential to support greater levels of engagement in math, but none of the teachers claimed they used CRP. While Ms. Pruitt had solid knowledge of her students in terms of academic standing, progress, attendance, and other normal, daily academic indicators, it seemed she had only cursory knowledge of her students' backgrounds over the timeframe of this study. If she was more aware of her

students' backgrounds, she did little to incorporate them into lessons or draw from their experiences. Several studies indicate teacher failure to account for students' cultural differences in their planning and instruction may result in student disinterest and alienation, ultimately manifesting in lower academic achievement and barriers to social wellbeing (Gay, 2010; Ladson-Billings, 1995). To that point, in general, the African American males in this study continued to underperform in math.

Contrasting Perceptions on Tutoring Effectiveness

While the teachers and the students agreed on the benefits of changes in pedagogy during after school tutoring, the opportunities for second chances at learning content, and equal treatment of students of all races, the two groups disagreed on the impact math tutoring had on math learning. From the students' perspective, after school tutoring had a significant impact on their math achievement. By attending tutoring, students knew they would be able to complete homework, work on notes, discuss math problems with the teachers, and work on problems with peer groups. In some instances, students indicated having the opportunity to use alternative means of learning, such as learning math with manipulatives or technology helped them to gain a better understanding of math concepts. Interview and observational data indicate students were able to translate knowledge from after school tutoring to the classroom as their engagement and participation increased. Also, being able to complete their work during after school tutoring improved their math grades, according to the student participants.

While teachers felt students were more engaged as a result of after school tutoring—finishing homework, completing class assignments, and exhibiting higher levels of participation in the regular math class, students' claims of increased

understanding and application of math concepts was not reflected in test scores and math grades.

Teachers noted exceptions as some participants had some increases math achievement. Al B and Louis maintained high grades and test scores, and Greg showed dramatic improvement. However, these three students were also the students that began the tutoring program with the highest grades (see Table 7). Al B increased his overall grade in math to an A. Although Greg started with a B, he dropped to an F at the second progress report. He improved his grade dramatically from an F to a B to finish out the semester. Louis maintained his high grades. All three of these students received an A on the most recent math test. Beaumont is an interesting case because he consistently attended tutoring, but his most recent math grade did not show improvement. While his homework completion percentage increased, his final exam grade was an F. Teachers pointed to this type of performance as evidence of the overall ineffectiveness of tutoring: Beaumont had consistent attendance but showed no academic improvement. They felt many students' academic performance mirrored Beaumont's performance with tutoring and grades, which did not result in a change in academic achievement. Teachers claimed, in general, improving math performance was hard.

Implications

This study provides insight on the perspectives of African American male students and those who teach them on how math tutoring impacts their math achievement. Their experiences allowed narratives of students who traditionally have had some of the lowest levels of academic success at PHMS into a discussion on increasing math achievement. Based on the findings from this study, there are factors that PHMS

administration and its teachers should consider increasing awareness of the struggles these African American male students are facing in improving their math scores. The following section includes the following three recommendations for practice that emerged from this study in support of PHMS's continued efforts in increasing the math achievement of African American males: teacher training, creating a more targeted tutoring program, and establishing a mentoring program.

Teacher Training

Teachers can benefit from professional development geared towards learning how to build stronger relationships with their students. Evidence from this study indicates some teachers who have had years of math teaching experience not only know how to engage their students, but make it a priority. Ms. Haley was purposeful in learning about her students' interests, developing relationships, and using that knowledge to construct individualized teaching opportunities.

Although Ms. Pruitt was also an experienced teacher she had less motivation and ultimately less success in developing connections with students. She relied instead on her teaching skills to decipher her students' academic needs in order to move them along educationally. As a result, she ignored what may have been most important factor in learning: the social and cultural needs of her African American male students. Ladson-Billings (1995) stated when claiming not to notice student differences, the teacher disregards one of the most salient features of a student's identity, possibly resulting in student alienation and disinterest in learning.

Having stronger, personal connections with students was what drew several of the student participants to Ms. Jackie. Her approach, which was more similar to Ms. Haley's

approach, was directly related to her knowledge of her students. Her personal approach allowed her to develop techniques to deliver content to students.

All three teachers, admittedly, did not have in-depth knowledge of students' backgrounds and did not claim to use CRP. If armed with knowledge of CRP, these already savvy educators may have been able to deepen their work with their students. A focused professional development plan on CRP as it relates to math instruction seems critical to support these 21st century learners. With professional development, these teachers could gain access to multicultural approaches to teaching—a vital step in connecting their teaching to the changing demographics of the K-12 learner population. Although improved test scores are not guaranteed with attention to CRP, this kind of pedagogy seems to suggest students would be more engaged and have a more positive disposition toward learning math.

Targeted Tutoring

Teachers at PHMS wanted to encourage all students to attend tutoring and to change the after school program's image from a negative connotation of being for kids with nowhere to go or who are academically challenged, to an image of all students coming and wanting to achieve. The focus was not on getting the underachieving student to attend as much as it was about getting all students to attend and then helping them improve their math grades.

Math teachers are in a position to identify struggling students who could be targeted for after school support with the assistance of a formal program. Those students struggling the most in math need help. This group primarily includes minority males at PHMS. Although some data suggests that many African American males struggle in math

(NAEP, 2014; Schott Foundation, 2015), other research points out African American males have higher academic success in math than other demographic groups when they have access to extended learning opportunities beyond the school day (Bodilly & Beckett, 2005; Posner & Vandell, 1994; Toldson, 2008). In these settings, African American students are able to better understand the content, which leads to improved academic outcomes. Implementing an after school tutoring program that targets specifically the most underperforming students (identified by prior academic grades, recent standardized testing) and by focusing on missing or incomplete prior learning could be beneficial to raising math achievement at PHMS and improving math outcomes for African American males.

Mentoring Students

There is a large body of research on the positive effects of mentoring and its impact on youth development and academic success (Eby, Allen, Evans, Ng, & DuBois, 2008; DuBois, Holloway, Valentine, & Cooper, 2002). Missing from PHMS culture, yet described by Louis, who was able to have a mentor and described it as “lifesaving,” is a mentoring program. African American male students would benefit from a mentoring program that offered guidance and role modeling. Mentoring programs are also a viable opportunity for the students who do not respond to the engagement techniques used by their class teachers. For example, the inability of Ms. Pruitt to engage students led to several participants in this study to have little desire to achieve in their math classes. A mentor could be an advisor for these students, guiding them as needed through the academic process and showing them from experience or by example on how to deal with or navigate being taught by someone they cannot relate to.

Suggestions for Future Research

There is still much to learn about African American male students and their experiences with after school programs designed to impact math achievement. If the purpose of secondary education in the U.S. is to prepare young people to contribute to society and to develop individuals to the fullest extent possible, more must be done to prepare these underachieving math students at PHMS and elsewhere. To better understand this population, more research must be conducted. This section provides four suggestions for future research.

One suggestion is to conduct a similar study with the addition of the parent/guardian perspective on the impact of math tutoring for their children. While many student-participants shared their parents' perspective on tutoring, it seemed cursory. Gathering more information from the parents would allow for a better understanding of their perceptions of the influence of math tutoring on their child's math achievement and their educational experiences at PHMS more generally.

Another suggestion is to conduct a similar study of another after school program at a different middle school. Each school and the students who attend are unique, yet students often have similar needs. Comparison studies could reveal important school structural and cultural factors that may influence student attendance, engagement and ultimately math achievement. A comparison with another after school program would offer a unique opportunity to shed new understandings of this data and encourage questions that were not previously considered. For example, conducting a comparative study could reveal other teaching methods that have the potential to increase student engagement and/or provide confirmation and greater nuances to the findings of this

study.

A future study should be designed as a longitudinal study: a study that follows after school participants throughout their middle school careers. Following student progression through time with a lens focused on math tutoring would expand the pool of teachers in the study and thus, provide greater insights into teacher pedagogy and its support for math achievement. The study may also reveal what impact math tutoring has on students' math choices over time.

To deepen our understanding of the influence of teacher pedagogy on students' math achievement a comparative study of after school programs could purposefully include two groups of teachers: those who adhere to direct instruction (teachers who are more similar to Ms. Pruitt) and those who provide a more student-centered pedagogy (teachers more similar to Ms. Haley and Ms. Jackie). This comparison has the potential of supporting or challenging the findings from this study that indicate student engagement improves or at least somewhat influences math achievement among African American males when teachers learn about their student, create relationships and teach in a more personalized student-centered way. Having additional knowledge of student experiences interacting with their teachers could provide insight into how to address student learning. Pedagogical strategies that promote success could be identified and implemented to help a greater number of students.

Conclusion

African American males as a group have historically been categorized as underperforming, and by traditional academic measures their math grades and test scores predominantly represent the lower levels of achievement. It is important to note many of

these same indicators also show increasing levels of achievement over time (NAEP, 2014; Schott Foundation, 2015). Much of the discussion in the literature on the academic success of African American males has not adequately taken into account their voices and their perceptions on what makes them more academically successful. While the study did not reveal a direct link to improving math achievement, the African American male participants did identify components that increased their engagement and motivation to learn math, components that led to some improvement in math achievement.

The student participants and the teachers in this study provided insight on the structures and pedagogies that were most beneficial for their learning. Lessons learned here can potentially help other schools and programs identify success strategies for their African American male middle school students who attend after school programs. The experiences that students in this study had indicate the importance of creating student-teacher connections, implementing a more interactive pedagogy and being taught the same curriculum in the after school program that they were taught during the regular school day. This study also showed that math improvement was more likely for those who attended regularly. Student engagement and students' motivation to learn math improved when students were given a second chance to learn.

African American males have been situated at the lower end of the academic spectrum for decades, despite numerous examples of achievement. While there are examples of high levels of achievement, how to help all African American males improve academically in math has no easy, straightforward answer. Compounding this issue is the fact that these individuals are seen as a group, many times ignoring the multiple examples of academic success, with the focus on the statistical majority. Providing these students

and their educators a voice, gives them the opportunity to speak on what works and what does not work regarding support for math achievement. Finding space for the student voice is a vital step in students continued success. For these students, speaking on what works for them academically and knowing that what they say is being acted on by those that teach them may further assist in the process of increasing engagement for these students, thereby improving their academic success.

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APPENDIX A

Parental Consent Form

University of San Diego

For the research study entitled:

The Impact of After School Tutoring on Math Achievement: Perceptions of African American Males and Those Who Teach Them

I. Purpose of the research study

Eric Brown is a doctoral student in the School of Leadership and Educational Sciences at the University of San Diego. Your child is being invited to participate in a research study he is conducting. The purpose of this research study is: to explore the perceptions of African American male students, their teachers and after school program staff on how the after school program influences their math achievement.

II. What your child will be asked to do:

If you decide for your child to be in this study, he or she will be asked to: Participate in a one on one interview with the researcher. They will be asked questions centered on their math achievement and how they feel the after school program influences that achievement. The initial interview will consist of 10 questions, but supplemental and follow up questions are possible, based on your students answers. The initial interview will not last longer than one hour. If a follow up interview is needed to ask some clarifying questions, it will take no longer than 30 minutes.

Your child will be audio-recorded during the interview.

Your child's participation in this study will take a total of 90 minutes.

III. Foreseeable risks or discomforts

This study involves no more risk than the risks your child encounters in daily life.

IV. Benefits

While there may be no direct benefit to your child from participating in this study, the indirect benefit of participating will be knowing that you helped researchers better understand how to better help students like your own.

V. Confidentiality

Any information provided and/or identifying records will remain confidential and kept in a locked file and/or password-protected computer file in the researcher's office for a minimum of five years. All data collected from your child will be coded with a number or pseudonym (fake name). Your child's real name will not be used. The results of this research project may be made public and information quoted in professional journals and meetings, but information from this study will only be reported as a group, and not individually.

Confidentiality may be breached under the following circumstances: (1) when there is suspected child abuse or neglect; and/or (2) when there is a reasonable suspicion that the child presents a serious threat of physical violence to himself or to others unless protective measures are taken.

You will not have access to the data your child gives the researcher.

VI. Compensation

Your child will receive no compensation for his/her participation in the study.

VII. Voluntary Nature of this Research

Participation in this study is entirely voluntary. Your child does not have to do this, and he or she can refuse to answer any question or quit at any time. Deciding not to participate or not answering any of the questions will have no effect on any benefits you or your child are entitled to, including health care, employment, or school grades. **Your child can withdraw from this study at any time without penalty.**

VIII. Contact Information

If you have any questions about this research, you may contact either:

1) Eric Brown

Email: ericbrown-09@sandiego.edu

Phone: (619) 750-5627

2) Dr. Lea Hubbard

Email: lhubbard@sandiego.edu

Phone: (619) 260-7818

I have read and understand this form, and consent to the research it describes to me. I have received a copy of this consent form for my records.

Signature of Participant

Date

Name of Participant (**Printed**)

Signature of Investigator

Date

APPENDIX B

Child Assent Form

My name is Eric Brown. I need to ask if you if you would like to do some things. Doing these things is called "research." It helps us find out new stuff.

I will be around the school and after school program over the next month. I will be looking at your math classroom, your math teacher and what you are doing in there. I will also be looking at the after school program and how they help you understand the math content you are covering every day.

Here are the things I'm asking you to do:

You and I will sit together and have a conversation, called an interview, about your math ability and how school and the after school program work together for your benefit. Our interview together will last about an hour. After I review our discussion, I may come back to you and ask some follow up questions, but that will take no longer than 30 minutes.

I will audio record our conversation. This will help me to make sure I understand all of your answers. No one will know it is you, because I won't use your name at all.

If there's some parts of this you don't want to do, just tell your Mom/Dad. Your Mom/Dad will NOT be able to see the stuff you tell me or give me.

If you tell me that:

- Somebody is hurting you or
- You want to hurt yourself or someone else, I will need to tell somebody.

It's OK to say 'No,' and nobody will be mad at you. Do you think this is OK for you?

I think it's OK for me to do this stuff. I can change my mind anytime.

Child's printed name

APPENDIX C

Demographic Profile Data

Code number _____

1. Age? _____
2. grade level? _____
3. Gender? _____
4. Race or ethnicity? __ White __ African American/Black __ Hispanic/Latino
____ Asian __ Native American __ Other
5. Free and Reduced Lunch Status: _____
6. IEP or SEP status? _____
7. How many years of participation in the after school program? _____
8. Current after school program start date: _____
9. Current math class: _____
 - a. Current academic grade: _____ Citizenship grade: _____
 - b. Recent Test Score results: _____
 - c. Homework Completion percentage: _____ Grade: _____
10. Last year's math class and grade: _____
11. Overall GPA: _____

APPENDIX D
Recruitment Flyer

Participants are needed in a Research Study:

The Impact of After School Tutoring on Math Achievement: Perceptions of African American Males and Those Who Teach Them

I am seeking African American high school male students to participate in a research project. I am a Doctoral student at the University of San Diego conducting a study to look at the influence of an after school program on the math achievement of African American male students. Participation involves a 60-minute interview, and possibly a second interview lasting no more than 30 minutes. Please contact Eric Brown at 619-750-5627 for more information or email ericbrown-09@sandiego.edu.

APPENDIX E

Informed Consent Form for Teachers and Staff

Contextualizing Factors Of Improving Mathematics In After school Programs For African American Males In Secondary Education

Eric Brown is a doctoral student in the Department of Leadership Studies in the School of Leadership and Education Sciences at the University of San Diego. You are invited to participate in a research project he is conducting for the purpose of exploring the perceptions of African American male high school students on the influence of an after school program on their mathematics achievement.

The project will involve program and participant observation and interviews that asks questions about the participant's opinion on the impact of the program on their math performance. Each interview will last about 60 minutes and will also include questions about you, such as your age, current math grades and/or test scores, number of years in the program and some attendance information. The interviews will take place at the after school program site during the school day. If needed, an overview of the project will be given to the student and parent at your home or at a time and place convenient for you. Participation is entirely voluntary and you can refuse to answer any question and/or quit at any time. Should you choose to quit, no one will be upset with you and your information will be destroyed right away. If you decide to quit, no one will be upset with you and your information will be destroyed right away.

The information you give will be analyzed and studied in a manner that protects your identity. That means that a code number will be used and that your real name will not appear on any of the study materials. Any information you provide will remain confidential and locked in a file cabinet in the researcher's office for a minimum of five years before being destroyed.

There may be a risk that participating in the interviews may make you emotional. Sometimes people feel anxious or sad when talking or reflecting on things. If you would like to talk to someone about your feelings you can call the San Diego Mental Health Hotline at 1-800-479-3339. Remember, you can stop the interview at any time.

The benefit to participating will be in knowing that you helped educators learn how to better help students like the participants in this study.

If you have any questions about this research, please contact Eric Brown at (619-750-5627, ericbrown-09@san Diego.edu) or Dr. Lea Hubbard, Professor, Department of

Leadership Studies, School of Leadership and Education Sciences at the University of San Diego (619) 260-7818, lhubbard@sandiego.edu).

I have read and understand this form, and consent to the research it describes to me. I have received a copy of this consent form for my records.

Signature of Participant

Date

Name of Participant (**Printed**)

Signature of Principal Investigator

Date

APPENDIX F

Student Interview Guide

The Impact of After School Tutoring on Math Achievement: Perceptions of African American Males and Those Who Teach Them

1. What is it like going to your school?
 - a. How much focus is on academics (math)?
 - b. Lots of tests?
2. How do you study for tests?
3. If you need help, where do you go for it? (Who?)
 - a. Do your parents talk to you about school or homework?
 - b. Does the school offer any methods to help with class and homework?
4. How does that program work?
5. Do you like the program?
 - a. Why/Why not?
 - b. Do they (the program) do anything special that makes you want to be in the program?
 - c. Can you give examples?
6. How do you choose who helps you in the after school program?
7. Does the program staff know who your math teacher is (or vice versa)?
 - a. Are you working on the same math content you do daily in class?
 - b. How is it different?
 - c. Are there ways to learn more (math)?
8. Do you learn more math or less math from the after school program?
 - a. How so?
 - b. How do you take what you learn after school back to math class?
9. Do you go to the after school program every day?
 - a. What is your frequency of attendance?
 - b. Does going everyday (or not) make a difference in math?
 - c. How or why not?
10. Is there anything else you want to mention about the program that has or hasn't helped you with math?

APPENDIX G

Math Teacher and Program Staff Interview Guide

The Impact of After School Tutoring on Math Achievement: Perceptions of African American Males and Those Who Teach Them

1. Describe the academic culture of the math department (program) at your school?
2. Do students have the opportunity to study at school for exams or homework?
 - a. If so, where, when and with whom?
 - b. Is there a formal program for tutoring in place?
3. Is there interaction between the program and math teachers?
 - a. Can you briefly describe the relationship?
 - i. How are students discussed or referred?
 - ii. Give a brief overview of how data is collected or shared?
 - b. Is the math content the same in both programs for students?
4. Is there any effort to encourage disadvantaged students to attend the after school program?
 - a. How does the program impact (*name of student*)'s progress in your class?
 - b. Can you give any examples of change in (*name of student*) as a result of the program?



**Institutional Review Board
Project Action Summary**

Action Date: October 5, 2016 *Note: Approval expires one year after this date.*

Type: New Full Review New Expedited Review Continuation Review
 New Exempt Review Modification

Action: Approved Approved Pending Modification Not Approved

Project Number: 2016-10-031

Researcher(s): Eric L. Brown Doc SOLES
Dr. Lea Hubbard Fac SOLES

Project Title: Contextualizing Factors That Improve Mathematics Achievement in
After School Programs for African American Males in Secondary
Education

Note: We send IRB correspondence regarding student research to the faculty advisor, who bears the ultimate responsibility for the conduct of the research. We request that the faculty advisor share this correspondence with the student researcher.

Modifications Required or Reasons for Non-Approval

None

The next deadline for submitting project proposals to the Provost's Office for full review is N/A. You may submit a project proposal for expedited review at any time.

Dr. Thomas R. Herrinton
Administrator, Institutional Review Board
University of San Diego
herrinton@san Diego.edu
5998 Alcalá Park
San Diego, California 92110-2492