

March 2018

Investigating the Parent Functions: African-American Families and Schools Collaborating to Improve Secondary Mathematics Achievement

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Investigating the Parent Functions:
African-American Families and Schools Collaborating to Improve Secondary
Mathematics Achievement

A Dissertation Presented

by

FRANK EARL STAPLES JR.

Submitted to the Graduate School of the
University of Massachusetts Amherst in partial fulfillment
of the requirements for the degree of

DOCTOR OF PHILOSOPHY

February 2018

College of Education
Department of Educational Policy, Research, and Administration

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African-American Families and Schools Collaborating to Improve Secondary
Mathematics Achievement

A Dissertation Presented

By

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DEDICATION

To my parents, Frank E. Staples Sr. (deceased), Ella L. Staples-Catlett, and Rommie W. Catlett; to my aunt by traditional kinship, but grandmother by love, Gladys M. Campbell-Staples (deceased); to my colleague, mentor, and friend, David T. Harris, Sr., Ph.D. (deceased); and to my lovely wife, Gloria A. Staples.

ACKNOWLEDGEMENTS

“I will bless the Lord at all times; His praise shall continually be in my mouth” (Psalm 34:1). To God be the Glory for the things He has done. I am truly blessed to have this opportunity to attain a doctorate. Great is God’s faithfulness. “The steadfast love of the Lord never ceases; his mercies never come to an end; they are new every morning; great is Your faithfulness” (Lamentations 3:22-23). Because of God’s grace and mercy, I am grateful to say that some things are better late than never.

I would like to thank my committee chair, Dr. Jeffrey Eiseman, for his high expectations and guidance throughout this dissertation process. Also, I would like to thank my committee members, Dr. Ernest Washington and Professor John Bracey for their assistance and support throughout this process. Again I would like to thank everyone on my committee for their time, wealth of experiences, and invaluable knowledge that they so enthusiastically shared with me.

I would like to thank a distinctive educator, Dr. Susan Bartzak Graham, who has influenced me as a student more than she will ever know. Dr. Bartzak Graham was my academic advisor at Wheelock College. Since the moment I met Dr. Bartzak Graham, she has had a lasting impact on my career as she always encourages me to stay the course.

I am grateful for the assistance that I received from Mr. Henry Thomas, Dr. Marjorie Magouirk-Colbert, Dr. Robert Colbert (deceased), Mrs. Catherine Porter, and Dr. Linda Griffin. Thank you for your dedication to the field of education and to me as one of your many students.

Finally, I want to acknowledge my wonderful wife, Gloria. Over the past two years, Gloria has willingly sacrificed much of the time we would normally spend together as I was consumed by doctoral studies. I want to thank Gloria for her love and patience throughout my dissertation process.

ABSTRACT

INVESTIGATING THE PARENT FUNCTIONS: AFRICAN-AMERICAN FAMILIES AND SCHOOLS COLLABORATING TO IMPROVE SECONDARY MATHEMATICS ACHIEVEMENT

FEBRUARY 2018

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The purpose of this study was to identify and evaluate specific strategies that encouraged school personnel and African-American family members to collaborate in a spirit of mutual respect to promote and support student learning and development in high school mathematics. Three research questions were used to (a) determine if strategies identified by the participants were effective or non-effective, (b) determine if there were any similarities or differences with respect to how family members and school personnel think about or assess specific strategies, and (c) assess the results of implemented strategies. This goal was accomplished by (1) convening a group of parents and attempting to mobilize them, and (2) encouraging teachers, administrators, or counselors to (a) rethink their assumption that African American families contribute little to their children's education and value education only if they participate in school-based involvement activities; and (b) adapt and engage in particular kinds of outreach and collaboration suggested by Abdul-Adil & Farmer, Reglin, Schurr, and Trotman. One study goal is to determine which strategies are identified by the participants as being

effective or non-effective, and if there are any similarities or differences with respect to how family members and school personnel think about or assess specific strategies.

Another is to promote the implementation of selected strategies and mathematics intervention, document the process, and assess the results.

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	v
ABSTRACT	vii
LIST OF TABLES	xv
CHAPTER	
I. BACKGROUND OF STUDY	1
Introduction.....	1
Problem Statement	8
Purpose of Study	9
Significance of Study	10
Assumptions.....	11
Definition of Terms.....	11
Organization of Study	12
II. CONCEPTUALIZATION AND CONTEXTUALIZATION OF FAMILY INVOLVEMENT	13
Definitions and Descriptions of Parental Involvement.....	18
The Findings of Parental Involvement Research	20
Parental Involvement Models	22
Typology of Parental Involvement	24
Beginnings of Epstein’s Typology.....	25
Description of Typology	25
Constructs of Parental Involvement.....	27
Involvement Decisions (Level 1).....	27
Choice of Involvement (Level II)	28
Mechanism that Influence Outcomes (Level III).....	29
Tempering and Mediating Variables (Level IV)	30
Student Outcomes (Level V)	31
Obstacles for Parental Involvement	32
African-Americans and Education.....	33
African-Americans Parental Involvement	33
Specific Barriers for African-American Parents.....	39

Principal’s Role in Parental Involvement	43
Response Strategies	44
Parental Involvement Strategies	46
Parental Involvement Strategies for African-American Parents.....	49
Parental involvement And Mathematics Achievement.....	53
Conclusion	59
III. METHODS	60
Introduction.....	60
The Researcher.....	60
Research Question #1	61
Research Question #2	63
Research Question #3	63
Research Design.....	64
Research Setting and Sample.....	65
Setting	65
Entry and Ethical Standards Review.....	65
Recruitment.....	66
Participants.....	68
Organization of Study.....	69
Research Instruments	69
Phase I (Surveys)	69
Observation	70
Academic Performance	70
Phase II (Focus Group Interviews)	71
Phase III (Interventions)	71
Phase IV (Individual Interviews).....	72
Participation	73
Parent (Intervention Only)	73
Parent (Full Participation).....	73
Student (Intervention Only)	74
Student (Full Participation).....	74
School Personnel.....	74
Procedures for Collecting Data.....	75
Data Analyses	76

Quantitative Analysis.....	76
Qualitative Analysis.....	76
IV. RESULTS.....	78
Educators’ Perceptions of the Factors that Affect Student Learning (Before Project).....	78
Educators’ Perceptions of Black/African-American Parental Involvement in their Children’s Education (base questionnaire).....	79
Educators’ Responses to Items Related to their Family Involvement Practices.....	81
Educators’ thoughts about improving African-American Family Involvement....	82
Scoring Criteria for Parental Involvement Questionnaire	83
Parental Roles	84
Research Question #1	89
Math Teachers Focus Group.....	91
Theme #1. Description of home-school collaboration vary differently amongst teachers.....	91
Theme #2. The teachers’ current family involvement practices are limited	92
Theme #3. African-American parents are more involved in their children’s extra-curricular activities.....	92
Theme #4. Teachers aren’t sure if race is a predictor for math success.....	93
Theme #5. Students’ perceptions about their mathematical aptitude could potentially affect their performance	93
Theme #6. Potential family involvement strategies that may improve math achievement.....	94
School Counselor Focus Group	95
Theme #1. The parents’ involvement is the most important aspect of home-school collaboration	96
Theme #2. The counselors’ family involvement practices extend beyond phone calls and emails.....	96
Theme #3. African-American parents are more involved than other minority parents	96
Theme #4. Counselors don’t believe that race is a predictor for math success.....	97
Theme #5. Educators or parents may not have high expectations for African-American students	97
Theme #6. Collaborating with African-American families as partners may improve math achievement.....	98

Administrator Focus Group	99
Theme #1. Approaches of establishing home-school collaboration vary amongst administrators.....	99
Theme #2. African-American parents' involvement is similar to other parents.....	99
Theme #3. Administrators don't believe that race is a predictor for math success	100
Theme #4. Potential family involvement strategies that may improve math achievement.....	100
African-American Parent Focus Group	101
Theme #1. Parents use multiple strategies.....	101
Theme #2. African-American students might perform better with a math teacher from the same race.....	102
Theme #3. The school should consider implementing different family involvement strategies	102
African-American Student Focus Group	103
Theme #1. Some African-American parents act like they're too busy to get involved.....	104
Theme #2. Students' opinions varied about visiting the churches as a meaningful family involvement strategies	104
Specific Finding Related to Research Question #1.....	105
Educators' Perceptions of the Factors that Affect Student Learning (After the Intervention).....	111
Educators' Perceptions of Black/African-American Parental Involvement in their Children's Education (final questionnaire)	113
Educators' Responses to Items Related to their Family Involvement Practices (After the Intervention).....	117
Specific Findings Related to Research Question #2.....	118
School Personnel Perspectives.....	118
Math Teacher Perspectives	122
African-American Parent Perspectives	123
African-American Student Perspectives.....	123
Research Question #3	123
V. DISCUSSION	126
Overview of Findings	128

Research Question #1	128
Research Question #2	129
Research Question #3	130
Social respect	131
Personal regard.....	132
Beneficence.....	132
Implications.....	132
Math Teachers.....	133
Researchers	134
Limitations	134
Delimitations.....	135
Recommendations.....	135
Build parents knowledge of involvement	136
Build educators knowledge about African-American families.....	136
Future Research	137
Conclusion	137

APPENDICES

A. PERMISSION TO USE COPYRIGHTED WORKS IN A PUBLICATION.....	139
B. INITIAL SCHOOL PERSONEL QUESTIONNAIRE	140
C. FINAL SCHOOL PERSONEL QUESTIONNAIRE	143
D. PARENT/GUARDIAN QUESTIONNAIRE	146
E. INITIAL AND FINAL STUDENT QUESTIONNAIRE.....	148
F. FOCUS GROUP GUIDE AND QUESTIONS FOR SCHOOL PERSONNEL	150
G. FOCUS GROUP GUIDE AND QUESTIONS FOR STUDENTS.....	152
H. FOCUS GROUP GUIDE AND QUESTIONS FOR PARENT	154
I. SEMI-STRUCTURED INTERVIEW GUIDE AND QUESTIONS FOR PARENTS	156
J. SEMI-STRUCTURED INTERVIEW GUIDE AND QUESTIONS FOR TEACHERS	158
K. SEMI-STRUCTURED INTERVIEW GUIDE AND QUESTIONS FOR SCHOOL PERSONNEL.....	160
L. NATIONAL PTA PARENT GUIDE AND TIPS	162
M. HISTOGRAMS OF MATH GRADES.....	167
N. TWO-SAMPLE T-TEST WITH EQUAL VARIANCES	173

REFERENCES174

LIST OF TABLES

Table	Page
2.1 Means of 30 Homework Assignments	54
2.2 Tests and Exams for the Experimental and Control Groups.....	54
2.3 2009 12 th Grade NAEP Participation.....	55
2.4 2009 12 th Grade NAEP Mathematic Scores and Boundaries	56
2.5 2009 12 th Grade NAEP Mathematic Average Scale Score.....	57
4.1 Educators' perceptions of the relative weight of factors on student achievement before project	79
4.2 Educators' perceptions of the percentages of African-American parents/guardians engaging in specific actions/activities associated with supporting their children	80
4.3 Educators' agreement with African-American family involvement statements.....	81
4.4 Educators' specific family involvement practices totals	82
4.5 Educators' specific family involvement practices mean scores	82
4.6 Educators' beliefs about what is needed to improve African-American family involvement (base questionnaire).....	83
4.7 Brief Description of Parental Roles	85
4.8 Mean PIQ Scores on each role.....	86
4.9 Parent results from the PIQ items (pre-survey)	88
4.10 Student results from the PIQ items (pre-survey)	89
4.11 African-American family involvement strategies selected by math teachers.....	95
4.12 African-American family involvement strategies selected by counselors.....	98
4.13 African-American family involvement strategies selected by administrators.....	101
4.14 African-American family involvement strategies selected by parents	103

4.15 African-American family involvement strategies selected by students.....	105
4.16 Parent results from the PIQ items (pre- and post-survey).....	109
4.17 Student results from the PIQ items (pre- and post-survey).....	110
4.18 Mean PIQ Scores on each role (post-survey)	111
4.19 Educators’ perceptions of the relative weight of factors on student achievement after project.....	113
4.20 Educators’ perceptions of the percentages of African-American parents/guardians engaging in specific actions/activities associated with supporting their children (base and final)	114
4.21 Educators’ agreement with African-American family involvement statements after the study.....	117
4.22 Educators’ specific family involvement practices mean scores (base and final)....	118
4.23 Educators’ beliefs about what is needed to improve African-American family involvement (base and final)	121
4.24 Control and Experimental Groups Weekly Average Math Grades	125

CHAPTER I

BACKGROUND OF STUDY

Introduction

Over the past four decades there has been an overwhelming consensus amongst educators, policymakers, and researchers that the quality of relations between schools and families play an integral role in student success (Henderson & Mapp, 2002; Mattingly, Prislin, McKenzie, Rodriguez, & Kayzar, 2002; Pomerantz, Moorman, & Litwack, 2007; Sheldon & Epstein, Yan & Lin, 2005). Parental involvement in students' education has been emphasized as a particularly important aspect of the school-family relationship, with significant implications for academic achievement. Furthermore, parental involvement in students' education has consistently been associated with affirmative outcomes in a multitude of areas such as improving achievement and behavior, decreasing absenteeism, and creating positive attitudes toward school (Chang, Park, Singh, & Sung, 2009; Cole-Henderson, 2000; Eccles & Harold, 1996; Epstein & Dauber, 1991; Griffith, 1998; Henderson, 1987; Jeynes, 2005; Mattingly, Prislin, McKenzie, Rodriguez, & Kayzar, 2002; Overstreet, Devine, Bevans, & Efreom, 2005; Taylor, Hinton, & Wilson, 1995; Topar, Keane, Shelton, & Calkins, 2010).

While there are very few arguments with the premises stated above, reservations regarding parental involvement causality still remain (Domina, 2005; Hara & Burke, 1998; Hyry-Dermith, 2012).

Family involvement might, in fact, cause student success to some degree, at the same time as family disengagement (lack of involvement) might be caused, to some degree, by low student achievement—that is, their child's not doing well in school might lead some parents/guardians to want to avoid involvement with her/his educational process due to feelings of frustration (with the child and/or the school), shame, etc. Such a two-way causal relationship would, of course, be

likely to entail research findings of a strong correlation between family involvement and student achievement (Hyry-Dermith, 2012).

There is some confusion around the meaning of parental involvement. Part of the confusion exists because parental involvement is considered a complex term that encompasses many behaviors and attitudes (Kohl, Lengua, & McMahon, 2000; Lightfoot, 2004). Involvement behaviors may include parental instruction, parental modeling, parental encouragement, and parental reinforcement of school related learning activities at home (Aligbe, 2014; Colson, 2010; Hoover-Dempsey & Sandler, 2005). Attitudinal components may include parental aspirations and expectations for their children's educational attainment (Abdul-Adil & Farmer, 2006; Young, Austin, & Growe, 2013). Another part of the confusion stems from the dominance in the literature of the overly narrow school-centric view of parental involvement, which consist of activities such as volunteering at school, communicating with teachers and other school personnel, attending school events- such as performances, parent-teacher organizations, parent-teacher conferences (Hill & Taylor, 2004).

There is a fragile connection between African-American families and schools (Reglin, 1993; Morris, 1999). A sense of profound alienation among many African-American parents could be the explanation for this phenomenon. Reglin (1993) suggests that the alienation of many African-American parents stem from familial problems or environmental conditions that take precedence over their children's education. Lack of trust in the education system, apathy, constraints and stressful life circumstances, problems with schedules, and transportation are said to significantly impact the alienation of African-American parents (see Harry, 1992; Brandon, Higgins, Pierce, Tandy, & Sileo, 2010). On the other hand, the alienation could be attributed to the dissonance

between African-American parents and schools (Bauch & Goldring, 1995; Brandon & Brown, 2009; Calabrese 1990; Irvine, 1990; Lightfoot, 1978). This alienation may exist due to cultural differences and experienced or perceived disrespect between parents and school personnel (Bloom, 2001; Brandon et al., 2009).

Research on African-American parental involvement in education has been described as negative or non-existent (Archer-Banks & Behar-Horenstein, 2008; Ogbu, 2003; Brandon, 2007; Williams & Sanchez, 2012). Smalley and Reyes-Blanes (2001) mentioned that one of society's greatest challenges is to proactively involve African-American parents in their children's education. African-American parents are assumed to lack concern about their children's education (Brandon, 2007; Brandon & Brown, 2009; Christianakis, 2011; Floyd, 1998; Thomas, 2003; Trotman, 2001). Some of the myths about African-American parents portray them as being passive and unresponsive to attempts made by the school to get them involved, ignorant about their children's cognitive and social development, and uninterested in education (Brandon & Brown, 2009; Lightfoot, 1978).

After the end of legalized school segregation, the connection between African-American parents and schools became fragile (Morris, 1999; Reglin, 1993). African-American parents began to lose schools that were pillars of strength for their communities, most importantly the African-American principals and teachers that educated their children (Morris, 1999). Before court-ordered desegregation, African-American parents were more comfortable with being involved in the schools (Edwards, 1993; Edwards, 1996). "The faces of teachers and administrators were familiar to them because, in many instances, the teachers and administrators were their friends, neighbors,

and church members” (Edwards, 1996, p.147). African-American parents knew they had a role in the school systems that shaped the minds of their children. Unfortunately, school desegregation presented specific barriers that caused African-American parental involvement to decline (Irvine, 1990).

One of the barriers was the integration of faculty, which prompted the removal of most African-American teachers (Edwards, 1993; Edwards, 1996). This faculty change replaced Black teachers with many White teachers who were unwilling to or uninterested in actively involving African-American parents. Some school personnel view African-American parents as non-supportive of their children’s education (Brandon et al, 2010; Edwards, 1993; Edwards, 1996; Thompson, 2003).

One of the realities associated with much of the discourse about students’ families in [metropolitan area public] schools—whose student bodies tend... to consist primarily of ... children of color, while faculties are composed by a significant majority of white, middle-class people—is that it tends to be focused primarily on perceived family weakness, i.e., the performance-enhancing factors with which school faculty perceive families as failing to provide their children, such as behavioral controls, accountability for homework, a vision of the future, ect. (Hyry-Dermith, 2012, p.9)

Furthermore, Hyry-Dermith suggests that educators tend to focus on perceived family deficits and neglect to identify family strengths to develop effective family-school partnerships. An important implication of developing effective family-school partnerships requires changing behaviors of both families and school personnel (Mattingly et al., 2002). Therefore, schools should move away from traditional school-based family involvement activities (Robinson & Harris, 2014) and begin to create ways families can function as resources for their children’s education (Jackson & Remillard, 2005).

Abdul-Adil and Farmer (2006), Reglin (1993) Schurr (1992), and Trotman (2001) have recommended strategies for educators to implement to increase African-American family involvement. Abdul-Adil and Farmer believe that African-American families may respond positively to involvement programs that promote parental empowerment, provide parental outreach, and identify indigenous resources as means to strengthen collaboration between home and school. These strategies are aimed at offering families training or skills, making services more accessible, and using existing supports within the family and community to encouragement more involvement in their children's education.

Reglin's strategies centers on humility and visibility. He recommends that educators should inform African-American parents that the school wants and needs their assistance to enhance student motivation and achievement. Also, educators should be visible within the African-American community. Educators can become visible within the African-American community by visiting local churches and community centers. Furthermore, educators can ask both ministerial and community staff to help the school communicate the importance of parental involvement.

Reglin believes that implementing these strategies would bridge the gap that exists between educators and African-American parents. These strategies are thought to solicit family participation in a manner that provides families with feeling as valuable partners in their children's education. In addition, partnerships that involve schools, families, and community groups may result in sharing and maximizing resources to further support student learning.

Schurr strategies are based on the seven parental involvement program elements identified by the Southwest Educational Development Laboratory (see Williams &

Chavkin, 1989). These strategies are thought to strengthen home-school collaboration by providing a useful framework for supporting student learning both at home and at school.

Trotman offers the following strategies: (a) urging parents or guardians to remain or become active in their child's educational process, (b) developing a case history of the family [of the students who appear to be at-risk] (see Kunjufu, 1989) in an effort to determine what is hindering their involvement, (c) establishing a rapport with parents, (d) providing parents with more authority, and (e) asking parents about their interest in the school. Trotman considers these strategies as ways to increase African American involvement through invitation and collaboration. These strategies are thought to recognize African-American families as part of the teaching process.

The strategies recommended by Abdul-Adil and Farmer, Reglin, Schurr, and Trotman are to be initiated and conducted by school personnel only. In essence, the use of these strategies may suggest that African American families are "empty vessels who cannot help their children until filled with outside knowledge" (Lightfoot, 2004, p. 93). Hyry-Dermith suggests that schools should use strengths-based approaches to identify how minority families help their children succeed in school.

Sustaining meaningful family involvement of African-Americans has been considered one of the most difficult problems in education (Irvine, 1990), yet there is a dearth of knowledge that exists regarding which strategies would promote and support student learning and development. Research should be conducted on which strategies offered by Abdul-Adil and Farmer (2006), Reglin (1993), Schurr (1992), and Trotman (2001) allow schools and districts to learn about what African-American parents do, "and perhaps what they struggle with , to provide their children with a strong family life and

support their children's learning" (Hyry-Dermith, 2012). Hyry-Dermith's Peck Family Strengths Study suggests the need to explore the attributes and practices of the families whose children attend schools. Hyry-Dermith states:

the starting points for family engagement theory, research and practice currently tend, most often, to be either what schools want to accomplish (such as getting parents to attend certain sorts of activities, or to read with their children every day) or what theorists and researchers want to know about the relationships between parent practices and school success (or lack of it), rather than what parents and guardians actually think, and what the families schools work with actually do, in relation to their children's learning. (p. 210)

Research focused on family strengths and attributes could contribute to developing family involvement programs for African-Americans and potential for other families of colors. In addition, this research could serve as the basis for strengthening faculty and staff capacity to effectively engage students' families in learning activities that extend beyond schools.

African-Americans have made remarkable progress a generation after the civil rights movement (D'Souza, 1995). However, it is difficult to ignore their encounters with oppression in this society and how the concept of race continues to play a major role in the lives of many African-Americans (Martin, 2006). "Although race has dubious value as a scientific classification system, it has had real consequences for the life experiences and life opportunities of African-Americans in the United States" (Martin, 2006). Therefore, it is important to be mindful of how the construct of race permeates areas of African-Americans in the context of parental involvement and student learning and development (Sellers, Smith, Shelton, Rowley, & Chavous, 1998).

Discussions regarding race affecting both parental involvement and student learning and development are capable of rousing emotions, as is often the situation when

the issue of race enters any dialogue. Yet, there is a need that demands the stirring of emotions (Martin, 2006), given the disproportionately low academic achievement of African-American students (Johnson, 1989; Tate, 1997; Campbell, Hombo, & Mazzeo, 2000). The need exists to develop African-American parental involvement interventions or solutions that are in the best interest of students (Delpit, 1988, 1995) that maintains political neutrality where all parents are recognized as being equal contributors to their children's educational process (Anhalt, Alexsaht-Snider, & Civil, 2002; Civil, Andrade, & Anhalt, 2000; Civil, Bernier, & Quintos, 2003; Civil, Quintos, Bernier, & Bratton, 2004; Gutstein, 2004; Martin, 2002, 2003, 2004; Peressini, 1997, 1998).

Problem Statement

Although there is consensus amongst educators, policymakers, and researchers about the value of family involvement for both school effectiveness and student achievement, schools continue to offer family involvement activities that reach narrow audiences and are usually limited to school-based involvement (Gonzalez-DeHass & Willems, 2003). The conventional ways in which schools promote family involvement (e.g., attending PTO meetings, checking in with teachers, and volunteering at events) are not likely to acknowledge strengths, build rapport, develop efficacy and promote reciprocal engagement with historically disenfranchised African-American parents (Abdul-Adil & Farmer, 2006; Slaughter & Kuehne, 1988). Further, educators' perceptions of African-American parents being deficits to their children's education also contribute to the inability to implement effective involvement programs (Epstein & Dauber, 1991; Hartas, 2008; Hyry-Dermith, 2012). While several writers have suggested promising strategies that might foster meaningful collaboration between African-

American family members and schools to promote and support student learning and development, their suggested strategies have not been the subject of empirical research studies. Accordingly, the problem is to move from having various sets of untested general strategies to having a coherent set of field-tested, richly elaborated strategies for promoting the kind of collaboration between schools and African-American families that is likely to lead to improved student learning and development.

Purpose of the Study

The purpose of this study was to identify and evaluate specific strategies that will encourage school personnel and African-American family members to collaborate in a spirit of mutual respect to promote and support student learning and development. This goal will be accomplished by (1) convening a group of parents and attempting to mobilize them, and (2) working with teachers, administrators, or counselors to (a) encourage some of them to rethink their assumption that African-American families contribute little to their children's education and value education only if they participate in school-based involvement activities; and (b) encourage school staff to adapt and engage in particular kinds of outreach and collaboration suggested by Abdul-Adil and Farmer, Reglin, Schurr, and Trotman. The first aim of this study was to determine which strategies are identified by the participants as being effective or non-effective. The second aim was to determine if there are any similarities or differences with respect to how family members and school personnel think about or assess specific strategies. The third aim was to attempt to promote the implementation of selected strategies, document the process, and assess the results.

The research questions that guide this study are:

1. What strategies might family members and school personnel select collectively to promote and support student learning and development? Are there any significant differences between responses provided by family members and school personnel?
2. What impact do the selected strategies have on family members and school personnel?
3. Which strategies are associated with improving math achievement? How long will it take to notice improvement, if at all, in student learning and performance?"

Significance of the Study

In spite of the growth of research on family involvement overall, little is known about the efficacy of specific strategies offered by Abdul-Adil and Farmer (2006), Reglin (1993), Schurr (1992) and Trotman (2001) for achieving improved outcomes in academic achievement. The significance of this study is that it seeks to address an under researched area: namely, to find effective ways to induce schools and African-American families to collaborate in a spirit of mutual respect to promote student learning and development.

The researcher convened a group of African-Americans parent and mobilized them, and worked with teachers, administrators, or counselors to encourage them to engage in particular kinds of outreach suggested by Abdul-Adil and Farmer, Reglin, Schurr, and Trotman with the goal of encouraging all involved parties to collaborate in a spirit of mutual respect to promote student learning and development. The researcher believes that this study would make a contribution to the field of education. Ultimately, policies could be developed to promote the kind of collaboration between schools and African-American families that can lead to increasing student learning and development, and stakeholders would have guidance regarding the steps needed to implement them.

Assumptions

The overall assumption is that all participants in this study who agree to participate provided truthful, objective and accurate information regarding their experiences with various levels of parental involvement and mathematics achievement.

Definition of Terms

The following terms are used throughout this paper and require specific definitions:

Black/African-American: The U.S. Census Bureau (2011) defines Black or African-American as “a person having origins in any of the Black racial groups of Africa. The Black racial category includes people who [mark] the Black, African Am., or Negro checkbox. It also includes respondents who [report] entries such as African American; Sub-Saharan African entries, Kenyan and Nigerian; and Afro-Caribbean entries, such as Haitian and Jamaican.” The terms Black and African-American will be used interchangeably.

Parent: For the purpose of this study, a parent is an individual who acts as the primary caregiver for a student.

Parental Involvement: Parental involvement is a combination of home and school activities that are performed by parents or guardians to support the educational process of their children.

Perception: An individual’s meaning of a particular issues or topic. For the purpose of this study, perception will refer to the participants’ understandings of parental involvement as it relates to student achievement.

Organization of Study

The rationale for this research, as well as the research questions, are provided in Chapter 1. Chapter 2 is a literature review of pertinent parental involvement topics as it relates to African-Americans, principals and school personnel, and mathematics achievement. The first part of Chapter 2 is divided into four sections: (a) Definitions and Descriptions of Parental Involvement, (b) Findings of Parental Involvement Research, (c) Parental Involvement Models, and (d) Obstacles for Parental Involvement. The second part analyzes the historical parental involvement practices of African-Americans. The third part examines literature on the principal's role in parental involvement, principal parent response strategies and parental involvement implementation strategies. The fourth part of specific African-American family involvement strategies. And the fifth part illustrates literature regarding the effects parental involvement might have on mathematics achievement. Chapter 3 outlines the methods and procedures used in this study. A restatement of the research questions are provided in addition to a brief recap of parental involvement models. Chapter 4 presents an analysis of the results. Lastly, Chapter 5 discusses the findings and provides future research recommendations.

CHAPTER II

CONCEPTUALIZATION AND CONTEXTUALIZATION OF FAMILY INVOLVEMENT

Who is responsible for a child's education? Historically, parents and perhaps society as a whole believe a child's education should be under the purview of the child's parents. Educational experiences provided by parents included, and still includes, activities related to inculcating discipline, basic skills, work skills, ethics and values (Hiatt-Michael, 2001). Therefore, educational activities could be considered the responsibility of the child's family, rather than a public institution (Berger, 1981; Hiatt-Michael, 2001).

Parental involvement in American education has fluctuated over the centuries in both the levels and types, from the seventeenth century to present (Hiatt, 1994; Hiatt-Michael, 2001; Watson, Sanders-Lawson, & McNeal, 2012). In the early years, parents were primarily responsible for a child's education, with limited involvement from a structured educational or governmental entity. In 1642, Massachusetts colony passed a law requiring all parents to provide their children with education in reading, religion, and trade.

However, families had large families to assist the agrarian culture and their primary family focus was on economic benefit of farm labor. Thus, town leaders noted that some parents were not teaching their children to read and acquire religious knowledge. Therefore, in 1647, this colony pressed for a law which mandated that all towns of 50 families or more hire a teacher who could be paid out of local funds. Towns with 100 or more households had to build and support a grammar school. This act, commonly referred to as Old Deluder Satan Act, marks the beginning of public schools in America. (Hiatt-Michael, 2008)

Towards the mid-1800's, children were becoming an important source of labor in industry (Whaples, 2005), and many low-skilled and uneducated parents required their children to work to earn money instead of attending school (Hiatt, 1994).

The continuation of child labor in industry in the late nineteenth and early twentieth centuries, however, sparked controversy. Much of this ire was directed at employers, especially in industries where supervisors bullied children to work harder and assigned them to dangerous, exhausting or degrading jobs. In addition, working-class parents were accused of greedily not caring about the long-term well-being of their children. Requiring them to go to work denied them educational opportunities... (Whaples, 2005, para. 7)

The formalization of public schools began to increase as a result of some parents being incapable of properly educate their children to improve society (Hiatt-Michael, 2001).

Although parental involvement policy in American education can be traced to 1642, the origins of significant parental involvement policy stems from programs that were implemented in the 1960's (Bakker & Denessen, 2007). "The first federally funded legislation, namely Project Head Start in 1964 for disadvantaged children in the inner cities and the Elementary and Secondary Education Act of 1965 required that parents serve on school advisory boards and participate in classroom activities" (see Hiatt-Michael, 2008). Then the Education of the Handicapped Children Act (1975) required parents to be active partners in determining their child's educational program. "Each handicapped student was to have an individually developed program. This program was to be developed by teacher, parent, child, and specialists. Parents were mandated to initiate the child's entrance and exit from the program" (Hiatt-Michael, 2008, p. 54).

Parents are the primary teachers of children. From birth to the age of five, children's education occurs in the four domains of development-- physical, cognitive, personality, and socio-cultural. In the physical domain, children learn to develop their

motor skills. In the cognitive domain, they acquire skills in perception, reasoning, problem solving, and language. Self-identity is acquired in the personality domain. The socio-cultural domain affects socialization and enculturation (Craig & Baucum, 2002); in the socio-cultural domain, children are taught norms or mores, which constitutes an informal education. The experiences that children encounter in each of these domains determine their self-confidence, discipline, and social skills, which should prepare them for school (Craig & Baucum, 2002). Thus, parental involvement in education is a factor long before children begin their formal schooling because parents have contributed approximately 43,800 hours of training towards their children's development and growth (Cordry & Wilson, 2004).

Once children enter the education system, other adults become influential in their lives, exercising direct and indirect influences on them. Higher-level administrators, such as school board members and central office administrators typically have indirect influence because they usually do not have personal contact with students (Chavkin & Williams, 1987). Their influence stems from the development and implementation of policies, procedures, and practices for the district. In contrast, school administrators, faculty, and staff have direct influences on children through their contact and interactions with students. Teachers are considered the most influential adults in school; their direct contact and personal interactions are meant to influence the cognitive and sociocultural development of children.

Principals supervise the curriculum, pedagogy, daily operations, and physical plant. Therefore, principals are ultimately responsible for ensuring that the schools provide children with a quality education within a safe environment, and for establishing

a smooth and secure liaison between the home and school. Moreover, principals have central roles in creating an environment that is favorable to parental involvement (Wanat, 1994).

Although several adults exercise a direct or indirect influence on the education of children, parents are the most important adults and play a crucial role in the education of their children. For this reason, parental involvement in education has received considerable attention from researchers, practitioners, and policymakers (Christenson, Rounds, & Franklin, 1992). "[D]ecades of research on family environments show that children have an advantage in school when their parents continuously support and encourage their school activities" (Epstein, 1987, p. 6). For instance, parent educational aspirations and parental support have a positive effect on student achievement (Singh et al., 1995).

Parental involvement not only benefits parents and children; schools benefit by it as well. According to Epstein (1987), parental involvement was considered one of the main components of effective schools. Tracy (1995) found that schools with high levels of parental involvement tend to be better than schools with less involvement from parents. Schools that offer various types of parental involvement into their programs

help parents build home conditions for learning, understand communications from the schools, become productive volunteers at school, share responsibilities in their children's education in learning activities related to the curriculum at home, and include parents' voices in decisions that affect the school and their children. (Cochran & Dean, 1991, pp. 291-92)

Meaningful interactions between parents and schools create a win-win situation for students, parents, and schools (Smalley & Reyes-Blanes, 2001).

The relationships that schools build with parents will be determined by the schools' view of the parents. Often, the role of parents in the formal education of their children is unacknowledged (Chavkin & Williams, 1987). "There must be a profound recognition that parents are the first teachers, and that education begins before formal schooling" (Lightfoot, 1980). Parents should be recognized as partners with shared interest for children's education.

Principals are paramount to the success of parental involvement. Principals can influence the degree and effectiveness of parental involvement at the school building level (Goldring, 1986; Goldring & Shapira, 1995). Davies (1987) suggests that principals encourage meaningful parental involvement by developing strategies that are attuned to the constituents being sought. When African-American parents are the constituents being sought, principals should understand the parental involvement strategies that work for African-Americans. It would be helpful for principals to understand the history of the education of African-Americans. Understanding this history will enable principals to lead schools that will eliminate the dissonance that exists between African-American parents and schools.

Principals can help reverse the alienation of African-American parents (Reglin, 1993). First, principals can create an atmosphere where [African-American] parents feel welcomed (Wanat, 1994) as valuable partners in the education of their children. In addition to their leadership roles, principals can communicate to African-American parents that their children are important and schools will do everything in their power to provide them with a high quality education. In most cases, African-American feel

alienated because they do not feel invited to participate (Edwards, 1993) or they feel their children are not valued by schools (Lightfoot, 1978).

Definitions and Descriptions of Parental Involvement

There is some confusion around the meaning of parental involvement. Part of the confusion exists because parental involvement is considered a complex term that encompasses many behaviors and attitudes (Farkas, Johnson, & Duffet, 1999; Jowett & Baginsky, 1988; Khan, 1996; Kohl, Lengua, & McMahon, 2000; Moles, 1993; Olmscheid, 1999; Wolfendale, 1983). Another element of confusion “is the use of different definitions of parental involvement by different researchers” (Keith et al., 1998 p. 338). Seginer (1983) suggests that research results will vary according to the meaning of parental involvement (see Singh, Bickley, & Trivette, 1995).

Understanding the definitions and descriptions of parental involvement could provide insight into how this term takes on different meanings depending on context. Therefore, it is strongly suggested that researchers provide a definition of parental involvement in their studies to distinguish the category being used to define the term (Kohl et al. 2000). Parental involvement has been used to denote parent expectations, communication between the home and school, parent participation at home, parent participation in school, decision making, or advocacy (Christenson, Rounds, and Franklin, 1992; Epstein, 1987, 1995; Keith et al., 1998). Essentially, parental involvement can mean parental activities at school (Stevenson & Baker, 1987; Epstein, 1995), parental behaviors and practices (Chavkin & Williams, 1985; de Carvalho, 2000; Grolnick & Slowiaczek, 1994; Putnam, 1996; Schneider & Coleman, 1993), and home-school collaboration (Epstein, 1987a, 1987b, 1995).

Parent activities include volunteering at school events, chaperoning field trips, or joining the Parent-Teacher Organization (PTO). Parental behaviors and practices include parent aspirations for children, parent communication with children about school, parent communication with teachers, parent participation in school activities, and parental rules that are education related. Home-school collaboration focuses on developing a positive relationship between home and school that promotes a student's academic success and social development.

Family involvement is not a fixed event but a dynamic and ever-changing series of interactions that vary depending on the context in which they occur, the disciplines from which the collaborative team members are drawn, the resources parents bring to the interactions, and the particular needs of the child and the family (Xu & Filler, p. 54).

Inconsistencies with Meaning

The lack of coherent meaning for parental involvement could be problematic for practitioners. Vandergrift and Greene (1992) evaluated parental involvement programs of schools participating in the Arizona At-Risk Pilot Project. The authors found that parental involvement was not consistently defined. In addition, the participating schools used different strategies to increase parental involvement. Some of the strategies used were as follows: providing assistance to parents (e.g., clothing, counseling, support groups), inviting parents to attend workshops, communicating through newsletters, and establishing volunteer programs and advisory committees. After one year of these initiatives, teachers reported that parental involvement did not improve because parents did not participate in many of the programs that were offered at the schools.

Many educators fell victim to the commonly held belief that counting heads as parents walk through the school doors would be enough to claim success. Parental involvement in these schools has meant little more than classroom visits, bringing refreshments to class parties, or selling items during a school fundraising event. Although the intentions were properly placed, those activities fell short of

producing meaningful outcomes or of realistically assessing parents' interest in their children's education. (Hampton, Mumford, & Bond, 1998, p. 411)

The Vandergrift and Greene evaluation of the Arizona At-Risk Pilot Project establishes the need for a common definition of parental involvement. Without consensus, parents and schools may not be in agreement with what constitutes parental involvement and they misinterpret activities that one group believes will have a positive effect on students.

The Findings of Parental Involvement research

There are empirical studies that provide evidence of the positive effect of parental involvement on student achievement (Christenson, Rounds, & Gorney, 1992). The evidence in the literature is conflicting. Some research on parental involvement suggests that children have an advantage in school when their parents support and encourage school activities (Epstein 1987b). A review of studies, reports, and analyses conducted by Henderson and Berla (1994) implied that parental involvement had a positive effect on both student achievement and school climate.

On the other hand, there are studies that imply that parental involvement has little or no effect on student outcomes (Fan & Chen, 1995). In a study aimed to assess whether parental involvement affects children's academic achievement, Ford (1989) reports that there were no significant differences in achievement (i.e., reading and mathematics skills) between students whose parents were involved from that of students whose parents were not involved. In a study examining school district report cards from Nevada high schools, parental involvement was minimally linked to academic achievement (Bobbett, 1995).

It seems that parental involvement may differ across racial-ethnic groups (Catsambis & Garland, 1997). Desimone (1999) points out that researchers do not have a clear understanding of the impact of parental involvement.

In a comparison of findings across ethnic groups, Lynch and Stein (1987) report that white parents were more involved in their children's special education process than Hispanic-American and African-American parents were. Geenen, Powers, and Lopez-Vasquez (2001) found European-American parents reported more involvement in school meetings than did African-American, Hispanic-American, and Native-American parents. In the Lynch and Stein and Geenen, Powers, and Lopez-Vasquez studies, African-American parents were described as having the lowest levels of involvement in school meetings.

However, there are studies reporting African-American parents as having higher levels of involvement than other ethnic groups. Bauch (1993) examined parental involvement of African-American, Hispanic, and White parents whose children were enrolled in one of the five participating inner-city Catholic high schools from Los Angeles, New York, St. Louis, Philadelphia, and Washington, D.C. Findings from this study report that African-Americans had the highest proportion of involvement in participation, communication, and decision-making. Sui-Chu and Willms (1996) conducted an analysis of parental involvement data gathered from the National Educational Longitudinal Study of 1988 (NELS-88). The authors found that African-American parents tended to have higher levels of involvement than their White counterparts in home discussions, school communication and home supervision, and demonstrated close to similar levels of involvement in school participation (e.g.,

volunteering at school, participating in PTO). Catsambis and Garland (1997) conducted a follow-up with the same families in 1992 to compare patterns of parental involvement between students' eighth and twelfth grades. The authors discovered that African-American parents exhibited higher levels of supervision of daily activities throughout middle school and high school than White and Hispanic parents, even though the school communication did not seem to increase significantly over time.

Studies that focus on the relationship between parental involvement and student outcomes do not explain why parents become involved in their children's education. Therefore, some researchers began to identify variables that could provide insight as to why parents become involved (Desimone, 1999). Socioeconomic status, ethnicity, education, and student grade level were identified as variables that influenced the amount and forms of parental involvement (Geenen, Powers, & Lopez-Vasquez, 2001; Gettinger & Guetschow, 1998, Lynch & Stein, 1987). Although these variables could suggest the quantity and manner of parental involvement, it is not clear, how parents select specific types of involvement and why (Gettinger & Guetschow, 1998; Kohl, Lengua, & McMahon, 2000).

Parental Involvement Models

There are several ways parents can become involved in the educational process of their children. Parental involvement models developed by Eccles and Harold (1996), Grolnick and Slowiaczek (1994), and Schickedanz (1977) illustrate how parents become involved. Schickedanz (1977) defined three levels of parental involvement: (a) teachers are experts and administrators are decision-makers, (b) schools are selective with parental involvement activities, and (c) parents are involved in decision-making process. In the

first level of Schickedanz's model, schools provided parents with secondhand information (e.g., newsletters, meetings, parent conferences) or involving them in passive activities (e.g., supervising snack time, donating unwanted home supplies). Ultimately, the first level kept parents out of the way. In the second level, parents are present in the school as either observers or volunteers. Parents are able to receive firsthand information about their children's school experience. Parents help with enrichment opportunities or routine tasks; however, teachers are still viewed as the experts. At the third level, the school provides activities that encourage parents to teach their children and to be involved in the educational policy decision-making process.

Grolnick and Slowiaczek (1994) described (a) behavioral (e.g., participating in activities at school and at home), (b) personal (e.g., parent caring about their children's experience at school), and (c) cognitive-intellectual (e.g., providing children with intellectual activities) as the three dimensions of parental involvement. This model consists of broad dimensions that combine specific types of involvement. For example, in the behavior domain parent activities at school were combined with parent activities at home, instead of separating activities in these environments (Kohl et al., 2000).

Eccles and her colleagues (see, Eccles, Wigfield, Harold, & Blumenfeld, 1993; Eccles & Harold, 1993) identified five dimensions of parental involvement based on the Michigan Childhood and Beyond Study. These dimensions are: (a) monitoring their children's school work in response to teacher requests, (b) volunteering by participating in volunteer activities at school, (c) involvement in the daily activities, especially in the areas of homework completion and test preparation, (d) contacting the school for progress updates, and (e) contacting the school to find out how to provide extra help. The

monitoring and involvement dimensions are individual dimensions that focus on helping children with their academic work. Both monitoring and involvement could be considered one construct. Contacting the school about progress or extra help could be combined as one item. Thus, this model could be condensed to three dimensions instead of five (Kohl et al., 2000).

The models mentioned above differ in the degree or ways in which parents become involved. The levels of involvement Schickedanz presents are broad, and two of the three levels focus on teachers and administrators as being the experts. This model does not seem to encourage parents being partners with schools. The dimensions in the Grolnick and Slowiaczek (1994) are broad, and encompass more parent behaviors than does the Schickedanz's model. However, Grolnick and Slowiaczek's model has dimensions that overlap which could become problematic in discerning which parental involvement practices or behaviors affect student learning. The Eccles and Harold's (1996) model has several dimensions in which parents demonstrate similar behaviors.

Typology of Parental Involvement

Epstein's (1987a, 1987b, 1995) typology of parental involvement outlines various activities that involved parents in their children's education (e.g., Casanova, 1996; Fantuzzo, Tighe, & Childs, 2000; Gamer & McCarthy-Mastaby, 1994). In addition, her typology has been cited in literature as a means for schools to strengthen home-school partnerships with parents (e.g., Christenson, Rounds, & Gorney, 1992; Cochran & Dean, 1991; Epstein & Sanders, 2000).

Beginnings of Epstein's Typology

Epstein (1987a) conducted a study of 3,700 elementary teachers and principals in 600 schools throughout sixteen school districts in Maryland. From the original sample, Epstein and colleagues conducted eighty-two in-depth interviews with teachers and surveyed over 1,200 parents. From the data, Epstein and colleagues identified four types of parental involvement: (a) basic obligation of parents, (b) basic obligations of schools, (c) parent involvement at schools, and (d) parent involvement in learning activities at home. Expanding on the previous study, Epstein (1987b/1995) identified (e) governance and advocacy, and (f) collaborating with community agencies as two additional types of parental involvement.

Description of Typology

The basic obligations of parents include the five necessities: food, clothing shelter, health, and security. Along with these necessities, parents teach their children basic cognitive and social skills, which prepare children for school and help to foster healthy development throughout childhood and adolescence. Overall, parents should provide their children with a positive home environment that encourages learning.

The basic obligation of schools, a second type of involvement that is most common to all schools, includes communications from the school to home (Epstein, 1987; Johnson, 1999, Kirschenbaum, 1999). Memos, telephone calls, report cards, weekly or monthly progress reports, and parent-teacher conferences are traditional methods of communication between the home and school. These forms of communication usually provide parents with information about school policies, programs, courses, and activities within schools. In some cases, parents may not receive

communication from the school (e.g., letters, report cards, or phone calls are not received by parents). Therefore, e-mail has become a popular tool to assist both home and school with a rapid and paper-free form of communication.

Parent involvement at school or school-sponsored events is the third type of involvement. Parents may serve as volunteers to assist teachers and administrators, chaperone class trips, conduct career awareness programs, help in the school library, and assist in the cafeteria. In addition, parents can serve as an audience for student performances, assemblies, or sports competitions. These practices will afford parents opportunities to be involved in some of the daily practices of school.

The fourth type is parent involvement in learning activities at home. This consists of parents providing children with learning activities that build general skills and behavior, along with reviewing class work. Activities at home help students with completing homework and other curriculum-related activities, as well as developing positive study habits, critical-thinking, conversational skills, responsibility, and social and personal skills.

A fifth type is parent involvement in governance and advocacy. In governance, parents participate in organizations, such as Parent-Teacher Association (PTA), Parent-Teacher organization (PTO), Parent-Teacher-Student Association (PTSA), parent advisory council, Chapter 1 programs, and other committees or groups at the school, district, or state level. These decision-making bodies are part of the official governing structure. Therefore, these groups become involved in developing school improvement plans; formulating or revising school policies, programs, or curricula; and assisting in selecting new administrators, teachers, or staff. In advocacy, which refers to parents as

activists, parents are involved with independent advocacy groups, unions, or clearinghouses.

A sixth type of parental involvement takes place when parents collaborate with community agencies. Some suggested practices of this type of involvement include students and parents participating in health and wellness programs, tutorial and enrichment programs, collaborative partnerships (e.g., civic, college, cultural, business organization), and community service. The focus here is to use resources and services from the community to support student learning and development.

Constructs of Parental Involvement

Kohl et al. (2000) characterized parental involvement as a complex construct encompassing many behaviors and attitudes of parents. For this reason, Hoover-Dempsey and Sandler (1995) developed a model of the parental involvement process that attempts to identify how parents decide to become involved in their children's education. This model consists of five levels of constructs. The levels are as follows: (1) parent's involvement decision, (2) choice of involvement forms, (3) mechanisms through which parental involvement influences student outcomes, (4) tempering and mediating variables, and (5) student outcomes.

Involvement Decisions (Level I)

Parental involvement decisions are influenced by parental perceptions and by the range of opportunities presented by schools. Parents become involved because of: (a) their personal construction of the parental role, (b) their personal sense of efficacy in helping children succeed in school, and (c) their reaction to the opportunities and

demands presented by both their children and their children's schools (Hoover-Dempsey & Sandler, 1995, p. 313).

Parents construct their roles in their children's education. In some cases, their roles are constructed by recollections of their own parents' parental involvement in education. Observing the activities of relatives and friends also contributes to a parent's role construction.

Parents become involved when they have a personal sense of efficacy. Parents can develop a sense of efficacy from direct experience, vicarious experience, verbal persuasion, and emotional arousal. Parents with a personal sense of efficacy believe that they have or can obtain the knowledge and skills necessary to help their children succeed in school.

Choice of Involvement (Level II)

Parents select types of involvement (e.g., Epstein, 1987b, 1995) based on their skills and knowledge, employment, family demands, and specific invitations present by their children or schools. Hoover-Dempsey and Sandler believe that parents who feel knowledgeable about a specific subject are more likely to help their children with that subject rather than an unfamiliar subject. In addition, parents who feel comfortable around teachers and students are more likely to volunteer to chaperone activities or support other school activities. Parents who are not comfortable in school settings are likely to choose to be involved at home.

The mix of employment and family demands will determine if parents have enough time and energy to carry out specific types of involvement. For instance, employment demands (e.g., work schedule) and family demands (e.g., child care, elder

care, another child's activity) determine whether parents select types of involvement that are conducted at home, school, or both.

Specific invitations, demands, and opportunities presented by children and schools influence how parents become involved. Children who need assistance with homework and long-term projects influence their parents to become involved in monitoring and reviewing the work. In addition, children who ask parents to chaperone or provide transportation for an event encourage parents to become involved. Teachers who assign homework that seeks parent and child interaction will encourage involvement at home. Teachers can also influence parental involvement by communicating with parents on a frequent basis (e.g., phone calls, memos).

Mechanisms that Influence Outcomes (Level III)

At level three, parents become involved in activities that will have a positive influence on children's educational outcomes. Modeling, reinforcing, and direct instructing are specific parental involvement mechanisms that effect children's educational outcomes. Modeling school related behaviors and attitudes could influence children's educational outcomes because parents demonstrate the importance of schooling by expressing interest and devoting time. Parents can show the importance in proximal ways by asking questions about the day, communicating with teachers, and reviewing homework. Attending school events and volunteering at the school are other ways parents express interest in schooling. The latter examples are distally related to educational outcomes.

Reinforcing daily their children's education could provide their children with interest, attention, praise, and rewards related to behaviors associated with school

success. This is important because children are encouraged to exhibit appropriate behaviors of student success. Hoover-Dempsey and Sandler suggest that other variables are involved in determining children's educational outcome (e.g., interest in subject, teacher's teaching ability). Therefore, reinforcing alone is not a sole condition of student success.

Parents can influence educational outcomes by providing their children with direct instruction through closed-ended or opened-ended formats. Closed-ended instruction would consist of parents encouraging their children to know the correct answers or the right way of answering a problem. This form tends to produce students that are factual learners. However, opened-ended instruction could produce students that have higher levels of cognitive thinking and a factual knowledge base. Parents who use opened-ended instruction encourage their children to plan, anticipate, and explain.

Tempering and Mediating Variables (Level IV)

The impact of parental involvement on children's educational outcomes is tempered or mediated by two variables: (a) the parent's choice and use of developmentally appropriate involvement activities and strategies, and (b) the fit between involvement activities and the school's expectations for parental involvement. The developmental appropriateness of selected parental activities and strategies is important because children should perceive parental involvement as positive or neutral in order for those activities and strategies to have an opportunity to influence educational outcomes. If children perceive activities and strategies as being inappropriate, the related behaviors of parents' are resented and the facilitation of student growth may not occur. The authors stress that parental involvement should not be driven by whether children feel good and

agree with the involvement, however the parental actions should feel appropriate to children.

Student Outcomes (Level V)

Hoover-Dempsey and Sandler (1995/1997) suggest that student outcome (e.g., skills and knowledge or sense of efficacy for succeeding in school) results from parental involvement behaviors exhibited from levels one through four. Modeling, reinforcing, and instructing by parents are primary influences of student outcomes. Modeling school relevant behaviors, which range from helping with homework to volunteering in the school to organizing extra-curricular activities, are ways parents convey the importance of devoting time and attention to school activities. Reinforcing school success and success related behaviors (e.g., completing classroom assignment and homework, studying well for exams, asking appropriate questions) will likely increase the student's sense of school efficacy. When parents are instructing to place value on asking questions, reading directions carefully, and completing assignments, children are more likely to demonstrate behaviors that are appreciated by teachers.

Parental involvement begins when parents become involved in their children's education primarily as a function of: (a) their role construction, (b) their sense of efficacy for helping their children succeed in school, and (c) their reaction to the opportunities and demands presented by both their children and schools. Then parents select specific involvement types based on their educational background, employment and family demands, and specific invitations. Subsequently, they employ mechanisms of modeling, reinforcing, and instructing to influence student outcomes.

Obstacles for Parental Involvement

Several factors or barriers prevent parental involvement from operating efficiently. These include parents' educational level, past school experiences, economics, family structure, and home-school communication. First, the parents' education level and past school experiences play a crucial role in whether or not parents become involved. Parents who did not have positive school experience tend to be intimidated by their child's teachers and administrators. Also, parents with limited education tend to feel that their academic skills are inadequate. Therefore, parents faced with these issues are less likely to become involved.

Second, economics can serve as a barrier to parental involvement. Literature has noted that there is a correlation between economics, family structure, and parental involvement (Gamer & McCarthy-Mastaby, 1994). In many inner-city schools, most students come from single parent families. Thus, some parents may not have the resources necessary to become involved.

Communication barriers present difficulties for schools and parents. This happens when letters, notices, or other types of communications are not received at home or not returned to the school. Through the years, students have been known to misplace or forget to give letters to their parents. Ultimately, parents are not aware of school functions or the progress of their children. However, some communications reach the home, but families with linguistic differences (e.g., limited English proficiency, illiterate) are unable to interpret the messages.

The prior description of parental involvement barriers focused on parents, but the presence or absence of key teacher and administrator behaviors can constitute barriers.

Lewis (1992) cites Epstein's comment that disadvantaged schools are less likely to recruit and train parents to work as volunteers, offer parent workshops, communicate frequently with parents on how to help their children with homework and skills, and have active PTA (p. 10). Furthermore, Epstein explained that teachers and principals in disadvantaged schools do not understand the dynamics of their students' families. With this lack of understanding, some teachers that differ culturally from their students assume that parents are disinterested in becoming involved with the school (Lewis, 1992). In essence, principals and teachers do not provide an atmosphere or attitude that truly supports parental involvement.

African-Americans and Education

Since slavery, African-Americans have sought educational opportunities for themselves and their children even though slaves were forbidden from receiving a formal education (Vergon, 1988; Woodson, 1919). Many African-American parents understood education as a way out of slavery (Lightfoot, 1978).

Historically, slaves used education as the primary strategy for liberation. Because [W]hites passed laws in some states forbidding the education of slaves, [B]lacks risked their lives in order to learn how to read and write. (Irvine, 1990, p. 106)

Many enslaved African-Americans sacrificed their lives because an education would be an essential element for the advancement of "their children, themselves, and the race, as well as the general community" (Billingsley, 1993). Although the conditions were discouraging, the quest for education was not hopeless (Woodson, 1919).

African-American Parental Involvement

Prior to the Civil War, almost none of the African-American children in the southern states attended public schools (Vergon, 1988) because African-Americans were

prohibited from receiving a public education by law (Woodson, 1919). Consequently, many African-Americans, both slaves and free, migrated to northern states between 1815 and 1850 (Woodson, 1919). Nevertheless, opposition to educating African-Americans did not only exist in the South (Irons, 2002). Approximately two percent of all African-American children who were enrolled in school during this period were “freed slaves attending ‘Negro schools’ scattered across the North” (Vergon, 1988, p. 26).

There is very little in the literature that describes parental involvement of African-Americans after their arrival to the United States through the early 1800’s. However, in his study of the history of the education of African-Americans prior to 1861, Woodson (1919) documents how many African-American parents advocated for their children to be educated at public expense since they were taxed to support public education. Clearly, African-American parental involvement was demonstrated when parents served as advocates for their children.

One of the earliest recorded cases of an African-American parent advocating for his child to receive equality within a public school system took place in Boston, Massachusetts. In the case of Roberts v. City of Boston (1849), the plaintiff, Mr. Benjamin F. Roberts, sued the city of Boston, under a state statute. That state statute said, “which provides that any child, unlawfully excluded from public school instruction in this commonwealth, shall recover damages therefor against the city or town by which such public instruction is supported” (see Levesque, 1979; Levy & Jones, 1974).

Mr. Roberts claimed that his daughter, Sarah, was denied admittance to elementary schools in her immediate neighborhood. Thus, Sarah had to walk past five elementary schools that enrolled only White students in order to attend the school

established for African-American students (Miletsky, 2017). Although the school that Sarah attended was considered to be in poor condition (e.g., classrooms were too small, the paint was defaced, and the equipment needed repairs) the school was deemed at the time to be fit to house Black students (Alexander & Alexander, 1992). The Supreme Court of Massachusetts was not convinced by the plaintiff's claim and rejected his suit (Alexander & Alexander, 1992; Tate, 1993).

After the Civil War, the exclusion of African-Americans from public educational opportunities was diminishing, however southern States enacted laws prohibiting African-American and White students from attending the same public school (Vergon, 1988). The segregation of public schools was upheld by the Supreme Court's 1896 decision in Plessy v. Ferguson, which reaffirmed the "separate but equal doctrine" expressed decades earlier in the Roberts case. In Plessy, the Court endorsed Louisiana's separate but equal public transportation practice for its African-American and White citizens. Even with the separate but equal doctrine, public schools for African-Americans were not allocated appropriate funds.

Anderson (1988) suggests that the history of parental involvement among African-Americans immediately after the Civil War through the 1930's provides a context for understanding how parents played a significant role in creating and sustaining their public schools during the segregation era (see Walker, 2000). According to Walker (2000) at least seven forms of African-American parental involvement from 1866 to 1930 can be identified in the literature. The seven forms of involvement were

founding new schools; providing financial and other support to existing schools; organizing institutions and using existing institutions to support education; petitioning governmental agencies; convening conventions; participating in

demonstrations and school boycotts; and, using law suits to achieve educational equity. (p. 258)

In her book, Their Highest Potential, Walker (1996) analyzes the history of a segregated school system in Yanceyville, North Carolina that presents evidence of African-American parental involvement. The author describes how parents served as advocates in order to sustain the elementary school and helped to transform it into the only African-American high school in Caswell County.

The school started as the Yanceyville Colored School in 1897. Twenty-two years later, the school was known as the Yanceyville School and was overcrowded. The Parent-Teacher Association sponsored social events to raise funds to contribute to the new school. By 1925, the new four-room school was the “most spacious educational facility that had ever been available for Negro children in the county” (Walker, 1996).

Even though African-American parents were pleased with the new school, they had one concern that extended beyond the school building. At that time, Caswell County did not offer a high school to its African-American students. If parents wanted their children to receive an education beyond elementary school, they had to send their children to African-American high schools in neighboring counties. However, White students in Caswell County were afforded an opportunity to attend high school. Again, the African American PTA rose to the occasion by advocating for their children and making financial contributions to support the creation of a high school.

The school board denied the Caswell County African American parents’ first request for a high school. During the 1930-1931 school year, the new principal, N.L. Dillard, received support from the parents and their supporters to offer eighth grade instruction to the current Yanceyville students. “While the board had ruled against

instruction beyond the seventh grade for Negro pupils throughout the county, it had not overruled instruction beyond the seventh grade for Yanceyville School students” (Walker, 1996, p.30). This was the informal beginning of Caswell County’s African-American high school.

Every year the Yanceyville School added a higher grade. Walker (1996) mentioned that there were no records of the school board’s response to the addition of higher grades. By the fall of 1933, the school had five students who were entering the eleventh grade. The principal established a committee of parents and patrons of the county to meet with the state Department of Education. The committee is said to have had several meetings with the state Department of Education, but records of these meetings were not found. During the 1934-1935 school year, Yanceyville School was recognized as a state-accredited high school, its name was changed to Caswell County Training School (CCTS), had seven students in their first graduating class (Walker, 1996).

During legalized segregation, African-American public schools could be thought of as institutions that offer an inferior education to its students.

Indeed, the meager materials, the inadequate facilities, the unequal funding of schools and teachers, the lack of transportation, and the failure of school boards to respond to Black parents’ requests are so commonly named in most descriptions of segregated education that they have created a national memory that dominates most thinking about the segregated schooling of African-American children. (Walker, 1996, p.1)

Despite the circumstances, CCTS was one of the many segregated schools that provided African-American students with a quality education (Walker, 1993; Walker, 1996; Morris, 1999). The educational programs at CCTS were similar to other approved programs by the Southern Association of Colleges and Schools, and received accreditation from that agency in 1955. In addition, Walker mentions the various forms

of parental involvement that were demonstrated by parents. Parental involvement at CCTS consisted of an active PTA, providing financial support, donating equipment, materials, and labor, advocating, communicating between the home and school, volunteering to chaperone school related activities and trips, and attending extracurricular activities. For those parents who did not participate in the PTA or other activities, their involvement was said to have taken place in the home. “Across Caswell County ... parents instilled in their children a respect for teachers” (Walker, 1996, p. 81).

CCTS African-American parents demonstrated various forms of involvement. This was evident both in Yanceyville School’s history and CCTS’s history (Walker, 1996). Moreover, “parents contributed to the financial support of the school, participated in school sponsored events ... and PTA, and provided silent home-base support through the respect for school personnel” (Walker, 1996, p. 82). Based on Epstein’s (1987b/1995) parental involvement typology, CCTS parents were involved in at least one or more of the following: basic obligation of parents, basic obligations of schools (e.g. communicating with parents), parent involvement at schools, governance and advocacy, and collaborating with community. It was not mentioned if CCTS parents provided learning activities at home; however, their belief in the importance of education and the many sacrifices they made to provide their children with educational opportunities suggest that parents were providing their children with a supportive learning environment.

In the school’s written and oral history, its graduates, parents, teachers, and community members described CCTS as a good school. CCTS, like many other southern African-American schools, has a rich history of graduating educated students despite

inadequate facilities, unequal funding, delayed responses from White school authorities, antagonistic school boards, and the financial burdens on parents.

Many African-American parents had difficulty understanding why their children were not afforded the rights and privileges of a public education even though they were paying tax to support public schools (Woodson, 1919). Under the separate but equal doctrine, the equalization of resources between African-American and White public schools was to be accomplished by the States. Consequently, African-American parents would have to resort to the courts in order to receive educational equality (Hiatt, 1994).

The previously mentioned Roberts v. City of Boston (1850) case was one of the earliest cases where the plaintiff sought desegregation as a remedy to achieve educational equality (Tate, Ladson-Billings, and Grant, 1993). Court-order school desegregation did not begin until 104 years later as a result of Brown v. Board of Education (1954).

Specific Barriers for African-American parents

After the end of legalized school segregation, the connection between African-American parents and schools became fragile (Morris, 1999; Reglin, 1993). African-American parents began to lose schools that were pillars of strength for their communities, most importantly the African-American principals and teachers that represented them a citizens (Morris, 1999). Mr. Erasmus Dent, who was the principal for more than thirty years of River Road Elementary School in Albany, Georgia states:

United efforts of parents as well as the overall aggressiveness of the students seemed to be less evident after integration of the schools. Perhaps much of the decline can be attributed to such things as weakened pupil-teacher relationships, ...racial tensions, ... community and personal attitudes toward the school, and the loss of effectively motivating parents to support the school. Integration in my opinion hurt black communities, principals, teachers, and students. We simply lost something. I think it was racial pride in our schools, drive and motivation to take control of the schools. (Edwards, 1993, p. 356)

Before court-ordered desegregation, African-American parents were comfortable with being involved in the schools (Edwards, 1993; Edwards, 1996). “The faces of teachers and administrators were familiar to them because, in many instances, the teachers and administrators were their friends, neighbors, and church members” (Edwards, 1996, p.147). African-American parents knew they had a role in the school systems that shaped the minds of their children. Unfortunately, school desegregation presented specific barriers that caused African-American parental involvement to decline (Irvine, 1990).

One of the barriers was the integration of faculty, which prompted the removal of most African-American teachers (Edwards, 1993; Edwards, 1996). This faculty change replaced Black teachers with many White teachers who were unwilling to or uninterested in actively involving African-American parents. Some school personnel view African-American parents as non-supportive of their children’s education (Edwards, 1993; Edwards, 1996).

Another barrier was the sense of alienation felt by many African-American parents. The alienation could have stemmed from the negative interactions between schools and parents. “Schools often treat black parents as nuisances to be tolerated or, worse, as causes for their children’s failure” (Irvine, 1990, p. 107). Schools preferred to interact with those parents who are “obsequious, appreciative, and uncritical” (Lightfoot, 1978).

The physical distance that desegregation of schools caused between the home-school relationships also served as a barrier (Irvine, 1990). Black students have disproportionately carried the weight of desegregating the nation’s schools. Bused out of their neighborhoods into predominantly White communities, students and their parents

often feel alienated and excluded from the schools” (Irvine, 1990, p. 107). As a result of their children attending schools outside of their neighborhoods, many African-American parents encountered difficulty with attending meetings, volunteering, and communicating with teachers during school hours (Irvine, 1990).

After court-ordered desegregation, integration of faculty, alienation, and physical distance caused a decline in African-American parental involvement. African-American parents withdrew from initiating contact with schools since schools did not encourage active involvement (Irvine, 1990).

Polly Greenberg, a child development specialist, provides an account of the trials and tribulations of a successful parental involvement component of Head Start in Mississippi in her book, The Devil Has Slippery Shoes. The Child Development Group of Mississippi, of which Greenberg was one of the founders, along with poor Black families rallied together to provide children with the necessary skills to become leaders of social change (Coles, 1970; Greenberg, 1969; Hale, 2012; Tomek, 2014). In fact the parental involvement component was so successful that it was ended by the federal government. The government shifted the control of Head Start to the states and effectively ended parental involvement in Head Start. The quiet secret was that when African American parents have real political power to hire and fire they become engaged in their children's education. Here was a case where the state government with the assistance of the federal government squashed one form of parental involvement.

It is important to mention that Head Start was not an isolated example of those in power not permitting African-Americans to function as equal partners in educational matters that affect their children. African-Americans have a strong legacy rooted in

cultural ideals of uplift and political resistance to oppression that have influence several educational reform movements, especially those related to school desegregation (Allen & Jewell, 1995; Anderson, 1988; Barnes, 1997; Cooper, 2005, 2009; Edwards, 1993; Levin, 1972; Noguera, 2004; Schneider, 1988; Shujaa, 1992). However, this activist-oriented educational parental involvement has been considered over a period time as confrontational and dismissed as counterproductive (Cooper, 2009). These negative depictions have been disseminated by White groups or institutions that are committed to the continuance of political inferiority (Washington, 1973).

Consequently, African American parents, particularly those with low incomes or working-class status, remain tied to a dichotomy that constructs them as lacking educational presence, values, and care when contrasted with [W]hite, middle-class parents who are constructed as being present, helpful, and caring. The taken-for-granted acceptance of this false dichotomy perpetuates bias and fuels exclusionary, if not racist, educational practices. (Cooper, 2009, p. 382).

Therefore, one could conclude that many of the barriers of African-American parental involvement isn't about the curriculum or teacher preparation— it's a political struggle. It is imperative that educators, policymakers, and researchers acknowledge that African-American parents and educators are unequal as it relates to their children's education. For instance, the Brown v. Board of Education (1954) decision and its aftermath illustrates how the African-Americans parents' roles as instigators of change was bypassed by governmental and bureaucratic actions (Sarason, 2003).

There is a misperception that African-American parents have always expressed little or no interest in their children's education and have no history of participation or parental involvement (Floyd, 1998). Sustaining meaningful parental involvement of African-Americans has been considered one of the most difficult and unsolved problems in education, yet little has been done to promote meaningful involvement of African-

Americans (Irvine, 1990). The literature fails to discuss how African American parents historically have played a significant role in their children's educational process (Irvine & Irvine, 1983; Lightfoot, 1978). This discounts or effectively erases the rich history of African-American parental involvement, and it fails to account for the specific barriers that eroded African American parental involvement.

Principal's Role in Parental Involvement

Generating parental involvement and nurturing effective principals have been two themes in school reform efforts aimed at creating successful schools. Principals are positioned to improve school effectiveness and productivity (Chavkin & Williams, 1987) by providing leadership and vision to parents, students, and teachers. Parental involvement can provide schools with real support if all parents are actively involved in all aspects of their children's education (McCullough, 1991). Principals and parents should be a collaboration to benefit students. And though this collaboration should be a joint venture, principals are responsible for developing or maintaining effective levels of parental involvement. Principals, ideally, are catalysts who initiate genuine collaboration by helping parents understand their roles in their children's education, informing teachers about the students' family structures, and creating sustainable partnerships between parents, teachers, and students that benefit students and schools (Berninger & Rodriguez, 1989).

Griffith (2000) examined principals from eighty-two elementary schools in a large metropolitan area, suburban school district. The study focused on roles played by principals that are associated with high levels of parental involvement; roles related to creating consensus among parents' perceptions of school environment; and how a

principal's role affect the level of involvement differently in schools with higher concentrations of socioeconomically disadvantaged students and non-English speaking students.

Response Strategies

Principals negotiate their relationships and interactions with parents based on their perceptions of parents (Goldring, 1986; Goldring, 1993). The way principals' respond to parents can determine how principals plan to involve parents in school building and activities. Reviews of empirical studies of principals' communication with parents suggest that principals generally use three response strategies to form impressions of parents: (a) socialization, (b) formalization, and (c) cooperation. Goldring (1993) describes how these response strategies are successfully employed.

Principals employ the response strategy of socialization to guide parental involvement practices in a direction appropriate to the mission and atmosphere of a particular school. Through socialization, parents are encouraged by principals to accept the school's goals and practices. According to Morris et al. (1984), there are several tactics that are used as a process of de-educating parents about the school's capabilities and responsibilities and re-educating parents to develop expectations within the school's paradigm.

Screening parental demands of teachers while responding to parental concerns is one of the socializing tactics used by principals' to articulate the school's capabilities and responsibilities. For example, if a parent concerned about their child's declining grades demands that the teacher send home weekly progress reports principals might explain to the parent that they cannot force the teacher to produce weekly progress reports, since the

union contract only requires teachers to report the child's progress twice each marking term (e.g., mid-term and term grades). However, principals could suggest that the parent to occasionally contact the teacher by phone or e-mail to discuss their child's progress.

Another socializing tactic used by principals is to mold parental expectations. For example, many principals encourage parents to join the PTA, PTO, or PTSA instead of forming individual parental organizations (see Walcott, 1973). "The national PTA, [PTSA, or PTO] serves as a controlling mechanism for the principal as it sets the behavior of the local group of parents in clear boundaries established by the national organization" (Goldring, 1986). This type of socializing can allow principals to channel parents' behavior into meaningful forms of involvement that are most likely to have a positive effect on student outcomes. In addition, principals have a chance to work with the organization (e.g., PTA, PTSA, or PTO) to set limits on parental expectations.

In contrast, formalization is accomplished when principals are able to use either buffering or co-optation to structure parental involvement into predictable forms. Buffering is a strategic method of creating distance between principals and parents, typically accomplished by the establishment of formal procedures to respond to parental demands. These formal procedures usually make it difficult for parents to schedule a convenient time to meet with the principal. For instance, at an open house, a parent asked to meet with the principal that evening to briefly discuss the school's curriculum. The principal refused to meet with the parent because open houses are not for individual conferences. Subsequently, the principal requests the parent to schedule an appointment with the office secretary.

Co-optation, another formalizing tactic, has been described as a process of incorporating new elements into the administrative or executive structure of an organization as a means of sidetracking threats to its stability (see, Selznick, 1949). This occurs when principals are dominating parent participatory organizations, such as the PTA, PTSA or PTO to support their own agendas only.

Cooperation, the third response strategy, is aimed at creating collaboration between the principals and parents to achieve the schools' common goals. When principals use this strategy, they view parents as important allies and are likely to encourage parental involvement.

Summing up, principals can attend to parental demands and expectations by socializing and co-opting parents, or principals can withdraw from parents by buffering (Goldring, 1986). However, it is in the students' best interest for principals to implement cooperating strategies that will encourage parental involvement.

Parental Involvement Strategies

Principals must take the initiative to create an environment that encourages parents to become involved (Schurr, 1992). The principal's ability to take initiative is critical to the success of any school program (Kammoun, 1991). Schurr (1992) suggested sixteen strategies that will help principals to implement and maintain a successful parent-involvement program. The strategies are:

1. *Mutual goal setting, contracting, and evaluating*: Principals should send a letter home, early in the school year, to describe the school's goals for parental involvement. Principals should encourage teachers and students to include comments in the letter that will encourage families to become participants in building home and school partnerships.

2. *Assessment of school, policies, practices, and rituals:* Analyze how the school does or does not receive parents into its schooling process. School policies or procedures might intimidate or ‘turn off’ parents.
3. *Parent lounge/center/resource room:* Create a space where parents feel accepted in the school. Parents should have their own place within the school building.
4. *Public information displays, public service messages, and work site seminars:* Principals should try to take school programs into the community rather than hosting all functions at the school. For example, set up a series of public parent program displays in local grocery stores, shopping malls, medical centers, or community agencies that promote home-school partnerships.
5. *Parent handbook of guidelines and tips:* Develop and update a handbook that includes study hints, test-taking tools, steps for problem solving and other information that parents can use at home with their children. This handbook may contain information about the phases of child development and growth, and typical expectations and achievement goals.
6. *Weekend or evening public information fair:* Design an activity to serve as an information session for the community at large. Community members can be informed about their potential influence on student achievement, and the school’s eagerness to establish a relationship with the community.
7. *Parent and student exchange day:* It has been suggested that sometimes parents have little appreciation for the demands on both the student and teacher. Therefore, parents should have an opportunity to ride the school bus, eat in the cafeteria, attend classes, and complete a homework assignment. These activities will give parents firsthand experience of the complexities of an actual school day.
8. *Extra academic credit for parent involvement:* Grant extra credit to students whose parents commit some time to parental involvement. The school can generate a list of parent involvement activities, such as taking a child to the library, attending one PTA/PTO/PTSA meeting, attending educational workshops, or visiting the school. The extra credit could be added to the student’s lowest grade or reward the student with a treat.
9. *An old-fashion family night at school:* Families enjoy school visits that are positive, so student performances or award ceremonies are effective ways to attract the family to school.

10. *School-wide communication plan*: Principals should encourage teachers to organize a procedure for contacting each family several times during the school year. The communication may vary from telephone calls, written messages (e.g., letter or e-mail), or conferences.
11. *Parent-teacher dialogue journals for communication*: This type of communication encourages parents and teachers to maintain a relationship through a dialogue journal. Some schools provide their students with a daily agenda or a student planner that contains a section where teachers can provide parents with student anecdotes, and a section where parents write a response or ask questions.
12. *Official parent proclamation efforts*: Principals can draft a parental involvement proclamation and motivate local political officials to become involved. For instance, the mayor's office should be contacted to request a formal acknowledgment of the proclamation.
13. *Monthly home achievement packets*: These packets should provide parents with ways to assist their children at home.
14. *Home visits form a special bond*: Teachers should be encouraged to make home visits. This provides teachers with an opportunity to extend educational services to the home. A special bond between the home and school is created through teachers making home visits, similar to the effect of parents attending school conference.
15. *School-wide homework policy*: Homework can be controversial between home and school. In some cases, unfair homework policies, inappropriate homework assignments, and home factors can create stress. With a clear set of homework guidelines, the stress may be kept to a minimum.
16. *Meet and greet program for involvement*: The meet and greet program would be similar to the old community welcome wagon. Here the school is involved in greeting new students and their parents to the school. This event should not be limited to new students in the school. A school meet and greet program should be designed both to introduce and reacquaint the whole school community.

Principals are in leadership roles that influence parents (Griffith, 2000). The sixteen parental involvement strategies suggested by Schurr can assist principals in fostering an atmosphere that is conducive to parental involvement (Wanat, 1994).

However, there are three strategies that might seem to be impractical or inappropriate.

These strategies are as follows: (a) extra academic credit for parental involvement, (b) school-wide communication plan, and (c) home visits.

Granting students extra academic credit for parental involvement seems to be weak and under-imagined strategy because it is punitive to students whose parents cannot participate in school activities and workshops. Implementing a school-wide communication plan might be difficult for teachers to organize. Nonetheless, guidance counselors (i.e., non-classroom teachers) can help to facilitate the communication process between student, parents, and teachers. Conducting home visits might be more appropriate for primary schools than secondary schools. However, some high school educators are implementing a few elementary and middle school concepts to meet the needs of their students and parents (Manning & Saddlemire, 1998).

As students matriculate from primary to secondary schools, some changes might need to occur in parental involvement both at home and school (Catsambis & Garland, 1997). Schurr's strategies will help to reach many parents at various levels of involvement. In order to develop or maintain a successful parental involvement program, principals should conduct a need assessment, analyze data and feedback, develop an action plan, identify necessary resources, monitor progress, and ensure continuity. The absence of these methods could threaten the strength and appropriateness of the selected parental involvement strategies to school programs.

Parental Involvement Strategies for African-American parents

Schurr (1992) provides a variety of parental involvement strategies that could encourage parents of various racial or ethnic backgrounds to become involved. However, Reglin (1993), Trotman (2001), and Abdul-Adil & Farmer (2006) describe specific

parental involvement strategies that would address the needs of African-American parents. According to Reglin, principals should implement some of the following:

1. *Admitting that help is needed.* Principals should let African-American parents know that the school wants and needs their assistance to make parental involvement a means to the end of educating students.
2. *Having high expectations for students' learning.* When the school has high expectations for student learning, students may rise to the level of expectations held by the principal and teachers.
3. *Implementing a variety of school involvement strategies.* Principals should use diverse involvement strategies. School policies should encourage involvement that best fit the needs and interests of families. Also, the "school improvement plan should tap the talents of parents" (p.72).
4. *Being visible within the African-American community.* When principals are visible within the African-American community, there is potential of building positive relationships.
5. *Visiting the churches.* Principals should visit the churches of their African-American parents and ask the ministerial staff to help the school communicate the importance of parental involvement. Also, principals should find out if the church offers an after-school program. If so, the principal could support it with donations from the school.

Reglin believes that implementing a few of the strategies mentioned above would bridge the gap that exists between principals and African-American parents. The two strategies that are most likely to be effective for African-American parents are (a) visiting churches and (b) being visible within the community. During segregation, many African-American churches have been pillars of support (e.g., financial and emotional) for nurturing the minds of African-American students (Hodge, 1997; Lightfoot, 1978). Visiting churches will provide principals with an opportunity to establish parental involvement programs with the institution that serves as the source of strength for many African-Americans. Furthermore, increasing church involvement can make principals seem more visible within the African-American community.

The other suggested strategies such as: (a) admitting that help is needed, (b) implementing diverse strategies, and (c) having high expectations for student learning might not seem to have special meaning for African-American parents only.

Nonetheless, there are two studies of African-American parents that support the need for principals to lead schools that ask parents for help, implement various strategies to involve African-American parents, and establish high expectations for learning (see Ogbu, 2003; Thompson 2003).

Trotman (2001) provides a list of specific strategies that administrators and teachers should implement to increase African-American parental involvement.

According to Trotman the following should improve African-American parental involvement:

1. *Urge parents and/or guardians to remain or become active in their child's educational process.* Reiterate to [parents or guardians] that they serve as their child's primary educators. Their presence during the child's educational career contributes to better behavior, which could lead to more school pride, higher self-esteem, and better grades.
2. *Develop a case history of the family in an effort to determine what is hindering their involvement* (see Kunjufu, 1989). Once a cause has been determined, incorporate a strategy to bridge the gap and make the parent feel more comfortable in the school setting.
3. *Establish a rapport with parents.* Contact parents before problems arise. Do not limit communication with parents to only that of problems with the child. This may help to eliminate the negative connotation that parents have towards schools, especially if they feel as if school personnel only contact them with negative news.
4. *Provide parents with more authority.* Use the team-oriented approach described by Comer (see Comer, 1988). This approach allows parents to feel welcomed, to participate in meaningful ways, and to reinforce academic achievement at home while administrative and mental health teams implement and monitor the program at school.

5. *Ask parents about their interest in the school.* Too often, the school chooses what the parents should hear although the parents may have little or no interest in what is being presented. Give parents what they are interested in and provide them with interesting speakers so that their enthusiasm and excitement will remain at peak levels.

Trotman considers these strategies as ways to increase African American involvement through invitation and collaboration. These strategies are thought to recognize African American families as part of the teaching process.

Abdul-Adil & Farmer suggests the following strategies:

1. *Promoting parental empowerment.* Collaboration between educators and parents can promote parental empowerment by acknowledging strengths of historically disenfranchised African-American parents. In addition, this type of home-school collaboration has been suggested as a promising model engaging African-American parents because they can stimulate empowerment orientation, encourage additional educational involvement, decrease institutional alienation, and establish culturally thoughtful norms.
2. *Providing outreach to parents.* The effectiveness of home-based parental involvement may stem from active school outreach.
3. *Identifying indigenous resources.* African-American families and communities have indigenous skills and strengths that can be helpful in the education of their children. The Joining Hands Parental Involvement Program (Floyd, 1998) is an example of a program that taps indigenous resources.

It is surprising how the literature does not mention that African-American parental involvement was higher when the racial make-up of the school staff matched that of the students. It would be beneficial for principals to understand that African-American parents like parents from other races or ethnic backgrounds want their children to receive a quality education. As mentioned earlier, cultural dissonance seems to disengage African-American parents from schools. Principals should engage African-American parents in meaningful home-school partnerships. Since the ending of legalized

segregation, African-American parental involvement has declined and been documented in the literature as a problem.

Parental Involvement and Mathematics Achievement

The need and significance of African American parental involvement in mathematics achievement of high school students has been a matter of debate in past and modern terms (Anguiano, 2004; Cousins & Mickelson, 2011; Heystek, 2003; Hiatt-Michael, 2001; Jeynes, 2003, 2005). Yet it remains unclear as to how parents should be involved or what in particular parents should do to influence their children's mathematics achievement. Identifying factors of influence in improving African American students' mathematics achievement might inform parenting practices in addition to school-based policies, practices, and interventions that involve family members and school personnel (Shute, Hansen, Underwood, & Razzouk, 2011).

Sirvani (2007) compared the high school mathematics achievement of an experimental group of students (n=30) whose parents' participated in a 12 week parental involvement project with a control group of students (n=22) whose parents did not participate. The experimental group parents received a one-page monitoring sheet twice a week. The monitoring sheet reported the students' homework grades and test grades in a regular algebra 1 class. Parents were asked to sign and return the monitoring sheets to the teacher.

The control group parents did not receive monitoring sheets. However, the school informed all parents of their children's progress by sending a progress report every three weeks and a report card every nine weeks. Throughout the experiment, students in both groups were given the same homework assignments and tests. In addition, all of the

students took the same exam that included all major concepts that were taught throughout the treatment. Tables 2.1 and 2.2 show the mean grades for homework assignments, tests, and exam.

Table 2.1 Means of 30 Homework Assignments

Experimental Group (n=30)		Control Group (n=22)		Effect Size
M	SD	M	SD	
75.64	32.07	49.51	40.68	1.20

Source: Sirvani, 2007, p. 37

Table 2.2 Tests and Exams for the Experimental and Control Groups

Variables	Experimental Group (n=30)		Control Group (n=30)		Effect Size
	M	SD	M	SD	
Test 1	65.07	15.29	70.00	16.85	-.31
Test 2	75.30	14.06	77.41	14.35	-.15
Test 3	75.57	14.89	69.59	14.62	.04
Test 4	76.37	11.67	73.05	14.69	.25
Test 5	80.60	12.05	67.14	13.84	.94
Test 6	75.20	9.40	73.27	12.86	.18
Test 7	75.30	11.85	65.59	19.40	.60
Exam 1	75.87	11.64	69.68	11.54	-.52

Source: Sirvani, 2007, p. 37

The homework assignments mean for the experimental group was 75.64, and the control group mean was 49.51. Except for test 1 and test 2, the mean of the tests for the experimental group was higher than the mean for the control group. Sirvani reported that the experimental group outperformed the control group because the parents in the experimental group were monitoring their children's work twice week. Also, the students in the experimental group completed more homework assignments and possibly study more for tests, due to their parents' involvement.

Noble & Morton (2013) investigated within group differences between African American females and males who participated in the 2009 National Assessment of Educational Progress (NAEP) mathematics assessment to compare average scale scores of African American students based on home regulatory environment and personal interest. The 2009 12th grade sample information is provide in Table 2.3. To explore the relationships between the variables listed above, the researchers used the web-based NAEP Data Explorer. This tool allowed them to analyze within group differences for African American males and females.

Table 2.3: 2009 12th Grade NAEP Participation

States	Students Tested (N)	African American Students (n)	African American Males	African American Females
Arkansas	2,700	594	285	309
Connecticut	2,800	364	189	175
Florida	3,200	640	282	358
Idaho	3,000	30	23	7
Illinois	2,700	432	212	220
Iowa	2,600	104	61	43
Massachusetts	2,900	232	123	109
New Hampshire	2,100	21	16	5
New Jersey	3,100	527	285	242
South Dakota	2,600	52	37	15
West Virginia	3,000	120	68	52
Total				

Source: Noble & Morton, 2013, p. 32

The NAEP mathematics scale scores range from 0 to 300. Each achievement level is given a minimum score for performance. For instance, a student whose average scale score is 216 or above is considered advanced, which means that they demonstrate in-depth knowledge of mathematical concepts and procedures. A student whose average scale score is 176 is considered proficient, which means that they are able to select appropriate strategies to solve problems. A student whose average scale score is 141 is considered basic, which means that they can solve

math problems involving direct applications of concepts and procedures. The national average scale score for African American students is 133. Table 2.4 provides a description the NAEP mathematics achievement levels for both African American male and female students.

Examining differences in average scale scores would suggests that on the whole gender does not impact performance.

Table 2.4: 2009 12th Grade NAEP Mathematic Scores and Boundaries

	African American Males	African American Females
Average scale score	134	133
SD	31	29
Below basic	59 %	62 %
At basic	32 %	32 %
At proficient	8 %	6 %
At advanced	*	*
SD standard deviation		
* Rounded to zero		

Source: Noble & Morton, 2013, p. 32; The Nation’s Report Card retrieved from <http://nces.ed.gov/nationsreportcard/pdf/main2009/2011455.pdf>

Based on the researchers analysis, the identified significant differences in averages scale scores based on students’ gender and the frequency that they discussed their studies at home (i.e., home regulatory environment), which was self-reported. African American male students who discussed studies 2-3 times a week at home had a scale score 9 points higher than African American female students who discussed studies every day. Table 2.5 shows gender and how frequently students discussed studies at home.

Table 2.5: 2009 12th Grade NAEP Mathematic Average Scale Score

Talk about studies at home	African American Males	African American Females
Every day	135	130
2-3 times a week	139	136
About once a week	136	135
Every few weeks	131	130
Never or hardly ever	134	131

Source: <http://nces.ed.gov/nationsreportcard/naepdata/report.aspx>

In addition, the researchers found no significant differences between African American male and female students' mathematics average scale scores impacted by personal interest (i.e., whether they liked math), which was self-reported.

Noble and Morton believe that the variables used for their study were meaningful, although the results did not yield more noteworthy findings. Furthermore, the researchers mentioned that NAEP data may not be the best resource for exploring mathematics achievement and home regulatory environment due to the small number of states that participated and the lack of a nationally representative sample of African American students.

Hong, Yoo, You, & Wu (2010) conducted a study on comparing longitudinal associations between two types of parental involvement (i.e., mathematics value and academic reinforcement) and high school students' mathematics achievement, using data from the longitudinal Study of American Youth (LSAY). The results of their study showed the effects of two different types of parental involvement on students' academic achievement. For instance, significant reciprocal associations were found between parents' math values and students' mathematics achievement over the five year period of

the study. However, the association between parents' academic reinforcement and students' mathematics achievement was not significant in either direction.

Hong et al. consider their study's results add to existing literature regarding the role of parental value and students' achievement as potential causes and consequences of each other, varying across grade levels. Previous studies made claims that parents' beliefs had greater influence on students' achievement than previous performance (Jacobs, 1991; Parsons, Adler, & Kaczala, 1982; Phillips, 1987) or both parents' and students' math beliefs were more influence by previous mathematics performance (Tiedemann, 2000) based on correlational and cross-sectional data (Hong et al., 2010). Hong et al. report that their study found that significant mutual associations exist between parent math value and students' achievement with students' previous achievement being more predictive of parental value.

Studies conducted by Sirvani, Noble and Morton, and Hong et al. provided evidence that parental involvement may influence students' mathematics achievement. However, these studies were not designed to examine which attributes would increase high school mathematics achievement. More research is needed to understand how the underlying mechanisms of family involvement (e.g., home-school collaboration, parent-child communication) at the secondary level effect student learning and development. A particularly promising direction is to explore the effectiveness of delivering interventions targeted towards family members and school personnel that increase high school mathematics achievement.

Conclusion

There is a weak connection between African-American families and school personnel despite the known advantages of home-school collaborations (Brandon, 2007; Davis, Brown, Bantz, & Manno, 2002; Thompson, 2003). Negative beliefs, perceptions, and attitudes of school personnel and family members have been identified as some factors that impede interactions between both groups (Jesse, 1995; Jesse, 1997). In addition, cultural, familial, and communication differences between African-American families and school personnel may contribute to their limited appreciation of how each group promotes and supports student learning and development.

Common sense would dictate that family members and school personnel should be regarded as inseparable partners whereas you cannot have one without the other. Too often, the parental involvement literature focuses on the negative attributes of African-American families. Family involvement programs are developed on the idea that family members' lack of skills to help their children succeed academically and need to be trained by school personnel (Lightfoot, 2004).

CHAPTER III

METHODS

Introduction

This chapter describes the procedures for this study. A restatement of the study's purpose and research questions are included to provide a better context for the research methods. Then the research design, methodological approach, sample selection, data collection, and analysis will be discussed.

Efforts to support and improve the learning and performance of African-American students have sometimes included attempts to increase family involvement (Schnee & Bose, 2010). However, the proposed strategies offered by Abdul-Adil & Farmer, Reglin, Schurr and Trotman are initiated by school personnel. Alternative strategies to school-initiated involvement may consist of family-initiated involvement that includes several social capital constructs such as parent-student interactions, parent-school interactions, parent network interactions, and family norms (Howard & Reynolds, 2008; Yan, 1999). The overarching purpose for this study is to investigate and evaluate specific strategies that will foster mutual respect between school personnel and African-American family members to promote and support student learning and development. A description of how each research question will be answer is provided.

The Researcher

The researcher was a district level administrator for 10 years in which the district the study occurred. Prior to this study, the researcher read Radical Equations by Robert Moses and Charles Cobb. This book was about the ongoing struggle for citizenship and equality for [African-Americans] that is linked to issues regarding math literacy. One of

the main points centered on how mathematics achievement is a gatekeeper for college admissions and STEM careers. Moses & Cobb state:

And in the culture itself—our culture—illiteracy in math is acceptable the way illiteracy in reading and writing is unacceptable. Failure is tolerated in math but not in English. Your parent may well lean over your shoulder as you struggle with the term paper your English class requires, or the book report that is due, making sure that you write it, checking the spelling and the grammar. But if you're struggling with an equation while doing your algebra homework, more likely your parent will look over your shoulder, wrinkle a brow in puzzlement, then say something like 'I never got that stuff either; do the best you can and try not to fail.' This is an old problem. In effect, math instructions weeds out people... (2001, p. 9).

After reading this book, the researcher wanted to understand how African-American parental involvement affect secondary math achievement. Therefore, he researcher became interested in this study because of the dearth of research in the areas of African-American parental involvement and high school mathematics.

Research Question #1

“What strategies might family members and school personnel select collectively to promote and support student leaning and development? Are there any significant differences between responses provided by family members and school personnel?”

To answer this question, the researcher involved working groups of school personnel and family members to collectively identify involvement strategies that could improve student achievement in high school mathematics. The proposed sample, $N = 36$, will be comprised of 6 math teachers, 3 school counselors, 3 administrators, 12 African-American students, and one parent for each student included. There will be three focus groups consisting of 12 members (i.e., 2 math teachers, 1 school counselor, 1 administrator, 4 parents, and 4 students). Each focus group will meet for one session that

will last between 60 to 90 minutes. The specific focus here is to provide both school personnel and family members' opportunities to discuss and identify strategies that may promote and support learning beyond traditional family involvement strategies.

Family involvement strategies are usually based on a synthesis of research and theoretical literature from the fields of education, psychology, and sociology. However, this study will base its strategies on the dialogue and collaboration of school personnel and family members. Therefore, the participants were provided with written information about specific strategies proposed by Abdul-Adil & Farmer, Reglin, Schurr, and Trotman to review before conducting the focus group sessions.

Prior to the focus group meetings, the researcher conducted an initial meeting of the school staff. The purpose of convening a separate meeting for the school staff is to provide background on the project and respond to individual questions about the project before scheduling focus group meetings. The following agenda items were covered during the initial meeting with the school staff:

1. Completion of an initial questionnaire regarding staff perceptions, attitudes, and actions in relation to their students' families and family involvement.
 - a. family strengths and weaknesses and current levels of involvement with their children's education, especially in math;
 - b. types of communication and work with families in which the staff members were engaged prior to the focus groups; and
 - c. how and why staff members should work collaboratively with family members to improve family involvement as it relates to math achievement.
2. An overview of the research project background, rationale, and goals.
3. A discussion of the proposed process of selecting students and family members. The discussion will include the identification of focus family

members. The selection of family members will be purposely focused on students whose math quarter or semester average ranges from a 63 to 72.

Research Question #2

“What impact do the selected strategies have on family members and school personnel?”

This research question was answered by asking both school personnel and family members open-ended questions about how selected strategies may have had an impact on them. These questions were asked during the semi-structured interview towards the end of the study.

Research Question #3

”Which strategies are associated with improving math achievement? How long will it take to notice improvement, if at all, in student learning and performance?”

The performance of students will be compared to their own previous experience and to that of comparable students in a control group to test whether the combination of selected strategies are associated with improving math achievement. The control group will consist of similar students whose parents were not randomly selected for participation. Comparing pre and post student performance data such as assessments (e.g., quizzes, tests, or exams), homework completion, progress reports, and report cards will be reviewed to determine whether or not student performance is effected by the combination of the selected strategies.

If there is a gain in performance for the intervention group, it may not be possible to statistically attribute it to one specific strategy. Therefore, family members and school personnel will rate the strategies that they think made a difference on a four or five-point

scale and the averages from each of the two groups will be reported. A survey will be created after the family involvement strategies are mutually selected.

Research Design

This study use a sequential mixed methods and action research design. Mixed-methodology provides the opportunity to examine student achievement data for a random sample of high school mathematics teachers, inferring associations for student improvement in mathematics. Also, action research is conducive to the exploration of perceptions of family members and school personnel as it relates to the overall usefulness of field-tested strategies to promote and support student learning and development.

When speaking about the emergence of mixed methods research, Creswell (2008) states that “the educational researcher needs a large toolkit of methods and designs to address complex interdisciplinary research problems” (p. 321). A similar approach is warranted by the complex issues surrounding implementing strategies that will foster collaboration between families and schools to promote and support student learning and development.

Greene, Caracelli and Graham (1989) suggest, “...qualitative and quantitative methods are used to measure overlapping but also different facets of a phenomenon, yielding an enriched, elaborated understanding of that phenomenon” (p. 5). Quantitative research is the most effective method for determining the correlation of variables to each other (i.e., family members and school personnel agreement or disagreement about selected strategies). Qualitative research is the best method to determine the role and impact that the strategies have on the relationships between family members and school personnel as well as the impact on student learning and development. Marshall and

Rossman (2011) assert “human actions cannot be understood unless the meaning that humans assign to them is understood” (p. 91). It is the hope that the use of a mixed-methods design gives the researcher flexibility in understanding the importance of relationships both from data sets and the words and actions of the participants.

Research Setting and Sample

Setting

A public urban high school located in Hartford County, Connecticut was selected the site for this study. The U. S. Census Bureau (2012) defines urban as “areas of 50,000 or more” in population. The district where this study took place had a population of approximately 51,000 as of the 2010 Census. The school has approximately 1,700 students which consists of 6% Asians, 39% African-American, 40% Hispanic, and 15% White. At the time of the study there were four schools within the district that educating students in grades 9-12.

Entry and Ethical Standards Review

The researcher obtained permission to conduct the study from the Institutional Review Board at the University of Massachusetts Amherst and the superintendent (see Appendix M) of the participating school district. There are no foreseeable risks associated with this research study that would affect the participants’ physical, psychological, and economic well-being. However, a possible inconvenience may be the time it takes to complete the interview.

Adult participants were provided with a consent form. The minor participants received an assent form. Participants’ names, addresses, or student ID do not appear in the study or results. Instead, pseudonyms and record codes were created for each

participant as a way to protect confidentiality and individual comments. Participants involved in the focus group session and semi-structured in person interview were asked to provide a pseudonym that will be associated with their responses. The participants in the experimental group had their names linked to a record code that consists of seven characters (e.g., UM17001). The pseudonyms and record codes were entered into a password protected Excel document and stored on a USB flash drive. All data gathered from participants were securely stored in a locked cabinet to which only the researcher will have access.

The audio recordings will be destroyed upon completion of my final oral examination. The transcripts and questionnaires will be destroyed within a three year period.

Recruitment

The recruitment of participants began with selecting teachers, randomly selecting 6 out of 17 high school math teachers to send an invitation to participate in this study. Each of the seventeen math teachers were assigned a number between 1 through 17 (e.g., Teacher 1, Teacher 2, Teacher 3, etc.). Then the Randomizer form on Research Randomizer at <https://www.randomizer.org> was completed to generate one set of randomly ranked numbers that range from 1 to 17. Should one teacher decline to participate, the next number on the list would have been select to invite another teacher as prospective participant.

Initially, six math teachers received a consent form for participation. Upon receiving the teachers' consent forms, they were asked to identify all students whose grade average is in the range of 63 to 72. Originally, the proposed sample, $N = 132$, was

supposed to be comprised of 6 math teachers, 3 school counselors, 3 administrators, 60 African-American students and one parent for each student included. Ten students in each class were randomly identified for the intervention phase with rank-ordered backups in case parents decline. Then two students in each class were randomly identified to participate in the focus group session and individual interviews with rank-ordered backups in case the parents decline. The final part of the recruitment process consisted of obtaining three school counselors and three administrators to participate in the study.

African-American students in each class were randomly identified for the intervention phase with rank-ordered backups in case parents decline. Parents of the identified students received an invitation letter and consent form in an enclosed envelopment via their child.

The recruitment of high school counselors began with randomly selecting 3 out of the 8 counselors to send an invitation and consent form to participate in this study. Each school counselor was assigned a number between 1 through 8 (e.g., Counselor 1, Counselor 2, etc.). Then the Randomizer form on Research Randomizer at <https://www.randomizer.org> was completed to generate one set of randomly ranked numbers that range from 1 to 8. Should one counselor decline to participate, the next number on the list would be selected to invite another counselor as prospective participant.

Two out of four high school assistant principals were randomly selected to receive an invitation letter and consent form to participate in this study. Each assistant principal was assigned a number between 1 through 4 (e.g., AP 1, AP 2, etc.). Then the Randomizer form on Research Randomizer at <https://www.randomizer.org> was

completed to generate one set of randomly ranked numbers that range from 1 to 4. Should one assistant principal decline to participate, the next number on the list would be selected to invite another assistant principal as prospective participant. There is one mathematics curriculum supervisor that will receive an invitation and consent form to participate in the study. This supervisor was grouped with the assistant principals. If the supervisor declines to participant, another assistant principal will be selected. Then two students in each class will be randomly identified to participate in the focus group session and individual interviews with rank-ordered backups in case the parents decline. The final part of the recruitment process will be to obtain three school counselors and three administrators to participate in the study.

Participants

The sample of African-American parents ranged in age, marital status, and education. Twenty-one of the parents were females and five were males. The age range for the parents was between 37 to 58 years old. Ten of the participants were married and the rest were single. All participants were high school graduates; two earned a bachelor's and one earned an associate's.

The sample of African-American students ranged in age, grade, and math ability. Fifteen of the students were females and eleven were males. The age range for the students was between 15 to 18 years old. Seven of the students were sophomores, thirteen were juniors, and six were seniors. Nine of the students were enrolled in courses above Algebra 2 (i.e., AP Statistics, Pre-calculus or Trigonometry), ten in Geometry, six in Algebra 2, and one in Algebra 1.

The sample of math teachers consisted of four females and two males. Three of the teachers were White, two were Latino, and one was Asian. The range of teaching experience was between 3 to 20 years. All of the teachers hold a master's degree.

The sample of school counselors consisted of two females and one male. Two were White and one was African-American. The range of school counseling experience was between 3 to 14 years. All of the counselors hold a master's degree, one earned a post-master's certificate.

The sample of administrators were White. Two of them were males. The range of school administration experience was between 9 to 20 years. Two of the administrators hold post-master's certificates; one earned a doctorate.

Organization of Study

The study was conducted in four phases: first, administer surveys; second, conduct focus group interviews; third, interventions; and fourth, conduct individual parent, staff and student semi-structured interviews.

Research Instruments

Phase I (Surveys)

The researcher used a questionnaire develop by Hyry-Dermith (2012) to survey school personnel and the Parental Involvement Questionnaire developed Cai, Moyer & Wang (1999) to survey family members and students. The Hyry-Dermith's questionnaire obtained information regarding the school personnel perceptions, attitudes, and actions in relation to the African-American students' families and family involvement. The Parental Involvement Questionnaire obtained information about family members' involvement in their children's learning of mathematics. Permission to reproduce and

disseminate both Hyry-Dermith's and Cai, Moyer, & Wang's questionnaires were granted to the researcher.

Observation

As an additional part of gaining access to the setting and to enrich the interview process, the researcher observed a math class for approximately forty-eight minutes. This participation allowed the researcher to have visibility with students and math teacher as well as to conduct non-participant observations in the setting. This observation served as another source of data collection for this study. Observation was focused on interactions between teacher and students. Patton (2002) explained "...through direct observation the inquirer is better able to understand and capture the context within which people interact" (p. 262).

Academic Performance

Students' math scores from The Preliminary Scholastic Assessment Test (PSAT) were obtained to examine whether the students in the experimental and control groups had similar mathematical knowledge or abilities. The PSAT is administered in October and is used to prepare high school students for the SAT, provide students with targeted feedback to improve skills, identify students for scholarship competitions, and report college and career readiness benchmarks to school personnel and family members. If the PSAT math scores show that students from one group have significantly different mathematical ability than another group, the scores will be included when analyzing student performance data, and appropriate statistical adjustments made.

The researcher used composite mathematics scores from standardized achievement tests and teachers rating of classroom academic performance (i.e., progress reports and report

cards). The STAR Math assessment is a computerized mathematics test developed by the Renaissance Learning Company. This assessment provides teachers with information to tailor instruction, monitor growth, and improve students' mathematics performance. Student progress report and report cards will be analyzed to provide insight into the students' mathematics achievement. The STAR Math scores, progress report and report card grades will be used for before and after comparisons.

Phase II (Focus Group Interviews)

Focus groups were used to generate rich in-depth information about the perceptions and experiences of African-American students and parents, teachers, school counselors, and administrators as they relate to specific strategies that will foster collaboration to promote and support student learning and development. As mentioned above, the participants for focus group sessions and individual semi-structured interviews was comprised of 6 math teachers, 3 school counselors, 3 administrators, and 6 African-American students and one parent for each student included. There were five focus group sessions. Each focus group session consist of participants based on the roles.

Phase III (Interventions)

This part of the study consisted of 26 African-American students enrolled in a high school mathematics course and one parent for each student. Throughout the experiment, students taking similar mathematics classes use the similar textbooks, tests, and homework assignments based on their current math class. Students agreed to attend a math lab class during the school day or stay after school with a math teacher or tutor at least once a week.

Students received a monitoring sheet which reported their class assignment, homework, quiz and test grades. The monitoring sheets were generated and distributed to

each student once a week by the teacher or school counselor. To keep the students' identities confidential, the monitoring sheet were placed in a manila envelope. Then the students took the monitoring sheet home to get their parents' signatures. Within the next two days, students were expected to return the sheet to the teacher or school counselor.

Math teachers used Khan Academy accounts to provide students with remedial or enrichment opportunities and link parents to monitor their child's progress. The teachers provided parents with notification of a quiz or test at least two day prior to the assessment. The notification was done through email, Remind: Safe Classroom Communication app, or home-school grade reporting portal. Also, the teachers provide the parents with a study guide for every scheduled assessment during the intervention period.

Phase IV (Individual Interviews)

The interviews consisted of semi-structured in-depth telephone interviews to investigate participants' thoughts regarding the collective process of selecting specific strategies to strengthen collaboration to promote and support secondary mathematics achievement. An interview guide was used and prepared in a way to ensure similar basic questions were asked of each participant (Cardona, Jain, & Canfield-Davis, 2012; Patton, 2002; Merriam & Tisdell, 2016). The open-ended questions allowed participants an opportunity to share their thoughts about family involvement and mathematics achievement. In addition, cultural background was explored during each interview as a topic of potential relevance to African-American family involvement practices. Each participant was interviewed once. The parent and teacher interviews lasted for approximately thirty-five minutes each. The student interview lasted for twenty minutes.

Participation

Parent (Intervention Only)

The involvement for each parent consisted of the following: complete an initial questionnaire regarding their perceptions of family involvement and mathematics achievement for a total of 30 minutes; Participate in a 9 to 12 week mathematics/family involvement intervention with their child. Parents (a) received, reviewed and signed weekly student monitoring sheet, (b) received and reviewed study guide material and quiz or test notification, and (c) monitored their child's progress on Khan Academy or home-school grade reporting portal for a total of 9 hours; Complete a final questionnaire that I will use for comparison to the initial questionnaire results for a total of 30 minutes. Total time expected: 13 hours.

Parent (Full Participation)

The involvement for each parent consisted of the following: complete an initial questionnaire regarding their perceptions of family involvement and mathematics achievement for a total of 30 minutes; Participate in a 9 to 12 week mathematics/family involvement intervention with their child. Parents will (a) receive, review and sign weekly student monitoring sheet, (b) receive and review study guide material and quiz or test notification, and (c) monitor their child's progress on Khan Academy and home-school grade reporting portal for a total of 9 hours; Complete a final questionnaire that I will use for comparison to the initial questionnaire results for a total of 30 minutes; Participate in one focus group session with 6 parents; and Participate in one semi-structured in-person interview. Total time expected: 15.5 hours.

Student (Intervention Only)

The involvement for each student consisted of the following: complete an initial questionnaire regarding their perceptions of family involvement and mathematics achievement for a total of 30 minutes; Participate in a 9 to 12 week mathematics/family involvement intervention with their parent; Complete final questionnaire regarding their perceptions of family involvement and mathematics achievement for a total of 30 minutes. Total time expect: 13 hours.

Student (Full Participation)

The involvement for each student will consist of the following: complete an initial questionnaire regarding their perceptions of family involvement and mathematics achievement for a total of 30 minutes; Participate in a 9 to 12 week mathematics/family involvement intervention with their parent; Complete final questionnaire regarding their perceptions of family involvement and mathematics achievement for a total of 30 minutes; Participate in one focus group session with 6 students; and Participate in one semi-structured interview. Total time expect: 15 hours.

School Personnel

The involvement of 6 math teacher, 3 school counselors, and 3 administrators consisted of the following: participate in one or two initial meetings for a total of 2 hours; participate in one focus group session for math teachers, school counselors, or administrators; participate in a 9 to 12 week mathematics/family involvement intervention with selected students and their parent. Teachers will (a) create Khan Academy accounts for student and their parent, (b) provide parents with study guide materials and, and (c) notify parents at least two day prior to a quiz or test for a total of 9 hours. Total time expected: 18 hours.

There were a total of five focus group sessions. The focus groups were formed by the roles of the participants. The teacher focus group consisted of 6 math teachers. The parent focus group will consist of 6 parents. The student focus group will consist of 6 students. The counselor focus group will consist of 3 counselors. The administrator focus group consisted of 3 administrators.

Procedures for Collecting Data

Permission was obtained from the school districts' superintendent to administer surveys and to conduct both individual and focus group interviews. Surveys were administered to the cluster sample of parents, math teachers, school counselors and administrators. The parent surveys were mailed with consent and assent letters and a cover letter briefly describing the research. The educator surveys were hand-delivered with a written explanation of the research study purpose and significance. A three-week window was offered for each participant to complete the survey at a convenient time.

There were five focus groups. Each focus group consisted of participants based on their roles. The teacher focus group consisted of 6 math teachers. The parent focus group consisted of 6 parents. The student focus group consisted of 6 students. The counselor focus group consisted of 3 counselors. The administrator focus group consisted of 3 administrators. The focus group discussions were recorded and transcribed by the researcher. An hour was reserved for each focus group, but the duration varied based on the amount of actual time needed to complete the process. The focus groups took place between February and March of 2017.

The semi-structured interview protocol was developed by the researcher and was based on the conceptual framework of parental involvement literature as described earlier

in the study. The interviews investigated participants' thoughts regarding the collective process of selecting specific strategies to strengthen collaboration to promote and support secondary mathematics achievement. An interview guide was developed to ensure similar basic questions were asked of each participant (Cardona, Jain, & Canfield-Davis, 2012; Patton, 2002; Merriam & Tisdell, 2016). The open-ended questions allowed participants an opportunity to share their thoughts about family involvement and mathematics achievement. In addition, cultural background was explored during each interview as a topic of potential relevance to African-American family involvement practices. Each participant was interviewed once. The semi-structured interviews took place during June of 2017.

Data Analyses

Once data were collected from the questionnaires, the researcher took the necessary steps to organize and manage the data. In order to protect the confidentiality of participants, the researcher kept all surveys, interview transcripts, informed consent forms, and assent forms in a locked filing cabinet. Audio recordings of interview content were transferred to my password protected computer.

Quantitative Analysis

Upon completion of the questionnaire data collected, each anonymous response form participants was entered into a STATA. Descriptive statistics were used in analyzing the data from the questionnaires.

Qualitative Analysis

When the focus groups were completed, verbatim transcripts of each group's dialogue formed the qualitative data set for the research. After transcribing the groups'

discussions, each document was be uploaded into NVivo, a qualitative analysis software package. The researcher identified distinct concepts and categories that formed the foundation of the analysis. After broad categorical and open coding of interview data, axial coding was used to speculate the relationships among data.

CHAPTER IV

RESULTS

The purpose of the study was to identify and evaluate specific strategies that encouraged school personnel and African-American family members to collaborate in a spirit of mutual respect to promote and support student learning and development in high school mathematics. Three research questions were used to (a) determine if strategies identified by the participants were effective or non-effective, (b) determine if there were any similarities or differences with respect to how family members and school personnel think about or assess specific strategies, and (c) assess the results of implemented strategies.

Educator Perceptions of the Factors that Affect Student Learning (Before Project)

The base questionnaire involved identifying the degree to which the educators believed a series of possible factors that impact student learning and development. The educators were asked to assign a number of points to each factor to identify the relative importance of that factor in such a way that the total of their assigned factors would equal 100. In essence, the educators were asked to identify the percentage to which each factor contributes to student learning and development. Table 4.1 includes the mean results for the educators' initial questionnaire responses.

Table 4.1: Educators' perceptions of the relative weight of factors on student achievement before project.

Factor	Mean points assigned (base questionnaire)
A. The student's natural talent /intelligence/ability.	17.6
B. The quality of teaching the student receives at school.	22
C. Steps parents/guardians take to emphasize the importance of education and learning .	16.1
D. Steps parents/guardians take to create a strong family life outside of school.	10
E. Steps parents/guardians take to help the child with homework or studying at home .	9.8
F. Steps parents/guardians take to create a consistent structure for homework/studying at home (even if they don't/can't directly help).	12.3
G. Steps parents/guardians take to actively collaborate with school staff to promote children's learning (communicating about progress, etc.).	7.4
H. Steps parents/guardians take to access support and opportunities for their children in the wider community (outside home and school).	4.8
TOTAL	100

Educator Perceptions of Black/African-American Parental Involvement in their Children's Education (base questionnaire)

In sections two and three of the base questionnaire, educators were asked to respond to specific statements about African-American parents. For instance, statements in section two allowed educators to give their best estimate, based on their experience, of the percentage of Nutmeg's Black/African-American parents/guardians who do each of several actions/activities. Statements in section three gauged how much educators agreed or disagreed with statements related to Black/African family involvement. Tables 4.2 and 4.3 provide educators' responses.

Table 4.2: Educators' perceptions of the percentages of African-American parents/guardians engaging in specific actions/activities associated with supporting their children.

Action/Activity	Mean percentage identified by interviewers (base questionnaire)
1. Work hard to create a strong family life at home for their children.	68
2. Consistently emphasize the importance of education in raising their children.	52
3. Regularly help their children with schoolwork at home.	21
4. Create a consistent structure for homework/studying in the home (even if they don't or can't actually help with homework or studying).	29
5. Actively collaborate with school staff to support their children's educational process.	30
6. Access support for their children in the wider community (outside home and school).	34
7. Make a significant, positive educational difference in their children's lives.	48
8. Do very little to support their children's educational process.	32

Table 4.3: Educators’ agreement with African-American family involvement statements

Educator Response Totals (base questionnaire)				
	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
1. Black/African-American family involvement is important for student success in school.	0	0	3	6
2. If Black/African-American parents/guardians try really hard, they can help their children learn even when their children are unmotivated.	0	4	2	2
3. Black/African-American parents/guardians need to learn ways to help their children with schoolwork at home.	0	3	4	1
4. Black/African-American parents/guardians at our school want to be involved more than they already are.	0	3	3	2
5. My colleagues view Black/African-American parents/guardians as important partners in their children’s educational process.	0	0	4	4
6. We need to improve Black/African-American family involvement at our school.	0	0	2	7

Educator Responses to Items Related to their Family Involvement Practices

Section four of the base questionnaire was related to educators’ self-reports about how often they had practiced specific family involvement communication strategies. The responses of the educators, compiled in Table 4.4, demonstrate considerable variation in terms of family engagement practices within the faculty. For analysis, individual responses were assigned points as follows: Less than monthly = 1 point; At least once a month but less than weekly = 2 points; About once a week = 3 points; Averaging more than once a week = 4 points. Analysis of mean results, are presented in Table 4.5.

Table 4.4 Educators' specific family involvement practices totals

Educators' Response Totals (base questionnaire)				
Family Involvement Practices	Less than monthly	At least once a month but less than weekly	About once a week	Averaging more than once a week
1. Have a conference with a parent/guardian.	5	2	2	3
2. Contact a parent/guardian if the child has problems or experiences failure.	1	6	0	5
3. Contact a parent/guardian if their child does something well or improves.	2	8	2	0
4. Communicate with a parent/guardian about the skills their child must learn in specific academic subjects.	1	6	5	0

Table 4.5 Educators' specific family involvement practices mean scores

Family Involvement Practices	Means
1. Have a conference with a parent/guardian.	2.5
2. Contact a parent/guardian if the child has problems or experiences failure.	2.8
3. Contact a parent/guardian if their child does something well or improves.	2.2
4. Communicate with a parent/guardian about the skills their child must learn in specific academic subjects.	2.3

Educators' thoughts about improving African-American Family Involvement

The last item of the base questionnaires involved completing an open-ended prompt. Educators were asked to list the **three most important** things that they thought would improve Black/African-American family involvement at Nutmeg High School. Since each educator was asked to provide a list of the three most important things that would improve family involvement, there could have been a total of 36 relevant

comments. Review, categorization, and subsequent analysis of the educators’ responses led to the development of Table 4.6.

Table 4.6 Educators’ beliefs about what is needed to improve African-American family involvement (base questionnaire)

Categories of Response with Sample Responses	# of educator responses in this category.
Make attending family involvement events more feasible. Sample responses: <ul style="list-style-type: none"> • Provide multiple opportunities during the day and outside of work hours. • Determine what times and days are best for parents. • Provide varied time slots and venues for family involvement events. 	6
Develop family involvement/education programs. Sample responses: <ul style="list-style-type: none"> • Provide academic resources for families. • Design programs that change with the grade of students. • Build up their confidence about their role in child’s education. 	4
Communicate with families frequently Sample responses: <ul style="list-style-type: none"> • Provide a wide range of communication method for families. • Provide more positive communication- school to home. 	8
Provide training to school personnel. Sample responses: <ul style="list-style-type: none"> • Train teachers about family involvement. • Being able to understand African-American struggles. 	2
Strengthen community outreach. Sample responses: <ul style="list-style-type: none"> • Be a presence in the community. • Being able to understand African-American struggles. 	2

Scoring Criteria for Parental Involvement Questionnaire

For each of the initial and final questionnaires, parents and students were asked to decide whether they “strongly agree,” “somewhat agree,” “somewhat disagree,” or “strongly disagree.” To force parents and students to distinguish tendencies, neutral

choices were not provided. For each positive statement, if parents or students chose “strongly agree,” the response was scored as 4 for the item. If they chose “somewhat agree,” the response was scored as 3 for the item. If they chose “somewhat disagree,” the response was scored as 2 for the item. If they chose “strongly disagree,” the response was scored as 1 for the item. For each negative statement, if parents or students chose “strongly disagree,” the response was scored as 1 for the item. If they chose “somewhat disagree,” the response was scored as 2 for the item. If they chose “somewhat agree,” the response was scored as 3 for the item. If they chose “strongly agree,” the response was scored as 4 for the item.

Parental Roles

Five parental roles such as motivator, resources provider, monitor, mathematics content advisor, and mathematical learning counselor were identified by Cai, Moyer, & Wang (1999) based on systematic reviews of literature on parental involvement (e.g., Booth & Dunn, 1996; Hoover-Dempsey & Sandler, 1995, Sigel, McGillicuddy-Delisi, & Goodnow 1992; White, Taylor, & Moss, 1992) and mathematics education reform (e.g., Mертens & Vass, 1993; National Council of Teachers of Mathematics, 1989). Parents as motivator, resource provider, and monitor are roles that parents performance when providing demonstrative support (Cai, 2003; Cai, Moyer, & Wang, 1999). Parents as mathematics content advisor and mathematics learning counselor are roles that parents demonstrate when directly assisting their children’s learning at home (Cai, 2003; Cai, Moyer, & Wang, 1999). Table 4.7 provides a brief descriptions of each of the parental roles.

Table 4.7: Brief Description of Parental Roles

Parental Role	Description
Motivator	Parents provide emotional support for students' learning.
Resource Provider	Parents play the role of resource provider at home by providing an appropriate place to study, relevant reference books, and/or access to the library.
Monitor	Parents monitor their children's learning and progress at home.
Mathematics Content Advisor	Parents provide advice to their children on mathematics content.
Mathematics Learning Counselor	Parents understand their children's current situation, learning difficulties, potential, needs and demands, and provide appropriate support to help their children overcome learning difficulties.

Source: Cai, J. (2003)

Table 4.8 shows the mean scores on each variable of parental roles for students and parents. There are no statistically significant differences in the mean scores between students and parents on the variables of motivator, resource provider, and monitor. The mean scores for the parents are significantly higher on the variables of content advisor ($t = 2.53, p < 0.05$) and learning counselor ($t = 3.07, p < 0.01$). Both students and parents have high mean scores on the variable motivator.

Table 4.8 Mean scores for each role on the Parent Involvement Questionnaire

Group	Parental Role				
	Motivator ^a	Resource Provider ^b	Monitor ^a	Mathematics Content Advisor ^b	Mathematics Learning Counselor ^a
Students (n=26)					
Mean	12.45	5.42	10.15	5.04	10.73
Standard Deviation	1.07	1.04	0.98	0.96	0.87
Parents (n=26)					
Mean	12.35	5.81	10.58	5.69	11.5
Standard Deviation	1.08	0.95	0.92	0.89	0.94

Note ^a Maximum possible score = 16, ^b Maximum possible score = 8.

Tables 4.9 and 4.10 show results from selected Parental Involvement Questionnaire items. The vast majority of parents (over 95%) responded that, at home, they encouraged their children to work hard on mathematics problems even though the problems were difficult. Over 90% of students responded that their parents encouraged them work hard. When parents were asked if they were able to motivate their children to learn mathematics well, almost 85% of the parents agreed or strongly agreed that they were frequently able to motivate their children to learn mathematics well, and nearly 85% of students agreed or strongly agreed that their parent did.

Parents realized the importance of having a nice learning environment for their children at home. About 93% of parents said that they tried hard to have such a learning environment, but only 88% of students agreed or strongly agreed that their parent did. Most parents and students disagreed or strongly disagreed that parent often bought mathematics-related books or resources for their children (65% vs. 69%).

The last of the selected Parental Involvement Questionnaire items gauged whether parents checked their children's homework regularly, monitored the amount of time their children spent on mathematics at home, and came to know their children's mathematics requirements through different ways. Specifically, 65% of parents said that they checked their children's homework regularly and 73% of students agreed or strongly agreed that they did. Over 57% of parents attempted to monitor the amount of time their children spent on mathematics at home. Nearly 54% of students said that their parents monitored the time on mathematics assignments. Only 50% of parents were aware of their children's mathematics requirements. However, over 53% of students disagreed or strongly disagreed that their parents were aware of their mathematics requirements.

Table 4.9 Parent results from the PIQ items (pre-survey).

Parent Response Totals (n=26)				
Selected PIQ Items	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
1. At home, I encourage my child to work hard on mathematics problems even though the problems are difficult.	0	1	6	19
2. I am usually able to motivate my child to learn mathematics well.	0	4	9	13
3. I try hard to have a nice learning environment at home for my child to do mathematics.	0	2	9	15
4. I often buy mathematics related books or resources for my child.	5	12	7	2
5. I check my child's homework completion regularly.	2	7	11	6
6. I always try to monitor the amount of time my child spends on mathematics at home.	7	4	5	10
7. I am always aware of my child's mathematics requirements by checking school website, parent portal, or speaking with teacher or counselor.	4	9	10	3

Table 4.10 Student results from the PIQ items (pre-survey).

Student Response Totals (n=26)				
Selected PIQ Items	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
1. My parents encourage me to work hard on mathematics problems even though the problems are difficult.	0	2	4	20
2. My parents are able to motivate me to learn mathematics well.	0	3	7	15
3. I have a nice learning environment at home to do mathematics.	0	3	10	13
4. My parents buy mathematics related books or resources for me.	8	10	7	1
5. My parents check homework completion regularly.	4	3	14	5
6. My parents try to monitor the amount of time I spend on mathematics at home.	6	6	4	10
7. My parents are always aware of my mathematics requirements by checking school website, parent portal, or speaking with teacher or counselor.	7	7	9	3

Research Question #1

“What strategies might family members and school personnel select collectively to promote and support student learning and development? Are there any significant differences between responses provided by family members and school personnel?”

There were a total of five focus group sessions. The focus groups were formed by the roles of the participants: one for 6 math teachers, one for 6 parents, one for 6 students, one for 3 school counselors, and one for 3 administrators. As explained at the beginning of each focus group session, questions were presented to the group and anyone was able to answer while others could play off of their counterparts’ responses. This

open format proved to be successful as each participant was provided time to reply to the questions as well as their counterparts' comments.

The questions for the focus groups were explored one at a time until all questions were answered, and, if necessary, participants were prompted to respond more thoroughly. Math teachers, school counselors, and administrators were asked four similar questions to identify selected strategies to implement during the intervention period.

These questions were:

- What does home-school collaboration mean to you? How, if at all, are you involved in this kind of collaboration?
- How would you describe African-American family involvement at your school? How would you describe African-American student math achievement at your school? What are your thoughts about how race may play a role in high school math success?
- What are your opinions about the African-American family involvement strategies list provided to you prior to this session? Please take a moment to review the list. What strategies might you select to promote student learning and development in high school math?
- As a group which African-American family involvement strategies would you select to implement over the next 9 to 12 weeks?

African-American parents and African-American students were asked the same questions as listed above with the exception of the second question. The modified question for the parents was:

- How would you describe your involvement in your child's education? How would you describe your child's math achievement at your school? What are your thoughts about how race may play a role in high school math success?

And the modified question for the students was:

- How would you describe your parents' involvement in your education? How would you describe your math achievement? What are your thoughts about how race may play a role in high school math success?

Below is the researcher's analysis of participants' experiences with or perspectives regarding African-American family involvement.

Math Teachers Focus Group

Six math teachers were invited to participate in the discussion on specific strategies that could promote and support African-American student learning and development. One math teacher was not able to attend the focus group due to a school district engagement. The findings from the focus group revealed six thematic categories.

The themes are as follows:

1. Descriptions of home-school collaboration vary differently amongst the teachers;
2. The teachers' current family involvement practices are limited;
3. African-American parents are more involved in their children's extra-curricular activities;
4. Teachers are not sure if race is a predictor for math success;
5. Students' perceptions about their mathematical aptitude could potentially affect their performance;
6. Potential family involvement strategies that may improve math achievement.

Theme #1. Descriptions of home-school collaboration vary differently amongst the teachers

The majority of math teachers were able to speak to some extent about the meaning of home-school collaboration. Some statements indicated that differences existed amongst them regarding where home-school collaborative efforts seems to matter most. In particular, some of the math teachers discussed how home-school collaboration was driven by what happens at school. Whereas others said home-school collaboration

consists of a reciprocal relationship between school personnel and families. One teacher said:

Home-school collaboration really means that the folks at home— whether it's mom, dad, grandma, grandpa, aunt, uncle or whomever the person of responsibility— is knowing what is happening in the school. Whether it's through the teacher, through the administrator, through the guidance counselor [or] through the student.

Meanwhile, another teacher mentioned:

Not only does the home know what is going on in school but school has some idea of what is going on at home because our students' days don't stop when they get on a bus. It not only relies on things going from school to home but also ideas and information coming back.

This teacher's comment underscores the notion that consistent communication between the home and school are essential elements to establishing home-school collaboration.

Theme #2. The teachers' current family involvement practices are limited

The math teachers identified the school's parent communication policy as the main component as to how they are involved in the home-school collaboration process. The school's policy requires teachers to notify parents of students who are (a) earning a grade of 69.9 or below during an identified period between progress reports or report cards and (b) showing growth on summative assessments or course grades. The two modes of contacting parents are phone calls and emails.

Theme #3. African-American parents are more involved in their children's extra-curricular activities

The math teachers reported that African-American family involvement was not the highest nor the lowest at their school. One teacher said, "I'm stump on this question because I don't see a lot of parental involvement in this school." Whereas another teacher questioned the group about whether or not African-American family involvement

was just restricted to academics, outreach programs, athletic events or performances. Further in the discussion, several teachers mentioned that [African-American parents] come to talent shows and athletic events.

One teacher went on to mention that the African-American parents of their honors level students' parents are involved. However, African-American parental involvement at the school is low. It is unclear whether African-American family involvement is low involvement due to the functions of the high school, teachers, or community.

Theme #4. Teachers aren't sure if race is a predictor for math success

There was no consensus amongst the teachers whether or not if race plays a role in high school math success. At least two teacher didn't believe that race plays any role in African-American students' math success. One teacher said that poverty is more of a predictor of lower math performance than race. On the other hand, one of the teachers said, "My own biases notwithstanding, African-American students have a history of not being treating equitably. So that's where I think race is going definitely going to play one factor."

Theme #5. Students' perceptions about their mathematical aptitude could potentially affect their performance

The teachers believe that their African-American students are capable of math success. However, some of their African-American students don't believe this to be true. According to some of the teachers, some of their students made the following comments about their math abilities:

- I don't know this, I'm Black.
- Don't expect me to pass, I'm Black.

Several of the teachers believe some African-American students may make negative comments about their math abilities to serve as a protective label to avoid either failing or performing well.

Theme #6. Potential family involvement strategies that may improve math achievement

The majority of teachers selected parent and student exchange as a strategy to promote student learning and development in high school math. Several of the teachers mentioned that this type of exchange could allow parents with a better understanding of what it takes to be successful in math and high school generally. Overall, some of the teachers believe if [African-American] parents understand what it means to be a successful math student, then they would be better equipped to transfer that knowledge to their children. Other strategies that were mentioned during the discussion were mutual goal setting, being visible with the African-American community, and home visits. The strategies that the teachers named were mentioned by Schurr, Reglin, or Trotman.

The teachers were given a list of strategies prior to review prior to the focus group discussion. As a group, the math teachers selected strategies offered by Schurr, Reglin, and Trotman. Table 4.11 lists the strategies that the math teachers would like to implement during the African-American family involvement project.

Table 4.11 African-American family involvement strategies selected by math teacher

Strategy Source	Strategy	# of math teachers selecting the strategy
Schurr	Assessment of school, policies, practices, and rituals.	4
	Parent Handbook of guidelines and tips.	5
	Extra academic credit for parent involvement.	2
Reglin	Admitting that help is needed.	5
	Having high expectations for students' learning.	4
	Being visible within the African-American community.	2
Trotman	Urge parents and/or guardians to remain or become active in their child's educational process.	4
	Establish a rapport with parents.	5

School Counselor Focus Group

Three school counselors participated in the focus group discussion. The findings from the focus group revealed six thematic categories. The themes are as follows:

1. The parents' involvement is the most important aspect of home-school collaboration;
2. The counselors' family involvement practices extend beyond phone calls and emails;
3. African-American parents are more involved than other minority parents;
4. Counselors don't believe that race is a predictor for math success;
5. Educators or parents may not have high expectations for African-American students;
6. Collaborating with African-American families as partners may improve math achievement.

Theme #1. The parents' involvement is the most important aspect of home-school collaboration

The school counselors agreed that home-school collaboration is an important contributor to student learning and development, especially parental involvement at home. This includes:

- “Providing their children with a math tutor or other resources when necessary.”
- “Having conversations with their children about their math class.”
- “Having knowledge of their children’s math course completion or enrollment.”
- Staying in communication with school personnel especially when they reach out.”

Although the counselors believe that the parents’ roles are the most important aspect of home-school collaboration, they agreed that parents aren’t solely responsible for students’ math achievement.

Theme #2. The counselors’ family involvement practices extend beyond phone calls and emails

The counselors, similar to the math teachers, identified the school’s parent communication policy as a way they are involved in the home-school collaboration process. In addition, the counselors communicate with parents during scheduled planning and placement team meetings, 504 plan meetings, parent-teacher conferences, or individual parent meeting.

Theme #3. African-American parents are more involved than other minority parents

The counselors agreed that African-American family involvement is higher than other minority groups, but not as high as White families’ at their school. One counselor

mentioned that African-American parents are very responsive to specific parental involvement invitations, such as attending parent-teacher conferences. However, the counselors believe that parent informational events or programs aren't well attended by African-American families.

Theme #4. Counselors don't believe that race is a predictor for math success

The counselors believe that African-American students have the ability to perform well in their math classes. Therefore, the counselors don't believe that race is a predictor for math success. A concern that was mentioned was whether or not African-American students and their families' believe race is a predictor for math success. According to the counselors, many African-American students are not performing to their potential in math.

Theme #5. Educators or parents may not have high expectations for African-American students

One of the counselors said that math performance expectations seem to be higher for White students than African-American students. The counselors grappled with the notion of whether or not school personnel and African-American parents were consciously or subconsciously setting lower math achievement expectations for African-American students. As mentioned earlier, many African-American students were not reaching their full potential in math. The counselor were wondering if the students' underachievement or underperformance was due to low expectations being set by students or school personnel.

Theme #6. Collaborating with African-American families as partners may improve math achievement

One of the counselors mentioned the need to recognize African-American family members as equal partners. Another counselor mentioned the need to host informational events in different locations other than the high school. Overall, the counselors thought that parent and community outreach would help promote student learning and development in high school math. Enlisting support from both [African-American] parents and community is paramount. One of the counselors said, “If you think about it, they are going to be the ones who know the best ways to reach other [African-American] parents and how to make involvement more of a norm rather than an outlier.”

The counselors were given a list of strategies prior to review prior to the focus group discussion. The counselors recommended implementing two of Schurr’s strategies, three of Reglin’s strategies, and four of Trotman’s strategies during the nine to twelve week project. Table 4.12 provides a list of the counselors selected strategies.

Table 4.12 African-American family involvement strategies selected by counselors

Strategy Source	Strategy	# of counselors selecting the strategy
Schurr	Parent Handbook of guidelines and tips.	2
	Parent lounge/center/ resource room.	2
Reglin	Admitting that help is needed.	3
	Having high expectations for students’ learning.	3
	Being visible within the African-American community.	2
Trotman	Establish a rapport with parents.	3
	Provide parents with more authority.	3
	Ask parents about their interest in the school.	2

Administrator Focus Group

Three administrators participated in the focus group discussion. The findings from the focus group revealed three thematic categories. The themes are as follows:

1. Approaches of establishing home-school collaboration vary amongst administrators;
2. African-American parents' involvement is similar to other parents;
3. Administrators don't believe that race is a predictor for math success.
4. Potential family involvement strategies that may improve math achievement.

Theme #1. Approaches of establishing home-school collaboration vary amongst administrators

The administrators' descriptions of establishing and maintaining home-school collaboration varied. One administrator described how they work their staff to develop positive interactions with parents. In essence, this administrators encourages their staff to use strength-based statements to begin conversations with parents.

The other two administrators mentioned that it is the function of school personnel to inform parents about how education has the potential of providing their children with opportunities in the future. Parents should be reminded constantly about what [school personnel] can do and what parents can do in a true and solid partnership.

Theme #2. African-American parents' involvement is similar to other parents

Two administrators mentioned that [African-American family] involvement is similar to the involvement of families' from other racial or ethnic backgrounds. One administrator pointed out that most African-American parents that are requested to meet with school personnel to discuss their children's academics, discipline or attendance, are

likely to attend the meeting. It was not clear whether or not if parents from other racial groups did not attend meetings with school personnel.

African-American family involvement is improving in certain grades because building administrators are putting more emphasis on it. One administrator mentioned that some African-American parents do not follow through with the agreed upon student monitoring tasks.

Theme #3. Administrators don't believe that race is a predictor for math success

There were several opinions given by the administrators about other factors that might be a predictor for math success. For instance, one administrator believes that socioeconomic status may be a better predictor than race. Another administrator mentioned that they haven't analyzed the math achievement data by race. Overall, the administrators don't believe that race is a predictor for math success.

Theme #4. Potential family involvement strategies that may improve math achievement

The administrators were given a list of strategies prior to review prior to the focus group discussion. Two administrators initially focused on strategies offered by Schurr that are traditional family involvement events. The strategies were (1) An old fashion night at the school and (2) Meet and greet program for involvement (i.e. Welcome back to school). As their colleague began to highlight strategies offered by both Reglin and Trotman, then they begin to explore other strategies that should be implemented during the study. As a group, the administrators selected a variety of strategies recommended by Schurr, Reglin, and Trotman (see Table 4.13).

Table 4.13 African-American family involvement strategies selected by administrators

Strategy Source	Strategy	# of administrators selecting the strategy
Schurr	Assessment of school, policies, practices, and rituals.	3
	Parent Handbook of guidelines and tips.	2
	Parent-teacher dialogue journals for communication	1
Reglin	Admitting that help is needed.	2
	Having high expectations for students' learning.	3
Trotman	Urge parents and/or guardians to remain or become active in their child's educational process.	3
	Establish a rapport with parents.	3
	Provide parents with more authority.	1

African-American Parent Focus Group

Six African-American parents were invited to participate in the discussion on specific strategies that could promote and support African-American student learning and development. Five parents confirmed, but only four parents participated in the focus group discussion. The findings from the focus group revealed three thematic categories.

The themes are as follows:

1. Parents use multiple strategies;
2. African-American students might perform better with a math teacher from the same race;
3. The school should consider implementing different family involvement strategies.

Theme #1. Parents use multiple strategies

Below are examples of how the parents are involved:

- “Having conversations with their children about their math class.”

- “Monitoring their children’s progress on Home Access Center.”
- “Communicating with school personnel when their children aren’t performing well.”

Overall, there was a consensus amongst the parents that their involvement is important. In addition, they view home-school collaboration as working together as a team for the best results.

Theme #2. African-American students might perform better with a math teacher from the same race

The parents said that they believe the interactions between non-African-American teachers and students influences students’ math performance. One parent explained a situation where their child’s math teacher made some comments that suggested that the students wasn’t able to keep up with the class. The parent said, “Sometimes I feel some of the teachers see a Black student in an honors level class and assume they don’t know how to do the work.” Other parents suggested the an African-American teacher might (a) connect better with African-American students, (b) build the confidence of African-American students, (c) serve as a positive role model, (d) encourage African-American students to apply themselves more in math, and (e) make African-American students feel more comfortable asking for help with math assignments.

Theme #3. The school should consider implementing different family involvement strategies

The parents suggested that different family involvement strategies, other than back to school night or open house, should be implemented at school. Several of the parents said that the back to school night in the beginning of the school year doesn’t provide them with enough time to speak with their children’s math teachers. One parent stated, “I don’t receive enough information from the math teachers.” Overall, the parents

would like for school personnel to try different strategies to provide African-American parents more opportunities to be involved in the home-school collaboration process.

The parents were given a list of strategies prior to review prior to the focus group discussion. As a group, the African-American parents selected strategies recommended by Schurr, Reglin, and Trotman. Table 4.14 lists the strategies that African-American parents selected for the duration of the study.

Table 4.14 African-American family involvement strategies selected by parents

Strategy Source	Strategy	# of parents selecting the strategy
Schurr	Assessment of school, policies, practices, and rituals.	2
	Parent Handbook of guidelines and tips.	4
	Parent-teacher dialogue journals for communication	2
	Parent lounge/center/ resource room.	2
Reglin	Admitting that help is needed.	3
	Having high expectations for students' learning.	4
Trotman	Establish a rapport with parents.	4

African-American Student Focus Group

Six African-American students were invited to participate in the discussion on specific strategies that could promote and support African-American student learning and development. Five African-American students participated in the focus group discussion. One of the students missed the focus group discussion, because they forgot when the time of the discussion. The findings from the focus group revealed two thematic categories.

The themes are as follows:

1. Some African-American parents act like they're too busy to get involved;
2. Students' opinions varied about visiting the churches as a meaningful family involvement strategies.

Theme #1. Some African-American parents act like they're too busy to get involved

The majority of the students spoke about how their parents are involved in monitoring their math progress. Two of the students said that their parents log on to home access center, a parent-student information portal, at least twice a week. The other three students said that their parents review their progress reports or report cards the go home periodically during the school year. Then a few of the students said how some African-American parents, not referring to their parents, act like they don't have enough time or are they're too busy to be involved in their children's academic events. According to several of the students, African-American families attend more athletic events than academic enrichment workshops or PTO meetings.

Theme #2. Students' opinions varied about visiting the churches as a meaningful family involvement strategies

The majority of the students said that they oppose having math teachers visit their churches to speak with pastors or [ministerial staff] about how to maintain or increase their parents' involvement. One student said that they wouldn't want their parent to speak about their math progress in church. This particular student, whose math grades are improving, went on to say that their parent checks home access center often and they do not need a reminder when they arrive at church. Another student said that they wouldn't mind if their math teacher attended their church. However, their parent is already involved in their education. A student who doesn't attend church said that she thought this would be a good strategies to reach out to African-American families who need assistance with helping their children perform better in math.

The students were given a list of strategies prior to review prior to the focus group discussion. As a group, the African-American students selected strategies recommended by Schurr, Reglin and Trotman. Table 4.15 lists the strategies that African-American student selected for the length of the study.

Table 4.15 African-American family involvement strategies selected by students

Strategy Source	Strategy	# of students selecting the strategy
Schurr	Parent Handbook of guidelines and tips.	4
Reglin	Admitting that help is needed.	3
	Having high expectations for students' learning.	4
Trotman	Establish a rapport with parents.	4

Specific Findings Related to Research Question #1

“What strategies might family members and school personnel select collectively to promote and support student leaning and development? Are there any significant differences between responses provided by family members and school personnel?” Findings related to the first part of this question were identified by comparing the involvement strategies that were selected by math teachers, school counselors, administrations, African-American parents, and African-American students in there respectively focus groups. The following involvement strategies were selected unanimously amongst all groups:

1. *Parent handbook of guidelines and tips.*
2. *Admitting that help is needed.*
3. *Having high expectations for students' learning.*
4. *Establish a rapport with parents.*

Parent handbook of guidelines and tips is one of the sixteen involvement strategies offered by Schurr. As mentioned in Chapter 2, some of Schurr's strategies will help many parents at various levels of involvement particularly when their students are in high school. For the purposes of this study, all of the parent participants received a copy of a parents' guide to student success in high school math (see Appendix L). This guide, which was published by the National PTA, provided the African-American parents in this study with a useful framework for supporting their children with learning high school math both at home and at school.

Admitting that help is needed and *Having high expectations for students' learning* are two of the four strategies recommended by Reglin. Having high expectations for students' learning is done by both educators and African-American families expecting that students will be successful in high school math. Admitting that help is needed centers on the notion that educators need African-American parents to assist them with student motivation and achievement. In addition, this strategy solicits family participation in a manner that provides families with feeling as valuable partners in their children's education.

Establish a rapport with parents is one of the five strategies offered by Trotman. During this study, African-American parents were afforded opportunities to communicate with school personnel via email. In addition, parents were able to monitor their children's math progress by

1. Using Home Access Center
2. Reviewing weekly monitoring reports
3. Communicating with math teacher via email.

The communication between school personnel and African-American parents in this study was done to maintain contact. Based on the information gathered from semi-structure parent interviews, there were no negative connotation that African-American parents had towards school personnel when parents were informed that their child was performing well in math at a particular moments in the study.

Findings related to the second part of the first question, “Are there any significant differences between responses provided by family members and school personnel?” School personnel (i.e., math teachers and administrators) were most likely to select Trotman’s urge parents and/or guardians to remain or become active in their child’s educational process strategy, whereas neither African-American parents nor students selected this strategy. One thing to note is that neither school personnel nor African-American parents and students selected any of the strategies suggested by Abdul-Adil and Farmer.

Parents and students completed the Parental Involvement Questionnaire at the end of the study. Tables 4.16 and 4.17 show results from selected items that were completed by parents and students for both the initial and final selected PIQ items. The majority of parents and students agreed or strongly agreed that parents, at home, encouraged their children to work hard on mathematics problems even though the problems were difficult (95% vs. 90%). When parents were asked if they were able to motivate their children to learn mathematics well, almost 85% of the parents agreed or strongly agreed that they were frequently able to motivate their children to learn mathematics well, and nearly 85% of students agreed or strongly agreed that their parent did.

Parents realized the importance of having a nice learning environment for their children at home. About 93% of parents said that they tried hard to have such a learning environment, but only 88% of students agreed or strongly agreed that their parent did. Most parents and students disagreed or strongly disagreed that the parent often bought mathematics-related books or resources for their children (65% vs. 69%).

The last of the selected Parental Involvement Questionnaire items gauged whether parents checked their children's homework regularly, monitored the amount of time their children spent on mathematics at home, and came to know their children's mathematics requirements through different ways. Most parents and students agreed or strongly agreed that the parent checked their children's homework regularly (65% vs. 73%). Slightly more than half of parents and students agreed or strongly agreed that the parent attempted to monitor the amount of time their children spent on mathematics at home (57% vs. 54%). Only 50% of parents agreed or strongly agreed that they were aware of their children's mathematics requirements. However, over 53% of students disagreed or strongly disagreed that their parents were aware of their mathematics requirements.

Table 4.16 Parent results from the PIQ items (post-survey).

Parent Response Totals (n=26)								
Selected PIQ Items	Strongly Disagree		Somewhat Disagree		Somewhat Agree		Strongly Agree	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
1. At home, I encourage my child to work hard on mathematics problems even though the problems are difficult.	0	0	1	1	6	5	19	20
2. I am usually able to motivate my child to learn mathematics well.	0	0	4	4	9	9	13	13
3. I try hard to have a nice learning environment at home for my child to do mathematics.	0	0	2	2	9	10	15	14
4. I often buy mathematics related books or resources for my child.	5	4	12	13	7	7	2	2
5. I check my child's homework completion regularly.	2	2	7	6	11	13	6	5
6. I always try to monitor the amount of time my child spends on mathematics at home.	7	3	4	11	5	9	10	4
7. I am always aware of my child's mathematics requirements by checking school website, parent portal, or speaking with teacher or counselor.	4	2	9	9	10	9	3	6

Table 4.17 Student results from the PIQ items (post-survey).

Student Response Totals (n=26)								
Selected PIQ Items	Strongly Disagree		Somewhat Disagree		Somewhat Agree		Strongly Agree	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
1. My parents encourage me to work hard on mathematics problems even though the problems are difficult.	0	0	2	1	4	5	20	19
2. My parents are able to motivate me to learn mathematics well.	0	0	3	3	7	9	15	14
3. I have a nice learning environment at home to do mathematics.	0	0	3	3	10	9	13	14
4. My parents buy mathematics related books or resources for me.	8	7	10	10	7	8	1	1
5. My parents check homework completion regularly.	4	3	3	7	14	12	5	4
6. My parents try to monitor the amount of time I spend on mathematics at home.	6	8	6	8	4	8	10	2
7. My parents are always aware of my mathematics requirements by checking school website, parent portal, or speaking with teacher or counselor.	7	3	7	4	9	11	3	8

Table 4.18 Mean scores for each role on the Parent Involvement Questionnaire (post-survey)

Group	Parental Role				
	Motivator ^a	Resource Provider ^b	Monitor ^a	Mathematics Content Advisor ^b	Mathematics Learning Counselor ^a
Students (n=26)					
Mean	12.46	5.54	10.27	4.96	10.81
Standard Deviation	1.03	1.02	0.98	0.94	0.90
Parents (n=26)					
Mean	12.35	5.81	10.58	5.69	11.5
Standard Deviation	1.08	0.95	0.92	0.89	0.94

Note ^a Maximum possible score = 16, ^b Maximum possible score = 8.

Educator Perceptions of the Factors that Affect Student Learning (After the Intervention)

At the end of the intervention period, the educators were given a questionnaire similar to the one that they completed prior to the beginning of the study. The first part of the questionnaire involved identifying the degree to which the educators believed a series of possible factors that impact student learning and development. The educators were asked again to assign a number of points to each factor to identify the relative importance of that factor in such a way that the total of their assigned factors would equal 100. Table 4.19 includes the mean results for the educators' base and final questionnaire responses.

First, the results of this item demonstrate that the educators believe that families have an impact on student learning and development. The mean for items C through H, which focused on parent/guardian actions or beliefs as it relates to their children learning math, was 60.4 on the base questionnaire and 63.2 on the final questionnaire. These

results suggests that the educators believed that students' families' actions (or lack thereof) have a greater impact on student math learning than do the child's natural talent or the curriculum and instruction the child receives in school. Second, the results indicate that educators' perceptions of the factors impacting student learning remained steady overall from the base to the final questionnaire. There was no change in the mean attribution of impact of more than 3.1 points for any item. The items for which there were changes greater than three points were related to the student's natural talent/intelligence/ability, for which the mean attribution declined and steps parents/guardians take to actively collaborate with school staff, for which the mean attribution inclined. Therefore, these results suggests that the educators believed that family involvement is central to student learning and development in high school math.

Table 4.19: Educators’ perceptions of the relative weight of factors on student achievement after project.

Factor	Mean points assigned (base questionnaire)	Mean points assigned (final questionnaire)
A. The student’s natural talent/intelligence/ability .	17.6	14.5
B. The quality of teaching the student receives at school.	22	22.3
C. Steps parents/guardians take to emphasize the importance of education and learning .	16.1	16.2
D. Steps parents/guardians take to create a strong family life outside of school.	10	12.4
E. Steps parents/guardians take to help the child with homework or studying at home .	9.8	7.9
F. Steps parents/guardians take to create a consistent structure for homework/studying at home (even if they don’t/can’t directly help).	12.3	10.5
G. Steps parents/guardians take to actively collaborate with school staff to promote children’s learning (communicating about progress, etc.).	7.4	10.5
H. Steps parents/guardians take to access support and opportunities for their children in the wider community (outside home and school).	4.8	5.7
TOTAL	100	100

Educator Perceptions of Black/African-American Parental Involvement in their Children’s Education

In section two of the final questionnaire, educators were asked to respond to specific statements about African-American parents. Statements in this section allowed educators to give their best estimate, based on their experiences prior to and during the study, of the percentage of Black/African-American parents/guardians who

do each of several actions/activities. The mean percentages from the base and final questionnaires are presented in Table 4.20.

Table 4.20: Educators' perceptions of the percentages of African-American parents/guardians engaging in specific actions/activities associated with supporting their children.

Action/Activity	Mean percentage identified by interviewers (base questionnaire)	Mean percentage identified by interviewers (final questionnaire)
1. Work hard to create a strong family life at home for their children.	68%	65%
2. Consistently emphasize the importance of education in raising their children.	52%	59%
3. Regularly help their children with schoolwork at home.	21%	25%
4. Create a consistent structure for homework/studying in the home (even if they don't or can't actually help with homework or studying).	29%	25%
5. Actively collaborate with school staff to support their children's educational process.	30%	31%
6. Access support for their children in the wider community (outside home and school).	34%	30%
7. Make a significant, positive educational difference in their children's lives.	48%	46%
8. Do very little to support their children's educational process.	32%	28%

Analysis of mean percentages suggests that the educators' estimations have changed slightly in relation to several indicators from the beginning to the end of their participation in the study. Comparison of the base and final questionnaire results demonstrates that along some dimensions, educators expressed somewhat more negative perceptions of the role that African-American students' parents/guardians played in

relation to their children's math learning at the end of the study than they did at the beginning. Mean estimations of the percentage of African-American parents engaging in only two action/activity indicators grew by 4 or more points from the base to the final questionnaire, with estimations of the percentage of parents who consistently emphasize the importance of education as they raise their children having a positive mean change of 7% from the base questionnaire. The educators' mean estimations of African-American parents who "create a consistent structure for homework/studying in the home" and "do very little to support their children's educational process" were reduced by 4% each. Overall, educators reported negatively on five indicators for this section.

In an attempt to describe any changes in perceptions, educators were asked to respond to an open-ended question at the end of section two of the final questionnaire: "Have you noticed any changes in your perceptions of African-American parents/guardians as a result of your participation in this research project?" Nine of the twelve educators responded no or "I have not noticed changes in my perception." One of the nine educators (possibly a math teacher based on the response) mentioned that his or her perceptions did not specifically change, but noticed greater participation and effort from the students who participated in the study.

One of three educators that believed their perceptions changed said, "I perceived that the Black/African-American parents were trusting the school very little. Also the emphasis they lay on education is less than an emphasis on making a living." The other responses were:

- "Schools can present themselves as an intimidating place so schools need to reduce those factors. Parents care about their children and schools need to learn how to leverage that interest, welcome it, and give it a viable presence in the school-family partnership."

- “I now have more of an understanding because I’ve been more reflective about specific questions raised. I have always felt and believed that parents love their child and I have not met one that hasn’t, but I see often that parents may not have the tools to help their child succeed.”

Although these statements were broad and did not describe how their perceptions changed over the course of the study, the respondent’s generally mentioned the how African-American family involvement may have the potential to positively impact high school math success.

In section three of the final questionnaire, educators were asked to respond to specific statements about African-American parents. In this section educators were asked how much they agreed or disagreed with statements about Black/African-American family involvement. Table 4.21 provides educators’ levels of agreement or disagreement for both the base and final questionnaires.

The results for section three demonstrate that the educators’ post-intervention level of agreement or disagreement with the African-American family involvement statements were similar to their pre-intervention level, with the exception of one statement. For analysis, individual responses were assigned points as follows: Strongly disagree = 1 point; Somewhat disagree = 2 points; Somewhat agree = 3 points; Strongly agree = 4 points.

Five educators disagreed with the statement “if Black/African-American parents/guardians try really hard, they can help their children learn even when their children are unmotivated.” However, none of the educators disagreed with that statement on the final questionnaire.

Table 4.21 Educators' agreement with African-American family involvement statements
(After the Intervention)

	Means	
	Base Questionnaire	Final Questionnaire
1. Black/African-American family involvement is important for student success in school.	3.6	3.8
2. If Black/African-American parents/guardians try really hard, they can help their children learn even when their children are unmotivated.	2.8	3.4
3. Black/African-American parents/guardians need to learn ways to help their children with schoolwork at home.	2.8	2.9
4. Black/African-American parents/guardians at our school want to be involved more than they already are.	2.9	2.8
5. My colleagues view Black/African-American parents/guardians as important partners in their children's educational process.	3.5	3.3
6. We need to improve Black/African-American family involvement at our school.	3.7	3.4

Educator Responses to Items Related to their Family Involvement Practices (After the Intervention)

Educators were asked to indicate how often they practiced a series of communication family involvement tactics with African-American family engagement. For analysis, individual responses were assigned points as follows: Less than monthly = 1 point; At least once a month but less than weekly = 2 points; About once a week = 3 points; Averaging more than once a week = 4 points. Response totals and analysis of mean results are presented in Table 4.22. In most areas there was little change with the frequency with which the educators practiced these family involvement tactics. The area in which educators' responses indicated the most change was: "Communicate with a parent/guardian about skills their child must learn in specific academic subjects," for which the mean decreased from 2.3 to 1.7.

Table 4.22 Educators’ specific family involvement practices mean scores (base and final)

Family Engagement Tactic	Means	
	Base Questionnaire	Final Questionnaire
1. Have a conference with a parent/guardian.	2.5	2.2
2. Contact a parent/guardian if the child has problems or experiences failure.	2.8	2.9
3. Contact a parent/guardian if the child does something well or improves.	2.2	2.1
4. Communicate with a parent/guardian about skills their child must learn in specific academic subjects.	2.3	1.7

Specific Findings Related to Research Question #2

“What impact do the selected strategies have on family members and school personnel?”

This research question was answered by asking both school personnel and family members open-ended questions about how selected strategies may have had an impact on them.

School Personnel Perspectives

School personnel were asked to respond to the following prompt while completing the final questionnaire: “In reflecting on what you have learned through participating in this research project, what (if any) are the most important changes you have already made with regard to your work with Black/African-American students’ families?” There were five educators who listed none as a response or left the item blank. Two responses focused on increasing communication with both students and their families:

- Communication is definitely key, but there has to be action on the student’s part. The adults working together will send a strong message but they have to act.

- Increase individual conversations with students and families to discuss ways they might find success.

Two responses focused on using several modes of communication with parents:

- I have made several attempts to talk with parents in person or on the phone as they did not respond to emails.
- Scheduling parent meetings to discuss math expectations.

Two responses focused on providing more tips or suggestions to families:

- I used to hesitate to make suggestions regarding parenting tips (how to provide academic structure, positive discipline with time frames) but have found that parents are receptive and eager to try new things to help their child.
- Do an activity to help them understand their own inherent cultural traditions/expectations that may set narrow limits for what behaviors they tolerate.

And one response focused on examining their own bias, “Self-reflection to make sure I’m taking into account all potential variables in life before making any assumptions about the lack of involvement and the reasons behind it.” Educators’ responses to another open-ended question related to changes in practice revealed similar response patterns: “Based on what you have learned through participating in this research project, what (if any) are the most important changes you plan to make with regard to your work with African-American students’ families?” There were five educators who listed none as a response or left the item blank. One educator’s response was omitted because the statement and bullet points were illegible. Two responses focus on establishing earlier communication with families:

- Early communication would be one change. I tend to communicate after there is a problem.
- Start communications in September even though we are just getting to know each other. Try to find out what supports are in place.

Two responses focus on making establishing positive relationship:

- More positive communication to establish strong relationships initially.
- Frequent communication for successes and not only negative phone calls.

One response focused on establishing dialogue with families in order to gain understanding, “To gain more of an understanding regarding a family’s involvement, successes and struggles.” And one response focused on scheduling parent events, “Establish parent conferences and open houses based on the local bus schedule.”

The last item in the final questionnaire involved completing the following open-ended prompt: “Based on my experience and understanding at this time, the three most important things that we need to do to improve Black/African-American family involvement at our school are:” A review, categorization, and subsequent analysis of the educators’ responses from both the base and final questionnaire led to the development of Table 4.23.

Table 4.23 Educators' beliefs about what is needed to improve African-American family involvement (base and final)

Categories of Response with Sample Responses	# of educator responses in each category.	
	Base	Final
<p>Make attending family involvement events more feasible.</p> <p>Sample responses from base questionnaire:</p> <ul style="list-style-type: none"> • Provide multiple opportunities during the day and outside of work hours. • Determine what times and days are best for parents. • Provide varied time slots and venues for family involvement events. <p>Sample responses from final questionnaire:</p> <ul style="list-style-type: none"> • Make sure transportation is available for community events and provide multiple timeframes. <p>Determine common cultural centers. Where are parents comfortable meeting with teacher/administrators? (Church, community center, library, sports events).</p>	6	4
<p>Develop family involvement/education programs.</p> <p>Sample responses from base questionnaire:</p> <ul style="list-style-type: none"> • Provide academic resources for families. • Design programs that change with the grade of students. • Build up their confidence about their role in child's education. <p>Sample responses from final questionnaire:</p> <ul style="list-style-type: none"> • Change open houses to parent conferences 	4	6
<p>Communicate with families frequently</p> <p>Sample responses from base questionnaire:</p> <ul style="list-style-type: none"> • Provide a wide range of communication method for families. • Provide more positive communication- school to home. <p>Sample responses from final questionnaire:</p> <ul style="list-style-type: none"> • Find out about parents' expectations. 	8	9
<p>Provide training to school personnel.</p> <p>Sample responses from base questionnaire:</p> <ul style="list-style-type: none"> • Train teachers about family involvement. • Being able to understand African-American struggles. <p>Sample responses from final questionnaire:</p> <ul style="list-style-type: none"> • Professional development to help staff understand their own hidden bias. • Increase communication among staff regarding cultural competencies and varying perspectives. 	2	4

Table 4.23 (continued)

Categories of Response with Sample Responses	# of educator responses in each category.	
	Base	Final
<p>Strengthen community outreach.</p> <p>Sample responses from base questionnaire:</p> <ul style="list-style-type: none"> • Be a presence in the community. • Being able to understand African-American struggles. <p>Sample responses from final questionnaire:</p> <ul style="list-style-type: none"> • Be a presence in the community. • Identify key venues in the community to hold outreach program. 	2	3

During the individual semi-structured interviews, math teachers, African-American family members, and African-American students were asked similar questions to solicit information regarding their participation in this study. Three math teachers, four African-American students, and three African-American parents participated in the semi-structured interviews.

Math Teacher Perspectives

Most of the teachers indicated that none of the implemented strategies made a significant impact on them during the study. However, one of the teachers said that the two of the implemented strategies (i.e., parent handbook of guidelines and tips and establish a rapport with parents) made an impact on them. The teacher noticed how these strategies promoted student learning for the student participants and helped build a better relationship with their parents.

African-American Parent Perspectives

Four out of five African-American parents who participated in the focus group discussion participated in individual semi-structure interviews. Qualitative data revealed that parents perceived that the specific involvement strategies had an influence on how they monitored their children's math progress during the intervention period. During the individual semi-structured interviews, most of the parents shared that the weekly progress reports and parent guidelines and tips were beneficial to them. Parent responses indicated that the weekly progress reports helped them (a) actively monitor their children's math program, (b) provide their children with support and motivation, or (c) have discussions with their children about their progress.

African-American Student Perspectives

Three out of five African-American students who participated in the focus group discussion participated in individual semi-structure interviews. Qualitative data revealed that students perceived that the specific involvement strategies had an influence on how their parents monitored their progress during the intervention period. Qualitative data revealed that students perceived that the specific involvement strategies had an influence on how their parents monitored their math progress during the intervention period. During the individual semi-structured interviews, most of the students conveyed that the weekly monitoring sheets positively affected their math progress.

Research Question #3

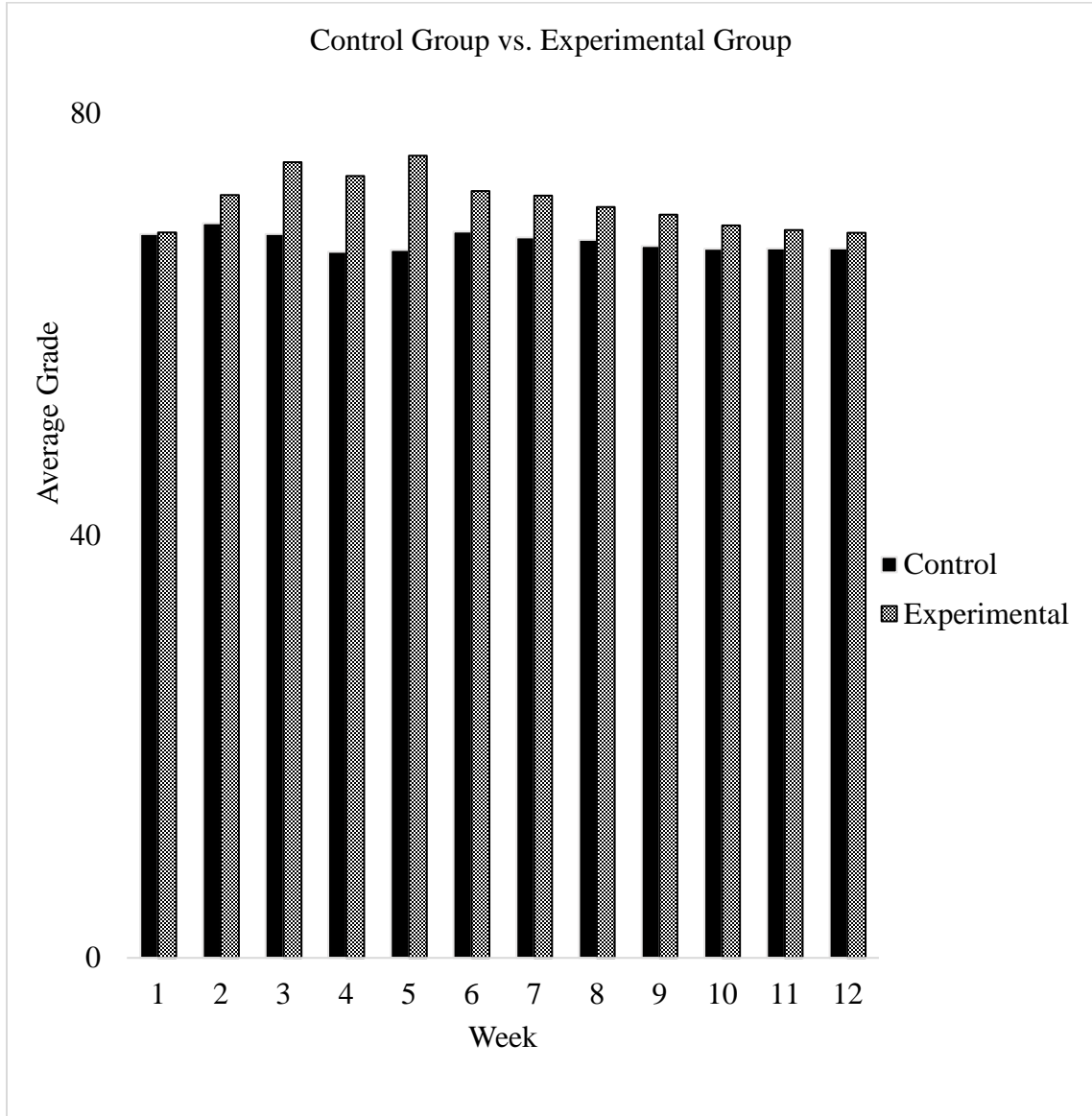
“Which strategies are associated with improving math achievement? How long will it take to notice improvement, if at all, in student learning and performance?”

The involvement strategies selected among all groups were all centered on school personnel providing African-American family members with guidelines and tips, admitting to African-American family members that their help is needed, having high expectations for African-American students' learning, and establishing a rapport with African-American parents. Also, parents received weekly monitoring sheets with their children's updated progress.

For the third research question, analysis revealed that it was difficult to assess which specific African-American family involvement strategy contributed to math achievement. A two-sample t-test was conducted to analyze students' achievement based on weekly-grade reports. Table 4.24 provides a visual display to make limited comparisons between the control and experimental groups over the course of the study. In addition, summaries of the distribution of weekly grade averages and the means and standard deviations for both student groups' grade reports across all twelve weeks are reported in Appendices M and N.

The results for weeks 1 and 2 suggest that there was no statistically significant differences between the experimental and control groups. However, there is a statistically significant difference between the experimental and control groups for week 3. The control group had a lower mean ($M = 68.54$, $SD = 9.01$) than that of the experimental group ($M = 75.35$, $SD = 9.67$). Week 5 is the most noticeable and statistically significant difference between both groups, whereas the experimental group had a higher mean ($M = 75.96$, $SD = 20.38$) than that of the control group ($M = 67.04$, $SD = 10.09$). Overall, the results suggest that the experimental group outperformed the control group over the duration of the study.

Table 4.24 Control and Experimental Groups Weekly Average Math Grades



CHAPTER V

DISCUSSION

The need for and significance of African-American parental involvement in mathematics achievement of high school students has been a matter of debate (Anguiano, 2004; Cousins & Mickelson, 2011; Heystek, 2003; Hiatt-Michael, 2001; Jeynes, 2003, 2005). Yet it remains unclear as to how African-American parents should be involved or what, in particular, African-American parents should do to influence their children's mathematics achievement. This study was based on the premise that identifying factors of influence in improving African American students' mathematics achievement might inform parenting practices in addition to school-based policies, practices, and interventions that involve family members and school personnel (Shute, Hansen, Underwood, & Razzouk, 2011).

In Chapter 2, descriptions of parental involvement models developed by Schickedanz (1977), Grolnick and Slowiaczek (1994), Eccles and Harold (1996), Epstein (1987a, 1987b, 1995) and Hoover-Dempsey and Sandler (1995, 1997) were provided. The section below will briefly recap these five models.

Schickedanz recognized three levels of parental involvement: (a) teachers are experts and administrators are decision-makers, (b) schools are selective with parental involvement activities, and (c) parents are involved in decision-making process. This model focuses on educators as being the experts and does not seem to create opportunities for parents to be a part of student learning.

Grolnick and Slowiaczek described (a) behavioral, (b) personal, and (c) cognitive-intellectual as the three dimensions of parental involvement that focus parent behaviors

and beliefs. However, the overlap between the three dimensions makes it difficult to discern which dimensions affects student learning the most.

Eccles and colleagues identified five dimensions of parental involvement based on the Michigan Childhood and Beyond Study. These dimensions are: (a) monitoring their children's school work in response to teacher requests, (b) volunteering by participating in volunteer activities at school, (c) engaging in the daily activities, especially in the areas of homework completion and test preparation, (d) contacting the school for progress updates, and (e) contacting the school to find out how to provide extra help. This model asserts that parents should communicate with the school frequently.

Epstein and colleagues identified six types of parental involvement: (a) demonstrating the basic obligation of parents, (b) exhibiting the basic obligations of schools, (c) contributing to parent involvement at schools, (d) providing parent involvement in learning activities at home, (e) participating in governance and advocacy, and (f) collaborating with community agencies. Epstein's typology was design to provide parents with several ways to be involved in their children's education.

Hoover-Dempsey and Sandler (1995) developed a model of the parental involvement that consists of five levels. The five levels are: (1) parents decide to become involved, (2) parents choose how to become involved, (3) parents influence children's school outcomes, (4) parents mediate between children's and schools' expectations, (5) parents' involvement results in student outcomes. This model focuses on how parents: (a) develop their role construction, (b) identify their sense of efficacy for helping their children succeed in school, and (c) respond to the parental involvement opportunities and demands presented by both their children and schools.

Olmscheid (1999) suggested that parental involvement should have a broad definition and description to include every aspect of the role of parents in their children's education. However, including every aspect of parental involvement may not lend itself to promoting student learning and development. For the purpose of this study, the parental involvement models offered by Abdul-Adil and Farmer, Reglin, Schurr, and Trotman were explored by the participants to determine which parental involvement elements were most likely to affect African-American student achievement in high school mathematics. As mentioned in Chapter 4, the participants selected strategies recommended by Reglin, Schurr, and Trotman to promote and support mathematics learning and development.

Overview of Findings

Research Question #1

This question considered (a) which specific parental involvement strategies would be selected collectively by the participants and (b) the significant differences between responses provided by family member and school personnel. As mentioned in Chapter 4, the participants selected two Reglin strategies (i.e., admitting that help is needed and having high expectations for students' learning), one Schurr strategy (i.e., providing a parent handbook of guidelines and tips) and one Trotman strategy (i.e., establishing a rapport with parents). None of the strategies offered by Abdul-Adil and Farmer were selected by any of the participants' to implement during the study. The majority of math teachers and administrators involved in this study selected Trotman's strategy of urging parents and/or guardians to remain or become active in their child's educational process. None of the school counselors and African-American family members selected that

particular strategy. Overall, the strategies that were selected focused on (a) bridging the gap that may exist between school personnel and African-American family members, (b) strengthening home-school collaboration, and (c) recognizing African-American family members in their children's educational process.

Research Question #2

This question considered the impact the selected strategies had on family members and school personnel. The majority of the math teachers indicated that none of the implemented strategies made a significant impact on them during the study. The teacher may not have been impacted by the selected strategies because of the length of the study, which was twelve weeks. However, one of the teachers mentioned how two of the implemented strategies (i.e., parent handbook of guidelines and tips and establish a rapport with parents) made an impact on them. This particular teacher noticed how these strategies promoted student learning for those of their students who participated in the study. According to the teacher, the students seemed to be more engaged in the classroom and completed more of their class and homework assignments. In addition, the teacher said that they noticed a better relationship, as it relates to the home-school communication, with the student participants' family members.

Four out of five African-American parents who participated in both the focus group discussion and individual semi-structured interviews had positive remarks regarding the impact the selected strategies or involvement in this study had on them. The majority of the parents described how the weekly progress reports and parent guidelines and tips were beneficial. For instance, parent responses indicated that the weekly progress reports helped them (a) actively monitor their children's math program, (b) provide their children

with support and motivation, or (c) have discussions with their children about their progress.

Three out of five African-American students who participated in both the focus group discussion and individual semi-structure interviews conveyed that the specific involvement strategies impacted how their parents monitored their math progress. In addition, the students mentioned that their math progress was affected as a result of participating in the study.

Research Question #3

This research question considered (a) the strategies that were associated with improving math achievement and (b) when during the study it was noticed. As mentioned in Chapter 4, it was difficult to assess which specific African-American family involvement strategy contributed to math achievement. However, there was a significant difference between the experimental and control groups for weeks 3, 4, and 5. Between weeks 6 and 12, the mean averages began to decline for both the experimental and control groups. Yet, the experimental group still outperformed the control group (see Appendices M and N).

There could be some speculations as to why the results either improved or declined for some of the African-American students in the experimental group. One possibility is that because the study began around the third quarter mid-term period, where students had an opportunity to improve their math grades prior to the end of the marking period. Therefore, the implemented strategies may have come at an opportune time to help African-American family members, primarily the students to focus on improving in their prospective math classes.

The decline for some of the African-American students may have been due the difficulty of sustaining good grades in math while focusing on other academic areas. Since the later part of the study was conducted during the fourth quarter, it is possible that several students could've experienced difficulty with managing learning and development in math in addition to managing other aspects of high school as the school year was ending. Thus, the intensity of the fourth marking period might have been a cause for the decline in some student grades.

Three home-school relationship themes emerged as a result of analyzing the data. These themes were exhibiting social respect, demonstrating personal regard, and expressing beneficence. The data that led to single out these concepts stem from responses from some of the school personnel's focus groups and questionnaires. Several of the educators believe that it is their role to inform African-American family members about how education has the potential of providing African-American students with opportunities in the future. To them, it appears as though African-American family members would not be able to help their children to appreciate or value education without their assistances. Therefore, they may infer that educators are valued more the African-American family members in this particular home-school partnership.

Social respect

Exhibiting social respect involves treating others as if they are one's social equals, as if they have worth (Cordona, Jain, & Canfield-Davis, 2012). It involves listening to what each person has to say and taking their views into account in subsequent actions or conversations. (Bryk & Schneider, 2002, p. 12).

Personal regard

Demonstrating personal regard requires school personnel to exhibit behaviors that reduce parents' feelings of vulnerability (Cordona, Jain, & Canfield-Davis, 2012). It is important that both school personnel and family members understand need to receive respect from other people (Roger, 1951).

Beneficence

Expressing beneficence as a function of the educator's role in parental involvement is probably not discussed often. The source of a moral obligation of beneficence taken on by educators could be a certain feeling of benevolence, good will, or sympathy towards students. Many educators start off their careers with a large measure of sympathy for students and a desire to commit their working lives to educating them. However, educators may be faced with constraints to beneficence (Gillon, 1985). According to Gillon these constraints are: (1) The need to respect the autonomy of those whom one intends to help, (2) The need to ensure that the help one renders [is not done as an obligation], and (3) The need to consider the wants, needs, and rights of others.

Implications

The findings in this study have important implications for math teachers, researchers, and African-American family members.

Although it is clear that African-American family members and school personnel agreed upon implementing specific strategies to promote and support student learning and development, the topic of race failed to enter into the discussion. Disregarding race in discussions of African-American parental involvement in education could be considered as dishonest. Crozier (2001) states:

[T]he adoption of a ‘one size fits all’ approach to parental involvement prevails. The blanket assumption that all parents are the same, with the same needs, and that their children can be treated in the same way is disturbing for all parents and particularly those who are already disadvantaged. With respect to ethnic minority parents, specifically, such an approach obfuscates the importance of tackling the nature and consequences of structural racism. (p. 330)

If the topics of race and racism are alluded to while discussing African-American parental involvement, it might be reduced to an explanation of prejudice or ignorance (Crozier, 2001; Gillborn, 1995). Moreover, neglecting the issue of race for the sake of being noncontroversial would silence the voices of African-American family members and discredit African-Americans strong legacy rooted in cultural ideals of uplift and political resistance to oppression.

Math Teachers

Most of the math teachers indicated that none of the implemented strategies made a significant impact on them during the study. However, this study exposed these teachers to specific African-American parental involvement strategies that have the potential to encourage mutual respect between educators and family members to promote student learning and development. Also, this study provides support to provide math teachers with strength-based and culturally relevant parental involvement professional development. Such approaches would begin with recognizing what African-American parents are already doing and explore additional opportunities to enhance successful involvement practices (Latunde & Clarke-Louque, 2016). Then African-American parents and math teachers could work together to identify students’ mathematical strengths and learning styles in order to equip students with academic strategies to use in the classroom or at home.

Researchers

This study was aimed at adding to the research on African-American parental involvement strategies that effect secondary mathematics achievement. Currently, very little is known about the efficacy of specific strategies offered by Abdul-Adil and Farmer, Reglin, Schurr, and Trotman for achieving improved outcomes in secondary mathematics academic achievement. This study offered both qualitative and quantitative analysis of participants' perceptions of strategies that have the potential to strengthen collaboration between school personnel and African-American family members. Though the present study does not offer an exhaustive description of specific strategies that promoted and supported African-American student mathematic achievement, it has brought to light need to move from having various sets of untested general strategies to having a coherent set of field-tested, richly elaborated strategies for promoting the kind of collaboration between schools and African-American families that is likely to lead to improved student learning and development.

Limitations

The researcher identified several potential limitations in the study. The first limitation of the study is the relatively small number of educators and African-American family members (including students) in the sample. The small size made it difficult to gather a wide range of perspectives on topics related to specific involvement strategies that promote and support student learning and development in high school math. Second, the study was conducted in one high school, therefore the generalizability of the findings is low. Third, researcher bias may be a limitation in the study. The researcher identifies as a Black male and is passionate about understanding how African-American family

members promote and support their children's academic growth and development. Any personal views or beliefs regarding participants' responses could affect the findings. Lastly, there was no empirical test of the hypothesis about what strategies might actually improve math achievement. These limitations could be addressed in future research.

Delimitations

Some delimitations are made by the researcher. First, the African-American family member participants' socioeconomic status and the math level of the parent or guardian participant were not a part of the data analysis. It is possible that these factors could have led to a deeper understanding of how selected strategies may have been impacted. The researcher chose to maintain the focus on investigating whether or not the selected strategies would affect math achievement. Second, the decision to conduct the study at this particular high school was made based on an existing relationship established by the researcher and school personnel within this school district. Conducting the study at this high school gave the researcher convenient access to the participants for survey distribution and interviews. However, this decision limited participation with respect to location (i.e., rural, urban, or suburban), school classifications (i.e., public or private), and school size (i.e., small, medium or large).

Recommendations

There are a couple of recommendations for enhancing African-American family involvement strategies to support or promote student learning and development in high school mathematics.

Build parents knowledge of involvement

Many of the African-American families interviewed in the study had already made a commitment to their children's learning and development. African-American parents not involved in this study may not fully grasp how their involvement can affect their high school mathematics. Therefore, a need may exist around understanding what African-American parents know about their children's math achievement and in what ways they are promoting and supporting their learning and development. Schools administrators might offer opportunities for African-American family members and math teachers to meet prior to the start of school to get become familiar with one another. Initially, African-American parents and math teachers can share their respective viewpoints of math achievement and describe their respective involvement practices.

Build educators knowledge about African-American families

It is not clear from the results of this study what the educators know about the African-American families that they serve. Some of African-American parents may have had experienced some difficulties while completing the own formal education, whereas others may have had positive schooling experiences. African-American parents want to support their children's growth and development and are willing to collaborate with school personnel to accomplish this goal. Educators should dedicate some time to get know more about African-American parents. At meetings, educators can take time to learn what African-American parents know about being involved, ascertain what parents want to learn, and provide events where parents can learn about supporting their children with high school math.

Future Research

Based on the findings from this study the following recommendations can be made for future research. This study was limited to only African-American families in an urban area in central Connecticut. Further studies would benefit from the expansion of this study to various school districts and different demographics. In doing so, the opportunity for a variation of responses along with the possibility of comparisons might occur.

In terms of educational practice, there are some actions that school personnel should consider if the aim is to effectively collaborate with African-American family members to promote and support student learning and development in high school mathematics. Perhaps the construct of parental involvement should be rethought. Educators and policymakers should move away from traditional school-based family involvement activities (Robinson & Harris, 2014) and begin to create ways all families can function as equal partners and resources for their children's education (Jackson & Remillard, 2005).

Conclusion

Research on African-American parental involvement and secondary mathematics is scarce (Martin, 2006). The purpose of this study was to identify and evaluate specific strategies that will encourage school personnel and African-American family members to collaborate in a spirit of mutual respect to promote and support student learning and development. This was accomplished by (1) convening a group of parents and attempting to mobilize them, and (2) working with math teachers, administrators, or counselors to (a) encourage some of them to rethink their assumption that African-American families contribute little to their children's education and value education only

if they participate in school-based involvement activities; and (b) encourage school staff to adapt and engage in particular kinds of outreach and collaboration suggested by Reglin, Schurr, and Trotman.

Efforts to support and improve the learning and performance of African-American students have sometimes included attempts to increase family involvement (Schnee & Bose, 2010). However, the implemented strategies offered by Reglin, Schurr and Trotman were initiated by school personnel. Alternative strategies to school-initiated involvement may consist of family-initiated involvement that includes several social capital constructs such as parent-student interactions, parent-school interactions, parent network interactions, and family norms (Howard & Reynolds, 2008; Yan, 1999).

Too often, the parental involvement literature focuses on the negative attributes of African-American families. Family involvement programs are developed on the idea that family members' lack of skills to help their children succeed academically and need to be trained by school personnel (Lightfoot, 2004). Common sense would dictate that family members and school personnel need to function as interdependent partners.

APPENDIX A

PERMISSION TO USE COPYRIGHTED WORKS IN A PUBLICATION

22 King Court
Enfield, CT 06082

November 12, 2015

Dr. Paul Hyry-Dermith
57 Suffolk Street
Holyoke, MA 01004

Dear Dr. Hyry-Dermith:

I am a doctoral candidate at the University of Massachusetts Amherst. I am in the process of preparing my dissertation proposal and am seeking permission to include the Interviewer Initial and Final Questionnaire from your dissertation. Your questionnaire will be used to survey school personnel perceptions, attitudes, and actions in relation to XXXX High School's students' families and family involvement.

Please indicate your approval of this request by signing the letter where indicated below and returning it to me as soon as possible using the self-addressed envelope. Your signing of this letter will also confirm that you own the copyright to the above-described material.

Sincerely,

Frank E. Staples Jr.
(978)580-7883
fstaples@educ.umass.edu

For copyright owner use:

PERMISSION GRANTED FOR THE USE REQUESTED ABOVE:

By: _____

Title: _____

Date: _____

APPENDIX B

Initial School Personnel Questionnaire

Part 1. There are many differences among students and their families, as well as their teachers and schools, which may contribute to student learning (how successfully a student achieves deep understanding of assigned material).

When you think about some of the factors that may impact student learning, which do you perceive as most and least important? In order to show this, please distribute 100 points across the factors listed below (entering a number in the points column); you can put as many or as few points as you believe appropriate as long as the total adds up to 100 (please check to see that the total is 100 before going on to the next section).

	Factor	Impact on learning (points out of 100)
A.	The student's natural talent/intelligence/ability .	
B.	The quality of the teaching the student receives at school.	
C.	Steps parents/guardians take to emphasize the importance of education and learning .	
D.	Steps parents/guardians take to create a strong family life outside of school.	
E.	Steps parents/guardians take to help the child with homework or studying at home .	
F.	Steps parents/guardians take to create a consistent structure for homework and studying at home (even if they don't/can't directly help).	
G.	Steps parents/guardians take to actively collaborate with school staff to promote their children's learning (communicating about progress, etc.)	
H.	Steps parents/guardians take to access support and opportunities for their children in the wider community (outside home and school)	
	Total	100

Part II. In this section, please give your best estimate, based on your experience, of the **percentage** of your school's parents/guardians who do each of the actions/activities, or have the feelings/experiences, named below.

1. Work hard to create a strong family life at home for their children. % _____
2. Consistently emphasize the importance of education in raising their children. % _____
3. Regularly help their children with schoolwork (or reading) at home. % _____
4. Create a consistent structure for homework/studying in the home (even if they don't or can't actually help with homework or studying). % _____

5. Actively collaborate with school staff to support their children’s educational process. % _____
6. Access support for their children in the wider community (outside home and school). % _____
7. Make a significant, positive educational difference in their children’s lives. % _____
8. Do very little to support their children’s educational process. % _____

Part III. *In this section, please indicate HOW MUCH YOU AGREE OR DISAGREE with each of the statements.*

	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
1. Family involvement is important for student success in school.	1	2	3	4
2. If our students’ parents/guardians try really hard, they can help their children learn even when their children are unmotivated.	1	2	3	4
3. All parents/guardians could learn ways to help their children with schoolwork at home, if shown how.	1	2	3	4
4. Parents of children at our school want to be involved more than they already are.	1	2	3	4
5. My colleagues view parents as important partners in their children’s educational process.	1	2	3	4
6. We need to improve family involvement at our school.	1	2	3	4

Part IV. *In this section, please indicate HOW OFTEN YOU have done each of the following over the course of the last school year that you’ve taught.*

	Less than monthly	At least once a month but less than weekly	About once a week	Averaging more than once a week
1. Have a conference with a parent/guardian.	1	2	3	4
2. Contact a parent/guardian if the child has problems or experiences failure.	1	2	3	4
3. Contact a parent/guardian if their child does something well or improves.	1	2	3	4

4. Communicate with a parent/guardian about the skills their child must learn in specific academic subjects. 1 2 3 4

Based on my experience and understanding, the **three most important** things that we need to do to improve family involvement at our school are:

1.

2.

3.

APPENDIX C

Final School Personnel Questionnaire

Part 1. There are many differences among students and their families, as well as their teachers and schools, which may contribute to student learning (how successfully a student achieves deep understanding of assigned material).

When you think about some of the factors that may impact student learning, which do you perceive as most and least important? In order to show this, please distribute 100 points across the factors listed below (entering a number in the points column); you can put as many or as few points as you believe appropriate as long as the total adds up to 100 (please check to see that the total is 100 before going on to the next section).

	Factor	Impact on learning (points out of 100)
A.	The student’s natural talent /intelligence/ability.	
B.	The quality of the teaching the student receives at school.	
C.	Steps parents/guardians take to emphasize the importance of education and learning .	
D.	Steps parents/guardians take to create a strong family life outside of school.	
E.	Steps parents/guardians take to help the child with homework or studying at home .	
F.	Steps parents/guardians take to create a consistent structure for homework/ studying at home (even if they don’t/can’t directly help).	
G.	Steps parents/guardians take to actively collaborate with school staff to promote their children’s learning (communicating about progress, etc.)	
H.	Steps parents/guardians take to access support and opportunities for their children in the wider community (outside home and school)	
	Total	100

Part II. In this section, please give your best estimate, based on your experience, of the **percentage** of your school’s parents/guardians who do each of the actions/activities, or have the feelings/experiences, named below.

9. Work hard to create a strong family life at home for their children. % _____

10. Consistently emphasize the importance of education in raising their children. % _____
11. Regularly help their children with schoolwork (or reading) at home. % _____
12. Create a consistent structure for homework/studying in the home (even if they don't or can't actually help with homework or studying). % _____
13. Actively collaborate with school staff to support their children's educational process. % _____
14. Access support for their children in the wider community (outside home and school). % _____
15. Make a significant, positive educational difference in their children's lives. % _____
16. Do very little to support their children's educational process. % _____

Part III. *In this section, please indicate HOW MUCH YOU AGREE OR DISAGREE with each of the statements.*

	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
7. Family involvement is important for student success in school.	1	2	3	4
8. If our students' parents/guardians try really hard, they can help their children learn even when their children are unmotivated.	1	2	3	4
9. All parents/guardians could learn ways to help their children with schoolwork at home, if shown how.	1	2	3	4
10. Parents of children at our school want to be involved more than they already are.	1	2	3	4
11. My colleagues view parents as important partners in their children's educational process.	1	2	3	4
12. We need to improve family involvement at our school.	1	2	3	4

Part IV. *In this section, please indicate HOW OFTEN YOU have done each of the following over the course of the last school year that you've taught.*

	Less than monthly	At least once a month but less than weekly	About once a week	Averaging more than once a week
5. Have a conference with a parent/guardian.	1	2	3	4

6. Contact a parent/guardian if the child has problems or experiences failure.	1	2	3	4
7. Contact a parent/guardian if their child does something well or improves.	1	2	3	4
8. Communicate with a parent/guardian about the skills their child must learn in specific academic subjects.	1	2	3	4

Based on my experience and understanding, the **three most important** things that we need to do to improve family involvement at our school are:

- 1.
- 2.
- 3.

APPENDIX D

Parent/Guardian Questionnaire

INSTRUCTIONS: Consider each statement separately and rate each statement independently of all others. Circle the rating that indicates the extent to which you agree with each statement.

		Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
1. At home, I encourage my child to work hard on mathematics problems even though the problems are difficult.		1	2	3	4
2. I am usually able to motivate my child to learn mathematics well.		1	2	3	4
3. I try hard to have a nice learning environment at home for my child to do mathematics.		1	2	3	4
4. I often buy mathematics related books or resources for my child.		1	2	3	4
5. I check my child's homework completion regularly.		1	2	3	4
6. When my child says he/she is having trouble learning mathematics, I tell him/her not to worry about it because everybody has problems with mathematics.		1	2	3	4
7. I always try to monitor the amount of time my child spends on mathematics at home.		1	2	3	4
8. I feel I can help my child solve problems from mathematics class.		1	2	3	4
9. I am aware of the approaches used to teach mathematics at my child's school.		1	2	3	4
10. I am always aware of my child's mathematics requirements by checking school website, parent portal, or speaking with teacher or counselor.		1	2	3	4
11. I seldom spend time talking with my child about his/her progress in mathematics.		1	2	3	4

		Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
12. I don't know how to motivate my child to do a good job on his/her mathematics assignments.		1	2	3	4
13. I think I know enough about algebra to help my child.		1	2	3	4
14. I understand my child's strengths and weakness in learning mathematics.		1	2	3	4
15. I don't know strategies for helping my child overcome weaknesses in mathematics.		1	2	3	4
16. Mathematics plays an important role in my child's future.		1	2	3	4
17. I always try to figure out good approaches for helping my child learn different mathematics topics.		1	2	3	4

APPENDIX E

Initial and Final Student Questionnaire

We would like to link your responses to both the initial and final questionnaires in a way that somewhat disguises your identity. Please create a code by using the first name of a parent or guardian and the last four numbers of your cell phone number. Write the letters and numbers in the spaces provided below.

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

It is important to use the same name and four numbers on both questionnaires.

INSTRUCTIONS: Consider each statement separately and rate each statement independently of all others. Circle the rating that indicates the extent to which you agree with each statement.

		Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
1. My parents encourage me to work hard on mathematics problems even though the problems are difficult.		1	2	3	4
2. My parents are able to motivate me to learn mathematics well.		1	2	3	4
3. I have a nice learning environment at home to do mathematics.		1	2	3	4
4. My parents often buy mathematics related books or resources for me.		1	2	3	4
5. My parents check my homework completion regularly.		1	2	3	4
6. When I am having trouble learning mathematics, my parents tell me not to worry about it because everybody has problems with mathematics.		1	2	3	4
7. My parents always try to monitor the amount of time I spend on mathematics at home.		1	2	3	4
8. My parents can help me solve problems from mathematics class.		1	2	3	4

		Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
9. My parents are aware of the approaches used to teach me mathematics at my school.		1	2	3	4
10. My parents are always aware of my mathematics requirements by checking school website, parent portal, or speaking with teacher or counselor.		1	2	3	4
11. I seldom spend time talking with my parents about progress in mathematics.		1	2	3	4
12. I think my parents know enough about algebra to help me.		1	2	3	4
13. My parents understand my strengths and weakness in learning mathematics.		1	2	3	4
14. My parents are not able to help me overcome weaknesses in mathematics.		1	2	3	4
15. Mathematics plays an important role in my future.		1	2	3	4
16. My parents try approaches for helping me learn different mathematics topics.		1	2	3	4

APPENDIX F

FOCUS GROUP GUIDE AND QUESTIONS FOR SCHOOL PERSONNEL

Introduction

Thank you for volunteering your time and coming to our meeting. My name is Frank Staples and I am the moderator for our discussion today. We are doing research to learn more about family members and school personnel collaborative efforts to promote and support students' math achievement. We think we can do that by listening to you talk about family involvement. The idea is to have a conversation with lots of give and take. There are no right or wrong answers to any questions ask during our discussion. I hope that you will feel comfortable enough to share what you truly think and feel. It is important that you know and understand that you can withdraw from this research at any stage without penalty.

Procedures

I estimate this focus group discussion will last no longer than 90 minutes. The discussion will be audio and video recorded so we do not miss any comments. The nature of a focus group prevents me from guaranteeing complete confidentiality of everything that is said during the focus group sessions. I would like to remind all participants to respect the privacy of fellow participants and not repeat anything that is said in a focus group session to others. You were asked to create a fake name to be attached to your comments in the final report. As the discussion will be recorded, please speak one at a time.

Your contribution today is very important. I am here just to facilitate this session and you should feel free to express your thoughts and feelings on this topic without any expectations from me. We are interested in hearing your thoughts and points of view even if it is different from that which others express in the group. However, if at any point you feel distressed by anything that is being discussed, you are free to leave at any time and without penalty. If applicable, I will provide information of agencies who will be able to assist you, although I am unable to offer personal comment and advice.

I am going to make every effort to keep the discussion focused and within our time frame. If too much time is being spent on one question or topic, I may park the conversation so that we can move on and cover all of the stages and also to ensure that all participants have a chance to give their input. If we have sufficient time, we will revisit parked thoughts in the order they were parked. If thoughts/conversations are parked I will write them in list format on the board.

Introduction

The purpose of today's focus group is to discuss your thoughts about African-American family involvement strategies that promote and support student learning and performance in high school math.

Does anyone have any questions before we begin our discussion?

Before we get started, please tell us more about you.

Questions

1. Please take a moment and think about home-school collaboration. What does home-school collaboration mean to you? How, if at all, are you involved in this kind of collaboration? (Moderator can capture phrases on flip chart)
2. How would you describe African-American family involvement at your school? How would you describe African-American student math achievement at your school? What are your thoughts about how race may play a role in high school math success?
3. What are your opinions about the African-American family involvement strategies list provided to you prior to this session? Please take a moment to review the list. What strategies might you select to promote student learning and development in high school math?
4. What systems are in place to monitor your students' learning and development in high school math? How do you know when students do not understand concepts after completing a unit? What systems are in place to provide students with support?
5. Describe previous conversations between family members and school personnel about PSAT scores, STAR scores, and grades. Please describe how math assignments, quizzes, or tests grades and standardized test scores communicated to family members.
6. What do your students know about home and school expectations of them when it comes to math performance and achievement? How do students know about your expectations? What would students say?
7. What resources do you think are needed to promote and support African-American student learning and development in high school math? Are these home, school, or community resources?
8. As a group which African-American family involvement strategies would you select to implement over the next 9 to 12 weeks?

APPENDIX G

FOCUS GROUP GUIDE AND QUESTIONS FOR STUDENTS

Introduction

Thank you for volunteering your time and coming to our meeting. My name is Frank Staples and I am the moderator for our discussion today. We are doing research to learn more about family members and school personnel collaborative efforts to promote and support students' math achievement. We think we can do that by listening to you talk about family involvement. The idea is to have a conversation with lots of give and take. There are no right or wrong answers to any questions ask during our discussion. I hope that you will feel comfortable enough to share what you truly think and feel. It is important that you know and understand that you can withdraw from this research at any stage without penalty.

Procedures

I estimate this focus group discussion will last no longer than 60 minutes. The discussion will be audio and video recorded so we do not miss any comments. The nature of a focus group prevents me from guaranteeing complete confidentiality of everything that is said during the focus group sessions. I would like to remind all participants to respect the privacy of fellow participants and not repeat anything that is said in a focus group session to others. You were asked to create a fake name to be attached to your comments in the final report. As the discussion will be recorded, please speak one at a time.

Your contribution today is very important. I am here just to facilitate this session and you should feel free to express your thoughts and feelings on this topic without any expectations from me. We are interested in hearing your thoughts and points of view even if it is different from that which others express in the group. However, if at any point you feel distressed by anything that is being discussed, you are free to leave at any time and without penalty. If applicable, I will provide information of agencies who will be able to assist you, although I am unable to offer personal comment and advice.

I am going to make every effort to keep the discussion focused and within our time frame. If too much time is being spent on one question or topic, I may park the conversation so that we can move on and cover all of the stages and also to ensure that all participants have a chance to give their input. If we have sufficient time, we will revisit parked thoughts in the order they were parked. If thoughts/conversations are parked I will write them in list format on the board.

Introduction

The purpose of today's focus group is to discuss your thoughts about African-American family involvement strategies that promote and support your learning and performance in high school math.

Does anyone have any questions before we begin our discussion?

Before we get started, please tell us more about you.

Participants' fake names:

Questions

1. Please take a moment and think how your family members have been involved in your education. How, if at all, does your family members' involvement help you overcome challenges that you might have in math?
2. How would you describe African-American student math achievement at your school? What are your thoughts about how being African-American may play a role in your math achievement?
3. What are your opinions about the African-American family involvement strategies list provided to you prior to this session? Please take a moment to review the list. What strategies might encourage African-American family members' to help their children improve their high school math performance?
4. What difference in family involvement, if any, exist between African-American families and families of other racial groups?
5. What resources do you think are needed to help African-American students perform better high school math? Should these resources be provided by your family members, school, or community? Please explain your opinions.
6. What could your school do to help African-American family members' understand you as students and your math schoolwork or assignments?
7. What could your school do to help African-American family members' become more involved in helping you overcome?
8. As a group which African-American family involvement strategies would you select to implement over the next 9 to 12 weeks?

APPENDIX H

FOCUS GROUP GUIDE AND QUESTIONS FOR PARENTS

Introduction

Thank you for volunteering your time and coming to our meeting. My name is Frank Staples and I am the moderator for our discussion today. We are doing research to learn more about family members and school personnel collaborative efforts to promote and support students' math achievement. We think we can do that by listening to you talk about family involvement. The idea is to have a conversation with lots of give and take. There are no right or wrong answers to any questions ask during our discussion. I hope that you will feel comfortable enough to share what you truly think and feel. It is important that you know and understand that you can withdraw from this research at any stage without penalty.

Procedures

I estimate this focus group discussion will last no longer than 90 minutes. The discussion will be audio and video recorded so we do not miss any comments. The nature of a focus group prevents me from guaranteeing complete confidentiality of everything that is said during the focus group sessions. I would like to remind all participants to respect the privacy of fellow participants and not repeat anything that is said in a focus group session to others. You were asked to create a fake name to be attached to your comments in the final report. As the discussion will be recorded, please speak one at a time.

Your contribution today is very important. I am here just to facilitate this session and you should feel free to express your thoughts and feelings on this topic without any expectations from me. We are interested in hearing your thoughts and points of view even if it is different from that which others express in the group. However, if at any point you feel distressed by anything that is being discussed, you are free to leave at any time and without penalty. If applicable, I will provide information of agencies who will be able to assist you, although I am unable to offer personal comment and advice.

I am going to make every effort to keep the discussion focused and within our time frame. If too much time is being spent on one question or topic, I may park the conversation so that we can move on and cover all of the stages and also to ensure that all participants have a chance to give their input. If we have sufficient time, we will revisit parked thoughts in the order they were parked. If thoughts/conversations are parked I will write them in list format on the board.

Introduction

The purpose of today's focus group is to discuss your thoughts about African-American family involvement strategies that promote and support student learning and performance in high school math.

Does anyone have any questions before we begin our discussion?

Before we get started, please tell us more about you.

Participants' pseudonyms:

Questions

1. Please take a moment and think about home-school collaboration. What does home-school collaboration mean to you? How, if at all, are you involved in this kind of collaboration? (Moderator can capture phrases on flip chart)
2. How would you describe your involvement in your child's education? How would you describe your child's math achievement at your school? What are your thoughts about how race may play a role in high school math success?
3. What are your opinions about the African-American family involvement strategies list provided to you prior to this session? Please take a moment to review the list. Are What strategies might you select to help with your child's learning and development in high school math?
4. What systems are in place to monitor your child's learning and development in high school math?
5. What difference in family involvement, if any, exist between African-American families and families of other racial groups?
6. What resources do you think are needed to promote and support African-American student learning and development in high school math? Are these home, school, or community resources?
7. How would you describe a conversation that you had with child's math teachers? What was the reason for the conversation? What concerns, if any, were address?
8. As a group which African-American family involvement strategies would you select to implement over the next 9 to 12 weeks?

APPENDIX I

SEMI-STRUCTURED INTERVIEW GUIDE AND QUESTIONS FOR PARENTS

Introduction of Interviewer

Thank you for volunteering your time and speaking with me. My name is Frank Staples and I am the interviewer for our discussion today. We are doing research to learn more about family members and school personnel collaborative efforts to promote and support students' math achievement. We think we can do that by listening to you talk about family involvement. There are no right or wrong answers to any questions ask during our discussion. I hope that you will feel comfortable enough to share what you truly think and feel. It is important that you know and understand that you can withdraw from this research at any stage without penalty.

Procedures

I estimate this interview will last no longer than 60 minutes. The discussion will be audio recorded so we do not miss any comments. You were asked to create a fake name to be attached to your comments in the final report.

Introduction

The purpose of today's interview is to discuss your thoughts about African-American family involvement strategies that promote and support student learning and performance in high school math.

Do you have any questions before we begin?

Before we get started, please tell us more about you.

Participant's pseudonym _____

Date

1. One of the goals of this study was to have African-American family members and school personnel collaborate on selected family involvement strategies that promote and support student learning and development in high school math. Tell me about your experiences with the recent collaboration with school personnel. What do you perceive to be the most beneficial parts of the collaboration process?

2. Please describe your thoughts about promoting and supporting your child's learning and development in high school math and any challenges, if any, that may have hindered you in the past. How would you describe your feelings after implementing the selected African-American family involvement strategies?
3. What are your thoughts about how race may play a role in high school math success?
4. Which, if any, of the selected African-American family involvement strategies made an impact on you? What impact did the strategies have on you in regards to promoting and supporting your child's learning and development in high school math?
5. What differences, if any, did you notice in child's math performance prior to and after implementing the selected African-American family involvement strategies and/or math interventions?
6. Which, if any, of the selected African-American family involvement strategies challenge or contradict your understanding of family involvement?
7. Which, if any, of the selected African-American family involvement strategies or math interventions strengthened the relationship between African-American family members and teachers or school personnel?
8. What other thoughts might you have about the selected African-American family involvement strategies or interventions?

APPENDIX J

SEMI-STRUCTURED INTERVIEW GUIDE AND QUESTIONS FOR TEACHERS

Introduction of Interviewer

Thank you for volunteering your time and speaking with me. My name is Frank Staples and I am the interviewer for our discussion today. We are doing research to learn more about family members and school personnel collaborative efforts to promote and support students' math achievement. We think we can do that by listening to you talk about family involvement. There are no right or wrong answers to any questions ask during our discussion. I hope that you will feel comfortable enough to share what you truly think and feel. It is important that you know and understand that you can withdraw from this research at any stage without penalty.

Procedures

I estimate this interview will last no longer than 60 minutes. The discussion will be audio recorded so we do not miss any comments. You were asked to create a fake name to be attached to your comments in the final report.

Introduction

The purpose of today's interview is to discuss your thoughts about African-American family involvement strategies that promote and support student learning and performance in high school math.

Do you have any questions before we begin?

Before we get started, please tell us more about you.

Participant's pseudonym _____

Date:

1. One of the goals of this study was to have African-American family members and school personnel collaborate on selected African-American family involvement strategies that promote and support student learning and development in high school math. Tell me about your experiences with the recent collaboration with school personnel. What do you perceive to be the most beneficial parts of the collaboration process?

2. Please describe your thoughts about how African-American family members promote and support their child's learning and development in high school math and any challenges, if any that may hindered them. How would you describe your thoughts after implementing the selected African-American family involvement strategies?
3. Which, if any, of the selected African-American family involvement strategies made an impact on you? What impact did the strategies have on you in regards to promoting and supporting student learning and development in your class?
4. What are your thoughts about how race may play a role in high school math success?
5. What differences, if any, did you notice in your African-American students' math performance prior to and after implementing the selected strategies and/or interventions? What differences, if any, did you notice in African-American family involvement?
6. Which, if any, of the selected African-American family involvement strategies challenge or contradict your understanding of family involvement?
7. Which, if any, of the selected African-American strategies or interventions strengthened the relationship between family members and teachers or school personnel?
8. What other thoughts might you have about the selected African-American family involvement strategies or interventions?

APPENDIX K

SEMI-STRUCTURED INTERVIEW GUIDE ANDE QUESTIONS FOR SCHOOL PERSONNEL

Introduction of Interviewer

Thank you for volunteering your time and speaking with me. My name is Frank Staples and I am the interviewer for our discussion today. We are doing research to learn more about family members and school personnel collaborative efforts to promote and support students' math achievement. We think we can do that by listening to you talk about family involvement. There are no right or wrong answers to any questions ask during our discussion. I hope that you will feel comfortable enough to share what you truly think and feel. It is important that you know and understand that you can withdraw from this research at any stage without penalty.

Procedures

I estimate this interview will last no longer than 60 minutes. The discussion will be audio recorded so we do not miss any comments. You were asked to create a fake name to be attached to your comments in the final report.

Introduction

The purpose of today's interview is to discuss your thoughts about African-American family involvement strategies that promote and support student learning and performance in high school math.

Do you have any questions before we begin?

Before we get started, please tell us more about you.

Participant's pseudonym _____

Date:

1. One of the goals of this study was to have African-American family members and school personnel collaborate on selected family involvement strategies that promote and support student learning and development in high school math. Tell me about your experiences with the recent collaboration with school personnel. What do you perceive to be the most beneficial parts of the collaboration process?

2. Please describe your thoughts about how African-American family members promote and support their child's learning and development in high school math and any challenges, if any that may hindered them. How would you describe your thoughts after implementing the selected family involvement strategies?
3. Which, if any, of the selected African-American family involvement strategies made an impact on you? What impact did the strategies have on you in regards to promoting and supporting student learning and development in math achievement?
4. What differences, if any, did you notice in African-American students' math performance prior to and after implementing the selected strategies and/or interventions?
5. What are your thoughts about how race may play a role in high school math success?
6. Which, if any, of the selected African-American family involvement strategies challenge or contradict your understanding of family involvement?
7. Which, if any, of the selected African-American strategies or interventions strengthened the relationship between family members and teachers or school personnel?
8. What other thoughts might you have about the selected family involvement strategies or interventions?

APPENDIX L

NATIONAL PTA PARENT GUIDE AND TIPS

PARENTS' GUIDE TO STUDENT SUCCESS- HIGH SCHOOL MATH

This guide provides an overview of what your child will learn during high school in mathematics. It focuses on the key skills your child will learn in math, which will build a strong foundation for success in many of the other subjects he or she studies throughout high school. This guide is based on the new Common Core State Standards, which have been adopted by more than 40 states. These K–12 standards are informed by the highest state standards from across the country. If your child is meeting the expectations outlined in these standards, he or she will be well prepared for success after graduation.

WHY ARE ACADEMIC STANDARDS IMPORTANT?

Academic standards are important because they help ensure that all students, no matter where they live, are prepared for success in college and the workforce. They help set clear and consistent expectations for students, parents, and teachers; build your child's knowledge and skills; and help set high goals for all students.

Of course, high standards are not the only thing needed for our children's success. But standards provide an important first step — a clear roadmap for learning for teachers, parents, and students. Having clearly defined goals helps families and teachers work together to ensure that students succeed. Standards help parents and teachers know when students need extra assistance or when they need to be challenged even more. They also will help your child develop critical thinking skills that will prepare him or her for college and career.

HOW CAN I HELP MY CHILD?

You should use this guide to help build a relationship with your child's teacher. You can do this by talking to his or her teacher regularly about how your child is doing — beyond parent-teacher conferences.

At home, you can play an important role in setting high expectations and supporting your child in meeting them. If your child needs a little extra help or wants to learn more about a subject, work with his or her teacher to identify opportunities for tutoring, to get involved in clubs after school, or to find other resources.

THIS GUIDE INCLUDES

- **An overview of some of the key things your child will learn in math in high school**
- **Topics of discussion for talking to your child's teacher about his or her academic progress**

■ Tips to help your child plan for college and career

To prepare for college and career, your child will study mathematics across a broad spectrum, from pure mathematics to real-world applications. Numerical skill and quantitative reasoning remain crucial even as students move forward with algebra. Algebra, functions, and geometry are important not only as mathematical subjects in themselves but also because they are the language of technical subjects and the sciences. And in a data-rich world, statistics and probability offer powerful ways of drawing conclusions from data and dealing with uncertainty. The high school standards also emphasize using mathematics creatively to analyze real-world situations — an activity sometimes called “mathematical modeling.”

The high school standards are organized into six major content areas: Number and Quantity; Algebra; Functions; Modeling; Geometry; and Statistics and Probability.

A Sample of the Work Your Child Will Be Doing To Become Ready for College and Career

NUMBER AND QUANTITY

- Working with rational and irrational numbers, including working with rational exponents (e.g., rewriting $(53)^{1/2}$ as $5\sqrt{5}$)
- Solving problems with a wide range of units and solving problems by thinking about units (e.g., “The Trans Alaska Pipeline System is 800 miles long and cost \$8 billion to build. Divide one of these numbers by the other. What is the meaning of the answer?”; “Greenland has a population of 56,700 and a land area of 2,175,600 square kilometers. By what factor is the population density of the United States, 80 persons per square mile, larger than the population density of Greenland?”)

ALGEBRA

- Solving real-world and mathematical problems by writing and solving nonlinear equations, such as quadratic equations ($ax^2 + bx + c = 0$)
- Interpreting algebraic expressions and transforming them purposefully to solve problems (e.g., in solving a problem about a loan with interest rate r and principal P , seeing the expression $P(1+r)^n$ as a product of P with a factor not depending on P)

FUNCTIONS

- Analyzing functions algebraically and graphically, and working with functions presented in different forms (e.g., given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum)

- Working with function families and understanding their behavior (such as linear, quadratic, and exponential functions)

MODELING

- Analyzing real-world situations using mathematics to understand the situation better and optimize, troubleshoot, or make an informed decision (e.g., estimating water and food needs in a disaster area, or using volume formulas and graphs to find an optimal size for an industrial package)

GEOMETRY

- Proving theorems about triangles and other figures (e.g., that the angles in a triangle add to 180°)
- Solving applied problems involving trigonometry of right triangles
- Using coordinates and equations to describe geometric properties algebraically (e.g., writing the equation for a circle in the plane with specified center and radius)

STATISTICS AND PROBABILITY

- Making inferences and justifying conclusions from sample surveys, experiments, and observational studies
- Working with probability and using ideas from probability in everyday situations (e.g., comparing the chance that a person who smokes will develop lung cancer to the chance that a person who develops lung cancer smokes)

Keeping the conversation focused. Talking to Your Child's Teacher

When you talk to the teacher, do not worry about covering everything. Instead, keep the conversation focused on the most important topics. In high school, these include:

- Does my child have a strong grounding in arithmetic, including operations on fractions, decimals, and negative numbers?
- Does my child take a thinking approach to algebra and work with algebraic symbols fluently?
- Is my child comfortable using coordinates in algebra and geometry?
- Can my child break a complex problem down into parts and apply the math he or she knows to problems outside of mathematics?
- Does my child use terms precisely and make logical arguments?

- Does my child have the knowledge to learn advanced mathematics after high school if he or she so chooses?

Ask to see a sample of your child's work. Ask the teacher questions such as: Is this piece of work satisfactory? How could it be better? Is my child on track? How can I help my child improve or excel in this area? If my child needs extra support or wants to learn more about a subject, are there resources to help his or her learning outside the classroom?

PARENT TIPS

Planning for College and Career

At the beginning of high school, sit down with your child's teachers, counselor, or other advisor to discuss what it will take for your child to graduate, your child's goals, and his or her plans after high school. Create a plan together to help your child reach these goals, and review it every year to make sure he or she is on track.

This plan should include:

- **An appropriate course sequence to meet your child's goals.** For example, if your child wants to study biosciences in college, he or she will likely need additional or advanced math and science courses in high school to be prepared for college-level coursework.
- **The most appropriate extracurricular activities for your child to participate in.** For example, if your child is interested in journalism or photography, encourage him or her to sign up for the school newspaper or yearbook. These activities will help your child expand his or her learning outside of school and may help foster new hobbies or interests.
- **Ways you can help your child prepare for college or career.** For example, if your child is interested in a particular field, look to see if internships exist to build his or her work experience in that subject area. Look for college fairs to attend, and encourage your child to visit colleges he or she might be interested in.
- **Finding ways to pay for college or advanced training.** College can be expensive, but there are lots of ways to get financial help, such as scholarships, grants, work study programs, and student loans. You just need to make the time for you and your child to do the research. You can start by helping your child fill out the FAFSA (Free Application for Federal Student Aid) during his or her senior year of high school. Visit www.fafsa.ed.gov for help and more information on FAFSA and financial aid.

For more information, the full standards are available at www.corestandards.org.

National PTA

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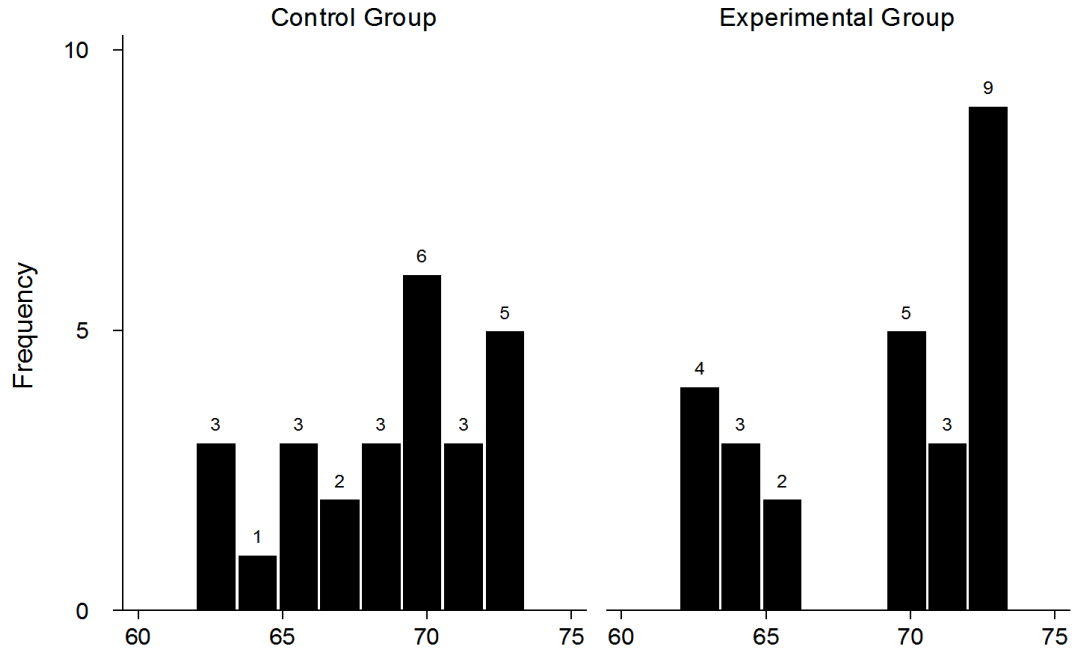
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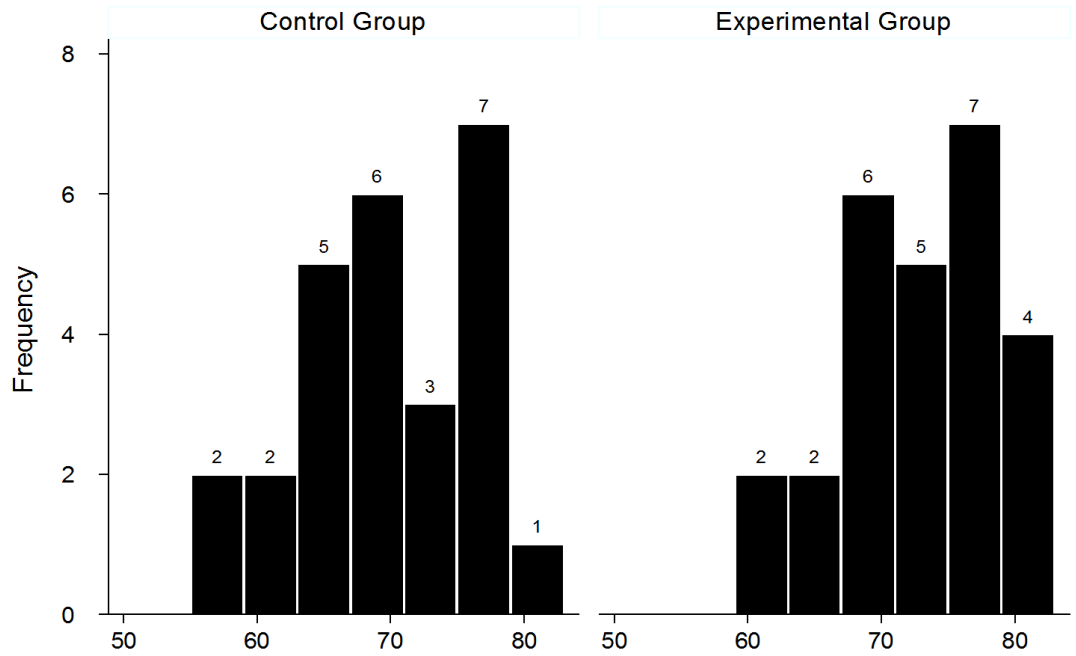
APPENDIX M

HISTOGRAM OF MATH GRADES DURING STUDY

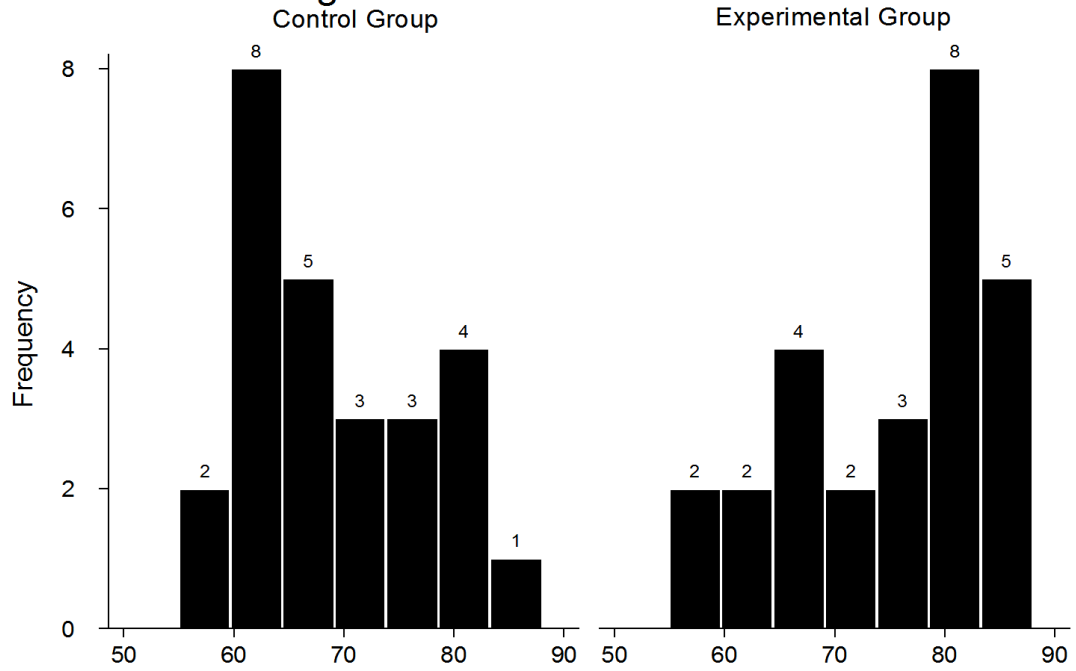
Histogram of Math Grades for Week 1



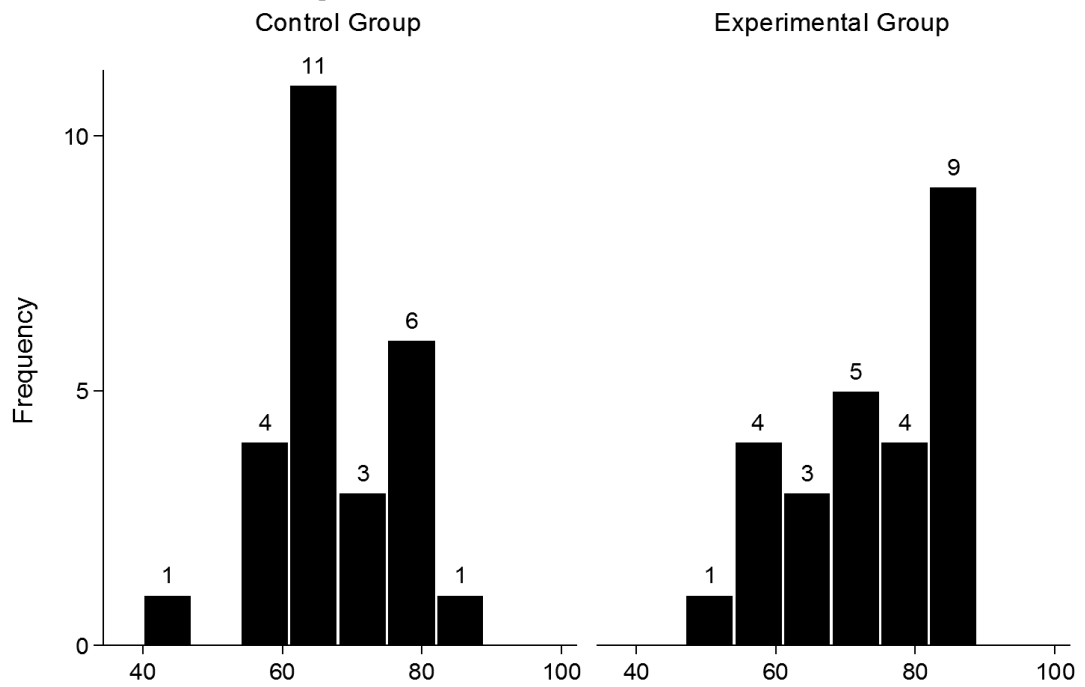
Histogram of Math Grades for Week 2

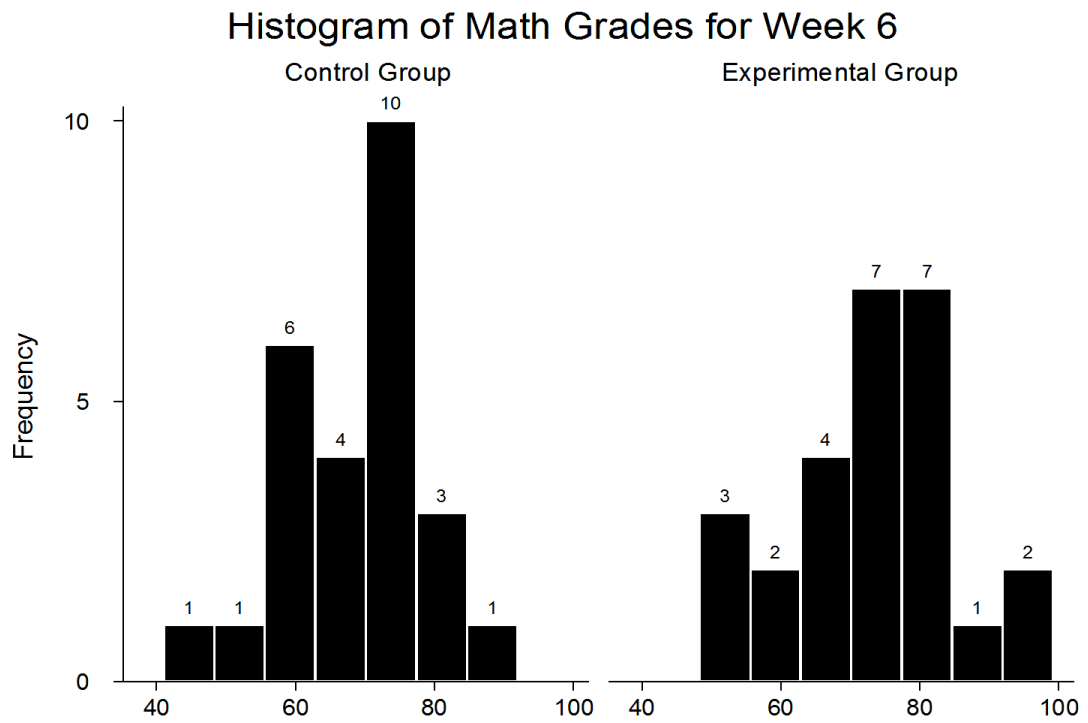
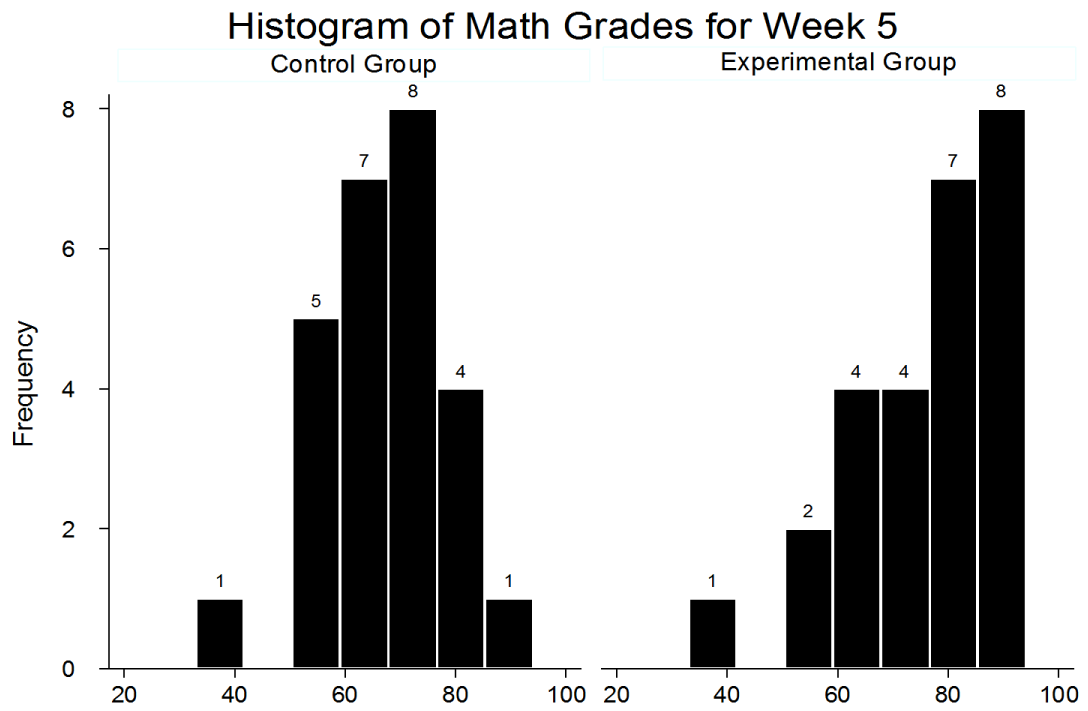


Histogram of Math Grades for Week 3

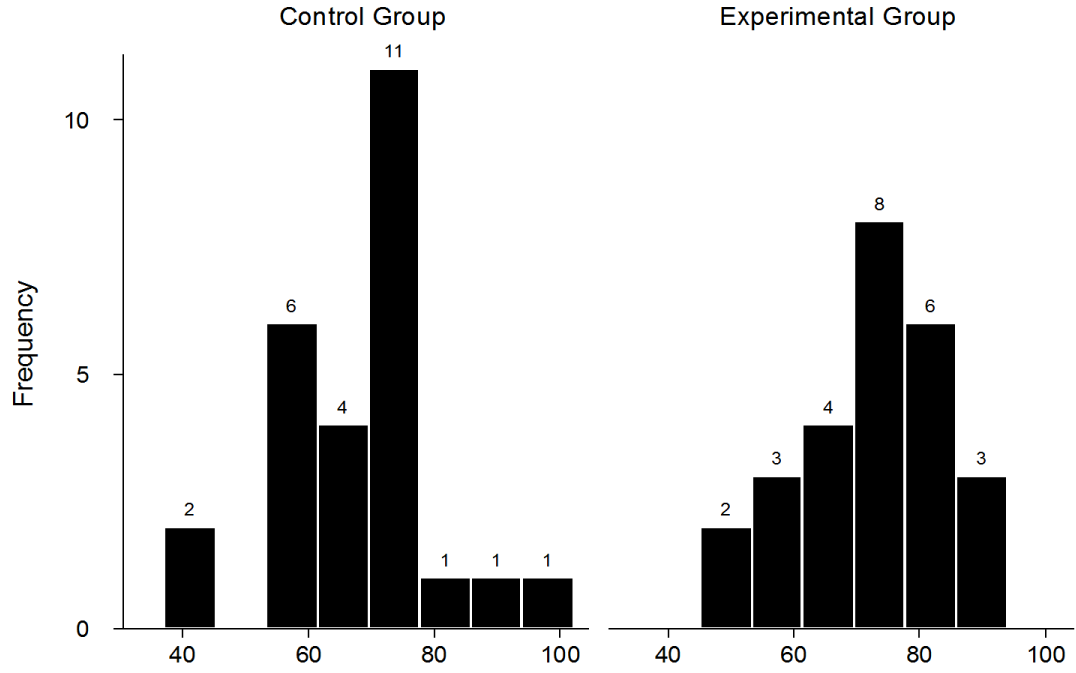


Histogram of Math Grades for Week 4

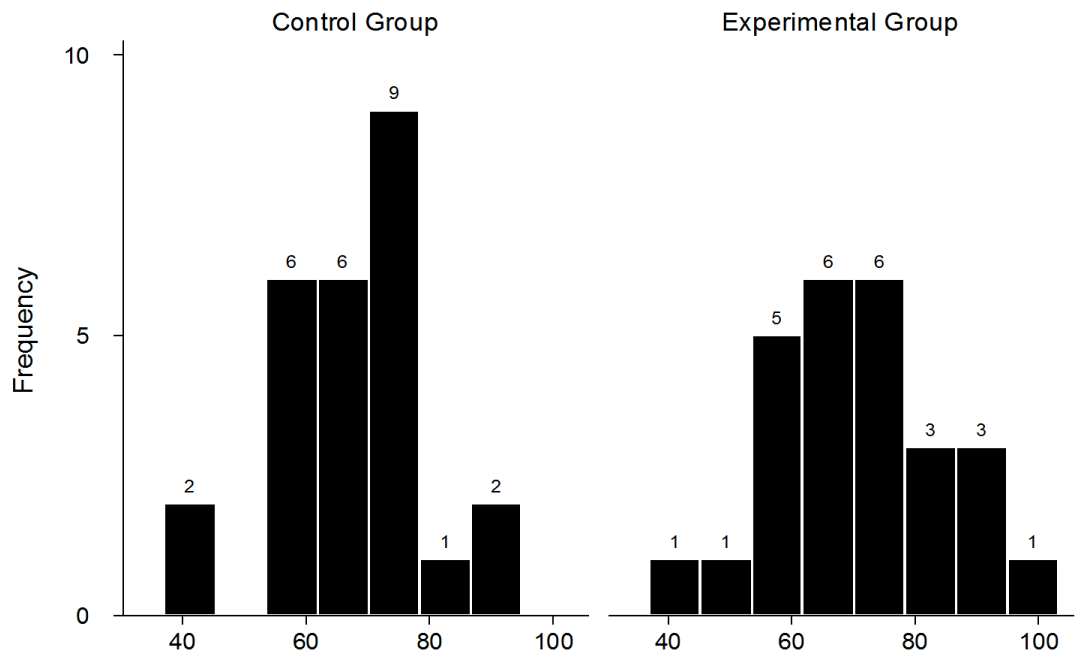




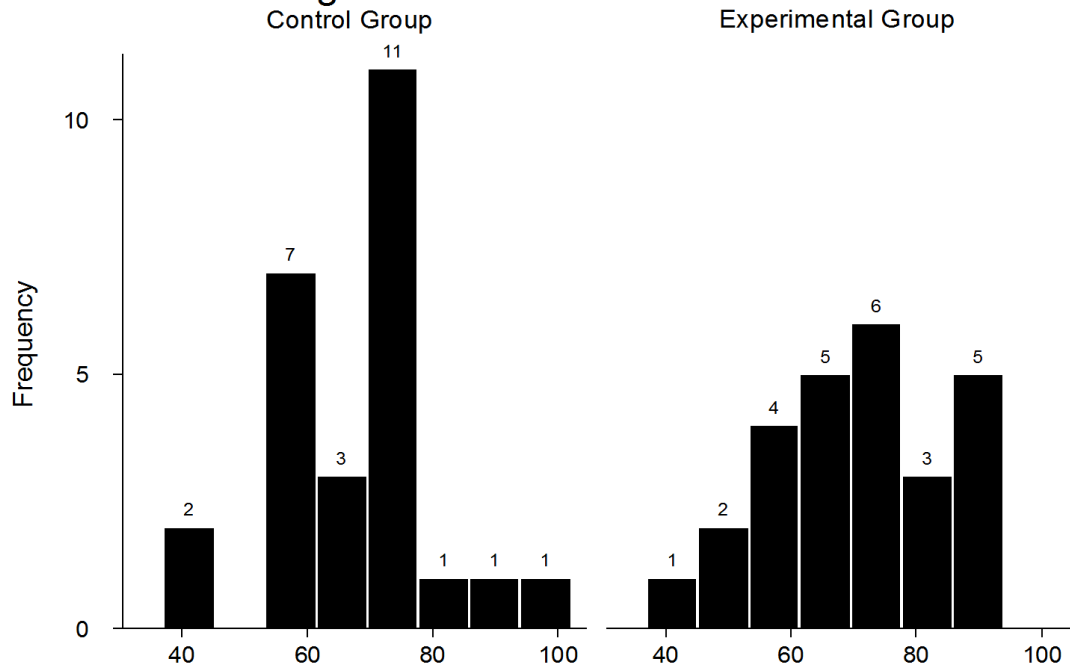
Histogram of Math Grades for Week 7



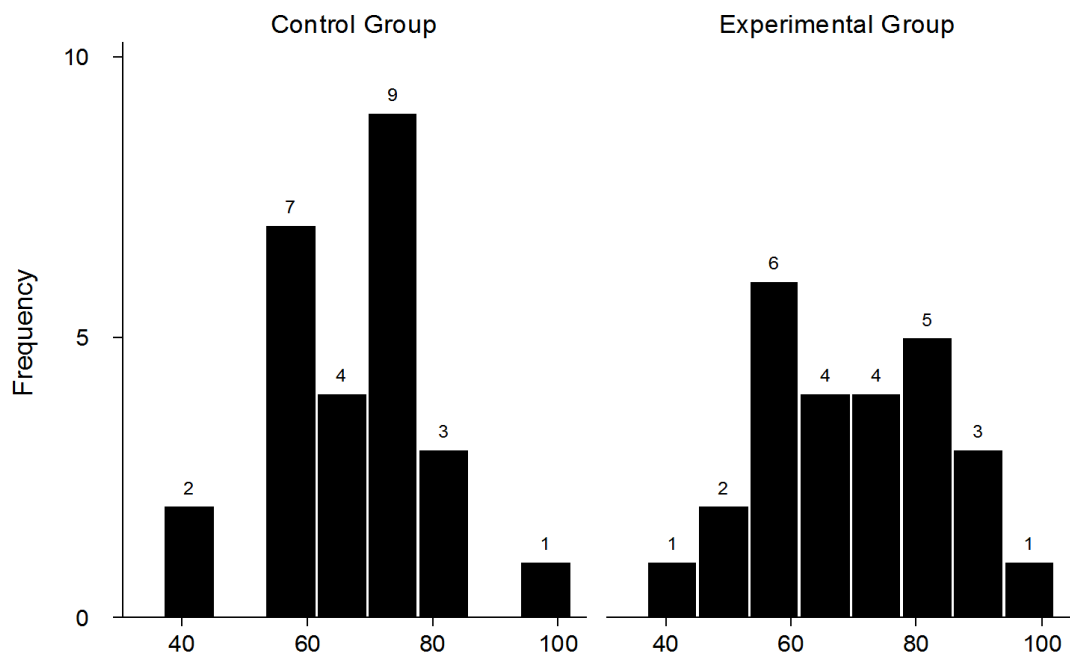
Histogram of Math Grades for Week 8



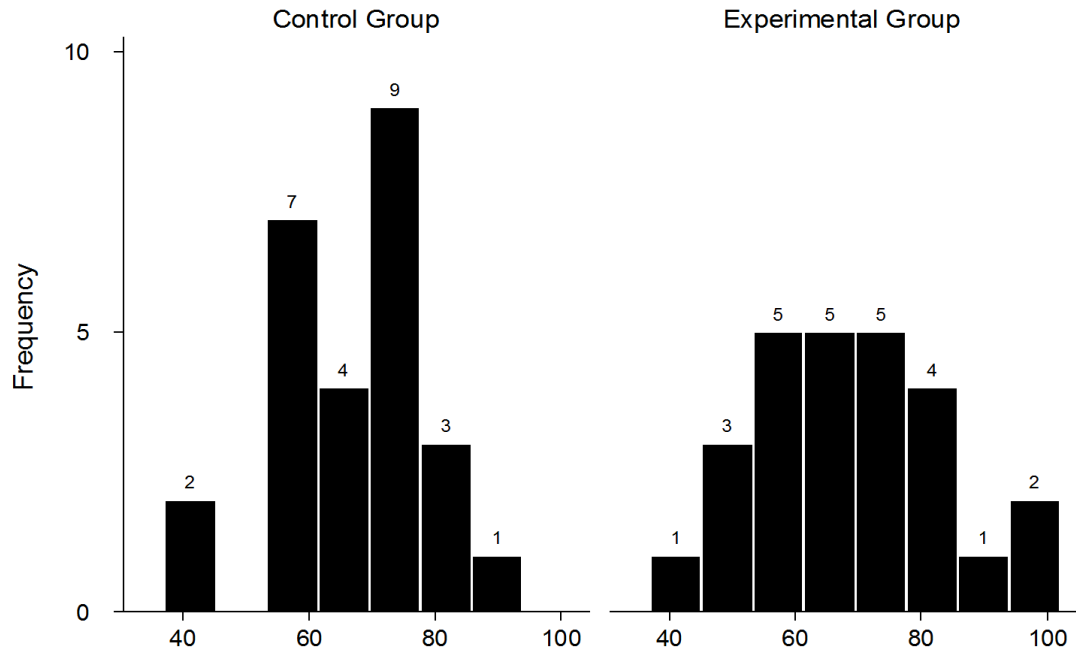
Histogram of Math Grades for Week 9



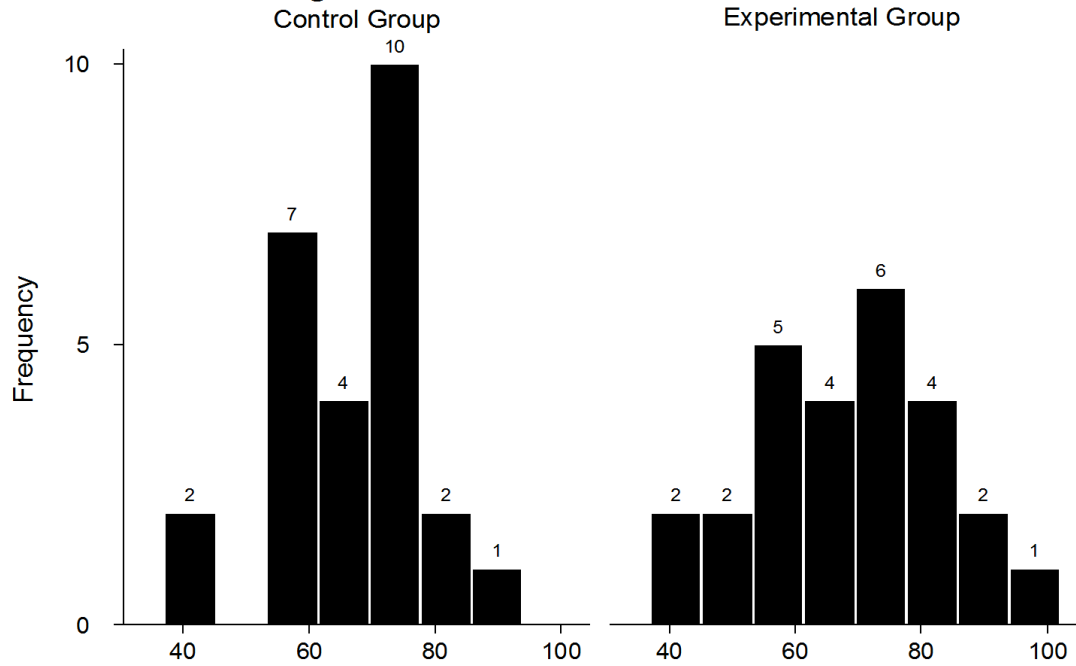
Histogram of Math Grades for Week 10



Histogram of Math Grades for Week 11



Histogram of Math Grades for Week 12



APPENDIX N

TWO-SAMPLE T-TEST WITH EQUAL VARIANCES

Two-sample t-test with equal variances					
	Group	N	Mean	SD	Range
Week 1	Control	26	68.54	3.1398	62-72
	Experimental	26	68.69	3.6853	63-72
Week 2	Control	26	69.58	6.9580	55-81
	Experimental	26	72.23	6.2309	59-83
Week 3	Control	26	68.54	9.0121	55-88
	Experimental	26	75.35	9.6661	56-88
Week 4	Control	26	66.85	9.6569	40-83
	Experimental	26	74.04	12.317	47-89
Week 5	Control	26	67.04	10.090	39-87
	Experimental	26	75.96	20.378	33-94
Week 6	Control	26	68.77	10.281	41-90
	Experimental	26	72.62	11.412	50-92
Week 7	Control	26	68.23	12.229	37-94
	Experimental	26	72.19	10.793	50-92
Week 8	Control	26	68	12.247	37-94
	Experimental	26	71.12	13.441	45-95
Week 9	Control	26	67.42	12.381	37-94
	Experimental	26	70.38	13.309	45-92
Week 10	Control	26	67.15	12.151	37-94
	Experimental	26	69.35	14.518	45-94
Week 11	Control	26	67.19	12.020	37-92
	Experimental	26	68.92	14.045	45-94
Week 12	Control	26	67.19	11.943	37-92
	Experimental	26	68.65	14.405	42-94

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