

**Pour Out the Oil:
Successful Parenting for Math Development among African Americans**

BY

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THESIS

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To my dear hearts, Patrick and Amiri. I love you.

Let everything you do be done in love [motivated and inspired by God's love for us]. (1 Corinthians 16:14 AMP)

No discipline seems pleasant at the time, but painful. Later on, however, it produces a harvest of righteousness and peace for those who have been trained by it. (Hebrews 12:11 NIV)

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List of Abbreviations

AP	Advanced Placement
CPS	Chicago Public Schools
CCSS	Common Core State Standards
CCSS-M	Common Core State Standards for Mathematics
CRT	Critical Race Theory
EM	Everyday Mathematics
ERIC	Education Resource Information Center
GED	General Education Diploma
GPA	Grade Point Average
MAPPS	Math and Parent Partnerships in the Southwest
MiC	Mathematics in Contexts
NCTM	National Council of Teachers of Mathematics
NSF	National Science Foundation
NWEA MAP	Northwest Evaluation Association Measures of Academic Progress
PARRCC	Partnership for the Assessment of Readiness for College and Careers
PTA	Parent-Teacher Association
SES	Socioeconomic Status
SQRP	School Quality Rating Policy
STEM	Science Technology Engineering Mathematics

SUMMARY

This is a qualitative case study of six African American families in Chicago. Each family has a focal child in 5th through 8th grade who is mathematically successful. Success with math is defined students identifying positively with mathematics. The families vary along the lines of socioeconomic status. This dissertation is preceded by research studies of African American parents that overwhelmingly focus on low-income, African Americans as a de facto representation of all African Americans and/or promote the idea that African American academic failure is explained by parental engagement patterns that differ from the parenting styles or parental involvement of White, middle-class parents. By taking a strengths-based approach to examining African American parents of varying socioeconomic status with mathematically successful students, this study represents a departure from this paradigm of understanding African American families. Furthermore, mathematics reform movements, with Common Core State Standards-Mathematics as the most recent, tend to marginalize parents by treating them as adversaries, rather than ancillary to success. Therefore, I question how these parents account for CCSS-M in their support practices.

Through cross-case and within-case analyses, I show how these African American parents engaged in three behaviors that afforded them agency in their students' math learning: parents (1) acted as a good steward for their child's education by selecting schools and programs that would ensure access to advanced mathematics, (2) promoted the knowledge, skills, and identities for math success, and (3) motivated their children to persist at math and achieve at high levels. The parents engaged in distal (i.e., math support that does not center math-related tasks) and/or proximal (i.e., math-related tasks) support practices. Parental support practices were dynamic and informed by their mathematics identities, how they perceive their child's math identity

toward any given math concept, their goals, and the situational context. Furthermore, socioeconomic status mediated family life, parenting, and parental support for math. In terms of math reform, parents (2 of 6) with professional backgrounds as teachers more so than their counterparts who were not educators (4 of 6) were more knowledgeable of Common Core and could identify changes in the ways mathematics was being taught as a result of Common Core. Parents who were not educators had not heard about Common Core or held conceptions of Common Core that were not as deeply informed as those with insider knowledge.

This study adds to previous literature by pivoting from parental involvement to describe parental math support and characterize their parental support in terms of distal and proximal practices. It validates the notion that research of African American families should consider how socioeconomic status impacts the phenomena under study. It also has implications for how district and school policies (e.g. school choice initiatives, selective enrollment, etc.) influence parental support practices for math.

CHAPTER 1 AFRICAN AMERICAN PARENT SUPPORT PRACTICES IN MATHEMATICS: A STRENGTHS-BASED APPROACH

The “oil” in the title of this dissertation is a reference to a bible story that I relate to how resources within African American families should be pulled upon to promote students’ success in mathematics. The story, *The Widow’s Olive Oil*, is reproduced in full below. For the sake of preamble, a widow was concerned about the well-being of her two sons who were in jeopardy of being taken as slaves to cover the outstanding debts of her recently deceased husband. *The Widow’s Olive Oil* reads:

¹ The wife of a man from the company of the prophets cried out to Elisha, “Your servant my husband is dead, and you know that he revered the LORD. But now his creditor is coming to take my two boys as his slaves.” ² Elisha replied to her, “How can I help you? Tell me, what do you have in your house?” “Your servant has nothing there at all,” she said, “except a small jar of olive oil.” ³ Elisha said, “Go around and ask all your neighbors for empty jars. Don’t ask for just a few. ⁴ Then go inside and shut the door behind you and your sons. Pour oil into all the jars, and as each is filled, put it to one side.” ⁵ She left him and shut the door behind her and her sons. They brought the jars to her and she kept pouring. ⁶ When all the jars were full, she said to her son, “Bring me another one.” But he replied, “There is not a jar left.” Then the oil stopped flowing. ⁷ She went and told the man of God, and he said, “Go, sell the oil and pay your debts. You and your sons can live on what is left” (2 Kings 4: 1-7, New International Version).

In this period of significant hardship, the key to the family’s freedom was in the resources (oil) already at their disposal. The family leaned on their social networks or community to overcome their predicament. For me, the “community” in the vignette harkens to the importance of extended family networks that African American parents rely upon for support—be it emotional, financial, academic or otherwise (Foster, 1983; Littlejohn-Blake & Darling, 1993; Taylor, Chatters, Tucker, & Lewis, 1990; Taylor, Casten, & Flickinger, 1993)—to navigate the unique task of raising Black children in a society where their humanity and self-determination is

undermined by systemic structural racism. The mother in the story was able to rely on the community to make her oil stretch further than it would otherwise. For many African American families, the larger community is often an extension of the family, from which we can gather resources to improve the educational experiences of Black students.

This is a study of mathematics socialization in African American families and the particular ways in which they provide support to their children who have experienced success in mathematics. Mathematics is an essential front on which to wage the battle for full participation in society for African Americans, as it has been used systematically to disenfranchise African Americans from upward social mobility and political power (Moses & Cobb, 2001; Stinson, 2004). I draw on Martin's (2006) definition of *mathematics socialization* as "the experiences that individuals and groups have within a variety of contexts, such as school, family, peer groups, and the workplace, that facilitate, legitimize, or inhibit meaningful participation in mathematics" (pp. 206). I focus on families because families are highly influential to children's academic success, as parents are the first teachers and socializers (Clark, 1983; Berry, 2008), and particularly African American families because when we can improve the schooling experiences of Black children, we expand their life trajectories (Ladson-Billings, 1997). The lesson in *The Widow's Olive Oil* for the plight of the African American family is that the educational experiences of their children are linked to their livelihoods; that is, African American children are at risk of greater levels of social and economic oppression if their current, negative educational experiences improve. Gloria Ladson-Billings (2006) terms the accumulation of these negative experiences the *education debt*. The story also aligns with my scholarly framework in that I focus on the strengths and assets within African American families and communities, rather than

their perceived deficiencies. I strive to, as Bratton, Quintos, and Civil (2004) put it, foreground “the possibilities present within the communities” (p. 2).

In this investigation of African American families, I identify parental support practices within and across African American families that facilitate mathematics development for their children, while carefully noting the constraints present and the ways that schools can better support this group. I use *parent/al support practices* as an umbrella term that includes traditional accounts of parental involvement or engagement (in-school involvement, volunteering, PTA, homework help, etc.), but also includes actions, both extraordinary and mundane, that facilitate the development of mathematics knowledge, identity, and achievement. For example, parents may create structures at home, such as enforcing bedtime or serving a nutritious breakfast, that allows a child to function effectively while at school. Although mundane, these actions create an environment for meaningful learning to take place. In another instance, a parent may create a mathematics-tutoring program (Berry, 2008)—an extraordinary act of parental engagement—that benefits their child as well as many children who would not otherwise have access to this set of experiences. In this scenario, not only are the parents who created the tutoring program engaging in support practices, but the parents who allow their children to attend the tutoring program are extending support as well.

Problem Statement

Parenting includes a range of actions that typically align with support, monitoring, or discipline (Amato & Fowler, 2004). These practices have implications for children’s adjustment, development, and well-being. Traditionally, parenting has been studied from a sample population of White, middle-class families and analyzed through the lenses of parenting styles and parental involvement (Abdul-Adil & Farmer, 2006; Baumrind, 1971, 1991; Chavkin, 1993; Lamborn, et

al., 1991; Maccoby & Martin, 1983; Shucksmith, Hendry, & Glendinning, 1995; Stone & McKay 2000). Both frameworks are theorized to provide academic support and positive youth development (Amato & Fowler, 2004; Epstein, 1991; Fan & Chen, 2001; Hill & Taylor, 2004; Jackson, Henriksen, & Foshee, 1998), yet these two areas fall short in capturing the experiences of African American families.

As researchers have begun to analyze Black family life vis a vis African American parents in earnest, they contend that African Americans' parenting styles are swayed by the contexts of their environment (Brodsky & DeVet, 2000; Kotchick & Forehand, 2002), social class (Lareau, 2003), and uniquely influenced by racial socialization (Banerjee, Harrell, & Johnson, 2011; Bowman, 1985; Constantine & Blackmon, 2002; Demo & Hughes, 1990; Fischer & Shaw, 1999; Stevenson, 1995). African American parents use racial socialization to prepare their children for their unique position in society *as African Americans* (Harris-Britt et al., 2007; Hughes et al., 2006; Neblett, Rivas-Drake, & Umaña-Taylor, 2012; Stevenson, 1995). Racial socialization literature has shown that the practice has important implications for the academic and developmental outcomes of African American children (Altschul, Oyserman, & Bybee, 2006; Banerjee, Harrell, & Johnson, 2011; Caldwell et al., 2004; Fisher & Shaw, 1999; Harris-Britt et al., 2007; Marshall, 1999; Neblett et al., 2009). Based on my review of the extant literature, African American parents, collectively, occupy a social status and position different from non-Black parents. Portrayals of African American parents and families in the research literature and in the media often focus on the pathology of, so-called "broken" families, and adverse outcomes. Moreover, those who have examined African American parental engagement in schools overwhelmingly focus on low-income African American parents and families (Bluestone & Tamis-LeMonda, 1999; Ford, Harris, Tyson, & Trotman, 2001; Querido, Warner, & Eyberg,

2002). In the literature, the African American family is, for all intents and purposes, synonymous with a low-income socioeconomic status. Within-group differences remain relatively understudied, despite calls for their consideration in studies of African American families (Allen, 1995; Burton, Bonilla-Silva, Ray, Buckelew, & Hordge Freeman, 2010; Hill, 2007; McAdoo, 1998). As a result, studies analyzing the impact of SES on parental support within African American families are few. In cases where analyses are extended to middle- and upper-middle-class African American families (e.g., Ogbu, 2003), the focus is still on the negative outcomes and the problematic aspects of familial dynamics. Specifically, the positive engagement practices of African American parents are often under-appreciated and under-reported, as those practices may differ from the normalized engagement practices of their White counterparts. Furthermore, a class-based analysis would be helpful to identify how the social locations of African American families influence their experiences and movement within educational institutions (Hill, 2007). It is likely that the experiences of African American families differ based on their socioeconomic position. Being African American and middle-income, or African American and low-income, or African American and working-class within school contexts may mean that certain aspects of their experiences are salient at the intersection of race and class. This line of reasoning runs counter to studies by Lareau (2002; 2003) that position social class as the predominant factor in how parents negotiate educational experiences for their children. An increase in studies with an intersectional approach to the study of African American families and parents will add context to our understandings of these families.

Furthermore, research on African American parents rarely considers the ways in which their background experiences (as students, as math learners, as African Americans, etc.) have influenced their academic support strategies. Parents' background experiences provide an

important basis for the roles they construct for themselves in support of their children. Parental role construction is defined as “parents’ beliefs about what they are supposed to do in relation to their children’s education and the patterns of parental behavior that follow those beliefs” (Hoover-Dempsey et al., 2005, p.107). Parents’ role construction is a driving force behind support practices and is influenced by their experiences, beliefs about child development, expectations, and recommendations from significant actors, such as teachers (Hoover-Dempsey et al., 2005).

A growing body of literature has begun to examine the support practices of African American parents around mathematics (e.g., Berry, 2008; Martin, 2000, 2009a; Jackson, 2007), but more qualitative research is needed on the roles that African American parents play in supporting their children’s mathematics education. Very few researchers look to parents’ mathematics identity as a factor in mathematics socialization (Martin, 2000, 2006, 2009a), and fewer still have investigated the influences of mathematics reform on African American parents’ engagement (Remillard & Jackson, 2006). Marta Civil’s (Civil, 1999, 2001; Civil, Diez-Palomar, Menendez-Gomes, & Acosta-Irqui, 2008) work with Latino parents is one example of research that focuses on parents and mathematics engagement. Civil’s work along with Martin (2000, 2006, 2009a) points to the value of beginning with parents’ experiences to understand mathematics socialization within family contexts and in the contemporary era of mathematics reform. Mathematics reform movements have often called for more parental involvement in mathematics education, while simultaneously placing parents at a disadvantage because such requests have not reached beyond rhetoric and platitudes to articulate clear and concrete roles for parents. Furthermore, African American parents often remain at a distinct disadvantage because they are portrayed as existing outside the purview of “good parents.” In society, and within

mathematics reform movements, positive discourse on parental involvement and overall good parenting are normalized according to the actions of White, middle-class parents (Ford, Harris, Tyson, & Trotman, 2001). African American parenting is juxtaposed to that lens. African American parents are further disadvantaged because they pull from undervalued forms of cultural capital when advocating for their children in schools (Yosso, 2005). In addition to enduring the heavy demands for involvement from the proponents of mathematics reform, African American parents must also navigate educational spaces where their children are exposed to lower quality resources (Diamond & Gomez, 2004). Given that many African American parents often confront issues of systemic structural inequity, the possibility exists that they may be perceived as less poised than their non-Black counterparts to respond to issues around mathematics reform.

With regards to Common Core State Standards for Mathematics (CCSS-M), contemporary mathematics will not resemble the mathematics of yesteryear, likely leaving parents in a precarious position to respond to calls for parental involvement from math reformers and educators, who may also lack sufficient comprehension of the math practices promoted by the new standards. Also important are policies of school choice. Even as Chicago is an open-enrollment district wherein parents can choose any school in which to send their child, in practice schools must also choose their children in return (via application processes). African American Parents are finding that they have more of an illusion of choice rather than real agency to select a so-called high-quality school (Patillo, 2015). This too may have implication for the kinds of mathematics learning taking place in schools and how parents choose to support their children's math learning. Therefore, more research is needed to understand better how African

American parents engage their children around mathematics and how they respond to the demands of mathematics education reform given their experiences.

What follows is an inquiry into the ways African American parents conceptualize their role in their children's mathematics learning and how recent reforms have impacted parental involvement, if at all. The investigation centers on the following research questions:

1. How do African American parents conceptualize their roles in their children's mathematics development, and what support practices do they employ to enact these roles?
2. How have math reforms (i.e., CCSS-M, as part of the most recent reforms in mathematics education) impacted parents' support practices in mathematics?
3. In what ways are their roles and behaviors influenced by their life experiences and mathematics identities?

The study participants are African American parents and their children who have demonstrated success with mathematics. Success with mathematics is conceptualized having a positive mathematics identity (e.g., a child who likes math or believes themselves to be good at math).

The study methods include interviews of parents, children and social networks, math autobiographies, and parental behavior checklists, each of which I discuss further in Chapter three.

Significance of the Dissertation Study

This inquiry furthers our understanding of how African American parents support mathematics learning, especially in the context of mathematics reform and in the era of school choice. The current lack of understanding is part and parcel of the narratives that couch African American parents as bad parents, as is the strained home-school relationship between educators

and African American families and the conflation of White parental practices as representative of *all parents* and beneficial for *all children*. This study delves deeper into these issues to addresses the ways African American parents support math development and how current reforms and school choice policies impact their support practices. I use math development as an umbrella term to reference the knowledge, skills, and dispositions related to learning math.

As a part of educational research and debate, scholars have interrogated and deliberated the question of why some students succeed, while others fail (Erikson, 1987; Herrnstein, 1973; Ogbu, 1987; Valdes, 1996). These debates often pit schools against families, as educators seek to explain student failure—namely Black student failure—as a function of the so-called disadvantaged home-lives of students (Lipman, 2004; Valdes, 1996). Various explanations for minority student failure have been presented. For example, some have looked to blame genetics, stating that some racial groups (i.e., African Americans, Latinos, and Native Americans) are genetically less intelligent than other racial groups (i.e., Whites and Asians) (Herrnstein & Murray, 1994; Valdes, 1996; Gould, 1981). While blaming the biological makeup of students for poor academic achievement has fallen out of favor, others have extended this line of reasoning to a more palatable argument vis-a-vis the cultural deficiencies of African American students (Valdes, 1996; Ogbu, 1987); that is, if African American students abandon their culture and embrace the culture of White society, they would be more academically successful.

If carried to its next logical conclusion, this argument extends to African American parents (Lopez & Donovan, 2009), and infers that if African American parenting styles, or parental involvement, were aligned with the methods and engagement patterns of White, middle-class parents, African American students would be academically successful. Teachers are not immune to this type of reasoning. Diamond and Gomez (2004) documented the ways in which teachers’

perceptions of African American parents have discouraged parental involvement. Their study pushed against culturally deficient thinking about African American parents and families that locates the source of African American student failure among African American parents and leads to strained home-school relations. This is an intellectual and political endeavor to affirm the strengths in African American families and to position African American parents as both culturally competent and good parents.

A strengths-based approach is necessary because the White middle-class parent prevails as the yardstick to which all other groups are measured (Brantlinger, 2003). Thusly, low-income, minority parents are blamed for what is perceived as a failure to support children's academic performance. This narrative is being played out currently with new state laws to reduce welfare assistance to families of children with failing grades and with school rules that penalize parents for failing to attend a parent-teacher conference (see Bashir, video file; Leach, 2013; Molnar, 2012; Wallace, 2013). These policies position low-income, minority families as deviant for not supporting their children in ways valued by mainstream society.

Because there is a need for research to explore African American parents' support of mathematics learning, my goal is to reframe conceptions of African American parental participation to better reflect their engagement and support practices. The first step in combating the hegemonic view of parental involvement is to document the practices of African American parents, which means providing a counternarrative of the ways in which African American parents are supporting mathematics. Therefore, we need research on African American families that identify their assets and that seeks to maximize those strengths for the benefit of African American children and families.

As researchers, practitioners, and policymakers who work with marginalized families, we must identify resources currently available to African American families—even if, at first glance, those resources may seem insufficient to address the educational debt. There are parents who can only do the “basics” (i.e., make sure the child goes to bed on time, send them to school with the necessary supplies, etc.) because they may not have the knowledge and skills necessary to engage in mathematics with their children, or they may have the knowledge and skills, but do not have the time in their work schedules to accommodate certain support practices. Nevertheless, what they do should be valued and is beneficial to the process of learning. Some parents are skilled and highly involved in the day-to-day mathematics experiences of their child. Berry (2008) provides an example of African American parents founding and running a tutoring program at their church to further the mathematics development of their mathematically successful child and provide opportunities for other children to develop mathematically. I recognize the importance of the reform era taking place in mathematics education, as it situates the experiences of African American parents and students.

Researcher Positionality

I am a married, African American woman who lives a middle-class lifestyle. With the recent birth of my son, I also became a parent. I grew up in a low-income household headed by my mother, who was a single parent. I have views that are colored by these and other intersecting identities that define me. This study centers African American parents and children from mixed-income groups. I can relate very intimately to my target groups, having experienced life circumstances typical for both low-income and middle-income families. The ability to personally relate to certain issues and concerns relevant to low-income and middle-income

families through my own life experience within these groups allows me to interpret the narratives of my subjects through a framework like those researched in this study.

The roots of my personal interest in African American parents as supporters of math learning are deep. Generally, as an African American woman, I am interested in the improvement of the educational system for African American children. Over the course of my graduate career, I have heard numerous stories about the mistreatment that African American children endure in mathematics classrooms from friends, family members, and educational actors. I have also taken note of the countless times parents have risen to advocate for their children. For example, several years ago my, then, 5th grade niece told her mom—my sister—that after complaining to her math teacher that a fellow student was copying her answers, the teacher responded, “I don’t know why they [the other student] would copy *your* work” implying that a student would not seek to copy her work because she was mathematically incompetent. Subsequently, my sister had several meetings with the principal, my niece was moved to another math teacher, and over time, mathematics became one of her favorite subjects. I was troubled immensely by the ease with which this teacher's perceptions could negatively impact her professional demeanor and rise to strike at a young girl’s developing mathematics identity. I was impressed, however, with how my sister was able to simultaneously insulate her daughter and enliven a robust fondness for math in her. This and other experiences piqued my interest in the role that African American parents play in supporting mathematics learning and success.

Now to speak specifically about my own experience: I was raised by a mother who was labeled with speech and mental disabilities, who was a teen mother, who supported the household on a fixed income, and who was unable to read well or help with math homework. By all accounts, my siblings and I should not have post-high school degrees, but we do. Given the

current narratives in educational research, this is inexplicable. These stories give credence to the idea that there is some quality or concept that is not being captured by many contemporary studies of African American parental involvement in mathematics.

Key Findings

My findings speak to the *how* and *why* of African American parental support of mathematics; that is, how do parents engage in mathematics support and why do their engagement patterns take a particular shape. The six families in this study are situated within Chicago Public Schools (CPS). The local context matter for their support, as research shows that educational opportunities in CPS are inequitably distributed across race, ethnicity, and income (Henricks, Lewis, Arenas, & Lewis, 2017). Overall, the findings demonstrate how these African American parents support math development. The findings also have implications for how math educators should conceive of parent support

In my assessment of how the parents in this study conceptualized their roles for support, I find that parents engaged in three particular behaviors that afforded agency in their students' math learning: parents (1) acted as a good steward for their children's education by selecting schools and programs that would ensure access to advanced mathematics for their child; (2) promoted the knowledge, skills, and identities for math success. Parents used a variety of methods to do this, such as orchestrating math-related experiences (e.g., STEM-related summer programs) designed to promote a healthy math identity, engaging in supplemental math instruction, and utilizing members of their social networks to facilitate math learning; and (3) motivated their child to persist at math and achieve at high levels.

In terms of the ways Common Core influences parents' support, I find that parents (2 of 6) with insider knowledge of CPS—these were parents who were educators by profession—were

more knowledgeable of Common Core and could identify changes in the ways mathematics was being taught as a result of Common Core. On the other hand, lay-parents (4 of 6)—those parents who were not educators—had not heard about Common Core or held conceptions of Common Core that were not as deeply informed as those with insider knowledge. This research also adds to the literature on math reforms (Davis, 1997; Lehrer & Shumow, 1997; Peressini, 1996, 1998a; Remillard & Jackson, 2006) by speaking to the efforts of the district to inform and include Black parents in decisions relating to Common Core in CPS and the ways these parents have managed Common Core.

In my exploration of how parents' life experiences and mathematics identities factored into their support practices, I find that parental support practices took on two interrelated forms: distal and proximal support. These two forms of support describe whether parents engaged in math-related activities with their children (proximal support) or provided other kinds of support that do not include engaging in math-related activities (distal support). The use of distal and proximal support was dynamic and a function of parents' math identity, their perceptions of their children's math identity, their resources, and the demands of the situation.

Organization of the Dissertation Study

The organizational structure of this dissertation study is as follows: In chapter two, I review the literature related to parents' involvement in mathematics education and provide an alternative account for parental involvement—parent support practices—to account for the conceptual limitations of parental involvement for parents who do not conform to White, middle-class norms of involvement. The research methods and procedures used to gather and analyze data for this study are in Chapter three. I describe the social positions of the families who participated in this study in Chapter four and provide an analysis of parents' support practices, how they

conceptualized their roles, and patterns of support from parents. In Chapter five, I take an in-depth look into the lives and mathematics stories of two families, paying special attention to the affordances and constraints on parents' support practices. I conclude in Chapter six with a discussion of the implications of the findings of this dissertation study.

CHAPTER 2 PARENT SUPPORT, HOMEWORK AND INEQUALITY IN MATHEMATICS EDUCATION AND REFORM

When it comes to mathematics education, mainstream research has examined the ways in which parents have impacted mathematics learning and development. The intellectual conversation has centered on how parents' engagement can have far-reaching implications for mathematics learning and the trajectory of their children's career. Conventional research also centers the mythical White, middle-class parent (and family), which (as I discuss later) leads to a tendency for researchers and practitioners to generalize White parents' methods of engagement to all parents. Not until recently have researchers begun to interrogate the implications of the hegemonic practice of measuring marginalized families by the yardstick of White middle-class families, and instead, started to interrogate African American families separately. To understand the context in which research on African American parents and mathematics is situated, this chapter begins with a review of the mainstream literature on parents' and mathematics. This literature is largely centered on parents' beliefs, parental involvement in general, and parental involvement in the context of mathematics education reform. Following this, I discuss Marta Civil's equity-based research on Latino parents and mathematics to reimagine the possibilities for research with African American parents. Finally, I provide an overview of African American family life, review recent literature that centers race in analyses of African American parents' experiences with math education, and challenge current parental involvement narratives as inadequate to the task of describing African American parents' mathematics support.

Parents' Beliefs and Expectations

Research on parents' beliefs is centered on two areas—beliefs about the importance of math and parents' gendered stereotypes about who can do math. The literature suggests that parents' beliefs about math inform how they support their children's math development. Parents' beliefs about math are also linked to and dependent upon whether their children are in the early-, mid-, or later grades. With respect to early childhood education, parents perceived reading and social-emotional skills as more important to develop than math skills (Musun-Miller & Blevins-Knabe, 1998). Drummond and Stipek (2004) corroborated this when they found that parents of elementary students believed it was more important to help with reading than with math. This phenomenon, however, may be an indicator of society's value of reading above math or the perception that reading is more critical than math for success in the early grades (Drummond & Stipek, 2004).

The literature goes beyond domain comparisons to assess how parents' math beliefs influence children's math development. The research suggests that if parents believe math is important, they will act on this belief by creating experiences for their children that reflect this belief. In a series of studies exploring parents' beliefs of the importance of math, Musun-Miller and Blevins-Knabe (1998) found that parents engaged their children in more math-related activities when they rated math high on a scale of importance. In another study, Simpkins, Davis-Kean, and Eccles (2005) conducted a survey of parents and children and found that when parents emphasized or encouraged math, their children engaged in more out-of-school math-related activities.

These studies suggest that the home environment is critical in shaping whether, and the extent to which, children are engaged in math-related activities outside of school. Parents who

engage in mathematics activities with their children create a robust environment, wherein the importance of mathematics is conveyed to the child over time. Perhaps the most vital aspect of this literature is the idea that parents' beliefs impact their children's beliefs about their own math abilities. Just as parents are impactful in creating out-of-school environments that support math development, as children age, they are influential in their course-taking patterns, which ultimately impact their career decisions. Children who persist develop strong mathematics identities— “the dispositions and deeply held beliefs that individuals develop within their overall self-concept about their ability to participate and perform effectively in mathematical contexts and to use mathematics to change the conditions of their lives” (Martin, 2006, p. 206). As we know, mathematics gets more complicated as children progress through school, and the environment created by parents helps children to persevere.

Parents play a crucial role in whether students continue on to advanced mathematics courses (Bleeker & Jacobs, 2006; Ma, 2001; Useem, 1992). It is theorized that the expectations of parents, more so than the expectations of other students or teachers, influence which math courses students select. Using longitudinal data, Ma (2001) found parents' expectations and plans for college strongly correlated to students' success in advanced mathematics. Moreover, the social influences of students' homes had a greater impact on students' course-taking patterns in advanced mathematics when compared to social influences at school (i.e., peers and teacher expectations). In another longitudinal study of parents' beliefs on children's self-perceptions, Bleeker & Jacobs (2006) found that parents' beliefs about their children's abilities to succeed in math still had an impact on their children's beliefs about their own math abilities and math-oriented career choices 12 years later. This study highlights the long-term significance of parents' beliefs and expectations and their impact on their children's math identity and career

decisions. Essentially, parents were instrumental in their children's mathematics trajectory, and what they did had a great influence on their children's course-taking patterns and their self-efficacy related to mathematics.

Overall, this literature does not disaggregate by race or income. There is no systematic approach to understanding how race or income play in the study of parents' beliefs and expectations. For the most part, the racial demographics of the studies reflect either a majority White sample or go unreported altogether, and the participants are assumed to be White (Bleeker & Jacobs, 2004; Ma, 2001; Musun-Miller & Blevins-Knabe, 1998; Simpkins, Davis-Kean, & Eccles, 2005; Useem, 1992). Furthermore, when racial demographics are provided, researchers treat race as a demographic variable (see Drummond & Stipek, 2004) and pay little attention to how race impacts parents' beliefs and expectations of what is possible for their children. With regards to literature centering parents' beliefs and expectations, there was one study that sought to explain differential access to advanced mathematics. Useem (1992) investigated why parents' level of cultural capital (i.e., education level, general knowledge of children's placement in tracking, and social networks) was positively linked to students taking advanced math courses. Parents' cultural capital was one of the reasons that they encouraged their children to take advanced math courses, as they were familiar with the level of work required for success. In this way, parents' beliefs and privileges were passed on to their children. Nonetheless, these analyses of parents' beliefs and cultural capital were discussed without consideration for the influence of race or the racial makeup of the sample.

Gender, Mathematics, and Parental Support

The literature on parents and mathematics gives special attention to the role of gender in mathematics participation. A part of this focus has been to understand how, despite the

comparable math achievement of boys and girls, there are gender differences among those who pursue math- and science-related fields of study and high-status careers in math and science (Gunderson et al., 2012). The literature suggests that parents' stereotypical beliefs and practices play a role in why their children pursue certain fields of study and careers. Parents' gender stereotypes manifest in how they socialize their children, leaving boys more primed for math- and science-related fields of study (Jacobs & Bleeker, 2004; Parsons, Adler, & Kaczala, 1982; Tiedemann, 2000). Jacobs and Bleeker (2004) studied how parents' promotive behaviors influenced their children's interest in math and science. Parents acted upon gendered math stereotypes through the purchase of more math and science toys for boys than for girls. Parents also acted upon stereotypes by providing girls with unsolicited help during math and science activities more often than they did for boys, thereby undermining the girls' self-concept, as it related to mathematics. Jacobs and Bleeker (2004) theorized that parents' gendered socialization of certain values and beliefs are conveyed, reinforced, and accumulated over time, influencing children's self-perceptions concerning mathematics and leaving them primed differently for math and science by gender.

Parsons, Adler, and Kaczala (1982) supported this idea, finding that parents' gendered stereotypes influenced which courses they perceived as necessary to their children. When they asked parents if their children held high regard for math, parents were more likely to believe their sons, more so than their daughters, held high regard for math. Parents believed English and History were more important to their daughters than math. Although boys and girls performed equally well on a standardized math assessment, parents believed that math was more difficult for their daughters than for their sons (Eccles, Jacobs, & Harold, 1990; Parsons, et al., 1982; Yee

& Eccles, 1988). These beliefs helped to shape the context in which boys and girls select courses and form their self-concepts or mathematics identity (Jacobs, 1991; Wigfield & Eccles, 1994).

The literature also conveys another aspect of gender that plays a role in how parents engage their children around math; namely, that parents' own behaviors and roles reflect gender stereotypes. Raymond and Benbow (1986) found that fathers were more involved in math activities and mothers were more involved with verbal activities. LaLonde, Leedy, and Runk (2003) corroborated this when they discovered that when mothers and fathers do math activities with their children, mothers tend to focus on computational fluency, while fathers tend to engage in more advanced mathematics, such as problem-solving and symbol manipulation. Perhaps more importantly, girls were not as confident in their math abilities as their male counterparts and perceived their mothers as having lower expectations for their success in mathematics.

The literature on gender, math, and parents highlights the social aspect of mathematics—math is not simply educational content; its use-value for an individual is impacted by one's socialization. The studies of gender and mathematics presented above do not theorize race, they often just report the gender of the sample (LaLonde, Leedy, & Runk, 2003; Parsons, Adler, & Kaczala, 1982). When they do provide race, their samples are mostly White (Jacobs & Bleeker, 2004; Tiedemann, 2000). We are left with the knowledge of how White parents socialize around mathematics and how that plays out with respect to gender, but we know very little about African American parents' socialization around both gender and math. Furthermore, we cannot generalize that healthy practices around gender and math are the same for and among African American parents and children. Do African American parents organize experiences for their children that are gendered and have differential outcomes? In what ways do African American parent's competencies, anxieties, and beliefs influence their children's math identity?

Conceptions of Parent Involvement

According to Hill and Taylor (2004),

parental school involvement is largely defined as consisting of the following activities: volunteering at school, communicating with teachers and other school personnel, assisting in academic activities at home, and attending school events, meetings of parent-teacher associations (PTAs), and parent-teacher conferences. (p.161)

Parent involvement has been linked positively to mathematics achievement (Shaver & Walls, 1998). Indeed, mathematics education reform efforts have brought national attention to parental involvement in schools (Peressini, 1997, 1998a, 1998b); however, there is concern among researchers and educators regarding the perception of low parental engagement in school activities among African American parents (Chavkin, 1993; Dauber & Epstein, 1993). There is also evidence that despite indicators that parent involvement is an essential aspect of mathematics achievement among Whites, parental involvement does not fully explain mathematics achievement of other racial groups, namely, African Americans, Latinos, and Asians (Yan & Lin, 2005). Said another way, traditional definitions of parental involvement do not adequately capture what parents of color do to support their children's learning (Abdul-Adil & Farmer, 2006; Chavkin, 1993; Chavkin & Williams, 1993; Cooper, 2009; Epstein & Dauber, 1991; McKay et al., 2003; Stone & McKay 2000). In traditional studies of parental involvement, race acts as a demographic variable, rather than a significant component used to understand the process of schooling and its impact on parental involvement (Lewis, 2001). There is a need for research to identify the aspects of African American parenting that are beneficial for children's mathematics achievement and identity. Indeed, we can learn from how African American parents frame their roles and engage in their children's schooling (Doucet, 2008; Remillard & Jackson, 2006; Jackson & Remillard, 2005).

To problematize traditional parental involvement research, critical scholarship has argued that the definition of parental involvement is too narrow to encompass how parents of color are engaged. Since parents of color engage in parental support differently, in ways atypical to the normalized standards of White parental involvement (Wallace, 2013), their engagement is often overlooked, and they are perceived as apathetic or indifferent to education (Abdul-Adil & Farmer, 2006; Cooper, 2009; Doucet, 2008). The scholarship on these issues proposes that parental involvement has been conceptualized as top-down or *schoolcentric* (Doucet, 2008; Lawson, 2003). Schoolcentric approaches to parental involvement privileges the implementation of “preset educational agendas and activities that may or may not serve the particular interests of diverse families and children” (Cooper, 2009, p. 380). In other words, parental involvement is defined by parents’ fidelity to engagement activities that are sanctioned by educators.

Further scholarship has tried to understand why some parents appear to be more engaged than others, albeit using traditional definitions of parental involvement (Jeynes, 2003; McNeal, 1999; Moles, 1993). This research suggests that the level and type of activities parents engage in depends on several factors, such as employment (for example, parents working during school hours cannot volunteer in the classroom), marital status, and education level. For instance, Muller (1995) contends that these factors may be proxies or index resources and opportunities available to parents. Mothers working part-time volunteered more at school; their children spent less unsupervised time after school and scored higher on mathematics assessments than full-time or non-employed mothers. It is likely that mothers working part-time have more resources that promote certain kinds of highly visible involvement, tend to be married (yielding a dual-parent household), and have a higher family income. These findings make clear that consideration should be given to how descriptive variables play out in context, given constraints and

affordances on time, adult supervision, family structure, extended family networks, and other factors that may influence parental involvement.

With respect to mathematics, scholarship on parental involvement tends to focus on how parents help with homework (Kliman, 1998; Lehrer & Shumow, 1997; Patall, Cooper & Robinson, 2008; Pezdek, Berry, & Renno, 2002; Sheldon & Epstein, 2005; Sirvani, 2007) and ways to improve that help. Research suggests that helping with homework is an essential aspect of engagement, however, there are factors that can hinder the effects of parental involvement in this area. Because parents do not have the level of training in math pedagogy afforded to teachers, parents may have trouble identifying their children's problem areas in math, potentially rendering their help useless (Pezdek, Berry, & Renno, 2002), or they may end up working toward cross-purposes. For example, when helping their children with word problems, parents tended to be more direct than teachers, focusing on goals and defining the problem, whereas teachers were concerned with helping children make sense of the problem (Lehrer & Shumow, 1997). Both approaches can lead to the correct answer, however, there has been a push in mathematics education reforms to focus on conceptual understanding. In this regard, parents may be in danger of focusing too heavily on procedural understanding. While parental involvement with homework is beneficial overall, there is a danger for children to become confused without the proper support provided to parents to enhance their understandings of the concepts, the approaches taken by the school, and the strategies for helping their children (Balli, 1998).

To improve the ways that parents provide help with homework, research has looked at program initiatives and parent training that provide structures to ensure that parents and teachers are working toward similar learning goals (Kliman, 1998; Sirvani, 2007; Starkey, Klein, & Wakely, 2004). Parental involvement initiatives specific to math have been found to improve

students' mathematics skills and achievement (Lehrer & Shumow, 1997; Patall, Cooper & Robinson, 2008; Sheldon & Epstein, 2005). For example, Starkey, Klein, and Wakely (2004) reported on a Pre-Kindergarten mathematics intervention program that was classroom and home-based for low- and middle-income families. The curriculum activities were aligned with the National Council of Teachers of Mathematics (NCTM) standards (see NCTM, 2000 for a complete list of standards). The home component of the intervention included activities that coordinated with the classroom curriculum. Families attended home math courses where parents learned how to do math activities. Despite the initial gap in mathematics knowledge between low- and middle-income children, by the end of the schoolyear, both groups of children increased their mathematics knowledge. Low-income children gained more knowledge relative to their starting points than middle-income children, effectively decreasing the gap in mathematics knowledge between the two groups.

Initiatives need not be the implementation of grand, expensive programs to be effective. In several Algebra 1 classes, Sirvani (2007) provided parents with homework monitoring sheets to sign as verification that students completed the homework. In math classes where monitoring sheets were utilized, students outperformed their counterparts whose parents did not receive monitoring sheets. This intervention did not demand much in the way of parents' math knowledge, rather it assured their involvement, via supervision, in the completion of homework—an involvement that proved vital. This highlights how small actions can have a positive impact on achievement. This is significant given that parents of students in higher levels of mathematics (i.e., high school mathematics) are not as positioned to help students with mathematics content as parents of children in lower level mathematics (i.e., k-8 mathematics).

Research on parent training has shown that providing parents with examples and companion homework is beneficial for students' completion of homework (Lehrer & Shumow, 1997; Patall, Cooper & Robinson, 2008). Additionally, schools with mathematics resources for parents had a greater percentage of students scoring at or above the proficiency levels in standardized mathematics achievement tests (Sheldon & Epstein, 2005). Van Voorhis (2011) has expanded our understanding of parent training to include simple acts like making sure homework assignments have clear instructions for involving family members. This can include having a conversation with a family member on the assignment topic. This type of support helps to facilitate the parents' involvement with homework, while also giving them a clear role. Parent training has led to higher rates of homework completion, fewer overall problems with homework, and higher achievement among elementary school students (Patall, Cooper & Robinson, 2008).

The studies previously discussed privilege the experiences and culture of mainstream parents, rather than the experiences of marginalized parents. When studying African American parents, researchers tend to investigate the ways they differ from White parents, using White parents as the benchmark for where African American parents need to be. This deficit approach is limiting because it binds the ways African American families can participate to only those actions sanctioned by schools. Therefore, as others have argued before, it is necessary to expand the definition of parental involvement to account for how African American parents engage their children in mathematics. This entails moving beyond a schoolcentric approach to home-based involvement, whereby parents' support practices at home are considered (Pomerantz, Moorman, & Litwack, 2007). In centering African American parents and families, this study enters the growing conversation in mathematics education that takes a critical and "bottom-up" approach to

parental involvement (Berry, 2008; Civil, 1999, 2001b; English-Clarke, Slaughter-Defoe, & Martin, 2012; Jackson & Remillard, 2005; Remillard & Jackson, 2006; Wallace, 2013). Gained from this work, is an understanding of how African American parents define their roles in their children's math learning, what factors facilitate or hinder their engagement, what support practices they engage in, and what resources parents have at their disposal.

Next follows a discussion of the ways in which reform movements include parents as partners in the mathematics education of students.

Conceptualizations of Parent Involvement within Reforms

Over the past sixty years, national and local reform movements have either alienated or excluded parents from participating in their children's mathematics education (Peressini, 1996, 1998a). The failure to articulate a clear and concrete vision of parents' engagement from the new math movement to the new CCSS-M has resulted in parents and reformers working towards cross-purposes that, ultimately, undermine the goals of mathematics education reform. This section identifies the ways parents are asked to get involved in reform and problematizes that involvement with respect to African American parents.

Reform movements began calling for parental involvement after the 1970s demise of *new math*. The new math reform movement was intended to be a curricular response to the Soviet Union's launch of Sputnik 1 in 1957. The launch created a palpable urgency for the U.S. to close the gap and secure our standing in the world through math and science education (Washington et al., 2012). The goal of new math was to link high school and collegiate mathematics to better prepare students for college, but educators were uncomfortable teaching in this new way, and parents experienced difficulties in helping their children with homework. Ultimately, it was

through the efforts of parents that new math was taken out of schools. Future education reformers took note that parents were crucial to successful reform.

At the same time, parents' pushback provided fertile ground for the 1970s "back to basics" counter-movement that re-centered the focus of mathematics education on obtaining traditional skills (Schoenfeld, 2006). However, after spending a decade on core skills and not seeing student improvement, goals for mathematics instruction expanded. The National Council of Teachers of Mathematics (NCTM) (1980) released *An Agenda for Action*, which contained recommendations for reform of school mathematics and a set of curriculum and evaluation standards (NCTM, 1989). The first two recommendations for school mathematics were to increase the focus on problem-solving and conceptual understanding (NCTM 1989, 2000).

During the late 1980s and 90s, this new focus led to a de-emphasis on memorizing isolated mathematical facts and procedures—meaning that the curriculum would need to change to meet these new goals. To meet this new demand, NCTM and the National Science Foundation (NSF) formed a partnership that resulted in government-funded curriculum projects. Mathematics reform curriculum, such as Everyday Mathematics (Fuson, Carrol & Drucek, 2000) and Mathematics in Context (MiC) (National Center for Research in Mathematical Sciences Education and Freudenthal Institute, 1996), were created to align with NCTM learning standards (NCTM, 1989, 1991). MiC, sponsored by the NSF and EM and created by the University of Chicago School Mathematics Project, are comprehensive curricula designed to foster conceptual understanding and demonstrate a connection between mathematics and the world (Fuson, Carrol & Drucek, 2000).

As discussed previously, parents tend to take a procedural approach to math problems with their children, so the restructuring of mathematics to concentrate on conceptual knowledge

isolates parents who use and believe in traditional mathematics (Jackson & Remillard, 2005). With that, reforms using alternative, rather than traditional, approaches to understanding mathematics, need not be destined for the same fate as new math. However, reformers must ensure that parents understand the alternative approach, its benefits and drawbacks, and the structures in place to help them navigate the new reforms—this is a prerequisite for parents to buy-in to reform. Without it, parents’ focus will likely run counter to reform goals. For example, Lubienski (2004) studied parents and students who had the option to take either traditional or reform mathematics courses upon entering high school. Parents tended to choose the traditional option for their children. Even though children had received previous instruction with mathematics curriculum aligned with NCTM standards from Kindergarten through 8th-grade, parents and students overwhelmingly chose the traditional high school mathematics sequence (i.e., the mathematics strands of Algebra I, Geometry, and Algebra II are studied separately), rather than the reform mathematics sequence (i.e., the mathematics strands are integrated each year). Parents who chose the traditional curriculum sequence cited concerns about college preparation as a factor in their decision. Parents who chose the reform mathematics sequence placed greater priority on children understanding and enjoying math. Lubienski’s (2004) findings supported the notion that parents’ and students’ beliefs about “proper math instruction” at the high school level played a role in their choice to abandon reform mathematics. Parents did not see the utility in reform mathematics and were concerned that the reform curriculum would neither complement college mathematics courses nor provide students with the opportunity to “learn the basics.” Because parents and children are more familiar with traditional mathematics, school communication with parents is especially important to ascertain and maintain parent buy-in. Schools should keep parents informed about what to expect with reform mathematics

curriculum, the benefits of reform curriculum over traditional curriculum, and the activities/resources that accompany units of instruction.

In recent years, another iteration of math reform has begun with the introduction of the Common Core State Standards (CCSS) in 2010. As of 2015, 42 states have adopted CCSS (Common Core State Standards Initiative, 2010). The mission statement on the homepage of CCSS's website reads:

The Common Core State Standards provide a consistent, clear understanding of what students are expected to learn, so teachers *and parents* [emphasis added] know what they need to do to help them. The standards are designed to be robust and relevant to the real world, reflecting the knowledge and skills that our young people need for success in college and careers. With American students fully prepared for the future, our communities will be positioned to compete successfully in the global economy. (Common Core State Standards Initiative, 2010, para. 1)

In several places, the CCSS website reiterates that these new standards help parents by creating clear objectives for students, written by qualified professionals (i.e., teachers, content experts and “leading thinkers”). The CCSS website does not address the real gap between knowing the goal of math instruction and knowing your role as a parent in facilitating that goal. Reporting on the changes the standards bring to mathematics, Dacey and Polly (2012) noted that the unified CCSS-M is an overhaul of “the mathematics we teach and the ways in which we teach it” (pp. 379). Despite acknowledging the changes, this report rarely mentions parents, except to say that parents should be aware of what’s going on in schools. There is a contradiction in the ways that CCSS and their affiliates are discussing the inclusion of parents. On the one hand, CCSS posits that clear objectives will help parents; on the other hand, they recognize implementation will revamp the ways math is done in schools. Because implementation of CCSS-M will likely lead to radical changes for many students, clear objectives are but one step in a plan to scaffold and support parents.

The Chicago STEM Education Consortium (2013) published a report entitled, *Getting Serious about Implementing the Common Core State Standards for Mathematics*, to help school administrators anticipate impending changes from the implementation of CCSS-M. The report recommended current teachers take additional courses in mathematics to engage students at the level intended by the standards. “It is likely that most current mathematics teachers will need to learn *new mathematics content and pedagogy* (emphasis added) in order to engage students in the mathematical ideas demanded by the CCSS-M” (pp. 6). The report, however, does not recommend any support aimed at parents to help them negotiate the new mathematics content that will be introduced to students. Although parental involvement has been shown to be beneficial for students’ learning, within the contexts of CCSS-M, parents’ roles remain reactive, ambiguous, and non-iterative. Parents’ needs are invisible, and they are not anticipated or addressed in any way. The overhaul of math and the ways it is done will alienate parents who prefer traditional ways of doing math and those who lack enough skills to participate in the conversation. Furthermore, the lack of dialogue around parents’ needs means that parents who are marginalized, parents of color, or those from low SES backgrounds, are at a distinct disadvantage, as their needs are not likely to be at the center of a program for parental support. Additionally, the support structures for them need to be qualitatively different from those for mainstream parents and meaningful to their contexts.

Even though all but eight states have adopted Common Core, state and local governments and individual schools are responsible for its implementation. In Chicago, schools that claim to have successfully implemented Common Core have endorsed a strategy of notifying parents and explaining to them what students are learning in the mathematics classroom (Guy, 2014). In the Chicago Sun-Times, a local parent explains implementation in her child’s school: “There has

been ongoing dialogue about the changes, and why teacher instruction will be different;” and the school “send[s] out monthly newsletters with explanations and updates [about] the curriculum’s focus for the next month and what our children will be practicing” (p. 2). Other local parents, presumably from schools that have not successfully implemented Common Core, have different experiences, claiming they were neither notified about Common Core changes in schools nor have they seen differences in teaching with the new standards. Because curricular decisions are made locally, schools do not necessarily adhere to the same mathematics curricula or, as the previous example demonstrates, have similar parent resources or communication strategies.

The general resources available to parents for CCSS-M are numerous, though still limited to certain groups of parents. Eureka Math, a Kindergarten through 12th-grade curriculum that aligns with CCSS-M, was designed by a group of teachers and scholars that had roles in developing CCSS-M (Eureka Math, n.d.). The website for Eureka Math has a tab for parents that include modules organized by topic and grade level. Each module provides background information on the topic, relevant vocabulary, the sequence of the topic relative to previous and forthcoming topics, the Common Core standard(s) being addressed, a sample problem, and activities parents can do at home. The modules are only available in English, so parents who are not fluent speakers or readers of English cannot benefit from this tool. Eureka Math has parent modules from Kindergarten to grade 5 and is only published online. Parents of students beyond grade 5 do not have the same support, indicating an assumption or expectation that (1) parents lack the knowledge and skills to address middle and high school mathematics or that (2) as children get older, parental involvement with homework will decrease. The online availability of the parent modules limits accessibility to families with computers and internet access, effectively marginalizing the participation of families with limited resources. In fact, there are several online

resources and guides for parents (see EngageNY, 2013; Council of the Great City Schools, 2012a, 2012b; National PTA, 2011), however, the finesse it takes to locate these resources may be beyond the skills or time of many parents. Furthermore, when it comes to high school mathematics, online parent resources either do not address high school math (e.g., Eureka Math), generalizes across all math subjects (i.e., Geometry, Algebra, and Functions) with socialization tips for parents to encourage the child's persistence (Council of the Great City Schools, 2012b), or lacks support in the form of vocabulary banks or content summaries, while assuming parents have the skills and knowledge to understand the content (Council of the Great City Schools, 2012a).

The limitation of these online resources is that they do not accompany homework, so they lack the benefits of being situationally relevant to the homework assignments. The resources tend to provide a general overview, and then parents are left to make decisions about how to handle specific content. The benefits of repetition are lost when resources are not coupled with homework, or parents are not otherwise regularly informed of the content being covered. Because most parents learned math for procedural fluency, rather than for conceptual fluency, parental resources should be provided at regular intervals, with each topic addressed, so they can learn with their children. It is important to have parental resources that grow as children reach higher-level mathematics to further facilitate parents' familiarity with progressively advanced mathematics content and with reform mathematics, in general.

With the CCSS-M and other math reforms, there exists the potential for heavy demands to be placed on teachers, administrators, students, and parents. On the one hand, support is provided for teachers, administrators, and students, but on the other hand, the resources that parents (both

mainstream and marginalized) need to support math reforms are overlooked or hard to access, even though parents are a critical piece in the success of math reforms.

Power, Privilege, and Normalization of Whiteness

The critique of reform movements as insensitive to the needs of parents is not new (Kliman, 1999; Peressini, 1996, 1997, 1998a, 1998b), though these critiques do not relate well with the experiences of parents of color. One such critique lodged by Peressini makes the case that calls for parental involvement by reformers is too abstract and lacks a clear delineation of parents' roles within reform. To bolster this point, Peressini (1998a) highlights one such call for involvement in *A Nation at Risk*. In the text, parents are directed to demand the best from schools, instill a work ethic, and be role models for their children. However, when parents of color engage in “demanding the best” they are met with resistance (Diamond & Gomez, 2004; Wallace, 2013). Even as Peressini challenges the discourses of math reforms in relation to parents, his challenge is not applicable to all parents—it indexes the struggle of White, middle-class parents in math reforms. Therefore, reform movements appear to put low-income African American parents at a distinct disadvantage.

Parents, in general, are at the margins of mathematics reform, with African American parents being at the farthest edges of the margins. Since White, middle-class parents' experiences and methods of parenting are privileged and normalized, when we talk about parents generally, we default to this notion of parenting based on what we know to be true of White, middle-class parents. Deviations from what is considered normal are otherized and devalued (Brantlinger, 2003). Thus, the “parents” referred to in reform documents are White, middle-class parents, with other parents, seemingly, ignored.

With respect to African American parents, there is little research on how they navigate reform mathematics, so we do not yet have a clear idea of African American parents' experiences with reform. One notable exception is the Remillard and Jackson (2006) examination of how reform has influenced African American parents. Analyzing low-income, African American parents' experiences with standards-based reform, they found that parents were disempowered and their positions as partners in their children's math learning were undermined (Remillard & Jackson, 2006). These parents found homework assignments difficult to complete without further clarification from the EM resource book, which they were denied access to. Because homework is sometimes parents' only connection to the mathematics classroom, parents found themselves disconnected from the mathematics education of their children.

Because parental involvement is slated by educators to look a certain way, when parents participate in ways outside the norm, their participation is delegitimized and met with resistance (Wallace, 2013). Wallace (2013) describes a (not so) collaborative effort by African American parents and teachers to increase student success. In this case, African American parents formed a parent group with a unified purpose of having "courageous conversations about [African American] students' needs, their education, and their achievement" (pp. 201). The parent group got involved in the following ways: (1) through the parent-teacher organization; (2) by organizing an after-school Enrichment Center where students could get tutoring or help with homework; (3) by volunteering their time in classrooms; (4) fostering mentorships; (5) by recognizing students who brought up their GPA or had a least a 3.0 GPA; and (6) implementing Dreambuilder Sessions, a routine school assembly wherein students were given access to Black professionals in various careers.

This parent group's efforts were met by teachers with what Wallace terms "moments of exclusion," whereby their involvement was discounted, undermined, or unrecognized. To that end, teachers created a "Classroom Visitation Policy" that limited the access of parents to classrooms. They were hesitant to volunteer for the Enrichment Center, declined to have their class attend the Dreambuilder Sessions, claiming their class could not afford to miss a day of content, and did not let students attend mentorship sessions. These moments of exclusion demonstrate that even when African American parents are involved in the ways they find meaningful, they risk being categorized as deviant and viewed as engaging in non-normative and unvalued practices (Brantlinger, 2003; Graue & Smith, 1996; Wallace, 2013). When African American parents meet with resistance, schools, therefore, do not lend themselves as safe spaces for their involvement, leaving parents to feel unwelcomed and rejected and in need of other ways to support their children. For example, in a study of parents' perceptions of schools, working-class African American parents "sensed that some teachers and administrators did not want them in the schools. They believed teachers saw parents' lack of education as a major barrier to *quality* participation" (Diamond & Gomez, 2004, p. 409, emphasis added). In this case, the word *quality* can be taken as a euphemism to mean that these parents did not fit teachers' normative expectations of White, middle-class parental involvement. As such, these parents took on protective roles to buffer their children from unfair educational practices and low-quality teachers and curricular materials.

The problem with conflating the parental involvement practices of White, middle-class parents with their African American counterparts is that White middle-class parents have more privilege, social capital, and tend to hoard opportunities for their children, rather than support what is beneficial for all children (Martin, 2009b). White, middle-class parents actively construct

their children's education with substantial influence on program choices, school affairs, and information networks. As they secure advantages and preferences for their children, they effectively outline the quality of education for other peoples' children (Brantlinger, 2003). This clashes with the goals of African American parents who, generally, want "quality and equitable mathematics educations and opportunities for their children" (Martin, 2006, pp. 208).

The normalization of White, middle-class experiences and practices can create tension between families and schools as "other" parents come into schools with different cultural capital, based upon race/ethnicity (Bratton, Quintos & Civil, 2004) and socioeconomic status, (Lareau, 2003) and consequently, unevenly leverage the system. Diamond and Gomez (2004) highlight this tension as they describe how African American parents of different social classes navigate the educational system to gain advantages for their children. Higher income African American parents used their cultural capital to navigate the system in institutionally sanctioned ways to gain advantages for their children. However, when lower income parents critiqued schools' operations and requested reforms, they were viewed as confrontational. Without a clear articulation of the role of parents, given their particular social and cultural contexts, parents with more social status will have an advantage over other parents, with implications for their children and the opportunities available to them. The main point here is that reform policies may exacerbate inequality, as parents with more resources are better able to leverage advantages for their children. Furthermore, the demand placed upon African American parents is especially taxing, as these same parents are already navigating spaces where their children are exposed to poorer teachers, curriculum, and schooling (Darling-Hammond, 2000) without the extra burden to support mathematics reform. These parents are not as positioned to respond to issues regarding reform mathematics as parents from schools with better resources.

Marta Civil on Parents and Mathematics

Marta Civil is a prominent researcher on Latino working-class immigrant parents engaged in teaching and learning mathematics in Arizona. Her work provides a culturally sensitive approach to parental engagement in an area of literature that is virtually silent. She is one of few researchers working with marginalized parents in mathematics reform contexts. Civil's equity-based scholarship considers the complexities surrounding parents' math experiences and the subsequent mathematics development of their children (Civil, 2001a; Civil, Diez-Palomar, Menendez-Gomez, & Acosta-Irqui, 2008; Civil, Guevara, & Allexaht-Snider, 2002). Her research advocacy brings attention to the interplay of forces—such as power, identity, language, and race—as parents navigate their children's mathematics education (Civil, 2003; Civil, 2008; Civil, Planas, & Quintos, 2005). While my work focuses on African American parents, I include Civil's work for the following reasons: Firstly, the experiences of Latino parents in mathematics may help to pinpoint important issues, even though the nuances of African American and Latino parents' experiences may differ. Secondly, Civil's work with Latino parents highlights a model of scholarly thought, whereby the contextual factors related to parents' support practices take the foreground in the question of how to support parents in their quest for quality mathematics education for their children. Thirdly, and perhaps most importantly, Civil uses a strengths-based approach in her work with Latino parents. Taking Civil's work as a program of research, I ask what lessons can be applied to work with and about African American parents?

Civil's research is based on the notion that Latino parents are intellectual resources for teaching and learning mathematics (Civil, 2001b). She strives to redefine parental involvement by invoking a strengths-based approach through her work with several projects, including Project Bridge and Math and Parent Partnerships in the Southwest (MAPPS). Project Bridge focused on

bridging the gap between school math and math used at home (Civil, 1999). The project aimed to increase parents' knowledge of math, but also learn how parents use math in their everyday lives. Reflecting on the challenges of bridging formal and informal mathematics, Civil stated, "I was trained in formal mathematics and had little if any experience with many of the practices that we uncovered in our visits and occupational interviews" (Civil, 2003, p. 5). One of the informal math practices among parents was with their jobs as seamstresses, as they were doing complex work with patterns. The use of patterns as a seamstress was work of a mathematical nature, but it proved challenging to connect parents' practical knowledge with the kind of math found in the classroom.

The second project, MAPPS, was a part of a mathematics parental involvement initiative to develop a partnership between teachers, administrators, and parents through leadership development sessions. MAPPS had several components, including Math Awareness Workshops, where parents and children worked together to investigate math concepts. A team of parents and teachers facilitated these workshops. Another component was the Math for Parents course, where parents took an eight-week math course on patterns, Geometry, and numbers. The goal was to increase parents' knowledge and skills around those content areas, as well as demonstrate the tenets of math reform by having parents learn through the reform math curriculum. Parents got involved in these projects to learn mathematics themselves and to help their children learn mathematics, as well. Some parents even took leadership roles and became facilitators of math workshops (Civil, 2001a; 2001b).

Civil mainly used focus groups, interviews, participant-observation, and forums to assess the impact of the programs on the lives of Latino families (Civil, Planas, & Quintos, 2005; Civil, Diez-Palomar, Menendez-Gomez, & Acosta-Irqui, 2008; Civil, 2001a; Civil 2001b; Civil, 2008;

Quintos & Civil, 2007). Her work suggests that parents' interactions with their children around mathematics were characterized by how they made sense of the math and math reforms (Civil, Diez-Palomar, Menendez-Gomez, & Acosta-Irqui, 2008). Since many of the parents were immigrants and had experiences with the educational system of their home country, their understanding was colored by strategies and procedures they learned in non-U.S. schools. During workshops, parents' knowledge of different methods was used as a tool to enhance the children's understanding, however, parents often felt frustration at home when helping their children with homework. Parents viewed the methods taught in school as inefficient, and when they approached their children with alternative methods, the children rejected this knowledge in favor of the methods taught in school (Quintos, Bratton, & Civil, 2005). To address the rift between parents and U.S. school mathematics, Anhalt, Alleksaht, and Civil (2002) suggest that schools promote the observation of mathematics classrooms among parents, the intent being that teachers can address parents' questions and concerns about their children's mathematics education more effectively. They also note the added benefit for parents to learn about critical points of reform mathematics, problem-solving, and communication through first-hand observation of math classes.

Bratton, Quintos, and Civil (2004) analyzed challenges to Latino parents' involvement and found that language policies and cultural differences presented barriers to their engagement. The state of Arizona passed a law requiring instruction in all public-school content areas be conducted in English, effectively cutting bilingual education. Spanish speaking Latino parents, or those who speak English with varying degrees of proficiency, are alienated from their children's education. Their ability to help with homework, even when they have the skills, is severely limited when children bring home assignments in English (Civil, 2008; Quintos & Civil, 2007).

Children are left to translate the assignment for their parents, which presents an added challenge for children who are not proficient in the mathematics registers of both English and Spanish. Mathematics reform movements have placed demands on parents to be more involved in math that is conceptually and linguistically more challenging. Nevertheless, parents who are not proficient in English are placed at a distinct disadvantage, as they are unable to meet the demand due to language policies.

Cultural differences also present barriers to effective collaboration between home and school (Bratton, Quintos, & Civil, 2004). Latino immigrants perceive their role in the school differently from how the school believes they should be involved. Parents “felt that here in the United States, parents are responsible for parenting as well as for being the “teachers” of their children, while in Mexico the parents’ role is mainly expected to be geared toward the home” (p. 22-23). These parents felt pressured and uncomfortable taking on the role of “teacher.” Since these practices are unfamiliar to parents, they may not be positioned to effectively leverage opportunities for their children.

There are a few lessons to be learned from the research of Marta Civil and her colleagues: (1) parents are intellectual resources; (2) parents understandings are characterized by how they learned math; (3) the ways in which parents envision their roles matter; (4) policies structure opportunities and can have a profound impact on the ways in which parents can engage in the teaching and learning of mathematics; and (5) parental involvement initiatives, such as MAPPS and Project Bridge must consider the roles of parents’ engagement (i.e., parents as learners, as teachers, as leaders) as they seek to address parents’ specific needs. These lessons can be applied to a program of study on African American families. For example, African American parents with children in CPS may face school-closings, lack of resources, teachers’ poor perceptions of

African American families, zero-tolerance policies, new curriculum, and limited cultural capital as structural hurdles that affect the ways in which they engage or take on supportive roles. So, identifying that which hinders their involvement and how they navigate those hurdles is vital for understanding how parents engage in support practices.

African American Family Life

“Negro families have shown an amazing ability to survive in the face of impossible conditions. They have also shown remarkable ability to take the barest shreds of opportunity and turn them into the social capital of stability and achievement” (Billingsley, 1968, p. 98). This quote by Billingsley refers to the complex social forces impacting African American family life in the U. S. over 45 years ago, and it aptly describes the present-day African American family. While many of the practices observed in African culture were “forgotten” with the practice of slavery (e.g. language, religion, kinship arrangements, etc.) in the U.S., many patterns of African family life remained in social memory and were transformed to fit within the enslaved Africans’ way of life and provide the basis for contemporary African American families (Forster, 1983). Extended family networks and fictive kin of the enslaved and formerly enslaved provided similar functions of sharing financial obligations, emotional support, companionship as well as assisting with the care of children as that of extended family relationships among West Africans.

The contemporary structure of African American families goes beyond so-called nuclear or single-family households (Taylor, Chatters, Tucker, & Lewis, 1990, 1990). African Americans are more likely to reside in extended-family households than are Whites. This living arrangement has the benefit of stretching limited economic resources extend further through pooling funds. It also has the added benefit of another adult to share in child-care and household duties. African American grandparents are more likely to take an active role in parenting than are White

grandparents. This phenomenon occurs because of a number of conditions such as residing in extended-family living arrangements, a single parent's reliance on family networks, teenage pregnancy (teen parents are more likely to live with their parents), and tenuous employment in the African American community.

African American parents rely on social networks are an important source of support (McLoyd, 1990; Taylor et al., 1990). These social networks include extended family, friends, neighbors, coworkers, in-laws, and fellow church members. These people provide emotional support, informational support (providing useful advice about managing family life), role modeling, and help with childcare, among other things. The psychological distress caused by the excessive continual experience of negative events (such as sustained economic hardships) can have negative effect on parent's behavior toward the child and impair the child's socioemotional development (Barbarin et al., 2005; McLoyd, 1990). Parents' social networks have the capacity to reduce the strain parents experience and thus improve the tendency of parents toward supportive, consistent, and involved parenting. The extended family networks of African Americans also provide another important role through the informal adoption of children (Littlejohn-Blake & Darling, 1993). African American families are flexible and willing to extend to absorb children of close relatives when they are no longer able to provide for them – a current phenomenon that was observed during slavery and after the civil war when so many former slave children were left motherless.

The historical legacy of slavery and the precarious economic positions of African American families have led to fluid gender roles (Billingsley, 1968; Livingston & McAdoo, 2007; Taylor et al., 1990). The provider and homemaker roles among African American married couples are less rigid than among White married couples (Taylor et al., 1990). Historically African American

women have participated in the labor force at higher rates than White women, and African American men are more likely than their White counterparts to believe that African American women should work. African American men are more likely to share homemaking duties with their wives than White men, although women predominantly maintain the household.

The number of non-nuclear and otherwise alternative family structures in the African American community has grown over the past 50 years. There is a disproportionate number of African American families headed by women, so there is a need to recognize the roles of non-residential fathers as they maintain relationships with their children (Livingston & McAdoo, 2007).

In addition to the unique structures of African American families, African American families vis-à-vis childrearing are influenced by the context of environment (e.g.; neighborhoods; Brodsky & DeVet, 2000; Kotchick & Forehand, 2002), social class (Lareau, 2003; Thomas & Sawhill, 2005), and racial socialization (Banerjee, Harrell, & Johnson, 2011; Bowman, 1985; Constantine & Blackmon, 2002; Demo & Hughes, 1990; Fischer & Shaw, 1999; Stevenson, 1995). Inner-city neighborhoods present an obstacle to child-rearing for low-income (and sometimes middle-income) African American parents who reside in (or near) high-crime and under-resourced neighborhoods (Pattillo, 1998). Among African American mothers in inner-city neighborhoods, those who are successful at insulating children from the deleterious effects of under-resourced communities use monitoring strategies (e.g., monitoring time, space, and friends), resource-seeking strategies (e.g., utilizing programs from institutions and organizations), and in-home learning strategies (e.g., direct and indirect strategies promoting learning) to aid in the development of their child (Jarrett, 1999; Elliot & Aseltine, 2012).

Relatedly, family structure has economic implications as well –single-parent families tend to be less well-off economically than families that have the benefit of multiple incomes due to cohabitation, marriage, or other circumstances (Thomas & Sawhill, 2005). For economically disadvantaged mothers, having social support (i.e., emotional support and instrumental support) impacts her parenting in a positive way (i.e., less punitive strategies and more nurturance; Ceballo & McLoyd, 2002; Elliott, Powell, & Brenton, 2015). It is believed that social support indirectly benefits child development by facilitating the psychological well-being of mothers.

With important implications for academic development, identity development, and overall well-being, racial socialization is how African American parents prepare their children to navigate society as *African Americans* (Altschul, Oyserman, & Bybee, 2006; Banerjee, Harrell, & Johnson, 2011; Caldwell et al., 2004; Fisher & Shaw, 1999; Harris-Britt et al., 2007; Hughes et al., 2006; Marshall, 1999; Neblett et al., 2009; Neblett, Rivas-Drake, & Umaña-Taylor, 2012; Stevenson, 1995). The structure of Black families and the roles that individuals take within that family is one step in understanding how the families of African American function and the resources children have in that family.

African American Families and Mathematics

In the last 20 years, research on race and mathematics has emerged, although the bulk of the literature deals primarily with African American students, instead of African American parents or families. To assess the scope of literature relating to African American families and mathematics, I used EBSCO to search several databases, including Education Index Retrospective, Education Research Complete, ERIC, and Google Scholar. While there are a few studies that center race, mathematics, and the family vis a vis parents (Martin, 2000, 2006, 2009a; McGee, 2015; McGee & Spencer, 2015; Jackson, 2007; Jackson & Remillard, 2005;

Larnell, 2016), those scholars tend to analyze the various ways in which race impacts one's mathematics identity, parents' experiences with mathematics, parents' roles, and mathematics socialization. A list of the literature that centers African American parents and mathematics is provided in Table I.

TABLE I: STUDIES OF AFRICAN AMERICAN PARENTS AND MATHEMATICS

Author(s)	Study Setting	Student Age (yrs)	Theoretical Foci
Berry, R. (2008)	Four middle schools with the largest enrollment of African American boys in Algebra 1	10-14	Counternarratives of successful African American boys; families as support systems
Berry, R., Thunder, K. McClain, O. L. (2011)	Participants were a part of a two-week summer program on algebraic reasoning and problem solving	10-13	Counternarrative of successful African American boys; mathematics and racial identities
English-Clarke, T. L. (2011)	Surveys and interviews with African American youth	14-16	Racial and mathematical socialization messages and mathematical identity
English-Clarke, T. L., Slaughter-Defoe, D. T., Martin, D. B. (2012)	Surveys and interviews with African American youth	14-16	Racial and mathematical socialization messages and mathematical identity
Ginsburg, L.; Rashid, H., English-Clarke, T. (2009)	Interviews of parents in Northeastern urban areas	7-10	Parental involvement in homework; parent reengagement with mathematics learning; nature of parent/child mathematics talk during mathematics activities
Green, S. (2013a)	Interviews and focus groups with parents at an elementary school	5-10	African American parental involvement
Green, S. (2013b)	Interviews and focus groups with parents at an elementary school	5-10	African American parental involvement; parent's roles in fostering intellectual and emotional growth
Jackson, K. J. (2007)	In-home observations/ observations at school and interviews	10	Learning mathematics across space and time

Jackson, K. J. (2009)	Participant observation (at school) and interviews	10	The social construction of youth and mathematics: mathematics socialization & social identification
Jackson, K., Remillard, J. (2005)	Interviews and home observations of African American mothers	8, 9	Parental involvement; parents as intellectual resources
Larnell (2016)	Interviews with college students	College-age	Mathematics identity, racialized narratives, & remediation
Martin, D. B. (2000)	Interviews with parents; classroom observations; interviews with children	8,10, 12-15, 17	Mathematics socialization and identity
Martin, D. B. (2006)	Interviews with parents	various	Mathematics as racialized forms of experience; parent advocacy
McGee (2015)	Life-story interviews with college students	College-age	Mathematics identity development
McGee & Spencer (2015)	Life-story interviews with STEM majors	College-age	Mathematics socialization and agency
McGee & Spencer (2014)	Interviews with STEM students	College-age	Development of Coping Skills for STEM
Remillard, J., Jackson, K. (2006)	Focus groups with parents; interviews with mothers	6-30	African American parents' experience with math and mathematics reform
Sonnenschein, Metzger, & Thompson (2016)	Interviews with parents and reading and math assessments for the focal children	4-5	Parental socialization of reading and math
Terry, C. L., McGee, E. O. (2012)	Interviews with high achieving Black students	14-17	Support structures for mathematically successful Black male students
Wallace, M. (2013)	A high school; group interviews with parents	14-18	Parental involvement; parents experiences with schools

A significant through-line and consistent narrative in the literature centering the mathematics socialization of African American students is that their parents and families are vital components of the socialization process and the construction of robust racial and mathematics identities (Berry, 2008; English-Clarke, Slaughter-Defoe, & Martin, 2012; McGee, 2015; McGee & Spencer, 2014; Larnell, 2016; etc.). African American families are known to have various qualities that are not typical of mainstream White families. That is, African American families rely on fictive-kinship and multi-generational networks for child-rearing (Carey, 2016; Chatters, Taylor, & Jayakody, 1994; Taylor, et al., 2014). Using the lens of risk and protective factors to analyze the coping skills of STEM students, McGee and Spencer (2014) locate students' multi-generational family households as a protective factor that borrowed wisdom from the elders of the families (e.g., grandparents) and found value in the "pitching-in" of aunties and uncles. "This safety network also provided a defense against the challenges associated with single parenthood by creating multiple supportive parenting relationships" (p. 370). Therefore, our conceptions of African American children's achievement and persistence in mathematics necessitates an understanding of their parents' support and the support of their larger community social networks.

In 2000, Danny B. Martin proposed a framework for understanding mathematics achievement and persistence among African Americans. Martin's *Multilevel Framework for Analyzing Mathematics Socialization and Identity among African Americans* emphasizes the ways various factors impact African American students' understanding of mathematics, as it relates to themselves. This emerging framework was constructed, in part, by using African American parents' counternarratives and provides a starting point for analyzing "community forces," including parent socialization, in mathematics. There are four levels to the framework:

sociohistorical; community; school; and individual agency. The sociohistorical level focuses on “discriminatory policies and practices that have prevented African-Americans from becoming equal participants in mathematics and other areas of society” (p. 29). The community-level outlines cultural and community beliefs about mathematics, with emphasis placed on “the participants’ beliefs about mathematics abilities, their motivations for obtaining mathematical knowledge, their beliefs about the instrumental importance of mathematics, their relationships with school officials and teachers, and their socioeconomic goals and expectations for themselves and their children” (p. 31). The school-level outlines classroom norms around mathematics, teachers’ beliefs, and mathematics curricula. The individual-level includes the individual’s agency-responses to the other levels within the framework, as well as beliefs about their personal identities, mathematics abilities, differential treatment in mathematics contexts, and the importance of mathematical knowledge.

By looking at parents, we can better understand the community level, and to some extent, the sociohistorical-level, and their influence on children. While research of Black (and Latino) parents is, in some ways, consistent with mainstream findings that parents believe math is an important skill for children and that reading more so than math is endorsed by parents in early childhood (see Sonnenschein, Metzger, & Thompson, 2016 for findings that center Black and Latino families; see Barbarin et al., 2008; Blevins-Knabe, & Musun-Miller, 1991; Musun-Miller & Blevins-Knabe, 1998 for similar findings with mainstream parents and children). From interviews with parents, Martin (2000; 2006, 2007) found that race, as well as social class, and broader educational experiences were essential aspects of African American parents’ experiences with and beliefs about school mathematics. African American parents often experienced being steered away from mathematics by more knowledgeable others (such as teachers) in ways where

race was a prominent factor (Martin, 2006). In one instance, a father described his discouraging personal experience, where a less skilled White student had moved ahead to advanced mathematics, while he [the father] was intentionally left behind. Martin recruited his study participants from a community college and found that parents were reinvesting in mathematics for professional development or degree purposes. As a result, these parents were in a better position to help their children with math. For example, one mother held family math events where she and the children would do homework together. In general, African American parents believed that a lack of math knowledge for their children would lead to further marginalization and limited opportunities. These parents considered their support for the positive development of their children's mathematics identity essential. By supporting the development of a positive mathematics identity, parents evoke a transformative process, where they redefine what it means to be African American and a doer of mathematics.

Scholars have also investigated the experiences of mathematically high-achieving Black boys and found families to be a critical factor in these students' success in mathematics (Berry, 2008; Berry, Thunder, & McClain, 2011; Terry & McGee, 2012). The families of these students promoted success by maintaining high expectations for achievement, carefully selecting schools that students would attend, advocating for their children's needs and rights, and engaging in protective behaviors (Terry & McGee, 2012). In effect, parents supported their sons by being "guardians of opportunities, standard setters, resources for mathematical knowledge, and models of success" (Berry, 2008, pp. 480). Parents discussed the importance of school and hard work, checked homework, relied on extended family networks for additional support, had high expectations, met with teachers informally to monitor math performance, provided early mathematical experiences (i.e., purchased math-related toys and educational games/videos),

acted as advocates for their sons' placement in gifted programs, and were aware of the deficit views associated with African American boys. Parents had a racial awareness and knowledge of teachers as gatekeepers of opportunity and were willing to become a nuisance to reluctant teachers and administrative staff to get their sons tested for academically gifted programs. In Berry's (2008) study of the experiences of mathematically successful African American boys, all but one of the eight boys participating in the study had a positive math identity. In a similar study of mathematics and racial identities of African American adolescent boys who are successful at school mathematics, Berry, Thunder, and McClain (2011) found that the boys' relationships with their families helped to support their mathematics identity. Through focus group interviews and mathematical autobiographies, the boys revealed that parents were their first math teachers or the first source of positive reinforcement of their math skills, nudging them toward success in mathematics and positive mathematics identities.

Although the parents from Martin and Berry's studies occupied unique positions, they should not be thought of as atypical. The parents in the Martin study were reinvesting in mathematics for themselves at the community college level, giving them a certain level of cultural capital and mathematical knowledge, as they sought to improve their children's mathematics education. The parents from Berry's study had sophisticated understandings of how race played into their son's mathematics education and possessed a level of cultural capital that allowed them to articulate their grievances in an institutionally sanctioned way that benefitted their children. Because these parents were knowledgeable of how opportunities for African Americans boys in mathematics can be curtailed due to institutional structures that lead to racial inequities, they made decisions using their racial awareness that influenced the mathematics socialization of the children (Berry, 2008; Berry, Thunder, & McClain, 2011). Martin (2006) described mathematics socialization as

“the experiences that individuals and groups have within a variety of contexts, such as school, family, peer groups, and the workplace, that facilitate, legitimize, or inhibit meaningful participation in mathematics” (pp. 206). Race and racism are complex issues that have implications for African American children’s in-school mathematics experiences (Spencer, 2009). African American parents must be able to advocate for their children’s rights within the institution and prepare their children to face mathematics environments where race is salient—an act termed as *racial-mathematical socialization*.

English-Clark, Slaughter-Defoe, and Martin (2012) defined racial-mathematical socialization as “racial socialization that is related to the discipline of mathematics” (pp. 63). In their study, youth reported hearing racial-mathematical socialization messages from parents regarding discrimination and the scarcity of African Americans in high-level mathematics. In addition to supporting the development of a positive racial and mathematics identity, racial-mathematical messages allow youth to make deeper and more nuanced understandings of “the far-reaching effects of discrimination, the youth-relevant contexts in which discrimination can occur, and the racial imbalances that they may perceive and experience as they reach higher levels of mathematics” (pp. 57).

In her dissertation, English-Clarke (2011) studied the relationship between racial and mathematics socialization and mathematics identity. Using surveys and in-depth interviews with African American youth, she examined how mathematical, racial, and racial-mathematical socialization messages influenced youth behavior and identity. Students reported hearing messages about the importance of math, coping strategies, and problem-solving advice from parents. About a third of the 168-youth reported hearing racial-mathematical socialization messages. These messages usually centered on the lack of African Americans in higher-level

mathematics or stereotypes about African Americans and mathematics. English-Clarke found youths' mathematics identity influenced how they received mathematics socialization messages. Students' beliefs about African Americans and mathematics were related to their feelings about mathematics and their racial identity.

An African American youth who is a student of mathematics must figure out what it means to be an African American, what kind of African American s/he is, what it means to be "successful" in math, and what kind of math student s/he is. However, the youth must also figure out whether and how s/he, as an African American, can and/or should be successful in math, given the way s/he views mathematics, racism, and the opportunity structure within the social environment in which s/he lives (p. 1).

Like Martin's (2006), this work speaks to the interconnectedness of racial identity to one's mathematics identity.

In her dissertation, Kara J. Jackson (2007) sought to understand how young people learn mathematics across space (i.e., home, school) and over time. Jackson conducted ethnography on the lives of Nikki and Timothy, two African American youth, studying how the construction of mathematics, models of identity, and practices are interrelated. She argued that young people take on different identities and forms of participation in different spaces (i.e., home versus school). Mathematics participation and competence may not look the same at home as it does in schools. Jackson found that sets of mathematical practices learned at home were lost to schools. "[T]here is a relationship between the social construction of mathematics and the social construction of learners" (p. 7-8). Furthermore, "how mathematics is constructed in various settings integrally shapes how learners are constructed and vice versa" (p. 7-8). I argue that the social construction of learners expands to include their families and shapes home-school interactions, and therefore, learning across space.

In an extension of her dissertation, Jackson (2009) argues the social dimensions of learning cannot be separated from the content of mathematics. Analyzing Johnson Middle School, the

school attended by Nikki and Timothy, Jackson found that Johnson was deeply invested in reform, with an objective to provide quality education to low-income children underserved by neighborhood schools. Particularly, Johnson's mission was to *change* students, not solely with respect to academics, as one might expect, but also in character and behavior. The goal for incoming students was remediation. Teachers and the principal often regarded students as "below grade level" because of students' demographic contexts, regardless of previous academic performance. In this reform environment, students were "denied access to challenging and academically purposeful mathematics" (pp. 195). Because students were framed as lacking academically, mathematics teachers focused on "basic skills," focusing their attention on memorization procedures at the expense of the students' conceptual understanding. The fifth-grade mathematics curriculum was at a fourth-grade level—a fact that teachers and administrators withheld from parents and students. This example highlights the ways students are socially constructed and the implications for their educational trajectories. The decision to repeat an entire year of fourth-grade mathematics most certainly impacts African American students' access to high quality and high-level mathematics. This decision further marginalizes African American students and puts them at a disadvantage, given the historical legacy of mathematics as a gatekeeper to power and privilege (Moses & Cobb, 2001; Stinson, 2004). Through the social construction of peers and families, this reform project couched African American students and families within discourses of deficit and change that ostensibly acted as mechanisms of oppression and limited their opportunities. The Johnson Middle School case demonstrates the need for meaningful partnerships among educators and parents who can serve as advocates for children.

Recently scholars have begun to study how low-income African American parents define their roles in the education of their children (Greene, 2013a, 2013b; Jackson & Remillard, 2005) and take on the role of a learner to support their children's mathematics education (Ginsburg, Rashid, & English-Clarke, 2009). Greene (2013a) tells the stories of parents who participated in a parental involvement workshop at their children's school. The goal was to increase parent participation in school-sponsored events with weekly meetings intended to build parents' support networks, and for teachers to learn about parents' beliefs, values, priorities, and goals for their children. From these weekly conversations with parents, researchers and educators alike found that parents *were* already involved at home. Parents were monitoring homework, building children's self-esteem, supporting independence, serving as role models, fostering resilience, and creating safe spaces for their children to develop. Even though the weekly meetings were designed to help the parents of struggling students participate in institutionally sanctioned ways, after the first parent meeting, the educators realized they did not understand what parents were *actually* doing at home. They made assumptions about the level of parental involvement based on normalized notions of what parental involvement should look like and, therefore, presumed parents were not involved. Greene's study highlights the reality that educators are not immune to the hegemonic narratives of good parenting and parental involvement. Educators make assumptions about the parental involvement of African American parents and make decisions about the form of these students' education based on these taken-for-granted assumptions (Ladson-Billings, 2001). Another important takeaway from this study is that all parents have a wealth of resources from which to prepare children for their day-to-day lives as they move from home to school. This point becomes especially meaningful as schools engage in mathematics reform and expect parental involvement.

Mathematics Education Reform and African American Parents

There are very few studies that analyze African American parents' roles in relation to *mathematics education reform*. A study by Remillard and Jackson (2006) is a notable exception. It focused on African American parental involvement, as it relates to reform math curriculum, and found that, like previous studies of parents (Graue & Smith, 1996; Lehrer & Shumow, 1997), African American parents had a hard time relating to the type of math their children were learning. Focus groups and interviews with parents revealed that the Everyday Mathematics reform curriculum was markedly different from the mathematics parents learned in school. They found assignments difficult to interpret—a problem exacerbated by school policies requiring math resource books remain at school to lower replacement costs for lost books, rather than make the informative resource available to all parents. Nevertheless, parents were resourceful and looked for alternative ways to help their children. Some parents availed themselves to attend their children's math class to learn what their children were learning. Others relied on their extended family networks to help their children with math homework. A few parents viewed the curriculum's focus on conceptual knowledge as limiting for their children, and thus provided their children with practice problems to build procedural fluency.

Ultimately, parents acted in several constructive ways and sought opportunities to shape learning outside of schools (Jackson & Remillard, 2005). Parents monitored children's progress through various channels (i.e., volunteering at school, supplementing schoolwork with at home practice) and provided informal math learning opportunities during daily household or family activities. For example, parents used card games, cooking, and sorting activities to highlight mathematics. Furthermore, they sought out educational materials, such as software, games, and educational workbooks, to provide their children with extra mathematics practice.

In this math reform era, the demands on parents are more significant than in times past, where parents could draw on their own mathematics experiences to help their children. Ginsburg, Rashid, and English-Clarke (2009) suggest that “urban” parents are pushing past their frustrations and engaging in learning mathematics in one of three ways: (1) learning mathematics for their children; (2) learning mathematics from their children; and (3) learning mathematics with their children. In the first case, to help the child with homework, parents learned for their children by recommitting to formal mathematics learning (e.g., attending GED classes or Family Math programs). “These and other parents perceived that their own limited mathematics knowledge and unfamiliarity with their children’s school curriculum could have negative consequences for their children’s learning, and they chose to devote time and effort to learning for the sake of their children” (p. 23). In the second case, to understand the mathematics, parents asked their children to teach them how to do the mathematics. This helped to give parents a window into the mathematics classroom. In the last case, parents were learning alongside their children; “parents describe an egalitarian dynamic, in which both parties are portrayed as learners and teachers, with the activity being mutually beneficial” (p. 23). A commonality across all three scenarios is the parents had to expand their knowledge and skills to navigate math reforms.

Broadening Conceptions of Parental Roles

Parental involvement, as it is often conceptualized in the literature, does not always account for the ways in which African American parents support their children in academic endeavors and, in this case, mathematics. As argued above, *parent involvement* is limiting for many African American parents for two overlapping reasons: (1) it uses models normalized from White, middle-class families that when applied to African American parents, taints perceptions of

African American parents who deviate from valued behaviors; and (2) it privileges schoolcentric behaviors; that is, involvement that is highly visible to educators and school personnel. For these reasons, I investigate *parental support practices* to assess the roles that African American parents take on to support mathematics development, rather than parental involvement. As described in Chapter one, parental support practices do not exclude traditional notions of parental involvement, but instead expands to account for those actions and engagement activities that are both extraordinary and mundane, conscious and unconscious, to facilitate the mathematics development of the children.

To understand African American parental support practices in mathematics, it is helpful to explore how mathematics socialization and racial socialization are related. Mathematics socialization and racial socialization may account for a portion of the structure or form that support practices may take. That is to say that support practices may look like math help on one day, preparation for bias on another day, encouragement to go school on yet another day, or all of these or some other combination of behaviors. Mathematics socialization and racial socialization are types of support practices and may, at times, overlap with one another (see Figure I).

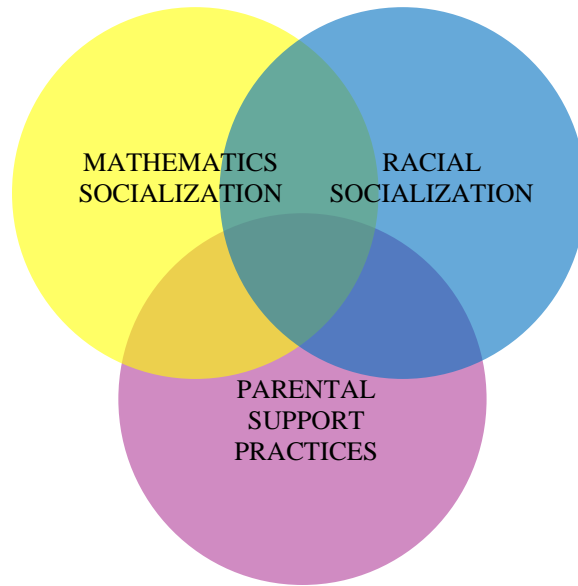


FIGURE I: RELATIONSHIP BETWEEN SOCIALIZATIONS & PARENTAL SUPPORT PRACTICES

To conceptualize the relationship between parental support practices, mathematics socialization, and racial socialization, it is helpful to think of these concepts as both interrelated and embedded within Martin's (2000) multilevel framework (see Table II; reproduced from Martin, 2000, p. 30).

TABLE II: MULTILEVEL FRAMEWORK OF MATHEMATICS SOCIALIZATION AND IDENTITY
AMONG AFRICAN AMERICANS: KEY THEMES

Sociohistorical
Differential treatment in mathematics-related contexts
Community
Beliefs about African American status and differential treatment in educational and socioeconomic contexts
Beliefs about mathematics abilities and motivation to learn mathematics
Beliefs about the instrumental importance of mathematics knowledge
Relationships with school officials and teachers
Math-dependent socioeconomic and educational goals
Expectations for children and educational strategies
School
Institutional agency and school-based support systems
Teachers' curricular goals and content decisions
Teachers' beliefs about student abilities and motivation to learn
Student culture and achievement norms
Classroom negotiation of mathematical and social norms
Agency and Mathematics Success Among African American Students
Personal identities and goals
Perceptions of school climate, peers, and teachers
Beliefs about mathematics abilities and motivation to learn
Beliefs about the instrumental importance of mathematics knowledge
Beliefs about differential treatment from peers

Martin's (2000) multilevel framework is meant to elucidate aspects of mathematics socialization and identity for African American learners. It can help to explain parents' experiences and mathematics identities and parents as socializing agents. It identifies several levels of mathematics socialization for students, including sociohistorical, community, and school, which are co-constructed through personal identities, goals, and beliefs.

Socialization and Identity

Parents socialize their children according to what they find important (Brodsky & DeVet, 2000). Mathematics socialization and racial socialization are relevant to this project with regard to the roles African American parents take on to support their children's mathematics development because schools, and mathematics classrooms, in particular, are places where race is salient and parents respond with certain kinds of support (Berry, 2008; English-Clarke, Slaughter-Defoe, Martin, 2012; Wallace, 2013). With respect to racial socialization, recent literature suggests there are socioeconomic and gender differences in the ways African American parents socialize their children regarding race and in the types of socialization message mothers and fathers provide (Allen, 2016; Peck et al., 2014; Reynolds et al., 2016). For instance, parents from higher SES families are more likely to report socialization messages that prepare their children for bias and cultural membership than their lower SES counterparts (Peck et al., 2014). Parents report sending more preparation for bias messages than cultural socialization messages to their sons and more cultural socialization messages than preparation for bias messages to their daughters (Peck et al., 2014). It is important to note the literature is scarce and mixed with respect to the ways African American parents differentially socialize daughters and sons regarding race (Brown, Linver, Evans, & DeGennaro, 2009; Caughy Nettles, & Lima, 2011; McHale et al., 2006; Reynolds et al., 2016; Verner & Mandara, 2013), there is reason to believe that the inconsistencies in the findings are linked to whether reports of socialization messages come from parents or children (Reynolds et al., 2016). Even though mothers are the primary socializing agents (Brown, Linver, & Evans, 2010; McHale et al., 2006), mothers and fathers differentially affect the racial identity development of their children via their socialization messages (Reynolds et al., 2016). In one of the few studies of residential fathers and racial socialization of African

American boys, Allen (2015) provides a rare insight into the support of fathers. The study found that fathers modeled for their sons how to navigate racialized spaces as Black men and, rather than lean on hegemonic discourses of Black masculinity for their identities, they defined Black masculinity for themselves.

As racial socialization undergirds parents' support practices, so too do parents' personal experiences with mathematics, their own mathematics identity, and their beliefs about the centrality of mathematics to their children's trajectory. Parents' mathematics identities will not only influence the ways in which they talk about mathematics, but also how, and the level to which they engage with their children around mathematics. Said another way, parents' support practices may, in part, be based on an appraisal of their knowledge and skills in mathematics, as well as time, resources, support from social networks, etc. My focus on parents' mathematics identity and mathematics socialization requires an understanding of how parents think about themselves as doers of mathematics and as African Americans, as well as the knowledge of constraints and affordances of certain identity choices within the home and school contexts. My study aims to foster a deep understanding of parents' experiences, children's socializing experiences, and salient aspects of socialization that facilitates success in mathematics. Whether or not parents talk to children about math, lean on social networks for support, advocate on behalf of the children for benefits, teach, encourage, or engage in a number of other support practices is predicated on how they conceptualize their roles in their children's mathematics development and is related to the constraints and affordances of their own mathematics

knowledge and skills, beliefs, mathematics identity, knowledge of CCSS-M, and practical commitments on time, such as work or parenting other children.

School Choice

Navigating school systems under the policies of school choice is touted as a way parents can cultivate high-quality in-school learning. The school choice movement emerged during the 1980s and gained momentum in the 1990s as criticism for the poor state of public education in the U.S. increased (Ferraiolo et al., 2004). The movement is based on the free market ideals characterized by the notion that patronizing high-quality schools will cause low-quality schools to either change to meet the market demands or fail. Proponents of school choice believe that it allows for underserved students to have access to high-quality schools by simply opting out of poor-quality schools in favor of high-quality schools (Patillo, 2015; White, 2018). School choice programs are varied,

“including: No Child Left Behind mandates that allow families to opt out of failing public schools and enroll in other public schools; inter- and intra-district open enrollment plans that allow students to attend public schools outside of their designated attendance areas; charter schools that are funded by public dollars but governed and administered by non-profit or for-profit organizations and are given greater flexibility in hiring, operations, and curricula; monetary vouchers (or scholarships or tax-credits) for families to send their children to private schools; and an innumerable list of alternative public school designations (e.g., magnet schools, options schools, and innovation schools) that require some parental or student purposeful action for enrollment.” (Patillo, 2015, pp. 43)

However, the legacy of school choice has marginalized Black and Latino students further from high-quality schools (Patillo, 2015; White 2018). In 2014, the closing of over 50 low-performing schools in low-income Black and Latino neighborhoods in Chicago presumably left better schools to do the job of educating. Applying the logic of social Darwinism affiliated with school choice has ushered in more selective enrollment charter schools, selective enrollment public schools, leaving underfunded and overcrowded neighborhood (public) schools to educate those

students left behind. Interestingly, what began as a method for parents to choose schools has morphed into schools choosing to serve a specific populace using public funds (White, 2018).

School choice happens through the lens of social class (Davies & Aurini, 2011) and race. Research documents the ability of upper and middle-income, majority White parents to effectively navigate complex educational terrain (Lareau, 2003). Parents who earn enough money can buy into “good” neighborhoods and thus “good” schools which often means a Whiter neighborhood (Johnson, 2006). Furthermore, it has been found that as students of color exercise their choice options for so-called “good” schools, White students in said schools opt into other schooling options (Renzulli & Evans, 2005). Not only that, but Patillo (2015) found that African American parents engaging in school choice in Chicago are not free to choose. That is as parents choose school for their children, schools must also choose them in return. Because Chicago is an open enrollment district and because this study takes seriously the experiences of parents and students, I consider how parents “choose” schools and the impact on the expectations for in-school mathematics and parents’ support practices.

Summary: Learning from Literature

Parents play a crucial role in facilitating their children’s mathematics course-taking patterns and career trajectory (Jacobs & Bleeker, 2004; Musum-Miller & Blevins-Knabe, 1998; Useem, 1992). Parents’ beliefs, expectations, and involvement help to shape their children’s self-efficacy or identity around mathematics. African American parents, however, are a unique group and their charge to raise African American children who can participate in society is wrought with challenges that are specific to African Americans. The mainstream literature of parental involvement in mathematics cannot account for the ways in which African American parents are engaged (Abdul-Adil & Farmer, 2006; Cooper, 2009; McKay et al., 2003; Stone & McKay 2000). This is in part because parental involvement is normed on White middle-class families (Abdul-Adil & Farmer, 2006; Baumrind, 1971, 1991; Maccoby & Martin, 1983; Shucksmith, Hendry, & Glendinning, 1995; Stone & McKay 2000). Therefore, the notion of parental involvement is limiting for African Americans parents, yet educators’ conceptions of who is and is not a “good parent” has ramifications for the quality of teaching and learning that takes place for African American children (Ladson-Billings, 2001). Furthermore, calls for parental

involvement from mathematics reformers must meet African American parents at the margins of an already strained parent-school relationship.

Parental support practices are one way in which we can begin to conceptualize the ways African American parents support mathematics development. The review above highlights some of the ways African American parents are socializing their children in math. African American parents are active agents in seeking out quality mathematics education for their children (Berry, 2008; Wallace, 2013). In some cases, parents are reengaging with mathematics to make connections to the mathematics their children are learning (Ginsburg, Rashid, English-Clarke 2009; Martin, 2000). Parents are challenged by a limited understanding of the goals and shape of reform mathematics (Remillard & Jackson, 2006; Jackson & Remillard, 2005), by their own experiences with mathematics as African Americans (Martin, 2000), and with resistance from educators that do not understand their methods of parenting (Diamond & Gomez, 2004; Greene, 2013a, Wallace, 2013) to raise children who are often viewed through a racialized lens that can confine their children's mathematics trajectory.

Telling the counternarratives of African American parents and letting them voice their experiences will allow us to better understand the following questions: How do parents conceptualize their roles in their child's mathematics education? What challenges do they face as they enact these roles? What factors facilitate the enactment of these roles? Within the changing mathematics education landscape shaped by mathematics reform, how are African American parents adapting their support practices? What institutional structures shape how parents are included in mathematics education?

CHAPTER 3 RESEARCH DESIGN

In this chapter, I provide insight into the research design of this study. I discuss why case study method is utilized and the role of narrative inquiry in advancing the discussion of African American parents' math-related support practices. This research design is intended to document how African American parents' construct their roles in their children's mathematics education, their supportive practices, elements of their experiences that lead to successful mathematics outcomes for their children, and the nature of their experiences with CCSS-M. The word *parent* refers to the child's primary caretaker. The focal children identified for participation are *successful* math students that have a positive disposition toward mathematics. Members of the family's social network were individuals who, through the course interviews, were touted as integral to the child's math development. These are individuals who regularly help with homework or engage in other math-related activities with the focal child.

The following research questions served to guide my investigation:

1. How do African American parents conceptualize their roles in their children's mathematics development and what support practices do they employ to enact these roles?
2. How have math reforms (i.e., CCSS-M, as part of the most recent reforms in mathematics education) impacted parents' support practices in mathematics?
3. In what ways are their roles and behaviors influenced by their life experiences and mathematics identities?

This qualitative study utilized a case study approach and narrative inquiry to address the research questions. I draw on multiple sources of data collected over the course of the 2016-2017

academic year, including multiple interviews with parents and students, parental behavior checklists, and autobiographical accounts of parents' math identities.

Because the study is situated in Chicago, I provide a description of CPS and contextualize district policies that impact the ways families provide support to students. Next, I describe the recruitment practices and the participants of the study. Lastly, I discuss the data collection methods and analysis process.

Research Design

Creswell (2007) outlines case study research as a method to understand an issue, in which the case is illustrative. It is an approach wherein “the investigator explores a bounded system (a case) or multiple bounded systems (cases) over time, through detailed, in-depth data collection involving multiple sources of information, and reports a case description and case-based themes” (p. 73). Case study is an appropriate method when the goal is to “provide an in-depth understanding of the cases” (p. 74).

I selected case study as a method because of the issue being explored and the various forms of data collected during the 2016-2017 academic year. In this research, the main issue of study is African American parents' support practices related to mathematics. Because parental support is a mediated activity between parent and child (and to some extent, schools), the cases included parent-child dyads of African American families. I drew upon multiple sources of data, including multiple interviews with parents and students, verbal accounts of parents' math autobiographies, a behavior checklist to track parents' support practices during the study, and a demographic information sheet.

Creswell (2007) further explains that “in a collective case study (or multiple case study), the one issue or concern is again selected, but the inquirer selects multiple cases to illustrate the

issue” (p. 74). I used multiple case study design to access different perspectives of African American parental support of mathematics. By studying African American families with different social positions, I was able to gain insights into important ways parents’ support practices differed by analyzing data across the cases. Creswell explains that when more than one case is explored, cross-case and within-case analyses are appropriate. Cross-case analyses involve looking for common themes across the cases, while within-case analyses involve a detailed description of each case and its themes. With respect to the guiding research questions of this study, the cross-case analyses provided a more general understanding of the agency-oriented acts of support parents practiced, how their support was influenced by Common Core math reforms, and the ways parents’ lives and math identities influenced their math-related support practices. The within-case analyses provided an in-depth examination of how the family’s social position impacts parents’ math-related support practices.

In addition to multiple case study design, I used narrative inquiry to frame the life experiences of the parents and children in this study. Narrative inquiry focuses on “the stories from individuals and documents, and group conversations about individuals’ lived and told experiences. These stories may emerge from a story told to the researcher, a story that is co-constructed between the researcher and the participant, and a story intended as a performance to convey some message” (Creswell, 2013, p. 71). Narrative analysis is commonly used in the field of mathematics education in studies of math identity (e.g., Berry, 2008; Martin, 2000; McGee & Martin, 2011) and with respect to parents’ roles (Greene, 2013b).

For the purposes of this study, narrative inquiry included an investigation into identity, meaning-making, and lived (told) experiences. Sfard and Prusak (2005) “*equate identities with stories about persons*” (p. 14, emphasis original). The stories of African American parents who

have children that have achieved a measure of success in mathematics are particularly compelling because there exist few studies focusing on the narratives of African American parents of mathematically successful children. The narratives presented in this study will help shed light on what it means to parent for success in a context where discourses of failure prevail.

Research Setting: Chicago Public Schools

In case study research, the setting is particularly important, in that it provides background information that may help bring clarity to aspects of the cases (Creswell, 2007). The setting for this study is Chicago and CPS. In 2017, the U.S. Census Bureau estimated the population of Chicago to be approximately 2.7 million people. By race, Chicago is almost evenly distributed among Blacks (30.1%), Whites (32.7%), and Latinos (29%) (U.S. Census Bureau, 2017). Comparatively, CPS is less diverse and affluent than the city. Over 380,000 students were enrolled in CPS in grades Pre-Kindergarten through 12 during the 2016-2017 school year (CPS, 2017). Of those students, 46.5% were Latino, 37.7% were African American, and 9.9% White, and approximately 80% of CPS students met the poverty guidelines for federal meal programs.

As Whites represent just under a third of Chicago's population, they are decidedly underrepresented in CPS at less than 10% of the student population. Frankly put, White families are opting out of city schools. The literature confirms that when the non-White student population increases (Renzulli & Evans, 2005), or when there is a substantial presence of poor, non-White students (Fairlie & Resch, 2009), White families find other schools (e.g., charter, private, religious) to send their children to.

CPS has engaged in school choice policies since the 1980s as part of an effort to increase school quality and address the racial and economic cleavages in schools (Barrow & Sartain, 2017). School choice is defined by the idea that parents can improve the educational

opportunities of their children by patronizing “good” schools, allowing them to flourish, and leaving behind “bad” schools to either improve on their own or fail (Pattillo, 2015). Under this model, racial disparities in access to high-quality schools would be lessened. In the last 15 years, CPS has enlarged its choice options by increasing the number of so-called high-quality public schools. Through several initiatives and the opening of charter high schools, Barrow and Sartain (2017) reported that by 2002, CPS had almost doubled the number of high schools (from 76 to 138) among its offerings.

As an open enrollment district, CPS provides a variety of elementary (grades Pre-Kindergarten/K-8) schooling options for families. Students are assigned a neighborhood school based on neighborhood attendance boundaries. Should a student wish not to attend their assigned neighborhood school, then selective enrollment, magnet, and small schools are all options available within CPS. Selective enrollment schools provide an accelerated curriculum for advanced students and require admissions testing for enrollment. Academic centers, classical schools, regional gifted centers, and regional gifted centers for English Learners are all types of selective enrollment schools within the district (CPS, 2018d). Magnet schools have a specialized focus, such as math/science or humanities, but do not provide an accelerated or advanced curriculum. Without an attendance boundary, they are open to all students in the city; a lottery system is used to select interested students. Small schools, as the name indicates, are small, public schools by design (CPS, 2018b). They enroll no more than 350 students, seek to foster community, and often have a special focus, such as technology or entrepreneurship. Small schools are said to facilitate manageability by allowing “faculty to meet frequently to discuss the day-to-day operations of the school, as well as to design curriculum, discuss student progress, and meet with parents and community members” (CPS, 2018b). Like neighborhood schools,

small schools have an attendance boundary, giving priority to students living within the boundary. If space is available, students can apply for admissions; acceptance criteria differ by school.

When CPS students graduate from 8th-grade and transition into high school, the process of selecting a high school can be murky. Although admissions are guaranteed to a student's neighborhood high school, students in 8th-grade must apply to attend another high school. Much like the college application process, students apply to various high schools in the city. The admissions process can vary by school, but generally, selective enrollment high schools make their decisions based on students' 7th-grade final grades, the admissions exam, and Northwest Evaluation Association Measures of Academic Progress (NWEA MAP) scores (CPS, 2018a). From these criteria, students are assigned a composite score, and 30% of the available seats are allocated to students who have the highest composite score. The remaining seats are allocated equally among the top scoring students from four socioeconomic tiers. Tiers are compiled according to the average income of the residents where students live.

Matching (i.e., selecting and being selected by a high school) with a high-quality high school is viewed as a prerequisite for gaining admission into a respected college. Thusly, many students aim to attend the best high school for which they qualify. Students apply to up to five schools and if they are accepted, receive an acceptance letter, to which they must respond in the affirmative by a specific date if they wish to attend the school. There is a second round of applications if students are not matched with a school that also chooses them. If students do not gain admission through the traditional route, they can also apply for "principal discretion," whereby the principal of a school may distribute an allotment of seats to students based on their own discretionary criteria. Even though the types of high schools (i.e., neighborhood, selective

enrollment, magnet, and small) mirror the options for elementary, the stakes, with respect to post-high school learning opportunities, are markedly higher for families selecting high schools.

To help families choose between schools, CPS has a School Quality Rating Policy (SQRP) that measures each school’s annual performance. SQRP (commonly referred as SQR) uses the following measures to determine a school’s success: student test scores; student academic growth; the closing of achievement gaps; school culture and climate; attendance; graduation; and preparation for post-graduation success (CPS, 2018c). The resulting ratings range from Level 1+ to Level 3, with Level 1+ representing the highest SQR, and Level 3 the lowest. Table III (reproduced from CPS, 2018c) outlines each level and how much district intervention is given to schools with lower ratings. Administrators in these schools generally have less autonomy and are given more directives from the district assigned network.

TABLE III: SCHOOL QUALITY RATINGS

Level 1+ is the highest performance - this is a nationally competitive school with the opportunity to share practices with others.
Level 1 is high performance - this is a good school choice with many positive qualities. Minimal support is needed.
Level 2+ is average performance - additional support from the network team is needed to implement interventions.
Level 2 is below average performance - this school requires increased support from the network.
Level 3 is the lowest performance - This school is in need of “intensive intervention” directed by the district.
<i>(CPS, 2018c)</i>

Students’ test scores impact the high school application process and help determine a school’s rating. Although CPS had implemented the standards from Common Core, they were still using the NWEA MAP standardized test, instead of the Common Core-aligned test and Partnership for the Assessment of Readiness for College and Careers (PARCC) to determine

admissions and to calculate SQRs. In fact, CPS administered both tests in 2016-2017, but PARCC was optional — parents could opt their children out of the exam via written letter to the school.

In terms of admissions, students who live in certain census tracts are given additional points toward their overall score to assist schools with high ratings in diversifying the student body by race and income. Despite this, Pattillo (2015) argued that the process of school choice in Chicago marginalizes Black and Latino students from high-quality schools. For example, in their 2018 high school rankings, U.S. News and World Report listed the top 5 schools in Illinois (all in Chicago): (1) Payton; (2) Northside; (3) Lane Tech; (4) Phoenix Military Academy; and (5) Jones. All are selective enrollment schools. CPS provides demographic information for each school on its website (CPS, 2018a). I provide the race and percentage of low-income students attending the top high schools in the city in Table IV.

TABLE IV: DEMOGRAPHICS OF TOP 5 HIGH SCHOOLS IN CHICAGO

High School:	Payton (SE) n=1,151	Northside Prep (SE) n=1,088	Lane Tech (SE, AC) n=4,495	Phoenix Military (SE) n=540	Jones (SE) n=1,910
SQR:	1+	1+	1+	1+	1+
Black:	10.90%	7.40%	7.80%	15.60%	11.90%
Latino:	22.20%	30.00%	40.00%	80.70%	29.50%
White:	43.60%	26.70%	35.40%	0.90%	39.20%
Asian:	17.50%	20.30%	10.50%	1.70%	14.30%
Other race:	5.80%	15.50%	6.30%	1.10%	5.10%
Low income:	30.90%	43.70%	43.40%	88.50%	37.30%

Note. Selective Enrollment (SE), Academic Center (AC)

At 10% of the city population, Whites are overrepresented at all the schools except the Military Academy. This is as expected, as Chicago tends to place military academies in predominantly

African American and Latino neighborhoods (Lipman, 2003). Analysis of the demographics of selective enrollment schools supports the notion that successfully navigating access to advanced curriculum via high-quality schools in Chicago tends to favor the White and affluent student. As such, the African American participants in this study experience what Berry (2008) describes as “aggregated individual discrimination—intentional or unintentional discrimination through favoring policies and practices that work to the disadvantage of students of color” (p. 478). In practice, school choice discriminates against students of color, running counter to the goal of leveling out access to high-quality schools among students of color.

Recruitment and Selection of Participants

Participants responded to flyers promoting the study. Flyers for the study were distributed in public locations like community centers, libraries, coffee shops, and beauty and barber salons located in predominantly Black neighborhoods in Chicago. Interested families were screened and selected for participation based on whether they met the following criteria: parents who (1) identified as African American or Black; (2) had a child was in grades 5-8; and (3) had a child who liked math or believed s/he was good at math. Parents signed consent forms (and students an assent) form prior to the start of their participation. Those agreeing to participate were given a monetary incentive (\$50 per interview for parents, \$10 per interview for focal children, and \$30 for members of a family’s social network).

The participants for this study are 6 African American families or parent-child dyads from varying socioeconomic classes with a focal child in 5th- through 8th-grades, and where applicable, were members of the family’s social network (see Table V for demographic details of the families). Because African American families come in different forms, this study utilized cases that vary along the lines of socioeconomic status, family structure (e.g., households headed

by a single parent, dual parents, one biological parent with a stepparent, etc.), type of school attended by the focal child (e.g., private school, neighborhood school, academic center, etc.) and grade level of the focal child.

TABLE V: FAMILY DEMOGRAPHICS

Parent	Smith	Harrison	Hill	Rogers	James	Spencer
Sex	F	F	F	F	M	F
Age	45	44	32	35	37	35
Education	High School Diploma	Postgraduate degree	Some graduate school	Master's	Bachelor's	Master's
Focal Parent Occupation	Hospitality	Actress/Teaching Artist	Financial Advisor/Broker	PE Teacher	Dean of Students	English Teacher/Teacher Coach
Partner Occupation	n/a	n/a	n/a	Security	Chef	Science Teacher
Income	\$20,000-\$40,000	\$41,000-\$60,000	\$61,000-\$80,000	\$61,000-\$80,000	\$61,000-\$80,000	More than \$101,000
Number of Children	4	1	1	2	4	2
Focal Child	Smith	Harrison	Hill	Rogers	James	Spencer
Sex	F	F	M	F	M	F
Age	13	11	11	11	10	13
Birth Order	4	1	1	1	4	1
Grade	8th	6th	6th	6th	5th	8th
Type of School	Neighborhood	Private	Small	Neighborhood	Neighborhood	Academic Center

The cases have focal children in grades 5 through 8 because, during this time, African American children are: (1) exploring, structuring and restructuring their sense of self (Chavous et al., 2003); (2) increasingly being positioned as raced beings (Tatum, 1997); and (3) developing more sophisticated ideas around who can and cannot do math while mathematics courses are getting increasingly more advanced (Nasir et al., 2009).

I focus on parents of mathematically successful children because these parents have found ways to successfully navigate school mathematics, despite typical expectations of failure for Black students in mathematics (Jackson, 2009; Leonard & Martin, 2013; Martin, 2000, 2009b; McGee & Martin, 2011; Spencer, 2009). With each new mathematics course, children (and by proxy, families) experience mathematics that is increasingly more complex and comprehensive (Hill & Taylor, 2004). Given the increased complexity, Black children's failure is often normalized or expected. The experiences of these parents and students can help to highlight means of support for other African American students and families who are struggling to achieve their goals in mathematics.

Previous studies of African American students and mathematics present definitions of success in mathematics that include: (1) participating in upper-level mathematics or enrollment in honors mathematics (Berry, 2005, 2008; McGee & Martin, 2011); (2) holding an advanced degree in mathematics (McGee & Martin, 2011); and (3) stellar performance in mathematics or on high stakes testing (Davis, 1997; Ladson-Billings, 1997). For this project, I define mathematics success as having a positive mathematics disposition or identity. Maintaining a positive disposition towards mathematics over time can be challenging for African American children; as they age and become increasingly more aware of their racialized status, they are also advancing in grade levels where mathematics becomes harder and more complex. Black children

who maintain a positive disposition toward mathematics and/or who maintain high grades are experiencing math success. Their disposition toward mathematics speaks to a measure of perseverance and determination that can be particularly powerful as they navigate in-school mathematics. Nevertheless, it necessary to declare that even though as families opted into the study their children had positive relationships with mathematics, the nature of adolescent development means that children are periodically negotiating their relationship to math success (and math identity).

Table VI represents the socioeconomic categories of families based upon research literature (for discussion of income categories see Beeghley, 2004; Elwell, 2014; Gilbert, 2002; for a discussion of lifestyle, socioeconomic status, and race see Oliver & Shapiro, 1997; Pattillo, 2007). In addition to income, education level, home ownership, and occupation help to paint a picture of a particular lifestyle for these families (Hauser, 1994; Pattillo, 2007). (To see the demographic information sheet given to parents, see Appendix E.)

TABLE VI: SOCIOECONOMIC STATUS DESCRIPTIONS OF AFRICAN AMERICAN FAMILIES

Socioeconomic Status	Income	Descriptive
Upper Middle	>\$100,000	Highly educated, often with graduate degrees. These families are less susceptible to economic changes and workers have considerable work autonomy. They are salaried professionals, executives, management, and middle management. These families are more likely to own their home rather than rent.
Middle	\$35,001-99,999	Members in this category are college graduates or often have some college. They are more vulnerable to economic changes than high-income wage earners but have a comfortable standard of living. They are semi-professional/professional craftsmen and possess white-collar jobs such as teacher or small business owner.
Low	<\$35,000	High school graduates or dropouts with highly routine/blue collar or clerical jobs that often pay by the hour. These families have little economic security and for some, poverty is a reality. They are often unemployed for prolonged periods of time. They are more likely to rent, rather than own, their home, and the poorest families have government assistance or reside in public housing.

Data Collection

I collected data for this study during the 2016-2017 academic year. I drew upon multiple sources of data to triangulate information, thereby enhancing the validity and reliability of findings (Noor, 2008; Yin 2003). Data sources consisted of the following: a demographic information sheet, three semi-structured interviews with parents, two semi-structured interviews with children, parents' and children's math autobiographies (collected verbally during the interview process), parent behavior checklists, and where applicable, one semi-structured

interview with a member of the family's social network. Table VII provides a summary of the data sources and collection procedures. The data collection procedures are described next.

TABLE VII: DESCRIPTION AND PURPOSES OF DATA SOURCES

Source	Description	Data Collection Timeframe	Data	Purposes/Uses
Parent Interviews	Conducted a 60-90-minute interview with each parent. Interviews were audio recorded and transcribed.	Fall 2016; Winter 2016; Spring 2017	6 parents	To develop a more in-depth understanding of parents' math support practices, the experiences and perceptions of parents that influence their math support practices, and how their practices are influenced by CCSS-M.
Student Interviews	Conducted a 45-90-minute interview with each student. Interviews were audio recorded and transcribed.	Fall 2016; Spring 2017	6 students	To learn how students perceive their parent's math supportive behaviors and serve as a source of data triangulation.
Social Network Interviews	Conducted a 60-minute interview with the participant. The interview was audio recorded and transcribed.	Winter 2016	1 participant	To learn about their role as a supportive member of a family's social network and to serve as a source of data triangulation.
Parent Math Autobiographies	Collected a verbal account of their experiences with and dispositions toward math.	Fall 2016	6 parents	To learn about parents' mathematics identities and how their support practices are influenced by their experiences with math.

Student Math Autobiographies	Collected a verbal account of their experiences with and dispositions toward math.	Fall 2016 & Spring 2017	6 students	To learn about students' math identities, their journey of math success, how parents' support practices are related to the students' math identities, and to serve as a source of data triangulation.
Parent Behavior Checklist	Distributed the checklist to parents. The items were a list of behaviors that parents or other individuals may have done to support math learning.	Fall 2016, Winter 2016, Spring 2017	6 parents	To serve as a source of data triangulation.
Demographic Information Sheet	Distributed the questionnaire to parents that included demographic information on their families.	Fall 2016	6 parents	To document race, gender, age, and education level of parents, learn about how families were structured, and gather information about parental and family income.

Semi-Structured Interviews with Parents

Semi-structured interviews were the main method of data collection. The general purpose of all interviews was to gain an understanding of the experiences and perceptions of parents (and their children), particularly as it relates to parents' math supportive practices. The interviews were conducted at the location of the parents' choosing. I conducted interviews in the participants' homes, at coffee shops, in my office, and at the participants' jobs. Prior to the interview, parents signed a consent form for their participation and the participation of their child. The interviews lasted approximately 90 minutes, and all interviews were audio-recorded with the participants' agreement. Each parent was interviewed separately, on three occasions—an initial semi-structured interview in Fall of 2016 (i.e., October), followed by two semi-structured interviews in Winter and Spring of 2017. In total, I conducted 18 interviews with the 6 parents that participated in this study.

The first interview provided baseline information from which subsequent interviews were based. The goal of the first interview was to prompt reflection on the previous 2015-2016 academic year, as well as on their personal background and parental philosophy, math socialization, and racial-mathematics beliefs. Parents were obliged to narrate their previous experiences with mathematics education, their knowledge of what was going on in their child's math class, knowledge of CCSS-M, their beliefs about the influence of race in mathematics education, their resources, and their support practices. Questions included: What are your main concerns as a parent? Thinking about this past 2015-2016 academic year, how would you say the year went? Were you pleased with your child's math teacher? Why or why not? What challenges have you faced while supporting your child's math learning? What are some of the most

challenging things when it comes to promoting excellence in math? What obstacles have you overcome? (See Appendix A for questions to be included in the first parent interview protocol.)

The parents' second interview was conducted during the Winter (i.e., December 2016–February 2017). Parents were asked to reflect on their child's first semester of their current math course. The interview focused on mathematics socialization from parents and other sources, Common Core, and additional obligations (e.g., work, familial, church, etc.). Protocol questions asked of parents were: Who has typically helped with math homework in your household? Who does your child go to with a question about math? Have you noticed any differences in the math that your child is bringing home since Common Core was implemented? How do you feel about the changes? Do you have financial commitments to your extended family? (See Appendix B for all questions included in the protocol for parents' second interview.)

Final interviews with parents were conducted toward the end of Spring 2017 (i.e., May-June 2017). The goal of this interview was to provide a reflection on the math goals for the year, learn of their plans for the following year, and of any changes they plan to make to their support. Questions included: How would you characterize your child's performance in math this year? How do you manage parenting alongside your other responsibilities? Over the past year, have you talked with your son/daughter about race? (See Appendix C for all questions included in the protocol for parents' third interviews.)

Semi-Structured Interviews with Students

The purpose of interviews with students was to confirm parents' support practices from the students' perspectives. The interviews were conducted at the location of the parents' choosing. I conducted interviews in the families' homes, at coffee shops, and in my office. Prior to the interview, parents signed a consent form for the participation of their child and the child signed

an assent form documenting their willingness to participate in the study—they could decline to participate even though their parents consented. The interviews ranged from 30 minutes to 90 minutes in length, and all interviews were audio-recorded with the students' agreement. The focal children were interviewed twice—once in the Fall of 2016 and again in the Spring of 2017. In total, I conducted 12 interviews with the 6 focal children of the study.

Since I interviewed parents prior to interviewing their children, I had background information on which I could probe the children's responses. The first interview focused on the students' previous year of math development, math identities, perceptions of parents' support practices regarding mathematics, including explicit and implicit messaging on the importance of mathematics, the constraints and affordances of mathematical knowledge, and how they feel about mathematics and its use as a tool for their future. Protocol questions addressing these issues included: How important is mathematics to your future career? Is it important for you to do well in mathematics? As an African American, do you think you are expected to do as well as other students in mathematics? How have (or can) your parent(s) help you achieve your educational goals? (See Appendix D for the student interview protocol for Fall 2016 and Appendix D for the student interview protocol for Fall 2016.)

Final interviews with the children were conducted in May and June of the 2016-2017 academic year (i.e., Spring 2017). The goal of the interview was to ascertain their reflections on their math learning for the 2016-2017 school year, the math support they received from their parents, learn of their academic plans for the following year, and any changes they plan to make to their study habits. Questions included: How is math going this year? Have you had any struggles? How do you expect the rest of the year to go for you? Do you still like math? Do you

plan to do anything differently next year? (See Appendix E for the student interview protocol for Spring 2017.)

Semi-Structured Interviews with a Member of a Family Social Network

The single interview for a member of a social network was conducted during the Winter of 2016. As a person integral to shaping the home mathematics environment, this interview focused on their math identity, their goals for the focal child's math development, and the nature of their math experiences with the focal child. The social network member was asked questions such as: When did you first begin helping the child with math work? What kinds of things do you help the child with? Tell me about the last time you helped the child with math. (See Appendix F for the interview protocol of social networks.)

Math Autobiographies

In addition to initial interview data, math autobiographies for parents and children were collected verbally during the interview process. The purpose of the math autobiography for parents was to have them recall important events in their own lives concerning math, provide insight into their beliefs about teaching and learning mathematics, learn of their math identities, and explore how their support practices were influenced by their math identities. The purpose of the math autobiography for children was to ascertain their feelings about mathematics and determine the factors contributing to their success in mathematics. I adapted math-autobiographical prompts from Shaw and Chessin (1996) for the children's interviews and Ellsworth and Buss (2000) for the parents' interviews. (For parent and child math autobiography interview prompts, see Appendix A and D, respectively.)

Documents

Demographic information (e.g., age, educational attainment, income, profession, own or rent a home, etc.) was collected from parents during my first interview with them. During each of their three interviews, parents were asked to complete a behavior checklist. The behavior checklist provided a list of potential supportive behaviors in which parents or members of their social networks were engaged. Their answers were used as prompts for continued discussion on their supportive behaviors. The checklist was not exhaustive but was intended to trigger their memories of math facilitative behaviors.

Parents were instructed to collect the following types of documents they received from their schools, if any: letters regarding CCSS or CCSS-M, parent resources that accompany CCSS-M-aligned curriculum, or any other documents designed for parents relating to CCSS-M. These were to be assessed for their (a) usefulness to parents (determined by parents' reports); (b) the ways parents were positioned in relation to CCSS-M (i.e., What was expected of parents? Were expectations clear to parents? Were parents expected to have a certain level of mathematics knowledge?); and (c) their ability to elucidate classroom activities considering the recent reform. At no time during the study did parents report receiving such documentation. A couple of parents mentioned a letter that was sent home from the district about Common Core during the 2015-2016 school year (a year before this study), but none of the parents kept the letter. Therefore, I do not include any documents about CCSS-M in the data analysis.

Data Analysis

Interviews were transcribed and entered in MaxQDA, a qualitative data analysis software package. Of the interviews, 18 were from parents, 12 from children, and 1 from a member of a family social network. The data analysis is organized into cross-case and within case analyses.

The data analysis process was iterative. Analyses across the cases helped to inform within-case analyses and vice versa. Analysis of the interview data included: reading the transcripts and coding observations and clustering observations into emerging themes or patterns.

The account of the data analysis process below primarily details analyses of the interviews. Because the parent behavioral checklists were probed on the spot during parent interviews, checklist data was evaluated and coded within the contexts of the interview data. Similarly, the participants gave verbal accounts of their math autobiographies within the contexts of their individual interviews. Therefore, the autobiographical data were analyzed as a part of the interview data. Included in the math autobiographies were participants' accounts of their math identities. For example, parents openly shared their math stories using phrases such as "I have a math anxiety" or "I don't see how you cannot get math. Math is everywhere." These statements were illustrative of or coded as their *math identity*. However, the demographic information sheet was used to help identify families' social position, and through interviews, identify aspects of parents' and students' experiences with mathematics and mathematics support practices that were connected to their social position.

Cross-Case Analyses

For the cross-case analyses, I used a combination of pre-existing or a priori codes (codes that emerged during analysis) and open-coding. A priori codes and emergent coding represent two types of coding, wherein one uses prefigured categories to organize data, and the other allows for the emergence of categories that reflect the views of the participants (Creswell, 2007). Open coding involves segmenting the data into categories. Through a refining process, codes are collapsed into larger categories, allowing the researcher to identify major themes (Creswell, 2007).

With the guiding research questions in mind, I used a priori and emergent codes to categorize parents' support practices. A priori codes for parents' supportive practices were derived from the parental behavior checklist and practices reported in the research literature. *Providing incentives and disincentives, talking with the child, enrolling the child in special programs, providing extra practice, monitoring progress or grades, helping with homework*, among other categories were some of the codes for parents' supportive practices. The following excerpt from a parent was coded as *monitoring progress* and *helping with homework*:

I stay on [the online grading system] just to monitor her classroom grades. I've been looking at her NWEA and her percentile, it's always great for me to see where she is nationally. And then just monitoring her homework and stuff. I always correct it first, so when she goes to school, she gets all the points. (Mrs. Spencer, Winter 2017)

I coded it as monitoring progress because of the mother's focus on monitoring the students' classroom grades, standardized test scores, and homework. The act of monitoring facilitated help with homework, therefore, the excerpt was also coded as helping with homework.

Emergent coding was used to capture parents' descriptions of their actions that were not on the checklist but that help to develop their child's math knowledge and skills. I coded the interviews for parents' descriptions of their support practices and their beliefs about how parental support should look, relationships between parents' math identity and their support, and for any CCSS-M-specific supportive behaviors from parents. *Student math identity, providing math advice or strategies, getting child input on decisions, and goal setting*, among other actions, are examples of emergent codes. The following excerpt was coded as *math advice or strategies*.

Delaina: What kinds of things do you tell Nia about Math?

Mrs. Spencer: So, I know I say to her, "You have one opportunity to do this problem at the test. So, you need to take your time." Friday, I said to her, "You need to get that math grade up," but I really want her to slow down. And I say to her, "Don't use that calculator or that phone. Do it in your head and show your work." (Mrs. Spencer, Fall 2016)

In this example, the mother's recollections of what she tells her daughter about math encompass math strategies for success (i.e., take your time, don't use a calculator, and show your work) and an idea of what success looks like for her daughter (i.e., get that math grade up and slowing down).

Open coding was used to collapse categories and refine categories of parents' supportive roles or paths of agency across the six families. At the fore were questions of parents' agency; that is, the roles and actions they engage in producing a desired result. I also questioned how and when parents decided to levy certain behaviors. In the process of open coding, I looked for themes, connecting codes that were prevalent across the families. The process yielded three themes: (1) *being good stewards by selecting schools and ensuring access to advanced mathematics*; (2) *providing the knowledge, skills, and dispositions for math success*; and (3) *motivating the child to persist and achieve math success*. For example, the codes *get child input*, *provide best chance at life*, *provide best education*, and *provide safe environment*, were collapsed into the larger category of *good steward – selecting schools and ensuring access to advanced math*. Those coded segments each had an aspect relating to the school selection process or accessing advanced math at a particular school. The following excerpt was initially coded as *provide safe environment*:

If you got to be with kids that don't look like you, for me to have peace of mind there ain't gonna be no bullets going to be flying all over when you get out of school, I will do it. You know who you are, be proud of your skin, all of that, and I will continue to reinforce that, but my main thing is safety. And I feel like if you are in a school where you don't feel safe, you ain't going to learn nothing, let alone, I don't care if it's gym, no course subject is going to be in any interest of you because you're going to be concerned about what does he got over there in his pocket? (Ms. Hill, Fall 2016)

As a function of selecting a school, this mother was concerned about the impact that an “unsafe” environment could have on her son's physical safety and his ability to learn. In that way, open

coding allowed for the identification and subsequent connection of common themes embedded within individual codes. A similar process yielded the other two themes: (1) *promoting the knowledge, skills, and dispositions for math success* and (2) *motivating the child to persist and achieve math success*.

Upon reflection on the data and the differences in parent support, especially regarding when and how parents engage in math-related tasks with their children, I began to see a pattern in parents' support practices. Parents were engaged in math support at two different levels—distally and proximally. Proximal support practices involved the parents doing math-related activities, while distal support practices did not. For example, *helping with homework* and *teaching money management* were codes that related to proximal support. *Monitoring* and *enrollment in programs* were codes and support practices that were distal. Distal support and proximal support are not mutually exclusive, as the previous example of the mother monitoring grades and homework (distal support) led to helping with homework (proximal support).

In the course of examining interviews, it became clear the majority of parents (4 of 6) were not very knowledgeable of CCSS-M and how it related to their child's math education, so my analysis changed from coding CCSS-M supportive behaviors to search for evidence addressing why CCSS-M remained relatively unknown among parents of successful math students. To do so, I tracked mentions of standardized tests in parents and children's interviews and compared talk about PARCC (a Common Core-aligned assessment) with talk about NWEA (an assessment used by CPS to enroll students in selective enrollment schools). I chose to analyze narratives around standardized tests since tests are highly visible areas of schooling, often with high stakes, and as such, PARCC was on parents' radar, even if they were not aware of its connection to CCSS-M.

Within-Case Analyses

The benefit of within-case analyses is that they offer detailed descriptions and in-depth understandings of the issues being explored. Rather than conducting a new set of analyses for this portion of the study, I explored the themes from across the cases more deeply within two cases.

I feature the Spencer and Smith families for the within case analyses because the families each had a focal child in the 8th-grade, and they occupied different social positions. As I have conveyed in my description of the research setting, 8th-grade is an important point in CPS students' education because families are considering options for high school. School selection and access to certain math programs featured prominently in the two families' narratives about school. The Spencer and Smith families differed by socioeconomic status (high-income and low-income, respectively), in their relation to CPS (with the Spencer family having insider knowledge of CPS systems and policies), and in the structure of their families (dual-parent household and single-parent household, respectively). Also, the Smith family utilized a member of the family social network to promote math learning, making them an interesting case in which to learn.

To demonstrate how the Spencer and Smith families illustrate or diverge from the whole group, I provided a rich description of family life, parenting, and parental support for math within each family. The description features the students' narratives, particularly conveying their math stories and the circumstances wherein they experience and address math challenges. Having a healthy math identity or being a high achiever in math does not mean a student is immune to struggle. I also feature how parents responded to support them.

For both the cross-case and within-case analyses, I contextualized parental support, given that families are embedded within cities, school districts, schools, and classrooms. Extended family, friends, and coworkers all touch their lives. In both analyses, I provide background information on family life using demographic information collected from parents and through narrative analysis. Parents' narratives were analyzed through the lenses of obligations and resources, noting their responsibilities and their capacity to act within a given environment. Where appropriate, I note parents' resources or capital, things, or people used to support the development of mathematics knowledge and skills, to provide further contextualization.

CHAPTER 4 CROSS-CASE ANALYSES: PATTERNS OF SUPPORT

In this chapter, I discuss how African American parents in this study supported their children's math development. By math development, I mean the knowledge, skills, and dispositions related to learning math. When parents in the study discuss math development, it is linked to their actions of support. They use words like "attitude" or describe how they could tell their child did not like certain aspects of math and what they did in response. They discuss the successes and struggles they encounter while doing math-related activities or participating in math-related programs.

I begin the analysis by describing the family units along demographic lines, such as socioeconomic status, occupations of the focal parent, family structure and marital status, and type of school attended by the focal child (e.g., selective enrollment school, neighborhood school, etc.). Next, I describe the three common roles that parents enacted to support math learning. Roles are the actions or positions that parents take to advance math development. These roles or acts of parental agency (i.e., being a good steward of education, providing tools for success, and motivating) emerged as parents reflected on their support over the school year. Next, I discuss what parents know about Common Core as it relates to changes in the math curriculum at schools. Lastly, I explain how math support practices took the forms of distal (e.g., motivation or monitoring grades) and/or proximal (e.g., direct engagement with math work) support as a function of parents' lived experiences and math identities.

Preview of the Findings

The guiding research questions for this study are: (1) How do African American parents conceptualize their roles in their child's mathematics and what support practices do they employ

to enact these roles? (2) How have math reforms (i.e., CCSS-M, as part of the most recent reforms in mathematics education) impacted parents' support practices in mathematics? (3) In what ways are their roles and behaviors influenced by their life experiences and mathematics identities? Analyzing across families, I show how parent support of math development is dynamic, complex, and impacted by district and school policies, parents' own math identities, and situational contexts. These findings relate to on-going discussions of district policies with respect to equity in school choice (New Schools for Chicago, 2017; Henricks, et al., 2017).

In addressing the first research question, I find parents engaged in three forms of agency. All parents acted as good stewards for their children's education by selecting schools and programs that would ensure access to advanced mathematics for their child. All parents promoted the knowledge, skills, and identities for math success. Parents used a variety of methods to do this, such as orchestrating experiences (e.g., STEM-related summer programs) designed to promote a healthy math identity, engaging in supplemental math instruction, and utilizing members of their social networks to facilitate math learning. All parents motivated their child to persist at math and achieve at high levels. In exploring my second research question, I find that parents with insider knowledge of CPS through their occupations as educators, could index changes in math in schools. Parents without insider knowledge—non-educators or lay-parents—had not heard about Common Core or held conceptions of Common Core that were not as deeply informed. In undertaking the third research question, I find that parents' math support practices were distal and proximal. Although both kinds of support have the goal of advancing students' math development, proximal support practices include parents in the doing of math-oriented tasks, while distal support practices do not require the parent to engage in math-related activities. Here,

it is apparent how support practices are influenced by parents' math identities and situational demands.

The Sociocultural Contexts of the Family Units

I provide the sociocultural context of the African American families participating in this study because African American families are not monolithic—the particularities of the life contexts influence how parents' support practices differ and converge. McNeil, Smith, and Landor (2018) make a case for extending intersectional perspectives to family research to understand how families experience multiple forms of power and oppression. Intersectionality is a lens for understanding how the convergence of social identities may compound to produce structural inequalities (Crenshaw, 1991). At the intersections of race, class, gender, historical time, etc., families are stratified to a particular social position (McNeil, Smith, & Landor, 2018). Furthermore, these sociocultural factors shape family functioning (James, Irby Coard, Fine, Rudy, 2018; McNeil Smith & Landor, 2018; Murry, Butler-Barnes, Mayo-Gamble, & Inniss-Thompson, 2018), parent practices (Bluestone & Tamis-LeMonda, 1999; Querido, Warner, & Eyberg, 2002; Brodsky & DeVet, 2000; Harris-Britt et al., 2007), and child outcomes (Bleeker & Jacobs, 2004; Hastings & Weinstein, 2008; Hill & Taylor, 2004; Maloney et al., 2015). None of the families in this study have the same social position, even when they belong to the same socioeconomic class. Therefore, my goal is to illuminate aspects of their complexity and respective life contexts, which have implications for their math-related support practices.

The family units in this study come from varying family structures and socioeconomic backgrounds (see Table V in the previous chapter for a detailed reference of the family units and see Table VIII below for a short-hand reference to the parent-child dyads). Three of the parents in the study were married (Mrs. Rogers, Mr. James, and Mrs. Spencer) and 2 of those marriages

created a blended family and co-parenting dynamic (Mrs. Rogers and Mrs. Spencer). Ms. Hill was the only single mother who was actively engaged in a co-parenting relationship with her son's father. Death and long-distance were the obstacles preventing active co-parenting relationships for the other two single-parent mothers (Ms. Smith and Ms. Harrison, respectively). In fact, Ms. Smith and Ms. Harrison each expressed a level of fatigue that accompanied parenting alone amidst the responsibilities of providing financially for their families. Regarding support, Ms. Smith and Ms. Harrison each looked to family, extended family, and friends to help support math learning. This included helping with homework, playing games with a math component, and attending math-related events. Parents that were married used their spouses for emotional support. They were less likely to look outside of the home for direct math support. I use direct math support to describe math-central tasks or activities in which the parent is directly involved. Examples include helping with math homework or tutoring the child.

TABLE VIII: PARENT-CHILD DYADS

Parent	Child	SES	Type of School
Ms. Smith	Michelle Smith	Low	Neighborhood
Ms. Harrison	Imani Harrison	Middle	Private
Ms. Hill	Eric Hill	Middle	Small School
Mrs. Rogers	Joy Rogers	Middle	Neighborhood
Mr. James	Michael James	Middle	Neighborhood
Mrs. Spencer	Nia Spencer	Upper Middle	Academic Center (Selective Enrollment)

Except for Mr. James, a father, all the parents in the study were mothers. Typically, in parent-child research, fathers are more challenging to recruit (Cochran, 1997) and less willing to participate than mothers (Phares, 1992). Therefore, the cases in their totality more easily convey the experiences of the mothers.

Parents' occupations included an actress, a financial advisor, hospitality worker, and teacher. In fact, three of the parents are connected to schools in some way via their occupation; two are educators (Mrs. Spencer and Mrs. Rogers), and one was a Dean of Students¹ (Mr. James). The Dean of Students is responsible for facilitating a positive school culture and climate through behavioral interventions. They often manage in-school suspensions and discipline referrals. At times, parents' job responsibilities interfered with their ability to provide direct math support. When work was busier than usual, direct math support declined. The mother working in hospitality (Ms. Smith) did not get off work until 10pm, making it more difficult for her to participate in homework activities.

In terms of SES, apart from Ms. Smith (low-SES), Ms. Harrison (middle class but unemployed), and Mrs. Spencer (upper-middle class), the remaining three parents hailed from families were middle-income households. Although the study criterion (as per Table V and Table VI) classifies Ms. Harrison as middle class, as an actress who was between jobs, Ms. Harrison saw herself as low-income. Earning at least \$41,000 per year from working odd jobs, Ms. Harrison earned twice as much as Ms. Smith who had the lowest family income. Ms. Harrison's family lived in her childhood family home with her mother, who owned the home. Not having to pay rent or a mortgage meant Ms. Harrison also had more disposable income than Ms. Smith, who received income-based housing assistance from the government. These kinds of life experiences—the number of hours worked during a week and the financial resources available to families—impacted parents' ability to monitor their children in person. With Ms. Smith working until 10pm and taking overtime to make extra money, she did not have as much face-to-face time with her daughter during the week as Ms. Harrison, who could drive to her daughter's school to

¹ Mr. James resigns as Dean of Students mid-year in favor of a career in sales.

pick her up and ferry her to swim and gymnastics during the week, and then to math tutoring on the weekends.

I became keenly aware of income differences between the families as Mrs. Harrison and Ms. Smith described the difficulties of meeting expenses for basic necessities and more (e.g., the expense of groceries, the inability to vacation, housing, etc.). Earning approximately \$20,000 per year, Ms. Smith and her family utilized public transportation. All other families owned a car, and none spoke of using public transit to go to work or school. In particular, the issue of taking public transit to school meant that Ms. Smith had the added burden of negotiating issues of safety as her daughter rode through certain “dangerous” neighborhoods. This became a point of contention between Ms. Smith and Michelle Smith (her daughter) as they discussed the possibility of attending certain high schools during the high school application process. Essentially, certain selective enrollment high schools were unavailable to Michelle due to their location; Ms. Smith wanted Michelle to travel a safe route to and from school. I describe this in more detail in the next chapter.

Having school personnel represented among three of the parents in this study means that the narratives and practices represented in the following chapters are biased towards school personnel or individuals with insider knowledge of CPS schools and systems. These insider parents were adept at navigating CPS schools and policies. Two of the three insider parents (Mrs. Spencer and Mrs. Rogers) were able to successfully navigate their children into selective enrollment schools, while Ms. Smith, a relative outsider to CPS, by comparison, experienced more hurdles when trying to gain admission to a selective enrollment school for her daughter. I discuss her experiences with school matching further in the next chapter. Mr. James did not demonstrate the same adeptness in navigating CPS as Mrs. Spencer and Mrs. Rogers. He was

within CPS but not of CPS in the same ways as Mrs. Spencer and Mrs. Rogers. I attribute this to his position as Dean of Students. His experience foregrounds the culture of schools, rather than the academics. This likely had implications for the kinds of professional relationships he acquired among his colleagues. Mrs. Spencer and Mrs. Rogers utilized their professional networks to the benefit of their children. Mrs. Spencer relied on her network of teachers to check in on her child's teacher and to help with homework, while Mrs. Rogers used her network of teacher-colleagues to gain access to upper-level mathematics at her school for her daughter. More so than the other parents in the study, Mrs. Spencer and Mrs. Rogers were able to use their insider knowledge to decide what math education would look like for their children.

The focal children of this study range in age from 10-13 years old. Half attended neighborhood schools (Michelle Smith, Joy Rogers, and Michael James) and the other three attended a private school (Imani Harrison), small school (Eric Hill), or an academic center (Nia Spencer). The type of school attended by the children emerged as an important factor in parents' narratives because the structure of CPS meant that in certain kinds of schools (i.e., selective enrollment), access to high-quality math curriculum was readily available. Therefore, the kinds of math experiences that students were having in schools were connected to the type of school they attended. Issues of access to an advanced math curriculum were being considered among families with children at neighborhood schools (i.e. the Smith, Rogers, and James families). The parents were concerned that neighborhood schools could not "challenge" their children as well as other kinds of schools. Starting at a neighborhood school, Joy Rogers (6th-grade, child of Ms. Rogers) was the only student to gain admission to a selective enrollment school during the study. Also, two of the focal students were in their 8th-grade year and in the midst of the high school application process. Consequently, the high school application (or matching process) was

intertwined with parents' considerations of school type and selecting the schools that represented the best opportunity for their child.

There was also a racialized context to parent support practices. With White families fleeing to the suburbs (Henricks, Lewis, Arenas, & Lewis, 2017) and choosing alternative schooling options (e.g., charter, private), the students in this study primarily attended schools where most of the student body was non-White. Five children in this study attend CPS schools and experience this racialized context. This also extends to, Imani Harrison, the only student in this study, who attends a private school. As an attendee of a predominantly affluent, White, private school, Imani experiences overt racism from her White peers at school, while the CPS students did not report any incidents of racism in their schools.

Parents' Agentic Roles

There were three prevalent paths of agency discussed by parents: (1) to serve as good stewards for their children's education by being active agents to gain access to high-quality schools and learning experience; (2) to provide their children with the knowledge, skills, and identities necessary to be successful in math; and (3) to motivate their children to persist and achieve math success. I provide examples from interviews with parents, and where necessary, highlight significant similarities and differences between families. To begin, I share how parents navigated access to high-quality schools and education programs for their children by selecting high-quality schools and by advocating for access to advanced math curriculum.

Good Stewards: Selecting Schools and Ensuring Access to Advanced Math

Terry and McGee (2012) contend that one type of support that African American parents provide toward math development is selecting schools their children will attend. Narratives from parents in this study support the notion that selecting schools for students is a salient practice that

can facilitate access to perceived high-quality math courses. With CPS structured to provide high-quality curriculum and learning experiences to a few students via selective enrollment schools, parents in this study navigated and circumvented CPS bureaucracy and structural inequities. For some, this meant embracing the idea of school choice and gaining admissions to selective enrollment schools. For those parents not in the market for a new school, this meant obtaining access to advanced mathematics at their current school. Furthermore, I document how a parent's ability to navigate CPS with relative ease was connected to their knowledge of CPS policies as educators.

In three of the six cases (i.e., the Harrison, Hill, and Spencer families), parents chose not to send their child to traditional neighborhood schools and opted, instead, for a more prestigious private school or a non-traditional public school (i.e., academic center and small school). Notably, of the three parents opting to send their child to a traditional neighborhood school, two of them (i.e., Smith and Rogers Families) leveraged access to advanced math curriculum that was not available to all students. Furthermore, by the end of the 2016-2017 academic year, the Rogers' family had gained admissions to an academic center (i.e., selective enrollment school) for their daughter, Joy. As educators and insiders to CPS, Mrs. Rogers and Mrs. Spencer were the only two parents to have children successfully transition to selective enrollment schools. Conversely, Ms. Smith, a non-educator and CPS outsider, was unsuccessful in her attempt to have her daughter, Michelle (Smith) attend a selective enrollment high school. I describe how and why this occurred in the next chapter.

Ms. Hill, a financial advisor and part-time Real-estate Broker, chose to send her 6th-grade son, Eric Hill, to Kane Elementary, a small school that focused on investments and entrepreneurship. Ms. Hill described how she made the decision to send her son to their chosen

small school. I suspect that her own professional proclivities, as they relate to finances, may have played a part in why she chose a school with a financial bend. Nonetheless, she outlined her choice according to the following factors: school quality ratings; notions of safety; peer-to-peer interactions; the quality of the school staff; network connections with children at the school; and the school's focus on investments.

Ms. Hill: I did some research when we were looking for schools. Because we always been at [a different school] ...but then I'm like, let me do a little bit of research, because our neighborhood school at the time [wasn't] getting good [school quality] ratings, but I don't really go by the ratings all the time.

Delaina: Okay, what do you go by?

Ms. Hill: I like to go in there and actually see what's going on, drive past, listen to the kids, how they converse with each other, how they interact with each other—that type of thing. Talk to the teachers, talk to the principal, see that type of thing. I'm a *more hands-on*, I need to experience it or whatever. But then, his god-sister went to Kane, and I was just taken away by the fact that they had an investments class for second graders. So, at that point, okay you're going here, that was really the determining factor. I mean of course it's in a decent area, but that was really the determining factor because I feel like children, *especially in the African American community*, they are not taught how to invest, how to save, what the benefits of having good credit are—those types of things. They are taught two plus two, but how can you make two plus two equal four times ten, then take it to this power and that power, invest this. They are not taught that all the time. (Ms. Hill, Fall 2016)

Ms. Hill was not happy with the school quality ratings of their neighborhood school, and thus began the search for an appropriate alternative. The decision to leave one school for another is rarely a simple decision; poor school ratings could have been one of several other factors that, when taken together, led to her decision to forego the neighborhood school. What drew her to Kane, however, was the racial context. Ms. Hill perceived the school's emphasis on investments and entrepreneurship as valuable and necessary content for Black children to understand. Moved by the opportunity to provide her son with an education imbued with knowledge of finance and

investments, Ms. Hill's considerations reinforce the idea that African American parents negotiate issues of race and racism while supporting their children (Banerjee, Harrell, & Johnson, 2011; Hughes, Rodriguez, Smith, Johnson, Stevenson, & Spicer, 2006; McKay, Atkins, Hawkins, Brown, & Lynn, 2003).

Also playing a vital role in Ms. Hill's considerations are issues of place and perceptions of safety. Such concerns seemed to play a more prominent role in her schooling decisions. Her declaration that "of course it's in a decent area" intimates that her decision was based, in good measure, on the notions of place (i.e., so-called good neighborhoods) and safety. To buttress this claim, I present Ms. Hill's views on Richard High School, located in a predominantly Black neighborhood and locally known for gun violence:

I have a good kid. Yeah, he's been sheltered. Would I send him to Northward? Absolutely not! I think the school, Richard High, I think it's probably a great school, but when you look at the location of where it is—okay, after he's learning all of this amongst people that look just like him and everybody is happy. When you get out the school at three fifteen and get Ray-Ray standing on the corner waiting to do something goofy, then what? And I understand why it's in that neighborhood, but at the same time, to me as a parent, I ain't trying to hear that. (Ms. Hill, Fall 2016)

To be considered as a worthwhile option for Eric (Hill), the school must be in an area that Ms. Hill deemed safe. Therefore, notions of safety were a prerequisite in considering what schools were open to Eric.

Ms. Hill learned of Kane's focus on investments after someone from her close social network went to the school. Social networks commonly inform parents' decisions about schools (Bosetti, 2004), therefore, having a member of her social network at the small school was consequential in her decision to select the school. The endorsement of Kane by her social networks, along with the school's focus on investments and entrepreneurship, seemed to set the school apart from other schools.

Whereas narratives of safety and the idea that Black children should be exposed to certain kinds of knowledge are salient in Ms. Hill's experiences with finding a school for Eric, Mrs. Harrison's narratives were shaped by her desire for an academically and socially balanced life for her 6th-grade daughter, Imani Harrison. The Harrison family was the only case in which the child attended a private school. Ms. Harrison sent Imani to Plurilingue, a predominantly White and affluent school that serves grades Pre-K-12 and focuses on second and third language acquisition. Courses, including mathematics, are mainly taught in French.

Ms. Harrison was unemployed during part of this study, and she worried that she would not be able to afford to continue to send her daughter to Plurilingue. Imani attended Plurilingue on a scholarship that she had to reapply for every year. Scholarship monies were not a guarantee for Imani, so Ms. Harrison's worries were renewed each year.

During this 2016-2017 school year, issues of race and racism had become salient for Imani at Plurilingue. Imani was called "Harembe," a racial insult meant to liken her to a famous gorilla of the same name, by a White peer. In another incident, a swastika was drawn on the wall of one of the school's bathrooms. It is common for Black students at predominantly White institutions to experience racism (Allen, 1992; Feagin, Vera, & Imani, 2014; Rankin & Reason, 2005), although the studies tend to focus on students at colleges and universities. At the elementary school level, Amanda Lewis (2001) similarly found that students of color in a predominantly White school experienced the process of racial othering amidst claims of equality and colorblindness from school personnel. As in Lewis's (2001) study, here too, school personnel were slow to respond and minimized the racial incidents—a source of frustration for the Harrisons. As patrons of predominantly non-White schools, no other parent-child dyad reported racial incidents during the school year.

Finances and the overt racial overtones had Ms. Harrison exploring schooling options wherein Imani would have more interactions with Black children. Of importance to Ms. Harrison in her search for a school were academics and her daughter's social life.

I think the change [in schools] would be good. I really want her to have a true high school experience...Academics are very important to me, but I also want her to have a social life...If she could get into Westlake, that's free...It also depends upon whatever my financial situation is. I want her to see other schools. We visited [a different private high school] ...We're gonna take our time and visit more schools, and sort of weigh it out. I will really listen to her, because I want her to be happy. (Ms. Harrison, Spring 2017)

Ms. Harrison did not want to keep Imani at Plurilingue for high school, as she adamantly sought and expected to find a good school with an accompanying Black social experience. Up until this point, Ms. Harrison had been pressing the school to create a policy on racism to no avail.

Exposing Imani to peers who are Black as a way to push against the adverse experiences associated with being Black and attending a predominantly White school is another form of racial socialization. While Ms. Harrison discussed social events like homecoming and potentially joining organizations where Imani would have access to other Black children, she mentioned Westlake (a highly-ranked, public, selective enrollment high school) and a different private school (also a highly-ranked high school) intimating her desire for a high school that is academically sound. Ms. Harrison was chiefly concerned with finding a school by the time Imani entered high school.

Three of the families opted for neighborhood schools. Neighborhood schools are not inherently low-quality schools; however, a report by New Schools for Chicago (2017) found that on average Black children are more likely to attend a "failing" school (i.e., having a school quality rating of 3) when compared to their White and Latinx peers. Furthermore, these failing public schools are concentrated in communities of color in Chicago (Henricks, et al. 2017).

Given the status of Black education within CPS, two of the three parents (the Rogers and Smiths)

requested what I have termed *level-up* mathematics for their children. Level-up mathematics is an unofficial way of tracking students within or across math courses with the intent to provide individual students with an advanced curriculum. An example of level-up mathematics is having students attend math courses one or more grade levels above their current grade. Students' official report cards would not indicate their coursework was advanced or in any way different from students who were completing the standard course offerings. Said another way, a child in 6th-grade would attend a 7th-grade math course while receiving credit for 6th-grade math in the official records.

From Mrs. Rogers, I learned that level-up mathematics was a boon that some parents of high achieving students at her school requested of teachers. In the case of the Rogers family, Mrs. Rogers was a teacher at the neighborhood school where her daughter, Joy Rogers, attended 6th-grade. Mrs. Rogers not only advocated for Joy's participation in level-up math coursework, but for other children, as well. Joy attended math classes above her grade level because Mrs. Rogers used her teaching position to gain access to what amounted to gifted programming for her daughter and other students.

Delaina: Did you have to propose the [level-up math and reading program]? Who did you propose it to? Tell me about that process.

Mrs. Rogers: Actually, it started in Kindergarten. In Kindergarten, the skills you have to know ABC's, you have to identify lower class letters and all those numbers. Joy and another kid had just surpassed that, and I was like okay, there is no reason to sit in your Kindergarten class when they be going to first grade and learn how to read some more in the difficult texts. So, then it started with level-up reading first. We had collaborative teachers, so it was a conversation between their classroom teachers as well as the upper-grade teacher to let them know "hey this is what we are thinking would be great, what are your thoughts? Is it feasible for you? Is it manageable?"

Delaina: When did you start the level-up math?

Mrs. Rogers: Level-up math started in second grade for Joy?

Joy Rogers: Yeah, no that was third.

Mrs. Rogers: Level-up math started in third grade. So, she was always high in math...with the math content, it really was. I could just give her whatever I wanted to one time and then [she] was like let me practice it two-three times and [she] got it. (Mrs. Rogers, Fall 2016)

As a teacher, Mrs. Rogers was able to maneuver Joy's access to level-up math (and reading) with relative ease through an appeal to colleagues. This is one example of how an insider to CPS can negotiate school practices to the benefit of her child. Neighborhood schools are often thought to provide low-quality curriculum, especially in low-income and predominantly Black neighborhoods, but level-up mathematics provided Mrs. Rogers and Ms. Smith with a platform upon which they could place demands on schools for high-quality curriculum. These two parents' successful requests speak to a level of agency in their children's math education that is difficult for some Black parents to achieve (see Diamond & Gomez, 2004).

Both level-up math students were doing advanced work with the goal of sharpening their skills in preparation for access to selective enrollment high schools. As neighborhoods are divided into socioeconomic tiers from which selective enrollment schools determine admissions, CPS students essentially compete with other students in their income bracket for coveted seats in selective enrollment schools. I presume, engaging in level-up mathematics is a way for some parents to do "as much as they can, through whatever means they can, to secure greater educational opportunities for their own children" (Walters, 2007). Here, the advantages are gaining access to high-level math and increasing the chances of admission to a selective enrollment school.

The Rogers family and the Smith family learned, however, that the usefulness of a level-up approach to math coursework has a time limit. The neighborhood schools typically did not have curriculum available beyond 8th-grade, therefore in 8th-grade, leveling up became a challenge

for students who were once its beneficiaries. By mid-year, Joy was sitting in on 8th-grade math as a 6th-grader, and it was not surprising that Mrs. Rogers shared that she would be seeking to place Joy at an academic center for 7th-grade. Since Joy wanted a career in STEM (as an astronomer), they chose Forest Hill Academic Center because of its focus on math and science.

Mrs. Rogers: So, we went to the Forest Hill's open house. Essentially, what they told us was, so, first she has to test to get in, which she should very well do. Right now, with CPS, they have the tiered system. So, it's based on three things: so, your grades—she has straight A's, so that's three hundred easy points she earns; then your test scores, which is based upon your percentiles from MAP scores—she's ninety-nine percentile for math, which gives her the automatic... [seventy what is that...one fifty; then reading, she's at seventy percentile, which is why she's like two seventy-nine for her percentiles for MAP. So that puts her at five seventy-nine. To get into the academic center, you got [to have] like six thirty-eight.

Delaina: Okay so you're like "Joy, you should be good!"

Mrs. Rogers: I just need you to [*laughs*] don't go in there and bomb [the admissions exam] [*laughs*]. That's it. That's all you gotta do. Just *don't bomb it*. You'll be fine. (Mrs. Rogers, Winter 2017)

Both the level-up curriculum and the eventual move to Forest Hill (Joy did indeed gain admission to the academic center) were wrapped in Mrs. Rogers's desire to provide Joy with the best opportunity for education. Their journey highlights how parents provide support for math development in ways that are dynamic — parents assess and reassess what support is needed and how to provide it.

The traditional neighborhood school worked for Mrs. Rogers and Joy for a time, but the decision to apply to an academic center was linked to their desire for advanced math and science curriculum and the inability of the neighborhood school to continue to meet those needs. Mrs. Rogers was able to maneuver schools in a way that the time constraints of leveling up did not have a negative impact on her daughter's mathematics learning. The Smiths', however, had a different experience. Ms. Smith believed the math teacher would be able to make the necessary

adjustments to accommodate advanced students. It was some time before the teacher adjusted her teaching methods, and this did not come without some pressure from Ms. Smith to maximize 8th-grade math to their advantage. The parents' ability to navigate the school system was partially a function of their differing connections to CPS. For example, Mrs. Rogers's access to cultural capital and her insider knowledge of CPS allowed her to maneuver CPS. This meant that as an incoming 7th-grader, Joy Rogers was all set to for high school. She would not have to take part in the high school application process in 8th-grade; she had essentially completed the process early. Following the city's template for applying to high school in 8th grade meant that the Smith's experienced some conflict in their efforts to provide Michelle (Smith) with level-up math curriculum beyond 8th-grade-course offerings. I detail the Smiths' journey in the next chapter.

Overall, the parents in this study chose (or were in the process of choosing) to send their children to schools based on their academic values and the values they wanted to be reified in raising Black children. Their goals were to provide their children access to good schools, high-quality math curriculum, and schooling experiences that were beneficial for Black children. Facing barriers like unemployment and/or underemployment, complicated school enrollment policies, and low-quality math curriculum, parents made decisions that would place their children in the best possible environment for math development. The parents who were educators were most adept at navigating CPS structures and policies to their advantage. Compared to the other parents, they experienced fewer setbacks (e.g., misunderstanding the procedure for applying to a selective enrollment school), and if they did experience a rare setback, it was to a lesser degree (e.g., level-up privileges are revoked for one class period because of misbehavior).

Promoting the Knowledge, Skills, and Identities for Math Success

He's an only child. He is a Black child. I can't blame him for not being somebody if I didn't do my part...But as a parent, I feel like that's my responsibility, to make sure you have been given the tools, you're given that energy, you're given that love, you're given that platform to be what you need to [be], [to be] what you want to be. (Ms. Hill, Fall 2017)

Each of the narratives provided by the parents in this study could be summed by the quote above. This group of parents believed part of their role as parents was to provide their children with the *tools* for math success. Tools are the knowledge, skills, and identities necessary to practice math at high levels. With respect to tools as knowledge and skills, Table IX provides a general overview of the support practices for math learning in which parents and members of their social networks engaged.² Apart from three categories (i.e., providing flashcards, opportunities for academic recognition in church or another forum, and providing incentives for math grades), in which the parents from the Hill, Spencer, and Harrison families did not take part, the parents reported that they participated in all other activities. For the most part, parents and extended family networks were performing support practices in ways that overlapped and were not mutually exclusive. For example, a parent and a grandparent could both provide math games. With the Harrisons, however, there seemed to be a complementary approach in which the extended networks were providing support in areas where Ms. Harrison was not. For example, Ms. Harrison only provided opportunities for her daughter to use her math skills in daily life.

² For the sake of simplicity, I have collapsed support given from anyone other than the focal parent (e.g., sibling, extended family, friend, etc.) and have listed them as "Network."

TABLE IX: PROFILES OF FAMILY SUPPORT PRACTICES³

	Hill		Spencer		Smith		Rogers		James		Harrison	
	Parent	Network	Parent	Network	Parent	Network	Parent	Network	Parent	Network	Parent	Network
Provide math games	X	X	X	-	X	X	X	X	X	X	-	X
Provide flashcards	-	-	X	-	X	X	X	X	X	X	-	-
Provide incentives for math grades	X	-	X	-	X	X	X	X	X	X	-	-
Purchase math workbooks	X	X	X	-	X	-	X	X	X	X	-	X
Provide opportunities to use math skills in daily life	X	X	X	X	X	-	X	X	X	X	X	-
Teach/review math concepts or strategies	X	X	X	X	X	X	X	X	X	X	-	X

³ This data was compiled from the behavior checklist completed by parents. Initially parents were instructed to complete a checklist every month. In practice, however, they completed the checklist during the interviews at my prompting with an eye towards the kinds of actions in which they typically engage. Therefore, the checklist data is a snapshot of parents support practices at three particular points in the study.

Teach child money management	X	X	X	X	X	X	X	X	X	X	X	-
Discuss math development with teacher	X	-	X	-	X	-	X	X	X	X	X	-
Play boardgames or card games	X	-	X	X	X	X	X	X	X	X	-	X
Enroll child in activities that use math	X	-	X	-	X	-	X	X	X	X	X	-
Provide extra practice with math	X	X	X	-	-	X	X	X	X	X	X	-
Provide opportunities for academic recognition at church or in another forum	-	X	-	-	X	-	X	X	X	X	X	-
Provide online access for math work or math games	X	X	X	X	X	-	X	X	X	X	X	-

With respect to members of the families' social networks, the Smith family is the only family for which I had access to a member of their social network who provided math support. Justin Smith is Michelle's older brother, who is away at College. His absence has added a degree of difficulty for when Michelle needs help with math homework. They work around his absence by sharing pictures of math problems and, at times, using functions on their phones that enable video chatting.

Delaina: Tell me about the last time you called Justin.

Michelle Smith: Today. *[Laughter]*

Delaina: Today. Okay. About math?

Michelle Smith: *[Laughter]* Oh. That was this week. It was Wednesday or Thursday because [the teacher] had gave certain kids a separate assignment. It was three questions *[inaudible 0:11:24]*. I was like, "How would I go about solving this?" I just was like, "Justin." He was like, "Send me the picture." Then I sent it to him. He was like, "Oh, okay. What you first have to do is get rid of the x value. Then you have to take the inverse of this." I was like, "Oh, okay." (Michelle Smith, 13 y/o, Fall 2016)

Michelle relays what seems to be an easy fix to their dilemma of physical distance. Technology has enabled Michelle and Justin to maintain certain aspects of his supportive math roles. In Chapter five, I detail Justin's math support for Michelle.

With their children situated in particular school settings, parents provided supplemental instruction. I use the term supplemental instruction to signify a support practice that occurs separately from in-school math and intends to deepen, remediate, or address perceived gaps in mathematical competencies. For example, tutoring and providing access to math programs are each a platform in which supplemental instruction takes place; the parent may or may not be the person primarily responsible for the act of instructing.

In all six cases, parents sought out some form of supplemental math instruction. However, the forms varied from one parent to another (see Table X). All parents reported tutoring (i.e.,

professional tutoring programs, informal tutoring by parents or someone in their social networks), enrolling the child in summer programs that focused on STEM, and online math programs. The parents differ in their facilitation of participation in math programs after school (utilized by Ms. Smith) and use of math worksheets to inform math learning (utilized by Ms. Hill, Mrs. Spencer, and Mr. James).

TABLE X: SUPPLEMENTAL INSTRUCTION

	Hill	Spencer	Smith	Rogers	James	Harrison
Tutoring (Informal and Formal)	X	X	X	X	X	X
Math Worksheets	X	X			X	
Summer Math Programs	X	X	X	X	X	X
After-school Programs			X			
Online Math Programs	X	X	X	X	X	X

Parents assumed the responsibility for ensuring their child developed certain mathematics competencies (e.g., Algebra, money management, etc.). Mrs. Rogers shared her thoughts in the following excerpt.

Because in and of itself, teachers can only do so much, so as a parent I'm like that's my job to make sure that my kid gets where they need her to be. So, you tell me what she is struggling with, I'm gonna make sure we teach her, or I teach [her]. (Mrs. Rogers, Fall 2016)

From this excerpt, Mrs. Rogers expected that teachers would not be able to teach her daughter, Joy, all she needed to know about certain math concepts. In anticipation of this, Mrs. Rogers expected to work with her daughter on content in which she is struggling. This could be a

particularly difficult task for parents who may not have a firm grasp of the material and the ways it is taught, or who do not have positive math identities.

In another example, Ms. Harrison shared her thoughts regarding her responsibility to intervene in math learning. “I want Imani to take as much math and advanced math that is available, especially at school. And what’s not at school, I will find her a place to take it” (Ms. Harrison, 1st parent interview, November 1, 2016).

Ms. Harrison’s case is brought into sharper focus when considering the contexts of her daughter’s schooling in French. With Imani taking “French Math,” Ms. Harrison was concerned about Imani’s ability to transition to “U.S. Math,” should she need to transfer Imani to a public school, or when she is ready to attend college. In interviews with Ms. Harrison and Imani, they explained that French math differs from U.S. math in its notation (e.g., 100 000 versus 100,000, respectively), procedures, and sequence of content (e.g., emphasis on Geometry in 6th-grade versus arithmetic operations, ratios, etc., respectively). This informed Ms. Harrison’s decision to seek additional math instruction for Imani. Ms. Harrison enrolled Imani in a supplemental course called “American Math” at school and eventually got a math tutor for her. Ms. Harrison explained further:

Ms. Harrison: Because her entire school day is in French, English sort of falls by the wayside. Because they don’t know how to develop that program, I think. They don’t know how to develop that program, and they’re not as concerned with it because “We’re a French school,” but what they don’t understand, is if I wanted to move her to an “American school,” there is definitely some deficits.

Delaina: So, this is a school she can attend throughout high school?

Ms. Harrison: To high school.

Delaina: Are you concerned at all for college?

Ms. Harrison: Yes, that does concern me, but I just [Delaina: But she speaks French] [laughs] Right. And she will speak four languages by the time she gets ready to go to college. But I gotta get a tutor. I gotta get a tutor. To help her with those things and I don’t have a problem with that. So ...

Delaina: How would you find a tutor?

Ms. Harrison: There's a place not too far from my house that's called, [Tutoring]. It's expensive, but you get results. So, I think that's where she'll be until I can't afford it anymore. (Ms. Harrison, Fall 2016)

Ms. Harrison and Mrs. Rogers are examples of how the parents in the study did not solely rely on the schools for their child's math development. Assessing their child's math needs and taking stock of their resources (i.e., "I can teach her." or "I gotta get a tutor.") was but one step in determining the most appropriate intervention for their child.

Regarding the promotion of positive math identities, some parents (particularly Ms. Hill and Ms. Harrison) were hopeful that facilitating a certain kind of environment would lead to a healthy math identity. Research suggests that identities are a function of interpersonal relationships and are co-constructed (Cooper, Behrens, & Trinh, 2009; Goffman, 1978; McLean & Mansfield, 2011; Martin, 2007). In this context, African American parents convey messages to students that help shape their mathematics identity (English-Clarke, Slaughter-Defoe, & Martin, 2012). Here, the data supports parents as socializing agents for mathematics identity development (Martin, 2000). For example, Ms. Hill shares her beliefs about how providing certain kinds of experiences for her son should influence how he feels about math. To demonstrate this, I return to Ms. Hill's quote at the top of this section.

Delaina: So why do you think he likes math?

Ms. Hill: Because I made him [*laughs*]. I made him! That's why it is what it is.

Delaina: Do you think you do anything differently from other African American parents?

Ms. Hill: He's an only child. He is a Black child. I can't blame him for not being somebody if I didn't do my part...But as a parent, I feel like that's my responsibility, to make sure you have been given the tools, you're given that energy, you're given that love, you're given that platform to be what you need to [be], [to be] what you want to be. (Ms. Hill, Fall 2016)

Ms. Hill's asserts that her son's feelings about math, as well as his ability to do well in it, were partly her responsibilities. She also highlights that her son "is a Black child." Her emphasis on race speaks to her belief that race and mathematics are related. She suggests that for Black children, it is particularly important for parents to provide "the tools," "energy," "love," and "platform" for them to be successful in life. In essence, a parent should enhance opportunities for their child, not curtail them. In truth, the data show that Eric's (Ms. Hill's son) math identity was precarious. In our first interview, he professed to like math, but by the second interview several months later, his feelings had changed as a result of some struggles he perceived in learning the content in math class.

Eric Hill: I do not like math, but—

Delaina: What don't you like about it?

Eric Hill: Everything really. Some things in math you have to really, really think, and I hate doing that. I really hate.

Delaina: Hate thinking?

Eric Hill: No, I don't hate thinking. When I don't really know it that good, I just get frustrated really easily. (Eric Hill, 11 y/o, Spring 2017)

At this point in the study, Eric did not have a healthy math identity—he did not like math. I still, however, consider him a successful math student because he was consistently scoring Bs in his math class. His unhealthy math identity did not hinder him from performing well. This example of Ms. Hill and Eric speaks to the autonomy of children as individuals who have thoughts, preferences, and experiences that may, at times, run counter to or align with their parents' goals. It also speaks to the idea that math success is a negotiation for adolescents that is navigated across time and space (Jackson, 2007; Travis & Leech, 2013) and is related to math identity. Although this study defines success as liking math or believing that one is good at math, success

for Eric is linked to his conception of math competence (i.e. “I don’t really know it that good, I just get frustrated...”) and his conception of math success may even change at some point.

Even though Ms. Hill wanted him to feel good about the subject, she was not his only source of math socialization. As Martin’s (2000) multilevel framework displays, children are embedded within systems that can have a differential impact on their identities and socialization—parents are but one piece that informs math identity development and socialization.

In the vignette below, Ms. Harrison discusses how her daughter Imani’s success in math has made her vigilant about how she speaks about math around Imani. Ms. Harrison had a “math anxiety” that she did not want to impart to Imani.

Since having my daughter and seeing the things that she is capable of doing; She took chemistry this summer, and the teacher said, “Although she hasn’t had algebra, I showed her how to do it, and she was keeping up with the eighth graders. I don’t think your school is challenging her enough in math because if she can grasp this in the three weeks we are together, your school needs to be doing more.” So, it has opened me up, just seeing what she’s able to do in math and how it’s easy for her. She doesn’t have anxiety about it. It’s made me more open to the possibilities of what she can do—what her interests, as a career, what they may be. And then for me, not putting my math anxiety off on her. So, it just made me aware of when I’m talking about math, and I’m around her, she knows I don’t like math, but I’m more aware. I would never want to have the conversation that we just had about math, in front of her because even though she feels good about math, I don’t want her to think “Oh, I’m just like my mom” [or] “I’m at the point now where it’s too hard. I have math anxiety.” I don’t even want her to language that. (Ms. Harrison, Fall 2016)

Laced in Ms. Harrison’s concerns about the potential negative impact her own math identity could have on Imani, was the belief that having a positive math identity is linked to students’ ability to persist in math and develop skills. She saw Imani’s math identity as vital to Imani’s opportunities for higher-level math (“I don’t want her to think I’m at the point now where it’s too hard.”) and in her career decisions.

For other parents, math performance was an indicator to them that a child had a positive math identity. One example of this is Mrs. Rogers.

Delaina: Does [Joy] like math?

Mrs. Rogers: Yeah, she's a whiz!

Delaina: Why do you think she likes it?

Mrs. Rogers: Because it just comes easy to her. (Mrs. Rogers, Fall 2016)

Motivation to Persist and Achieve Math Success

The third form of support invoked by parents is the motivation of their children's persistence and achievement of high levels of success in math. In general, Black parents taking on the role of motivator is a phenomenon found in education research (Cousins & Mickelson, 2011); parents' role as motivator appears in math education research, as well (McGee & Spencer, 2015).

Evidence suggests that when it comes to learning math, motivator is one of the most impactful roles parents can play (Cai, 2003; Cai, Moyer, & Wang, 1999; Stevenson, et al. 1990), even more so than directly assisting with math learning (e.g., informal tutoring or helping with homework). At times, parents' acts of motivation were to convey the importance of math, relay expectations, and/or provide messages of encouragement to persist in math. Every parent in this study did one or more of these things. Although I primarily provide examples of each kind of motivation in isolation, motivational messages could, at times, overlap.

To convey the importance of math, all the parents made the case to their children that math is a worthwhile endeavor and/or is linked to future opportunities. For example, Mr. James, a father of 4, discussed how, when the time comes for his 5th-grade son, Michael James, to apply to high school, he will let Michael have the final decision on which school he would attend. Michael liked to play basketball and aspired to be a professional basketball player.

So, I'm almost positive he'll be looking for a school that has some good sports programs, that's going to give him the best opportunity to get to the next level. And then with school, whatever school he choose, I just want to make sure he could get some proper education. It's not all about [sports]. I talk to him about that now, "It's not all about this basketball [or]

football [thing]. You gonna' need to learn how to read and do math and all of those along with it.” (Mr. James, Winter 2016)

Mr. James was a volunteer basketball and football coach at his son’s school. From his narratives, it was clear that he supported Michael’s desire to play basketball professionally. However, Mr. James promoted the idea that Michael should hone his basketball skills in addition to learning math, as both would be needed.

According to Michelle Smith, Ms. Smith’s daughter, her mother would speak to the possibilities available to those who obtain math skills. Discussing what would happen if she missed an assignment, Michelle mimics her mother’s characteristic “lectures,” saying:

"This is your future. You need to be prepared for your future. If you don't do your work, you will be a hoodlum. You will not get out of the hood. I'm trying to raise a doctor here." Hope she heard that part. [*Michelle raises her voice to be overheard by Ms. Smith in the kitchen.*] "I'm trying to raise a doctor here!" (Michelle Smith, 13 y/o, Fall 2016)

From Michelle’s perspective, Ms. Smith undoubtedly outlined the stakes and where she could expect to spend her life if she were not careful. As noted by McGee and Spencer (2015), African American parents may use “struggle as a reminder to be vigilant and determined in their effort to maintain academic success” (p. 485).

With children whose aspirations include careers like astronomer (Joy Rogers), architect (Eric Hill), and forensic pathologist (Imani Harrison), these parents motivated those aspirations by conveying the importance of math and encouraging perseverance in math. Ms. Hill provides an example of a parent encouraging persistence in math. Although Eric Hill had a B-average or higher in math, he did not like math. To explain his dislike of math, he stated, “I just get frustrated really easily” (Eric Hill, 2nd child interview, April 11, 2017). Ms. Hill, however, uses his career aspirations of architecture to motivate his perseverance:

I think with him and architecture, he’s, “I want to be an architect.” Then when he discovered, “Well, I don’t really like math, so architecture’s math.” I said, “Don’t worry about that. Worry about the part of it that you like, and then we will build on the other stuff.” You think

everybody out here knows how to do everything? No *[laughter]*. That's what you got these programs and stuff for. Don't worry about that. Know the basics...focus on what it is that you want to do. I noticed from a young age he took a liking to Legos, so we just kept pushing it, encouraging it, and now, he was in a robotics competition not too long ago with [the university]. (Ms. Hill, Spring 2017)

Ms. Hill used Eric's desire and passion for architecture to inspire him to continue with math. She let him know that he was not alone. Ms. Hill encouraged him to persevere in building on his math knowledge and skills. She sought to offer comfort and her support (e.g., "We will build on the other stuff.") on his journey toward a career in architecture. In that, she also gave him a goal—"know the basics,"—a mission seemingly easy to attain.

All the parents, except Mrs. Spencer, reported speaking about math to their children as a vital component of future occupational success using the potential career to motivate math learning. Motivation by relaying expectations is more easily understood in relation to a breach in a parent's expectations. For example, Mrs. Spencer was unhappy with her daughter's low-B grade in math. Mrs. Spencer described her frustration that Nia (Spencer) would not take extra measures to increase her grade:

Mrs. Spencer: Nia's motivation is just lax at times.

Delaina: When you say "lax" what do you mean?

Mrs. Spencer: I really don't know if it's just me being too hard, but I just feel like she's just satisfied with 'whatever [grade] I get is just what I get.' And I know if she pushes herself, she can get more. She's just satisfied with the mediocrity and I don't like that. Don't want to stay for extra office hours, you know? Not really trying to do anything extra to boost those skills and it's reflecting in her grades. (Mrs. Spencer, Winter 2017)

Mrs. Spencer initially had reservations as to whether her expectations of Nia were "too hard." She perceived Nia to be placated with the grades that she was earning. However, Mrs. Spencer was not contented with "mediocre" grades. She shares the actions she perceived would improve Nia's math grade that Nia fails to do. By clarifying the actions that Nia fails to take, Mrs. Spencer

effectively identifies her expectations for Nia’s behavior toward success. By the end of the year, Nia improved her math grade after overhearing a conversation between her mother and math teacher about what Nia could do to increase her grade.⁴ After hearing this, Nia decided to heed the admonitions of her mother and teacher to start asking questions in class, to be more attentive, and stay after school for extra help. Her grade went from a low B to a high B.

Mrs. Spencer was not the only parent to motivate by conveying expectations or setting goals for math learning. Mrs. Rogers set goals for her daughter, Joy, regarding online math programs. Joy could only proceed to the next online math module when 100% accuracy was achieved on the current module. Ms. Smith had expectations that homework was always to be completed and turned into the teacher, no excuses.

In each case, the kind of motivation parents offered was informed by their perceptions of their child’s needs. When parents perceived their children to be struggling or uncertain of their way, parents encouraged them to persist. When parents perceived the need for corrective action or when they sought to “challenge” their children, they set expectations for their child’s behaviors.

Parents’ Knowledge of Common Core and Related Support Practices

During interviews with parents, it was immediately clear there was a bifurcation between the CPS educators (i.e., Mrs. Rogers and Mrs. Spencer) and the non-educator parents (i.e., Ms. Smith, Mr. James, and Ms. Hill) or lay-parents, when it came to their knowledge of Common Core. As educators, Mrs. Spencer and Mrs. Rogers were more knowledgeable about Common Core and its impact on the classroom. With a child in a private school that was less affected by

⁴ Nia Spencer’s decision to improve her grade is, in part, linked to her conceptions of mathematics success and identity. I will discuss this further in chapter 5.

the CCSS, the Harrisons are the only parent-child dyad for whom discussions of Common Core were moot. Therefore, the Harrisons are excluded from these analyses.

Excluding Mrs. Spencer and Mrs. Rogers, when asked about Common Core's influence in their child's math curriculum at school, the parents were at a loss to name its impact on school mathematics and their lives. Instead, Common Core seemed to be a fleeting memory—something they may have heard mentioned at the school's open house or in a letter, but has not, to their knowledge, manifested in the classroom. In fact, the district was said to have sent a letter to parents notifying them before implementing Common Core.

Delaina: Tell me what you know about common core and what you've seen as far as shifts?

Ms. Hill: I don't really know too much. I mean, I think I may have seen that on some handouts or something that they may have given us when we pick up the report cards, but I haven't really heard a whole, whole lot about it. (Ms. Hill, Fall 2016)

Delaina: What do you know about Common Core?

Mr. James: Isn't it an online math program for scholars?

Delaina: There may be an online component, but it's what they've called a restructuring of math standards.

Mr. James: It's not like IXL?

Delaina: I don't know what that is.

Mr. James: It's a math program. It's what we use in our school for our children. It develops in all areas of math, depending on their grade level.

Delaina: So, like the PARCC test, it's supposed to be aligned with Common Core.

Mr. James: Okay gotcha. Yeah, you're right.

Delaina: Have you received any letters from the school saying, "we're doing this thing with Common Core?"

Mr. James: No. No. (Mr. James, Fall 2016)

Ms. Smith was the only lay-parent to claim to know anything about Common Core.

Delaina: What do you know about Common Core?

Ms. Smith: That they teach the same—Common Core is basically that. It’s almost self-explanatory. They teach the same curriculum, for every grade—the same level, the same time, at every school. ...If you go to any CPS school, whatever grade that child is in, all CPS schools are supposed to be teaching that same curriculum—that nobody’s supposed to sway from...So, basically, they’re all supposed to be teaching the same thing. No, no. If that was the case, my child would be a part of a program where she was in one grade or on one roster, doing another grade work. Because if she’s in sixth grade, she’s supposed to be learning sixth-grade work. That’s Common Core—[if] she’s in seventh grade, she’s supposed to be learning seventh-grade [work]. That wasn’t the case. (Ms. Smith, Fall 2016)

The standards for her meant that children across the city should be learning the same thing.

However, she recognizes inconsistencies between what she sees as the purpose of Common Core (i.e., the sameness of curriculum across schools for each grade level) and her experiences (i.e., her daughter has had access to curriculum above her grade level). Ms. Smith’s understanding of Common Core is erroneously grounded in the belief that it is a curriculum that has a set pace across CPS, rather than a set of learning standards from which curriculum is based or otherwise aligned. Missing is the understanding that the learning standards describe the knowledge and skills children should have at certain stages of their education. The curriculum, a teacher’s instructional moves, coursework, homework, and assessments should all be firmly grounded within specific learning standards.

As an educator, Mrs. Spencer’s description of Common Core is more robust; “So, they are standards that are nationally based. They are intended to be more rigorous than Illinois standards” (Mrs. Spencer, 1st parent interview, October 22, 2018). Mrs. Spencer was the only parent with a child (Nia Spencer) in a selective enrollment school; her experience differed

somewhat from the other parents. Her narrative intimates the idea that students' experiences with Common Core may differ along the lines of school type; that is, students at neighborhood schools and students at selective enrollment schools may have qualitatively different experiences with Common Core.

Delaina: Have you seen any influence of Common Core in [Nia's] algebra?

Mrs. Spencer: Yeah. So, the shifts of word problems, working them out multi-step, multi-level problems are definitely included. I think that's more [so] because of the [academic center's math] program—how it's designed itself... It's designed around Common Core and, in theory, to be more challenging. So, I don't think they've done anything special. I think they have just followed the curriculum. I think they just followed the standards. As opposed to the traditional [neighborhood school], like [the neighborhood school where I teach], we're just selecting textbooks and at the point of purchasing some textbook did not integrate Common Core, but that's where we are. But with their program, they have to remain competitive. They had to have [the curriculum] aligned to Common Core... because if the material is not created to Common Core, you probably are just getting the Illinois standards, which are really, kind of like...whew... outdated and most of our [neighborhood] schools—a good number of them—have outdated resources. Unfortunately.

Delaina: So, with the resources that her school has, does it look like –

Mrs. Spencer: They update it because they have to keep status quo and because we too pay for materials, so they keep replenishing—we as parents. So, that's the different thing. They get revenue from parents to keep their things subsidized. (Mrs. Spencer, Winter 2017)

After initially claiming that differences in her daughter's math coursework were attributable to Common Core directly, Mrs. Spencer refined her position. According to Mrs. Spencer, the math program at the academic center is better resourced and offers curriculum aligned to Common Core more than typical neighborhood schools. Parents at the academic center pay a premium on materials, so the curriculum remains reformist, and presumably, the students have a competitive advantage over most students in CPS. Her narrative as an educator dictates that fidelity to Common Core in purchases of curricular materials is unequally realized across schools in CPS. From this, I surmise that it may not be mandatory for all schools to have Common Core-aligned

materials, or that there is an oversight in this area at the district level. Nevertheless, she suggested that to remain competitive (i.e. “keep the status quo”), the academic center “had to have the curriculum aligned to Common Core,” thereby introducing the corollary notion that it is not a necessity, nor an expectation, for curriculum at neighborhood schools to be aligned with Common Core.

When it came to supporting math learning, Mrs. Spencer did not report a change in her support as a result of the implementation of Common Core. Instead, she attributed changes in the intensity of her support to the transfer from one school to another; that is, attending a more rigorous program at a selective enrollment school was the impetus for increased home support. Mrs. Rogers, however, was the only parent to make a connection between her math support and Common Core.

Delaina: Have you ever thought that something was missing from her math class and decided, “I’m going to do this—?”

Mrs. Rogers: Yeah. They only teach so much of the content within a school year. So, I’ve enriched her through Khan Academy, that’s a free [online] program...So we started [the program] when she was in third grade. So essentially, I just put in third-grade math and [modules] just popped up, and she would just start working in a block of content that was Common Core related. So, she would master that content move, onto something else, master that content, move onto something else. (Mrs. Rogers, Fall 2016)

Mrs. Rogers began enrichment activities to ensure her child would not miss certain math content. CPS began the transition from the Illinois State Standards to CCSS in 2011-2012, with full implementation slated for 2014-2015. Given that Mrs. Rogers’s daughter, Joy was a 6th-grader during the study, Mrs. Rogers started Khan Academy with Joy in 2013-2014 when Joy was in 3rd grade. This is one year before CPS was slated for full implementation across the district. If we believe the assertion that CCSS was an improvement from the previous Illinois State Standards, Mrs. Rogers’ timing suggests that utilizing Khan Academy was not incidental. Mrs. Rogers’s

status as an educator is salient, as her support of enrichment activities aligned to Common Core came before its complete implementation across the district and was likely a result of insider knowledge of CPS policies and practices.

Thus far, the transition to and implementation of CCSS seemed to cause little disruption to the Spencer and Rogers's families. However, where does this leave the parents and families without insider connections to CPS and who know little of Common Core? What is their relationship to Common Core? Sharing her observations of the transition to Common Core at her school, Mrs. Rogers addresses how the district engaged parents around Common Core:

Delaina: When [your school was transitioning [to Common Core], was there any plan to notify parents around what to expect? What kinds of things did they send out [to parents]?

Mrs. Rogers: The district issued a parent letter, as well as they also sent out a school letter, essentially telling parents how they could practice doing the PARCC test.

Delaina: Do you think the letter was impactful?

Mrs. Rogers: No. It wasn't, because I was like, you could have saved your paper [laughs]. Cause it was like you're asking parents to do a lot, and of course I do because I am really invested in my kids' education... (Mrs. Rogers, Fall 2016)

According to Mrs. Rogers, the letter sent to every parent within CPS did little in providing real support options for the predominantly African American parents at the school where she works. I attempted to track down the letter from CPS notifying parents of the change from Illinois State Standards to Common Core to get a firsthand account of the information provided to parents and the actions required of parents, but I was unsuccessful. Nevertheless, the one-time letter to parents represents a continuation, at least at the district level, of treating parents as marginal agents in reform math efforts (Peressini, 1996, 1998a), generally, and within the era of Common Core, specifically. The African American families in this study, especially those who are outsiders to CPS, occupy a precarious position, given that (1) African American students are

overrepresented in neighborhood schools where the curriculum may not be fully aligned to CCSS-M, (2) according to the parents, there no on-going initiatives currently exist in the schools or the district to scaffold CPS parents into Common Core, and (3) African American parents, especially those who are low-income, tend not to be the audience reformers envision when they speak to and about parents.

Although unfamiliar with Common Core, I assumed lay-parents would be more familiar with the accompanying Common Core-aligned standardized test—PARCC. From Mrs. Rogers’s account, the district letter also provided information on how to prepare for the PARCC test. However, as I examined the narratives from the parents and children, I noticed that they seemed to mention the NWEA MAP (often referred to by participants as either NWEA or MAP) more so than the PARCC test. I believe this is because CPS had not replaced NWEA with PARCC as the official standardized test. Both exams were administered; PARCC, however, was not administered as a high-stakes exam. Instead, NWEA remained the test that was linked to eligibility and selection for elementary and high school programs with minimum academic requirements. Because NWEA testing was tied to real consequences, parents and students often utilized NWEA test scores as a measure of math performance. Michelle Smith (daughter of Ms. Smith) explains how a part of the process for applying to high schools starts with a different kind of letter from the district.

Delaina: What letter is this?

Michelle Smith: It's a letter that they give you [of] the schools you can apply to. Not the actual [school]. No. It's just like, "Oh, you can apply to magnets, IB school. You can apply to Selective Enrollment". I can apply to all of them...

Delaina: How do they determine where you can apply?

Michelle Smith: Test scores. Your NWEA and then your PARCC. They don't exactly take PARCC for anything anymore, but they take your NWEA. My NWEA

scores were pretty good. I got this. For reading, I got the highest in the school. Then for math, I got the third highest. (Michelle Smith, 13 y/o, Fall 2016)

Michelle's account that the high school application process excludes the use of PARCC is correct (CPS, 2018). The seemingly low-stakes approach to the PARCC test could have, in some way, undermined Common Core's salience to parents. In fact, parents could opt their child out of taking the exam via a written request to the school. According to narratives from Ms. Hill and Mrs. Rogers, PARCC seemed to be strongly encouraged at their schools. Both parents reported some pressure from schools to allow their children to take the exam, but both opted out of the exam for their children.

Delaina: Has he taken the PARCC?

Ms. Hill: No, I don't allow him to take that. I think that's the one that's optional. He does take the NWEA cause that's what he has to have to go to the next grade. But any standardized test, I'm one of those opt-out parents.

Delaina: The PARCC is aligned with the Common Core.

Ms. Hill: So now that I know, then I'll let him take it [laughs]...But see the way that they broke it down to us [by the school] was, "well the kids don't have to take it, but we want them to take it because it provides this for the school." What? I need to make sure this does not count against him if it's something that he doesn't do well on...But if you telling me that he doesn't have to do it, then I think that's what most parents [would choose]. My child don't have to do it, why would I make him do it? Because really, he would be getting anxiety when these tests are coming around, and I didn't like that. (Ms. Hill, Fall 2016)

Ms. Hill (and the other parents) did not necessarily need to monitor PARCC scores since educational opportunities were not linked to the scores. Furthermore, because over-testing was a concern for Ms. Hill, she felt her child need not take the exam at all. The utility of PARCC was in its usefulness as a tool for professional educators to access students' learning needs (Chicago Public Schools, 2017).

Learning standards set the parameters for what is taught in schools, while standardized tests assess students' learning based on the given learning standards for that grade level (Darling-Hammond & Wise, 1985). Given that the two are linked, the parents often discussed Common Core along with PARCC and NWEA. Apart from testing, however, the lay-parents could not see the influence of Common Core in the math classroom or in their children's homework. Therefore, the lay-parents generally did not report support practices or changes in support that arose from the new learning standards. It may be that there was no significant change in the math curriculum for parents to note. It may be that any changes that parents registered with math coursework were erroneously associated with other programs. Nevertheless, it remains clear that parents, in general, were unaware of how Common Core impacted what their children were doing in math classrooms and that the one-time efforts by the district to engage parents around Common Core were insufficient, thus leaving parents at a disadvantage in shaping their support practices around the new standards.

Life Experiences and Math Identities: Distal and Proximal Math Support Practices

When further analyzing the families' narratives of support, what emerged were not only the roles and support practices in which parents engaged, but also patterns in the enactment of those practices. Parents' math support practices could take the form of *distal* or *proximal* support, and the analyses suggest that support practices can change across contexts and given their child's overall adolescent development. In some situations, a parent was better positioned to provide distal math support (e.g., motivation or monitoring grades), while in others, s/he could provide proximal math support (e.g., direct engagement with math work). Distal and proximal support practices categorize parents' actions, rather than parents themselves, who act within the contexts of the situation. I do not suggest, however, that one type of support practice is superior to

another. I also do not claim that distal and proximal support practices capture every kind of math support and the context of that support among African American parents. I do posit that distal and proximal practices characterize how and when parents facilitate math learning. The small number of cases from which these practices emerged does not generalize to every African American parent, and future research should consider how these practices shift across contexts. Below, I discuss distal and proximal math support practices among these African American parents as being informed by the math identities of the parents and the situational demands they and their children negotiated⁵. I present the two types of support practices separately, however there may be occasion for parents to move more fluidly between the two. The characterization of parental support practices as either proximal or distal allows for the description of parents' behaviors with the goal of understanding why supportive behaviors manifest in certain forms. The benefit lies in their ability to describe and explain parental support rather than privilege certain kinds of behaviors.

Proximal parental support practices are actions in which parents, themselves, initiate or take part in a math learning activity. They are meant to refine, remediate, or teach math skills. At times, the children were disgruntled at what they perceived to be intense oversight or unnecessary practice at math. Among other things, these practices include tutoring, reviewing homework, and giving impromptu math lessons. For example, Mrs. Rogers describes a shopping experience where she discusses money management with her daughter in a real-world context:

So, we went to Kohl's on Sunday, and she wanted this little Columbia jacket. Now Columbia's, they not cheap. So, she was like "Well mom, I have one hundred dollars [at home], and this jacket is forty dollars. So, okay, I'll just pay you back the forty [dollars for] my portion." I said, "Okay, well what about coupons?" She was like "Well, we'll just see when we get to the register." So, I was like "Okay, well whatever [the price] is, you gon' have to calculate before

⁵ All support practices reported within this study can be categorized as either distal or proximal, however I discuss the concepts separately to highlight the relationship of distal and proximal supports to parents' life experiences and math identities.

because if you don't calculate it before, I'm gonna get all this money. So, the lady scanned it, and it was like [another] thirty percent off, well it was an eighty-dollar jacket that went down to forty [percent off]. So, then another thirty percent off. "Oh Joy, now thirty percent off, so what is [the price]? She was like [pauses for 2 seconds to mimic Joy calculating the price], I was like "Too slow. She already showed you [on the register screen], so now I still gotta get that money." [laughs] And then I ended up having Kohl's cash which was another forty dollars off the entire purchase. I said "The total entire purchase right now, Joy is sixty-four dollars with your jacket and my shirt. She's about to take forty dollars off." So, she's like "Oh, that's twenty-four dollars." I said, "Oh okay, you keeping some money now." The lady scanned something else, so then it ended up being the shirt I bought was eight dollars, and her jacket was nine dollars and thirty-five cents. I was like "Joy, you got this quick little turn-up girl." I said "This is how money works, you stack the coupons, you stack some percentages off, on another percentage off, dollars off, bam! (Mrs. Rogers, Winter 2017)

In this example, Mrs. Rogers initiates the math activity—calculating the price based on a percentage off, and within a certain timeframe. Driving the impromptu proximal support was Mrs. Rogers goal for Joy to learn about saving money (e.g. "This is how money works, you stack the coupons, you stack some percentages off..."). Throughout the activity Mrs. Rogers encourages Joy to calculate her total given all discounts so that she would not owe the \$40 price. Joy initially is unsuccessful in her first attempt to calculate the price with discounts, but Mrs. Rogers allows her another opportunity to be successful with gentle scaffolding (e.g. I said "The total entire purchase right now, Joy is sixty-four dollars with your jacket and my shirt. She's about to take forty dollars off." So, she's like "Oh, that's twenty-four dollars." I said, "Oh okay, you keeping some money now.")). It is likely that, as a 6th-grader in 8th-grade level-up math instruction at school, Joy has learned about percentages in school math. Mrs. Rogers, therefore, is providing the opportunity for Joy to refine her skills using a real-world setting and application. This example of proximal support showcases Mrs. Rogers's initiation of direct actions designed to nurture certain math skills and values.

In another example of a proximal support practice, Ms. Hill describes her approach to helping her son learn fractions.

Delaina: Are there any other ways that you stress math at home that you haven't told

me about?

Ms. Hill: Right now, Eric's on fractions. And he doesn't care for fractions, I can tell. So, like I said, I'm going to be sweet [to him]. My birthday was just last week. So, I had a cake, and he was doing his homework, and he's like "Can I take a break?" And I'm like "Sure, fine. You want some cake?" "Yeah, I want some cake!" "So now there's six slices of this cake [laughs] we take away two, what fraction is that?" And he's just like "Ma you serious?" "Yes!" [laughs] (Ms. Hill, Fall 2016)

Here the goal for Ms. Hill was to have Eric learn fractions through the use of incentives because of his negative math identity. Ms. Hill initiates the math activity of identifying fractions by seizing upon an opportunity to reify the concept using a mundane application. The activity was linked to Eric's formal math learning in that the intent was to support Eric by engaging concepts in his homework. In her decision to engage the proximal support, Ms. Hill considers Eric's attitude toward fractions (i.e. "he doesn't care for fractions") and his recent dislike of math in general and elects to engage him in a "sweet" way so that he would be motivated to identify the fraction. It may have been the reason why she chose cake—something that he enjoys—as the mode through which she engaged him with fractions.

Distal parental support practices were manifested in behaviors designed to monitor the child's math learning from a reasonable distance. The goal was usually for parents to ensure the child was making progress toward certain math goals. If parents perceived the progress toward those goals was unsatisfactory, they implemented an intervention to address the issue. For instance, parents monitored grades, assessed test scores, and took away privileges, or hired a tutor when progress on goals (e.g., math grade, no missing math assignments, etc.) were perceived as unsatisfactory or stunted in some way. Interventions could be distal or proximal.

Below, I provide two examples of distal parental support practices, one of which showcases an intervention from a parent. In the first example, Ms. Harrison explains why she monitors her

daughter Imani's scores on certain standardized tests. Recall that Imani attends a French-speaking private school where she is enrolled in a French math class. In addition to the regular French math class, she is enrolled in an American math course that meets once a week.

Delaina: Are you pleased with these [French and American] math teachers?

Ms. Harrison: I don't know. I can't really tell in French [math]. She hasn't really had the [American math] teacher enough for me to know. I don't know. Sometimes I feel like I'm just flying by the seat of my pants. I can't even tell you really what's going on in school because it's not in English. I have to trust [that] when she takes the American tests—like the Explorer Test; she's taking the ACT— if I see good progress or it's a good score, then I can say, "Okay. Something's working." That's how I've been able to tell. (Ms. Harrison, Spring 2017)

Driving Ms. Harrison's distal support practice (e.g. monitoring test scores) is the need to ensure that Imani is making "good progress" on standardized tests that center US methods and procedures. Ms. Harrison does not speak French, nor is she familiar with French math procedures, and her ability to engage support practices beyond the distal are inhibited. Therefore, this aspect of her support practices is distal. Even though Ms. Harrison experiences a language barrier in assessing the math Imani is doing, the mother-daughter pair work together at times to translate her math homework problem to terms Ms. Harrison can understand. They have experienced varying degrees of success with this practice, but when Ms. Harrison can "figure it out," she engages Imani through proximal support.

The second example comes from Mr. James, who explains that his son's 5th grade math scores have been dropping; Michael James's math grade went from a B to a C in the previous quarter and his dad was not happy about the new lower math grade. After talking with the teacher, Mr. James learned that Michael was not turning in his homework. Mr. James started helping Michael with his math homework, but this did not solve the problem—Michael was still not turning in the homework. In the fourth quarter, Michael's progress report shows that he has a

D in math. At a loss for why Michael is still not turning in homework, in the following excerpt, Mr. James explains how he has responded to his son's decreasing math scores.

Mr. James: [Michael] would do his homework, but he wasn't turning his homework into his teacher. I didn't understand that.

Delaina: [Michael] said that [you and his mom] took away his privileges for the game [console].

Mr. James: Yeah, he can't play no video games. He does not have TV in his room right now. Well, he has a TV, but no cable.

Delaina: Which is almost like no TV.

Mr. James: Yeah, so it's no TV. Technically can't watch anything.

Delaina: How long is that going to last?

Mr. James: We'll see when his grades come out. If his grades are up to par, then he'll be fine. (Mr. James, Spring 2017)

Mr. James shares more of his thoughts at my prompting:

Delaina: What's happening between [the time Michael completes his homework and when he should be turning it in]?"

Mr. James: Yeah, that's what I asked him. I know what it is with Michael. Michael is so engulfed in all of the things going on around him, so here's what happens with Michael. It's time to put the homework in. Something starts going on, because there's always something going' on in [the school], talking. He gets involved in that, and now he just set his paper down God knows where. (Mr. James, Spring 2017).

The goal for Mr. James's overall parental support was to address the issue of Michael not turning in his homework so that his math grade would not be negatively impacted. Initially, Mr. James engaged in proximal support to address the homework dilemma by helping Michael with his math homework, however, his continued observance of his son's grades caused him to provide additional support. The impetus for Mr. James's actions—Michael's poor showing in math on his progress report—carries the implication that Michael did not meet certain expectations for his math grades. The distal support intervention—taking away a privilege—did not necessitate Mr.

James's direct engagement in a mathematics activity. When Mr. James realized that helping Michael with his homework was not addressing the underlying issue of not turning in his math homework, he changed tactics. The change in support is linked to the Mr. James's perception that Michael needs more support to become independent and responsible for his math work. In that way Mr. James's distal support was developmental nature designed to promote independence or autonomy (Soenens et al., 2007). Mr. James is clear that if Michael's grades increase, then the ban on video games will be lifted for him. For this to happen, Michael will need to demonstrate an increase in his ability to be responsible for his math homework. This example highlights that distal and proximal support may at times inform one another or be used in tandem while also supporting the developmental needs of the child.

Overall, all the parents engaged in distal support, chiefly, through the practice of monitoring grades and, to a lesser extent, test scores. Mrs. Spencer, Mrs. Rogers, Mr. James, and Ms. Hill regularly engaged in proximal support through several mathematics activities, like helping with homework, prepping for tests, impromptu math lessons to refine skills, and money management. However, Ms. Smith was the only parent who did not report any instances of proximal support. Ms. Smith explains that "If I felt that there was an issue with her, as far as the work, then, of course, I think I would be more attentive. But I think Michelle can do it" (Ms. Smith, Spring 2017). Ms. Smith believes Michelle to be a competent math student who does not need much in the way of direct math help from her mother.

It is difficult to say how parents' math identities influenced the kinds of support they provided. However, Ms. Harrison and Ms. Smith were the only parents who had negative relationships with math. As someone who started formal schooling at 9 years old, Ms. Smith, struggled with math in high school and spoke in no uncertain terms about her experiences with

math “I did not like math. It had nothing to do with math. I didn’t like *authority* growing up. I was totally a different kid.” Likewise, Ms. Harrison did not have fond recollections of her mathematics education:

I don’t like math. I have math anxiety. When I came into college freshman year, I took a math class. Every test, I got a D, so I dropped the class, and I didn’t take math again until my last year of college, and I took a class with a whole bunch of math dummies. He actually said, “You all are here because you don’t like math” ...And so [I] took the class and got a C out of it, but I have math anxiety. I can count my money. I can do basic math. I can do fractions, and I can do all that stuff, but if you want to get real deep into it and having to memorize formulas, forget it. (Ms. Harrison, Fall 2016)

Even though Ms. Harrison experienced trouble learning advanced math as a student, she carved out space where she believed she was competent— “basic math.” During our second interview, Ms. Harrison shared that Imani tends to lose points on her math exams because of “small mistakes.” Ms. Harrison says, “Sometimes I’m thinking, we need to go over the math facts” (Ms. Harrison, Winter 2016). As a potential solution, Ms. Harrison proposes proximal support—reviewing math facts with Imani. Driving that proximal support would be Ms. Harrison’s goal to make sure Imani can demonstrate competence with foundational math skills. Ms. Harrison’s perception of her competency in math was confined to basic math facts. This lends credence to the idea that a parent’s math identity and support practices are related. However, in other areas, particularly relating to the French language aspect of Imani’s math coursework, Ms. Harrison admits that Imani will need to seek immediate support elsewhere:

Delaina: Who does Imani talk to if she has a math question?

Ms. Harrison: [*scoffs*] She [*pause*] will [*pause*] talk to her friends, or she’ll ask her teacher. Or if she’s working on a math program, she’ll read the explanation cause it’s in French. She sometimes has a hard time translating it to me. If I can look at it and see what she’s doing, but they do like division. Math is different. Division is like [*writes down an example of a French division problem*] that or something like that for her. I’m like, “What? That ain’t right. What you doing?” And so, they do math differently. (Ms. Harrison, Fall 2016)

Unlike other parents in the study, Ms. Harrison had the added layer of language and differences in U.S. and French math procedures to maneuver. The difficulty in negotiating the language barrier and differences in procedures adds context to the earlier vignette, wherein Ms. Harrison describes her use of standardized tests (e.g., the Explorer Test and the ACT) to monitor her daughter's progress. At a minimum, these vignettes seem to indicate parents' engagement in distal or proximal support practices are linked to their math identities, how they perceive their child's math identity toward any given math concept, their goals, and the contexts of the situation.

The above examples of distal and proximal support practices do the work of decentering parental involvement practices that are highly visible to schools. Thusly, it centers on the behaviors of parents and sets out to explain why parents engage in particular ways with math development. The goal is not to privilege either distal or proximal support behaviors, but to describe them. What these vignettes obfuscate is the messiness of parental support practices. I present somewhat neat examples that are a snapshot of some the factors parents negotiate as they engage in certain supportive behaviors. The neat presentation of distal and proximal support practices can hide the ways that parents' support is improvisational. That is because the larger educational system is not designed for African American parents; they must make their own ways using the tools and insights they have at hand. In as much as the examples are neat, they also feature dynamic and, at times, messy support. It is dynamic when parents assess and reassess what support is needed, like when Mr. James switched from proximal support to distal support to promote autonomy with his son so that he would remember to turn in homework. It is messy when considering all of the factors that play a role in a parents' decision to support in one way or another, like when Ms. Harrison decides to give distal support to her daughter given that

Ms. Harrison does not speak French, she also wants her daughter to be proficient in “American” math, her daughter makes “simple” mistakes during math exams, her daughter participates in a number of extracurricular activities (i.e., drama club, gymnastics, swimming, and lacrosse), the advice from her daughter’s teacher, the fact that her daughter was called “Harembe” by a classmate, she has to cook and clean for her daughter and their extended family, must job hunt in between acting gigs, and is primarily responsible for her daughter since her ex-husband lives in a different state. Though this list of factors is not exhaustive, it indicates that there is often a lot for parents to act on, consciously or otherwise and that their support may not be carefully mapped out but may be improvised given the contextual issues that have primacy. Future research should seek to, not only describe parents’ support practices but also look for shifts that accompany the ebb and flow of life that is how parents engage given the math identities at play, situational contexts, demands on parents, goals, math contents, adolescent developmental issues, improvised support, etc.

Discussion

The purpose of this chapter is to explore how six African American parents conceive of their roles in promoting their child’s math development, determine the extent to which Common Core impacted parents’ support practices, and assess how parents’ math identities and experiences influence their parental support practices. I find the parents primarily take on three agency-oriented roles: (1) Being good stewards through selecting schools and programs to ensure access to advanced mathematics for their children (McGee & Spencer, 2015; Terry & McGee, 2012); (2) Providing the knowledge, skills, and identities for successful math development (Berry, 2008; Martin, 2006; Remillard & Jackson, 2006); and (3) Motivating their children to persist and achieve math success (McGee & Spencer, 2015).

This study adds to discussions of mathematics support practices of African American parents by documenting how parents negotiate the prevailing opportunity structures of their school systems, both for selecting schools and for seeking quality mathematics learning experiences once a school has been selected. Parents select schools within the context of school choice policies in Chicago. With struggling schools more commonly located in communities of color, African American parents must engage in school choice to select non-neighborhood schools for their children. This point is bolstered by the fact that at various points in the year-long study, each of the three parents with a child in a neighborhood school either sought admission to a selective enrollment school or considered leaving their neighborhood school later.

In the process of selecting a school, those parents with knowledge of CPS systems and policies were able to convert that knowledge into educational opportunities for their children. When compared to a lay-parent (Ms. Smith), those parents who are professional educators (Mrs. Spencer and Mrs. Rogers) were able to navigate school choice more easily. These findings are an instantiation of Reay's (2004) claim that policy initiatives with a parent component make visible the role of cultural capital in advancing students' educational opportunities.

Aside from selective enrollment schools, CPS does not offer what amounts to gifted programs within neighborhood schools. There are three cases where the focal child was enrolled in a neighborhood school (i.e., Rogers, Smith, and James). In two of those cases (i.e., Rogers and Smith), the parents made arrangements with schools to allow their children access to high-level mathematics through level-up math. Such advocacy among these parents is not unique (Brantlinger, 2003). The literature documents how African American parents act as advocates to broker access to perceived advanced mathematics (Berry, 2008; Jackson, 2009; Martin, 2000, 2006; McGee & Spencer, 2015; Terry & McGee, 2012). This study extends the previous

literature by (1) analyzing the role of district and school policy (i.e., school choice initiatives and selective enrollment schools) on parents' math support, (2) pivoting from parental involvement to describe parental math support and to characterizing their support in terms of distal and proximal practices, and (3) considering the ways African American parents' math support is influenced by social class.

The parents in this study engaged in an array of practices designed to increase students' math knowledge and skills and to facilitate a positive mathematics identity. They provided math games, purchased math workbooks, provided incentives for math grades, enrolled their child in math-related programs, and taught money management, among other things. The goal was for students to practice math at high levels. Parents and members of their extended social networks were implicated in providing math support. In the next chapter, I explore how a member of the Smith's family's network was utilized for math support.

In my assessment of how parents' support has changed in response to the adoption of CCSS in math in Illinois, I find lay-parents reported no change in their support behaviors. This is primarily because they did not know how Common Core influenced the students' math coursework. This may mean that parents are unknowingly undermining the goals of the standards in their support. In fact, only the parents who are professional educators could identify what Common Core was and the impact it has in the math classroom. It is possible that schools implement course materials that have different levels of fidelity to the standards; that is, selective enrollment schools may be in a better position to provide course materials that are fully aligned to Common Core than under-resourced neighborhood schools. Moreover, reports of a district letter about Common Core sent to parents without any word since speaks to the continued

practice of treating parents as marginal and unimportant agents in their children's math education (Peressini, 1996, 1998a).

It is well documented that parents bring an array of math knowledge and skills and math identities (Civil, 2001a; Civil, Diez-Palomar, Menendez-Gomez, & Acosta-Iriqui, 2008; Civil, Guevara, & Alleksaht-Snider, 2002; Maloney, et al., 2015; Martin, 2006) to math-related tasks with their children. The study findings support the assertion that parents' math identities influence their support-oriented behaviors and practices. By proposing the use of *distal* and *proximal* support practices as a way to think about the tensions between parents' math identities, parents' math knowledge, and the situational context of math support, we may gain insight into the ways in which parental support is dynamic and changes to meet the needs of the child. Whereas in one situation a parent may provide distal support, and in another, she may provide proximal support, the extent to which distal and proximal supports are available to a parent depends on the contexts (e.g., time, work responsibilities, knowledge of a specific math-related task, perception of the student's needs, etc.) and parents' own beliefs about their math competence.

The cross-case analyses in this study allowed for the identification of common themes among the six parent-child dyads and the exploration of important ways parents differed along those themes. The within-case analyses of the following chapter, however, shifts the focus onto two families and the process by which each parent enacts the themes.

In the next chapter, within-case analyses allowed for an in-depth exploration into the family life, parenting, and parental support for math within the Spencer and Smith families. By homing in on these two families, I demonstrate how the Spencer (upper-income) and Smith (low-income) parents' math support practices were mediated through social class.

CHAPTER 5 WITHIN-CASE ANALYSES: THE SPENCER AND SMITH FAMILIES SEEK ACCESS TO HIGH-LEVEL MATH

In this chapter, I take a deep dive into the lives of the Spencer and Smith families to foreground the context of parental support. I have chosen two families who differ in the kinds of capital they employ for math support, income, family structure, and the type of school attended by the focal child. Their cases are especially interesting because of the differences in the parents' approaches to mathematics education for their children. Mrs. Spencer is a veteran teacher in CPS and can use the language and culture of schools to demand quality education for her daughter. Ms. Smith, however, does not have formalized schooling beyond high school and uses her resources creatively to support her daughter's math and educational needs.

In particular, I address the support practices that Mrs. Spencer and Ms. Smith employ and assess how their daily lives influence their support of their child's math development. Four interrelated themes emerged from the analysis of the narratives of the Spencer and Smith cases. First, the mothers often make support decisions within class-laden contexts; that is, parents' supportive moves had foundations in class sensibilities and concerns. Therefore, I foreground issues of social class in their daily lives, in their schooling decisions, and in how they interact with teachers. Second, the parents employ various forms of capital (e.g., Yosso, 2005) to navigate school selection and access to high-level math programs. Third, parents' support practices were born of the mathematics (e.g., math identities, math-related concerns, math knowledge, issues with motivation) and situational (e.g., professional and personal obligations) contexts. Finally, social networks were critical agents in advancing the math knowledge of the child.

I begin by introducing the focal participants in each parent-child dyad and provide a sketch of their family life. I document their schooling choices along with the mathematics experiences of the focal children (Nia Spencer and Michelle Smith) and the parent support practices in each family over the course of the school year. Specifically, I document the resources these parents utilize in contributing to these students' mathematics success. To counter deficit thinking about African American parents, it is important to outline the resources they use toward math success (Yosso, 2005). More so than in the previous chapter, I introduce aspects of the young girls' development that (directly and indirectly) influence parents' support practices as the youths' identities, desires, aspirations, and expectations are being negotiated. I share issues of their development to further relate the humanity of these young girls and highlight the complexity and messiness of parental support practices.

The Spencer Family

Mrs. Spencer is the matriarch of the Spencer family. Mrs. Spencer is African American and was a 35-year-old mother of two children at the time of the study. The Spencer family is blended; Nia Spencer, the focal child, was 13 years old and was the child of a previous marriage. Mrs. Spencer is newly wed to Mr. Spencer (4 months). Together, they have a 3-year-old son named Adam.

Mrs. Spencer grew up in Chicago with her mom, stepdad, and sister. Her mom worked odd jobs, and her stepdad worked as a mechanic. Using her grandmother's address, Mrs. Spencer's mom would drive Mrs. Spencer and her sister 45 minutes away every day to seize the opportunity to go to a "good" school. Mrs. Spencer has a bachelor's degree in Business Management, two master's degrees in Education, and is a teacher and instruction coach in the district. Mr. Spencer also works in education as a biology teacher at a charter school. According

to Mrs. Spencer, her husband has plans to work in religious ministry full-time. At the time of the study, Mr. Spencer was completing coursework toward a postgraduate degree in psychology. His goals are to provide religious counsel to parishioners, with the benefit of a natural lens for a more holistic approach to ministry.

Nia is a petite and soft-spoken girl. She has many hobbies, including dancing and volleyball. Nia wants to be a plastic surgeon or a baker when she grows up. As an 8th-grader, she attended an academic center for 7th- and 8th-graders. I remind readers that as part of CPS, academic centers are accelerated programs housed within certain high schools, whereby students in the 7th- and 8th-grade can earn high school credits. Students are required to undergo admissions testing to qualify for the program, and once admitted to the program, they have a guaranteed spot in the high school, or they may choose to apply to any other high school of their choice. In Nia's case, she decided to apply to the academic center for 7th-grade after a friend described the benefits of the program to her.

Delaina: Why'd you [transfer schools]?

Nia Spencer: Because my friend was talking about how she wanted to test to get into better schools. The work at my old school, it was really, really easy for me. She was saying how it challenged us more, so I really wanted to go for that challenge. I told my mom about it. She put me in the test—to test, and then—

Delaina: You got in.

Nia Spencer: Yeah, I got in. (Nia Spencer, 13 y/o, Fall 2016)

Adolescence is a time of intense development for youth, marked by great change in several areas: biological development, cognitive development, and social development. Early adolescents (10-14 years) experience puberty, growth spurts, gains in weight and height, and hormonal changes (Meschke, Peter, Bartholomae, 2012). They are also developing a sense of independence, are more concerned with the perspectives of their peers, are engaging in rule and

limit testing, and their identities are being negotiated (Spano, 2004). Nia's initial interest in her new school is perhaps an indication of her adolescent development where peers' opinions gain more prominence than that of their parents. In Nia's case, the opinion of a peer featured prominently in her decision to apply for a new school.

Nia cites math as her favorite subject and reading as her least favorite subject in school. She describes herself as a role model to her peers because her friends come to her often for advice.

Family Life

I provide a brief description of the Spencer family's life in terms of finances, resources, and obligations. I include this information to not only provide a sense of daily life for the Spencer's, but also as a testament to the ways daily life can be and is colored by race; that is, what it looks like for this upper-middle-class African American family to navigate schools in the inner-city.

The Spencer family was among the 2.1% of African American households in Chicago who earn \$100,000 or more annually (Yerak, Shropshire, & Janssen, 2015). They owned their home on Chicago's Southside, had recently purchased a new midsize SUV, and took annual family vacations to places like Disney World. In addition to the mortgage, car note, and other household bills, Mrs. Spencer paid roughly \$10,000 per year to send Adam to daycare, and she paid approximately \$700 per year to have a school bus ferry Nia to and from school during the week. Mrs. Spencer was among the 10% of graduate students who had borrowed more than \$150,000 in student loans (Bidwell, 2014).

A taken-for-granted assumption is that Black people who achieve middle-class status live a life comparable to their White counterparts. Pattillo (1999) argues that Black middle-class families have less wealth (i.e., accumulated assets) than their White counterparts, marking their middle-class status as tenuous. For instance, Black wealth, like the Spencer's', centers home

equity and car ownership, while White wealth derives from the generational accumulation of financial assets (Oliver & Shapiro, 1997). When discussing her hopes for her daughter's educational and financial future, Mrs. Spencer recalls how having little to no financial support has affected her:

And I just fear—I owe that 175,00 dollars to student loans because I just had to fend for myself. No awareness. No anything. And it's really jammed my life up. I just don't want that for [Nia]. (Mrs. Spencer, Winter 2017)

If student loan debt was an ever-present burden on Mrs. Spencer, so too was the burden of being the one to whom extended family members look for an influx of cash, if an emergency arose. As the one who “made it,” Mrs. Spencer had the responsibility of financially caring for many of her mother's expenses. She described the stress of this responsibility:

I always carried my mom, as a burden, to try to—I felt like, man, we ain't never have this when I was little. So, some things—I pay her cell phone bill, but Mr. Spencer has taught me now that sometimes saying no is not always bad. So, I've been able to still support her in the ways that I can, but not to the level that I was [before]. I don't feel bad about it. (Mrs. Spencer, Winter 2017)

Mrs. Spencer's upper-middle-class lifestyle is accompanied by a sizable student loan debt and some financial responsibility for her mother, who is less well-off. The lack of intergenerational wealth in her life supports the notion that black upper-middle-class life is distinctly both middle-class and Black (Lacy, 2007), with far less flexibility and fewer avenues for expansion, as compared to White, middle-class life.

In addition to her financial responsibilities, time plays a role in how family life takes shape. Mrs. Spencer often shared that throughout the year how her life is overflowing with professional, personal, parental, and church responsibilities, with little room for any additional activities or rest. I did not anticipate how time for her emerged as a precious commodity. Whereas her weekdays are primarily dominated by work, her weekends are devoted to enrichment (e.g., museums) and other family-related activities (e.g., game night, birthday parties,) for her children.

During a Monday night interview at her home, we discussed a potential new role that she will take on as “First Lady,” should David become a pastor; she described the additional responsibility:

It’s demanding. It’s very demanding [...] For me, just supporting—my husband leaves here for church at like 10:30 in the morning on a Sunday and come home like 11:30 at night. Service is back, to back, to back. Like, yesterday I had so much work to do. I couldn’t get there [for] but one service and I know when he [becomes a pastor]-the expectation is for me to be there all day. I can’t just not be there. “Where the first lady?” “She just at home trying to clean.” “She’s just washing today.” So, the expectation and the level of commitment and sacrifice on my part and working a job! It’s just a lot [...] my responsibility just—in every dynamic, at work, at home [*exhales deeply*—it’s a lot [...] I’m so tired right now. I went to a service Friday. We had a tarrying service that started at 10pm. I ain’t get home until 3. I got in the bed at 3:30am. My mother-in-law was at the door at 8:30am the next morning to do some things at the house. I had to take Adam to a party [an hour away] that started at 11. I had to be a mother. Then when I got back, I went to sleep for a couple hours, and I had to get up and straighten up. That was my Saturday. My Sunday, [Mr. Spencer and I] went to breakfast because we didn’t get to see each other [all week] and then he left for church. I went to a 8 o’clock service pm. Didn’t get out until like 11. Got in the bed like Midnight. Woke up and went to work and now this [interview]. So tonight, soon as you leave, I’m sleeping. (Mrs. Spencer, Winter 2017)

I highlight this excerpt to demonstrate how certain responsibilities pull on her time, and this ultimately became an issue later when Mrs. Spencer negotiated the kinds of math support to offer Nia, given the demands on her time. Time has been shown to play a role in parental involvement and math achievement (Muller, 1995), although not with respect to the kinds of math support a parent provides.

While Mrs. Spencer seems to be operating at capacity, Nia is still adjusting to family life with her younger brother and stepdad. In the past couple of years, Nia experienced several changes in her family life. Nia had gone from a family of 2 with her mom, where she was an only child, to a blended family of 4. She described life in her family as fun.

Nia Spencer: My family is very funny. My mom is very funny. My step-dad is a comedian. Then we have my little brother, which is hard for me, because me and him don’t really agree.

Delaina: Right. Well, you've been the only one for a while, right?

Nia Spencer: Yeah, I had an older brother, but it wasn't on my mom's side.

Delaina: Right, but with your mom—I mean, your brother's two or—

Nia Spencer: Yeah. He's two.

Delaina: Two. Yeah. [Chuckles] Now you have to—

Nia Spencer: Get used to sharing.

Delaina: Mm-hmm. [Chuckles] With a baby, no less, right?

Nia Spencer: Yeah. [*Chuckles*] (Nia Spencer, 13 y/o, Fall 2016)

Because adolescence is a time where children are growing in their independence (Spano, 2004), not only can we expect that Nia's relationship with her mother to change in terms of her independence, but she is also negotiating her identity in the family in relation to the addition of a stepdad and a much younger sibling. All in all, Nia seemed to be doing well and adjusting to her family's new normal.

"My child has one opportunity."

Nia's day-to-day life seemed to be on par with what one would expect of a young teen. After her arrival home from school, she texts with friends until, rather conveniently, her mother arrives home from work. This was when she gets serious about completing homework.

Delaina: What time is it when you get home [from school]?

Nia Spencer: I get home about 5:15. Some days I'll get home at 4:45, depending on who's riding [the bus] in the afternoon. I get home, and then first, I eat. I'll be really hungry, because the lunch food is disgusting. Then I lay down. Then I'll remember that I have homework to do, so I get up, do my homework. I get sidetracked a lot. I'm a procrastinator. I get on my phone, text my friends, and stuff. That's when my mom comes home.

Delaina: What time is it around then?

Nia Spencer: She comes home about 6:00-ish, 5:45. Then that's when I really got to start doing my homework. I do my homework. She'll be like, "Do you need [me]"

to check it?" I'll be like, "Yeah, you might want to check it, just in case." (Nia Spencer, 13 y/o, Fall 2016)

Mrs. Spencer is very much involved in the daily goings-on when it comes to Nia and math. Both Mrs. Spencer and Nia described Mrs. Spencer's academic support style as demanding. In fact, Nia said it is "aggressive." I would describe her math support practices as a combination of proximal and distal behaviors. With her focus on day-to-day math learning, she is heavily involved in things like homework, checking grades online, making sure Nia is studying for tests, and teaching and reviewing content when necessary. As an educator, Mrs. Spencer's take on Nia's educational needs is colored by her professional expertise and her desires for Nia's future. Interested in how she approaches the delicate task of being a parent who is also an educator and instructional coach for other teachers, I ask how she balances her professional role and her professional relationships with Nia's teachers.

Delaina: Do you think your status as a teacher and instruction coach intimidated [the teacher] at all?

Mrs. Spencer: I never tell them because when I'm coming, I'm coming as that parent. I'm a hard parent though, so I feel like my child has one opportunity and you're not going to be that person to not give her what she needs. So, I come as a parent, but it's very hard to really balance what I know they should be doing to just being that parent. I never have a conversation with them about what I do. I never told them.

Delaina: Okay. So, you said, "you're a hard parent."

Mrs. Spencer: I am.

Delaina: Okay. Say more about that.

Mrs. Spencer: Because I come in and I dissect your lesson. I look at your environment. I ask you questions pertaining to your instruction, and I need for you to tell me or give me an action plan for my child. What she needs. What she did not get? What are you teaching? What are your plans? What were the misconceptions on the assessment? Do you have a strategy to fix that? Are you going to deliver that the same? These are the questions I'm coming into the parent conference asking, and my husband be like, girl shut up. And I feel like it's so important because Nia can be lazy. I think a lot of, especially in math, because it's a build-up on steps, a lot of what Nia does not get is because she rushes

through and she wants to be finished. That's what I feel like, but I do respect the teacher as the expert of the content. So, we can work together, I think would be better at helping the child. (Mrs. Spencer, Fall 2016)

Mrs. Spencer's answer sheds light on her style of math support. Part of the reason her approach to teachers is heavy-handed in nature was that she believes Nia has "one opportunity" to excel at math. With math acting as a gatekeeper (Atuahene & Russel, 2016; Bryk & Treisman, 2010; Lawler, 2005; Moses & Cobb, 2001; Stinson, 2004; Visher, Butcher, & Cerna, 2010) and with Black children being given limited access to the domain of math (Nasir & Hand, 2008; Wilhelm, Munter, & Jackson, 2017), the literature supports Mrs. Spencer's notion that each opportunity for access to high-level mathematics is precarious for Black children (Berry, Ellis, & Hughes, 2014; Berry, Thunder, McClain, 2011; Johnson & Kritsonis, 2006). Furthermore, Mrs. Spencer's professional training and experience provided the lens in which she assessed the adequacy of the math teacher's efforts. Lastly, Mrs. Spencer considered herself the expert on Nia and the teacher as the expert on the domain—working together, they could be great.

Near the end of the study, Mrs. Spencer questioned whether her persona as a demanding parent was still necessary, given her perceptions of Nia's math identity. What follows is a snapshot of Mrs. Spencer's support for mathematics and Nia's math success. Mrs. Spencer's support practices are grounded in her professional expertise, her own math identity, her perceptions of Nia's math identity, and her ability to utilize the members in her social network. Next, I discuss Mrs. Spencer's support strategy as a parent who, like other parents, wants to provide her daughter with the best chance at life.

Supporting Nia's Math Identity and Success

In the analysis below, I focus on Mrs. Spencer's support practices, as they relate to her perceptions of Nia's needs and mathematics identity. For reference, there are three important shifts and storylines in Nia's math trajectory: (1) pre-academic center where she coasted through

school with A's and little effort; (2) the 7th-grade transfer to the academic center and the first time around with Algebra 1; and (3) the re-do of Algebra 1 in 8th-grade. Nia is taking Algebra 1 to get high school credit for the course. To get credit, she must pass the Algebra exit exam at the end of the school year. Understanding these three arcs in Nia's storylines helps contextualize Mrs. Spencer's math support. These storylines represent crucial times in Nia's math development where her math identity was contested. From independent interviews with mother and daughter, Nia is reportedly an A-B math student. However, her math grades belie the contestation for high-levels of math knowledge and skills in 7th-grade and in the first half of her 8th-grade year. Nia eventually achieves a measure of success (i.e., a consistently high math performance) that plays a role in the negotiation of a positive math identity. This study began during the third arc of Nia's math story or the beginning of Nia's 8th-grade year.

As I describe in Chapter three, the 8th-grade year for CPS students is a key year, as it is a time when students apply to high schools of their choice. However, the pressure of the 8th-grade year was different for Nia. As a student of the academic center, she was guaranteed a spot in their corresponding high school program. The high school has the highest CPS SQR of 1+ and boasts that 83% of its graduating seniors enroll in college the following school year. Instead, it was the year where it would finally be decided whether she would get high school credit for Algebra 1—determining if her high school tenure would begin with Algebra 1 or Geometry. She first attempted the accelerated Algebra course in 7th-grade after her transfer to the academic center. The pace of study was an abrupt change for Nia, she elaborated:

With [the academic center], it's really hard to learn on the same pace as others. They go really, really fast. Once I started to get used to how fast the teachers go, then that's when [math] started to become easier for me. (Nia Spencer, 13 y/o, 1st child interview, December 5, 2016)

Using her prior academic achievement as a gauge, the Spencer's did not expect Nia's 7th-grade Algebra 1 experience to be marked by struggle. After assessing how Nia was responding socially and academically to the new school, Mrs. Spencer made the difficult decision to delay Algebra 1 until 8th-grade and placed Nia in pre-Algebra. Through her reflection on Nia's 7th-grade year, Mrs. Spencer describes the conditions that precipitated her decision to place Nia in pre-Algebra.

Mrs. Spencer: It was an accomplished year. She did good. Through sweat and tears and me. It was a rough year for us both, getting adjusted to the rigor and everything, but she was successful. I'm proud. The school she was at before—everything in her life had been super easy right—a hundred percent's, A, A, A, A, to the point where I was just like you're not being challenged. This is nothing. So, the first year was challenging for her because she went from a school with 200 kids to now this large building, that she didn't know anybody. And at first, she was crying every day because that social element of getting to know people. And then the workload. It was like her first experience of getting B's and C's on test

Delaina: Which must have been jarring?

Mrs. Spencer: Very stressful and I had to change my parenting in that.

Delaina: What were you doing before, versus now?

Mrs. Spencer: So, I think I created a situation for her to not accept her best as being okay. Because when she was not getting good grades, you know at first, she was really stressed out about it, very sad. And I'm like, "Man Nia, you doing good. It's okay", but she could not take that or handle that, and that was my fault. So, I had to reposition myself and my thinking to telling her it's okay if you don't get a A, you're in a program that's accelerated. Oh, prime example, because her test score and everything were so high, they put her in a freshman Algebra class [3-second pause, exhales] her math skills were good, but not up to par for that program, and so I was hollering at her every night and she didn't understand and it was just a lot of tension during homework. [laughs] Twelve, One O'clock...I mean homework all night. She just could not get it. So, I told her, after like two weeks, I said, "You know what, I got to take you out this class." She was a little like "I can do it." So, I emailed the people, took her out of the class, put her back in [pre-Algebra], she was successful in that, and I think that was one of the best things I could have did for her. If I made her stay in that class, it would have been awful. (Mrs. Spencer, Fall 2016)

The transition in 7th-grade to the academic center was hard for both mom and daughter. One of the salient features from Mrs. Spencer's retelling of the 7th -grade year was the emotionally laden context of the late-night homework sessions. Math is not a purely intellectual endeavor; it can elicit both positive and negative emotions in parents and children (Dettmers, Trautwein, Ludtke, Goetz, Frenzel, Pekrun, 2011; Else-Quest, Hyde, & Hejmadi, 2008).

Within this context, Mrs. Spencer outlined several supportive practices that she enacted to support Nia in the transition. Only one of the support practices was proximal support—helping with homework. All of the other forms of support were distal level supports—moving Nia to a new school, monitoring Nia's social life as a new student, encouraging Nia to accept her best as good enough, redefining success, assessing Nia's skill level and the skills required to succeed in Algebra, and switching Nia to Pre-Algebra. None of the distal supports, save assessing Nia's skill level, was contingent upon Mrs. Spencer's direct engagement with Nia in a math activity. I believe that one of the most important supports is Mrs. Spencer's reframing of math success in terms of effort, given the accelerated nature of the math program. Boaler and Staples (2008) propose that math socialization that centers effort, rather than ability, tends to promote persistence among students. Furthermore, students' perceptions of at-home support from parents (including emotional support) are linked to students' ability to persist in mathematics (Shukla, Tombari, Toland, & Danner, 2015) and possibly, their achievement (Ellington & Frederick, 2010).

Nia's 8th-grade year was not without its own set of challenges. Mom and daughter continued to experience tension around math homework; Nia's morale waned, she was not giving her best effort, and her math performance suffered. Whether Nia would get high school credit for Algebra 1, by the end of the study, was unclear. Mrs. Spencer's support, in terms of how she addressed

challenges, brings in sharp relief just how she supports Nia, and it highlights how math success can be a hard road where conventionally “smart” kids may have to persevere and work very hard to achieve their desired success.

Nia’s Journey of Math Success

African American parents have been shown to support their children’s development of a positive mathematics identity (English-Clark, 2011; English-Clark, Slaughter-Defoe, & Martin, 2012). Part of the challenge for Mrs. Spencer, as she sought to support Nia’s mathematics development, was the apparent shift in Nia’s math identity. Although math was her favorite subject at the beginning of the year, Nia no longer felt this way by the end of the study.

Delaina: Do you like math?

Nia Spencer: No.

Delaina: Why?

Nia Spencer: It’s just, I could never have a week with me feeling good. I could never have a week with me feeling like I’m doing good in math. It’s more of a two-day thing. Math, it’s like a, not enemy, but enemy, because I don’t be thinking that I can ever do good in math. I don’t like it.

Delaina: Have you always felt like that?

Nia Spencer: No.

Delaina: When did you start feeling like that?

Nia Spencer: I’m not gonna say that all of my dislikes for math started this year. I used to like math last year. I looked forward to doing math homework. Now, I do the homework. I don’t put my all in the homework like I used to. (Nia Spencer, 13 y/o, Spring 2017)

Nia’s perception that she was not able to perform well at a consistently high level impacted her math identity and subsequently impacted the level of effort she put into her work. Given how this study defines success (i.e., liking math or believing one is good at math), Nia did not feel

successful at math and is negotiating her relationship with math in her new school environment and across time. Her experience of having a math identity that is being made and remade across space and time is a normal part of adolescent development (Jackson 2007). As a parent, Mrs. Spencer is responding to her perceptions of Nia's math identity in real-time, making decisions that will influence Nia's identity development. In fact, Mrs. Spencer described Nia's recent disposition toward mathematics as "lax," and with Nia seemingly apathetic to her math work, Mrs. Spencer began to take on more responsibility. For example, in the following vignette, Mrs. Spencer was dissatisfied with Nia's grades and study habits, so she began to force Nia to study.

I really don't know if it's just me being too hard, but I just feel like she's just satisfied with 'whatever I get is just what I get.' And I know if she pushes herself, she can get more. She's just satisfied with the mediocrity and I don't like that. Don't want to stay for extra office hours, you know? Not really trying to do anything extra to boost those skills and it's reflecting in her grades. ... And then, when I was helping her and making her prepare for the final exam, she didn't know what she was doing. ... They had three study guides, but Nia wasn't really going through the study guides. So, this one particular night where we really got into a battle, I made her bring the study guide, and I went through the questions with her. She was struggling with—they were doing slope y-intercept, and she was struggling with finding the slope or writing the equation that was perpendicular to a given equation. I must have gave her the same problem ten times until she mastered it, so she would do one and I would come back and give her the same exact problem, same exact numbers, she couldn't do it. So, we went through that for two days to the point where she stopped talking to me. She got mad, and I feel like if I don't make her, she won't and then her grades would really slip. I don't know how I feel about that. [*Mrs. Spencer blows airs, frustrated.*] (Mrs. Spencer, Winter 2017)

Mrs. Spencer suggests that the reason why she is so hard in study sessions is because of Nia's lackadaisical attitude—in some ways, she is trying to save Nia from herself. Given what she believed Nia was capable of, Mrs. Spencer has certainly determined that Nia's apparent lack of effort was problematic and had led to a less than stellar performance in math. For sure, Mrs. Spencer was monitoring Nia's grades—distal support. She alluded to certain expectations for Nia, given her math performance of late; that she goes to the math teacher's office hours, do extra work to improve her skills and grades, and study for the final exam. When Mrs. Spencer's

expectations were not met, she intervened to help Nia study for the final exam—proximal level support. It is likely that Mrs. Spencer chose a proximal level intervention because it would allow her to have some measure of agency in Nia’s learning by providing a first-hand account of Nia’s progress. During the intervention, a rift grew between mother and daughter. Mrs. Spencer was left wondering if her methods were “too hard,” and if so, was she [Mrs. Spencer] okay with “mediocre” grades.

This event occurred midway through the 2016-2017 academic year, and as other 8th-grade families in the city were making decisions about high school, the Spencer’s were contemplating whether Nia could handle the collegiate track in high school at the academic center. Given the additional effort Mrs. Spencer was putting into Nia’s math work, Nia’s dispirited attitude toward math and the impact on their relationship, by the end of the year, Mrs. Spencer had to do a cost-benefit analysis to see if this would be the right move for the pair.

“Aggressive Help” and High Expectations

Mrs. Spencer’s considerations, collegiate track or not, highlight another aspect of the journey for Nia this year—Mrs. Spencer’s aggressiveness or expectations when it came to studying math. As I mentioned in Chapter four, proximal supports were not always well-received. The success of parents’ proximal support practices depends on how they are perceived by the child. Nia elaborated on how her mom’s help with studying affected her:

Delaina: If you were not doing well in school, would your mom help? If so, how would she help?

Nia Spencer: She would help, but it would be an aggressive help. [*Chuckles*] She’ll yell. Then later on, when she sees what I’m doing wrong and what I need help in, she’ll start to calm down and be like, “Okay.” She’ll take her deep breaths, like, [*takes a deep breath and exhales mimicking mom*] then she’ll be like, “This is this.” She’ll explain it to me as if she was a teacher.

Delaina: Okay. Do you think that helps, your mom having an educational background?

Nia Spencer: Yes...It helps, and it hurts. It hurts because it's like she expects a lot from me. That aggressiveness, it can trigger a sensitivity level for me. I'll start crying or something because I don't like when I'm yelled at. (Nia Spencer, 13 y/o, Fall 2016)

Perhaps the “aggressive help” compounded Nia’s sensibilities of not having a good week in math or perhaps this clash between mother and daughter is a characteristic of Nia’s growing desire for independence which is emblematic among adolescents (Spano, 2004). Whatever the case, Mrs. Spencer was concerned about the strain her help was having on their relationship. As Mrs. Spencer imagined how her supportive role should look as Nia enters high school, she was not willing to continue in her current path of “aggressive” help. Her goal for high school was for Nia to be independently successful without her intensive oversight. Mrs. Spencer explains:

So, I just went to a meeting at the school—a high school preparation meeting. And they are re-introducing a new collegiate capstone, where you take all college courses—well you take high school courses; AP courses—to get the college credit. And I had to sit in that chair and really think about would that be the best move for Nia [in terms of her academic independence]. Yes, she qualifies for it from her test scores and me working so hard 7th-8th-grade, but I’m afraid if she transitions into this special program, that she not going to have the self... not so much self-efficacy, the self-diligence to succeed or to be successful, as what I deem as being successful...So, I don’t know. I want her to go to the collegiate program, but if it’s going to be at the sake of us being angry and hollering and her crying, maybe that’s not as important. She has the capacity if she’s pushed—if I’m right there hammering. But transitioning into high school, some of that you just, you have to want it for yourself. (Mrs. Spencer, Winter 2017)

In this vignette, the choice for Mrs. Spencer is whether to put Nia in AP courses. The decision is contingent upon the following situational context: Nia’s current math identity, the level of support Mrs. Spencer must provide to ensure Nia is successful, according to her terms, and her goals of academic independence for Nia. Mrs. Spencer attributes Nia’s 7th- and 8th-grade math success to her own efforts; however, it seems as though, in the transition to high school, Mrs. Spencer will privilege her goals for Nia’s academic independence.

Despite her struggles, Nia saw her current math identity as temporary. By the end of the school year, she developed a plan to help maintain her success.

Delaina: Do you see this [i.e., dislike for math] being a new trend for you? Do you think it's something you could bounce back from next year?

Nia Spencer: Yeah. Next year, I can definitely bounce back from this, because I have new goals for next year.

Delaina: What are your new goals?

Nia Spencer: When I need help in any class, I'm gonna ask. When I know that I'm not understanding something, I'm gonna stay after school. I'm gonna do the homework and actually try to do the homework before asking someone to help me with it. I'm just gonna pay more attention. (Nia Spencer, 13 y/o, Spring 2017)

Nia believes her current relationship with math is changeable and that, through effort, she can achieve math success. Nia is taking ownership of her math learning. She outlines action items for high school math that she believes will lead to her success. The action items (or "goals") are all centered on what she can do to advance her math learning. She repeats a series of "I'm gonna" statements, showcasing how her plan for success is contingent upon her own efforts.

In taking ownership of her math learning, Nia did not wait until the new year to enact her goals. By the end of the school year, things seemed to be looking better for Nia. Mrs. Spencer noticed a difference in Nia's grades.

Mrs. Spencer: She shocked me this fourth quarter. She did outstanding! I kind of pulled back a little bit, because I had a lot going on, so I don't know.

Delaina: How'd she shock you? What'd she do?

Mrs. Spencer: Her grades were the best they've been, and then her independence of really tracking and contacting the teacher. She ended up with a 88 in algebra, 89 in English, 89 in biology, and the rest she got As. I'm just like, "All she needed was one more point," but I was just like, "whatever," because she did that on her own, and I was very happy to see that. Her final exams were good. She really shocked me...I don't know how her thinking has shifted in this whole thing. I know I shared with you before, she's so satisfied with just being, okay. I don't know.

Delaina: Maybe she's not.

Mrs. Spencer: Right, so maybe she's not now. (Mrs. Spencer, Spring 2017)

From Mrs. Spencer's perspective, it seemed that Nia was making headways into being more academically independent; that is, taking ownership of her math learning. It is interesting that this emergent sense of ownership for Nia occurred at a time when Mrs. Spencer said she "pulled back." Nia was able to maintain her math success during this time, and to Mrs. Spencer, this denoted a shift in Nia's thinking. Nia and I had a conversation about the changes she had made to increase her 4th quarter math grade.

Nia Spencer: Math, it's going good. I went from a 81 to a 88 now. I'm getting better.

Delaina: How'd you go from a 81 to 88?

Nia Spencer: It was report card pickup. My teacher told my mom how I wasn't asking a lot of questions and how I doze off. I made sure I was asking questions when I didn't understand anything. I was being attentive in class and listening to the teacher and staying for after school help.

Delaina: What made you make that turnaround?

Nia Spencer: It was more so me realizing what I'm doing wrong and how I'm not gonna be that successful with grades if I continued to stay on the path that I was on.
(Nia Spencer, 13 y/o, Spring 2017)

With Nia having overheard her teacher's feedback, she was able and willing to make concrete changes in her behavior to see higher grades. I believe her success in math in the last quarter provided the evidence and motivation for how she can see continued success in high school math.

Although she was able to redeem herself by maintaining her math success, it is unclear whether Nia will get high school credit for Algebra 1 via the conventional route of successfully completing the Algebra exit exam. Mrs. Spencer explains how she prepares Nia for the Algebra exit exam and what her plans are if she does not pass the exam:

Mrs. Spencer: I did make sure that Nia participated in every after-school tutoring session they had. She did that for about a month and a half. because they were getting ready to take the algebra exit exam.

Delaina: How did that go?

Mrs. Spencer: She took it. Nia said it was hard. She did not finish, which I got on her about. We don't get the results until the end of June, so I don't know.

Delaina: Either way, what's your plan if the algebra exit exam is the good results that you want, or if it's not the results you want?

Mrs. Spencer: Okay. The purpose of the algebra exam is to give them the high school credit going into their freshman year, so she could potentially start with honors geometry. If she passes the exam, she gets the high school credit. If she does not pass the exam, they have slated a summer program, where the parent pays \$150.00 where they can go over the material again, still get the credit, and go to freshman honors geometry. (Mrs. Spencer, Spring 2017)

Despite not knowing whether Nia would get high school credit for Algebra via the exit exam, Mrs. Spencer has a backup plan that includes an alternative route through CPS systems that would get Nia to the goal of starting high school with honors Geometry. This is one of the areas where Mrs. Spencer has an advantage—insider knowledge of CPS systems. Cultural capital is positively related to educational attainment (Sullivan, 2001), and certainly, Mrs. Spencer leans on social and cultural capital to benefit Nia's educational opportunities.

Mrs. Spencer's Well of Community Cultural Wealth

Yosso (2005) argues that when considering the resources of communities of color, a CRT lens is more appropriate than traditional Bourdieuean cultural capital theory since it is "narrowly defined by White, middle-class value and is more limited than wealth—one's accumulated assets and resources" (p. 77). Instead, community cultural wealth is based on the notion that people of color produce cultural wealth through at least 6 forms of capital: aspirational; navigational; social; linguistic; familial; and resistant capital. The capitals are not exhaustive nor mutually

exclusive. Although other forms of capital are present, there are two that were salient as Mrs. Spencer narrated her support of Nia's math learning: navigational and social capital.

Navigational capital refers to the skillful traversing of institutions, especially those institutions that can be hostile to students of color (Yosso, 2005). As a teacher and instructional coach, Mrs. Spencer has first-hand knowledge of the CPS system; she knows how classrooms and schools operate and uses this knowledge to leverage opportunities to maximize Nia's math learning. For example, she encouraged Nia to talk with her teachers after class to identify areas where she had misconceptions. She used her professional knowledge to determine whether the problems she noticed in Nia's understanding could be attributed to the efforts of the teacher or to Nia. Mrs. Spencer often expressed discontent with Nia's math teacher, who was new to the vocation:

Delaina: Tell me about one of the last times when you talked with [the math teacher], and you weren't "all that impressed."

Mrs. Spencer: Last year, cause that's her same teacher this year. I mean, it's like having a conversation with her, was me doing all the talking and her just agreeing. She was not aggressive enough, and I felt like as the math teacher, I should not as the parent be coming in making all the demands or input. If I'm coming in to speak to you, you need to have something prepared to tell me about my child's math skills. I had to pull teeth, like what is she missing? Is it the steps she not understanding? Is the computation that she does not get? It was always a difficult conversation in trying to really get the information from her that I needed to help support Nia. And I just felt like, you need a personality. Knowing content is one thing, but do you know how to deliver is something else. (Mrs. Spencer, Fall 2016)

It is clear from her portrayal of their interactions that Mrs. Spencer went into meetings with the goal of getting the information she needed to support Nia's math development.

Mrs. Spencer's well of resources also included support from two different groups of people. Social capital is defined as "networks of people and community resources" that provide "instrumental and emotional support to navigate society's institutions" (Yosso, 2005, p. 80). The

first group Mrs. Spencer utilized was a network of teacher-colleagues who also had children enrolled at the academic center. They provided helpful information regarding Nia's math coursework and teacher. Because of their collective discontent with the math teacher, this group banded together to support their children's math learning. The group support extended to discussions of their discontent with the math teacher, as well as the mathematics content:

Mrs. Spencer: Some of my teacher-colleagues' kids or ex-colleagues' kids go [to the academic center], so we talk on group message. So, we share stories, compare our problems, you know. Actually, I have three teacher-colleagues that go to school with Nia with the same teacher, and we all discuss.

Delaina: What types of things do ya'll talk about?

Mrs. Spencer: Her. [*Laughter*] Just like, 'what did such and such get on the test? What did [the teacher] say? Did she respond? What do you think about this homework? Did you all figure this out? What do we need to do?' So, we use each other to help our kids. because if it's something I don't understand, maybe she understands. (Mrs. Spencer, Fall 2016)

The second resource for social capital was Mrs. Spencer's husband, Mr. Spencer, who provided emotional support. Although Mrs. Spencer was dutifully and fiercely committed to her responsibilities (e.g., household chores, bills, work, and supporting the children's education), she often felt overwhelmed and anxious. With her life packed with family, professional, church and other responsibilities, Mr. Spencer promoted balance and encouraged Mrs. Spencer to relax and not worry as intensely about things such as Nia's math grades. Mrs. Spencer's work/life got particularly demanding during the 3rd and 4th quarter, and as a result, Mrs. Spencer did not provide as much proximal math support to Nia as she did in the first half of the school year. Mrs. Spencer explains her husband's impact during this time:

I don't know. I've been really working on my own anxiety and stress levels, because I'm a big worrier, [Mr. Spencer] says. One thing that he's really helped me with recently, "Just stop worrying about it." That has helped me tremendously. It's almost one of them things where it is what it is. Yeah, do what you can and don't worry about it... In really trying to just trust the process has really helped me out. I love my children, so I do find some type of reward in being a mother to them. That's gratifying to me sometimes, at

some levels. What has helped me the most is to be able to participate in her accomplishments. [And] when I was looking on [the online grading system], I lost track of what I'm doing – I'm a stalker! But just to see [her success], that gave me so much excitement, like, "You can relinquish some of your [anxiety]." (Mrs. Spencer, Spring 2017)

As Mrs. Spencer's proximal support was, in part, linked to her perception of Nia's math identity, it was a big step for Mrs. Spencer to relent aspects of her intensive support. Emblematic of the messiness of parental support practices, there were several intersecting issues at play as Mrs. Spencer conceded aspects of her characteristic proximal support practices. Nia was at a place developmentally where youth are becoming more independent of their parents (Spano, 2004). The uptick in Mrs. Spencer's work responsibilities coincided nicely with Nia's decision to extend more effort to her math work (as I described earlier). With her mother's focus squarely on work, Nia was able to demonstrate a degree of self-determination with respect to her math learning. Mr. Spencers's emotional support, in particular, gave Mrs. Spencer permission, so to speak, to allow Nia space and to focus on her work responsibilities. The collision of all these factors played a role in Mrs. Spencer's transition away from proximal math support during this time.

Case Summary

The supportive resources I describe above were affective in nature, as well as content-based, which allowed Mrs. Spencer to provide distal and proximal support to Nia's math learning. Mrs. Spencer occupied a unique position as a parent because of her professional experience as a teacher and instruction coach; her knowledge and the ability to navigate educational settings is not a resource common among lay parents. Next, I will provide a case analysis of the Smith family. The Smith matriarch primarily utilized distal support practices to advance her daughter's math development. Like the Spencer's, the Smith's family support is based on resources and perceptions of the focal child's math identity.

The Smith Family

Ms. Smith is the matriarch of the Smith family. Ms. Smith is a 45-year-old African American mother of four and a grandmother to three children under the age of 5. Ms. Smith has never been married and has three adult children: Natalie, 25 years old, Shaun, 22 years old, and Justin, 18 years old. Michelle Smith is Ms. Smith's fourth and youngest child at 13 years old. Ms. Smith is a service worker in the hospitality industry.

Ms. Smith grew up in a public housing project in Chicago. She describes a difficult childhood against a backdrop of violence, drugs, and domestic violence:

My mother was a victim of domestic violence...there were six of us [children] at the time. So, we all ended up, because of the domestic violence and the extremity of the last incident with my mother and her then-boyfriend, it landed my mother in the hospital for several years for brain surgery. And so, because of that, we became wards to the state, which means we were dispersed [into the foster care system] and this was at a very young age. (Ms. Smith, Fall 2016)

While in the foster care system, Ms. Smith reported receiving no formal schooling until she was about 9 years old. Until then, her older brother took on the responsibility of teaching Ms. Smith what he learned in school:

The system really didn't care about you getting an education, but thankfully, my brother who's next to me...he and I remained together [in the system]. It was imperative to him that I got an education, even though I didn't go to school, what he learned in school he came and taught [me]. And I end up going to school at the age of nine, quite not like the rest of the children who start at five, or whatever it is at CPS...With my age they just put you in the grade they thought you supposed to be in, [laughs] so I didn't have to go back to kindergarten...so because of *that* closeness—that bond that he and I have and how it was so important for him to make sure that I was educated—I imposed that on my children because I was a single parent. (Ms. Smith, Fall 2016)

Although Ms. Smith experienced extreme family hardship at an early age, between Ms. Smith and her brother, there still existed the notion that education was important. This is the seed she determined to carry on to her children.

After starting school, Ms. Smith was a below average student that performed just well

enough to pass to the next grade level. While she and her six siblings did not remain together in foster care, she and her older brother were always placed together. They bounced around several homes before landing a more permanent home with their great uncle and his wife. By high school, however, Ms. Smith began a downward spiral that led her to skip school, drink at a local bar, and to search for her mom. She eventually found her mom and concluded, after some time that, her mother was unable to care for her. After reevaluating her life and processing the disappointment of her older brother at her academic performance, Ms. Smith began to focus on and successfully graduated from high school.

Michelle Smith is an energetic 8th-grader who talks fast and loves to dance; in fact, she wants to be a professional dancer. She has participated in dance teams at her school and has successfully auditioned for dance programs throughout the city. Michelle likes math and is one of the top math students in her school. Michelle is one of five students who has participated in level-up math. Ranking herself by test scores, Michelle said, “My NWEA scores were pretty good. For reading, I got the highest in the school. Then for math, I got the third highest” (Michelle Smith, Fall 2016). She is excited to learn new things, and she looks up to her second older brother, Justin. Michelle and Justin mirror the dynamics of Ms. Smith and her brother’s relationship around education. For years Justin has been teaching Michelle the math he learned in school.

Justin is in his freshman year at a Historically Black College on a full scholarship, and the family is galvanizing around the possibility of Michelle following a similar path.

Ms. Smith: So, in my mind, I’m already thinking Spelman. So, I said, “Hey, this what you need to do—your brother got it, and you’re going to do it. (Ms. Smith, Fall 2016)

Michelle Smith: My entire family is a stickler on education because some of them didn't finish their education, and some of them didn't go as far as they wanted to or could have. They are really pushing for me and my brother because my older sister didn't finish college and my older brother didn't finish college. They're pushing for me and Justin to stay on [our] education. (Michelle Smith, 13 y/o, Spring 2017)

During the study, Michelle attended a neighborhood school, with aspirations of attending one of the top selective enrollment schools in the city for high school. At 49%, fewer and fewer of Chicago's students are choosing to attend their assigned neighborhood school in favor of charter, magnet, or other schooling options (Cullen, Jacob, & Levitt, 2005; Richards & Perez, 2016). By high school, the number of students opting for an alternative to neighborhood schools swells to 76% of students. Cullen, Jacob, and Levitt (2005) suggest that students who opt out of neighborhood schools may differ from those who stay along the dimensions of motivation and parental involvement. However, these data problematize this finding because, as Michelle's high school matching experience will show, she opted into a neighborhood high school because a technicality in the application process effectively limited her options for schooling. Perhaps the focus on how students who stay at neighborhood schools differ from those who opt out should be shared with a critical examination of the district and school policies relating to school choice. This may help to contextualize further why certain patterns emerge in the context of school choice. What are the ways that students who can attend a selective enrollment school are barred from this opportunity? Which students do policies systematically exclude from participation in selective enrollment schools? And which policies are responsible for changing students' educational trajectories?

Michelle's neighborhood high school had a Level 2 rating, indicating its below-average performance that did not meet district expectations. Because of Ms. Smith's academic goals for Michelle and the inability of the neighborhood high school to provide a route to those goals, Ms.

Smith wanted Michelle to attend one of the highest ranked high schools in Chicago—Westlake High School. (Michelle actually favored a different school—Owen Torrington High School) Ms. Smith explains:

[Westlake High] is one of the top high schools in the city of Chicago...every year I track where Westlake is [ranked] because I've always wanted her to go to Westlake High. I wanted Justin to go to Westlake High, but we lived on [*names a street intersection*] at the time. I still wanted him to be accessible to his sister. I wanted both of them to come home together. So, Owen Torrington did what it was supposed to do for my son. However, I wanted him to go somewhere else. But for Michelle, because she had that advantage with Justin teaching her [the math that he learned] and it now shows in her work. So now, I want her to be advanced. In order for me to challenge her and in order for her outlook on life to change, she needs to go to Westlake High. (Ms. Smith, Fall 2016)

Although Michelle did not initially agree with her mom that Westlake High was the best option for her, by the end of the study Michelle wanted to attend the school. However, a series of events ensured that Michelle would not be attending Westlake High School (or Owen Torrington High School favored by Michelle).

Family Life

I provide a brief description of the Smith's family lifestyle. This description should provide a backdrop for what it is like for the Smith family to navigate their world as low-income African Americans. Race, social class, and Ms. Smith's perception of her role as a mother, uniquely impact her decision-making, in both educational and mundane contexts.

To get a sense of daily life for the Smith's, I address what it looks like for this Black family to negotiate life in an urban city as a low-income family. The Smiths lived in a small home on Chicago's south side—they had been living in the house for about 6 months when the study began. To afford the home, Ms. Smith participated in a rent-to-own program through Section 8, which provides rental housing assistance. The Smiths are among the 65% of African American, Latino, and Asian households in Chicago for whom a disruption in income (e.g., losing a job, medical emergency, etc.) would lead to poverty within 3 months (MarksJarvis, 2017). Ms. Smith

earned close to \$20,000 year without accounting for overtime and double shifts she often worked to earn additional money to support the household. Even with working overtime and taking on extra shifts, the money she earned did not cover all her expenses:

I'm the tree, but I've got a lot of branches on my tree that have branches. It's a lot of boughs. I got four kids, and with my son in college and my [oldest] daughter who has babies, my mother's medical needs, my own personal [needs], and then, there's just so much, and then the thirteen-year-old girl who wants to do things and go places with people and—it's expensive all the way around. And honestly, I don't even know how I survive sometimes... Granted, big things go off—gas has been turned off [because] I had to pay the rent, I had to buy this medicine for my mom, or I had to send this money to my son because he can't be in a whole other state and ain't have no pocket money. So it's hard, trust me, it's hard. (Ms. Smith, Winter 2016)

Not only was Ms. Smith tasked with providing for her household, but she was also partially responsible for her mom's ongoing medical needs and bills. She worked with her brother to pay for their mom's medical care.

The place that [my mom] stays, the nursing home where she is, you know that's twenty-seven a month, twenty-seven hundred. I only make fifteen dollars an hour; this is fourteen [hundred] [*gesturing toward the home*]. Do you see why I'm working so much? Why I'm always there [at work]? And I mean it's hard! My lights in jeopardy now—as a matter of fact, I got a disconnection notice for December 1st. (Ms. Smith, Winter 2016)

The Smiths did not own a family car; they used public transportation to get around the city. With Justin away at college, Michelle now rode the city bus alone to and from school. CPS student may ride Chicago's trains and buses at a reduced fare. The way that Michelle moved throughout the city to school was important because issues of neighborhood safety came in to play. Parents have been found to adjust their behaviors based on perceived neighborhood safety (Weir, Etelson, & Brand, 2006; Iruka, Murenton, & Gardner, 2015), and typically, low-income parents are faced with such concerns. Ms. Smith thought a lot about the safety of her daughter during her commute to and from school in their new neighborhood:

Ms. Smith: Michelle travels right now [further south] to go to school... I knew that there was gonna come a time where I needed to allow her to be able to catch the [city] bus by herself. I was gonna be uncomfortable because she's never done

it, because Justin has always done it [with her]. So, I felt like, if I started now, she would become familiar to the people in this neighborhood—like going and coming at certain times on certain days. And then the days I’m off, she and I go off to the bus stop together [and] I wait for her to get on the bus. When she’s getting on the bus or when she’s getting off the train, I meet her up there at the bus stop, so people see she going and coming with somebody.

Delaina: She becomes a regular fixture in the community, like they know-

Ms. Smith: So, when you see her by herself, which is on Wednesday, Thursday, and Friday, you know the momma’s at work. So, I need to watch her. She’s not a kid alone by herself. She’s a female, and I’m hoping that these people could give a damn, especially in this neighborhood, because our [previous] neighborhood, they go and come with no problem. (Ms. Smith, Fall 2016)

Ms. Smith hoped that through her practice of walking Michelle to the bus stop that she was demonstrating to the neighborhood that her daughter is someone who was valuable and that should be looked after. The goal was for the community to look after her when Ms. Smith had to work or was unable to be there to walk with Michelle. Ms. Smith saw Michelle’s status as “female” to be particularly salient in why the community should care about Michelle.

With public transit as the Smiths’ main mode of transportation, Ms. Smith weighted the perception of neighborhood safety heavily in the decision about which high schools were viable options for Michelle the following year. Ms. Smith was primarily concerned with which high schools provided the safest route of travel for Michelle, and it became evident just how deeply transportation played into school choice for this matriarch. The following exchange picked up after Michelle had made a case to me (and by proxy to her mom, who was in earshot of the interview) for why Owen Torrington High School would be a better option for her than Westlake High School, and Ms. Smith interjected with her reasoning.

Michelle Smith: I don't have the scores to get into Westlake High.

Ms. Smith: Yes, she does. We've already acknowledged that.

Michelle Smith: I don't think—

Ms. Smith: However, it will also prepare her. It'll put her in a diverse neighborhood downtown. You get to go downtown and see different businesses. You may change your mind. Going to the schools in the inner city, again, traveling was also a thing for me because she has to get home from school at night. I'm afraid for her to come from all the way out there in the [far south side area of Owen Torrington High School] to get home. It gets dark 3:30 p.m., 4:00 p.m.

Delaina: Mm-hmm. Oh, I know it.

Ms. Smith: I don't want you on no bus stop [on the far south side] trying to get home.

Michelle Smith: Westlake High is farther away.

Ms. Smith: I feel a lot safer with you traveling from north [to get home]. There's a large group of people, adults, and everybody, traveling from downtown coming home... (Michelle Smith, 13 y/o, Fall 2016)

Owen Torrington High School is not as highly ranked as Westlake High, but it shares Westlake High's level 1+ school quality rating, indicating its above-average performance that far exceeded district expectations. Ms. Smith ultimately dismissed Torrington High for Michelle because of the relative safety of the commute for her daughter. This example stands in stark contrast of the Spencer family who could afford to pay extra for the school bus to pick up Nia and the route of travel to the school was not an issue. In talks about selecting schools, the relative location of the school was not a factor upon which a school was eliminated or not.

Reiterated throughout each interview with members of the Smith family was Ms. Smith's ongoing worry for her children's wellbeing. On a break from college, Justin, who was home from school and within earshot of the interview, agreed emphatically after his mom described her constant worry.

Delaina: So, what's significant about her being "a female" and then also –

Ms. Smith: Well because she travels. She catches public transportation, and this society isn't nice, really not to any gender, but especially not to the female gender. Because I'm at work, I'm not there to protect her. My maternal radar is always [on] worry, like *always* worry.

Justin: Yes! [laughs] (Ms. Smith, Winter 2016)

With the onset of summertime, certain areas of Chicago are prone to increases in criminal activity, and since the Smiths were living in a new neighborhood, in a new house, Ms. Smith was unsure about the relative safety of their new accommodations. She made alternative arrangements for Michelle while she was at work to assuage her fears. So instead of Michelle going home after school, she took the train to her mother's job, and after Ms. Smith's shift was over, the two would ride home together. The idea was for Michelle not to be at home alone. Ms. Smith explains:

Simply because I don't really know what's going on just yet. I need to feel out this summer and see what really— because if [hoodlums] don't come out when it's consistently warm, then I'll see. (Ms. Smith, Spring 2017)

Ms. Smith's head seemed to stay on a swivel. She was consistently on guard for signs that she should engage certain protections for her children. Her gauge of safety impacted her decisions around high school selection and unsupervised time for Michelle after school.

Math Means A Better Life

Overall, the Smiths lived a lifestyle that was similar to other low-income African American families in Chicago (Jarrett, 1995; McCreary & Dancy, 2004; Pattillo, 1998; Pattillo, 2007). They did not take family vacations, and there was always a shadow of worry present when going about life in the inner city. Yet there was hope in the family for what Michelle could become, for the brightness of her future through her studies. Michelle was excited for the day when she could leave the “dangerous” city for college life and not have to check in so often with her mom.

While Ms. Smith would not invoke the notion of “citizenship” or “full-participation in society” to describe her life, she would agree that her lifestyle denotes that of a person who is not a full member in society, wherein personal and economic autonomy are hallmarks. The notion of

citizenship is linked with ideas of freedom, self-determination, membership to some elite class, upward social mobility, belonging, and power (Berlant, 2014). Ms. Smith does not have access to all the rights and privileges that citizenship affords her White or Black counterparts who have higher incomes. Nevertheless, she wanted this for her daughter.

Like Moses and Cobb (2001), who argue that mathematics is now the front for which citizenship (i.e., full participation in society) is decided and that social mobility is difficult for people of color to maneuver without mathematics, Ms. Smith saw mathematics as a way for Michelle to gain access to a better life.

Delaina: So, what does mathematics mean for your child's future?

Ms. Smith: Money, simply put. Money. And if I got money, I can live comfortable. Stability. You know, stability. Math is stability, and with stability comes money. And with money, comes comfortability and comfortable living. I don't have to struggle anymore. I don't have to worry about whether or not I can pay my light bill or my gas bill. I know I'm going to be able to make it to work. Living a certain way and being able to come and go as you please. Just being able to do what you want to do in life and not being confined to, [*motions a circle with hands*] "this is my limit." You get to a grocery store and be like "don't let me go past a hundred. When I get to a hundred dollars, let me know" and then you start putting all the things you need up there first in front and you don't have to do that. Hopefully, when you get older, you can put up any item on that conveyer belt, what you want, and swipe your card and do what you want. Math is gonna tell you how much money coming out of that account. So, you don't have to worry about tomorrow... (Ms. Smith, Fall 2016)

Ms. Smith saw math as Michelle's ticket to a way of life, wherein she would not face the same concerns as her mother. Math meant social mobility and would allow for a certain level of comfortability and easy-going lifestyle not plagued by worries for the next day. The corollary notion is that without math, Michelle would not live comfortably, would not be able to pay all her bills, would not have upward social mobility, and would be living within the bounds of second-class citizenship. Ms. Smith's hope for her daughter's future brings into stark relief the realities of living in the city as a low-income family.

To explain why some youth from low-income African American families experience differential social mobility, Jarrett (1995) proposes characteristics of community-bridging families that help explain differential outcomes. “Community-bridging is used as a metaphor for the complex of strategies that families of socially mobile youth employ to link their young people to mainstream opportunities and institutions” (pp. 114). The characteristics include: (1) supportive adult network structure; (2) restricted family-community relations; (3) stringent parental monitoring strategies; (4) strategic alliances with mobility-enhancing institutions and organizations; and (5) adult-sponsored development. The salient practices Ms. Smith engaged were supportive adult network structure, stringent parental monitoring strategies, and alliances with mobility-enhancing institutions and organizations. Michelle has an uncle, sister-in-law, and older brother whom all provided some expertise relevant to her personal and math-related goals. I shared previously how Justin provided proximal support for Michelle’s math homework. Where relevant, I provide examples of Ms. Smith’s engagement in monitoring strategies and in cultivating alliances with institutions and organizations that will help Michelle achieve math-related goals. These support practices ensured that Michelle had a “bridge” to opportunities through high-level participation in mathematics.

Supporting Michelle's Math Development

Michelle attended a level 1 elementary school that “exceeds” the CPS’s minimum performance standards. With the third highest math score of students in her grade on the NWEA standardized test, Michelle was one of the top math students in her neighborhood school. As I described in Chapter four, Michelle participated in level-up mathematics, and as a result, she reportedly had taken and passed the Algebra exit exam early in 7th-grade. Therefore, she would be able to start high school math with Geometry.

Like other families of socially mobile youth, Ms. Smith allowed Michelle to participate in several mobility-enhancing organizations (Jarrett, 1995). Through participation, youth are linked to social opportunities and networks that produce tangible skills or provide personal connections. Michelle has been a part of several after-school programs intended to either enhance her mathematics knowledge and skills (e.g., Algebra, Trigonometry), or to provide support as a young African American girl (e.g., mentoring program through Zeta Phi Beta—an African American sorority).

Apart from Geometry, Michelle was confident in her math abilities. With Geometry, Michelle proclaimed:

“I’m not the best at Geometry because I can get numbers, like Algebra and Trig. My mind just quickly picks up numbers, but shapes—I have to take a little time. One of my pet peeves is wasting time.” (Michelle Smith, 13 y/o, Fall 2016).

So, while Geometry prickled feelings of frustration, her overall math identity was positive.

Michelle recalled that her brother was instrumental in her development of a positive math identity:

Okay. It really started when I was really younger. I used to do the “4 + 4” and the “2 + 2.” I wasn’t exactly good at math back then, but my brother, Justin, was a math genius at everything. He still is. He took calculus when he was a sophomore. He would help me with the math. He would make it fun because I didn’t like it. He would make games and make stories, and then he would give me rewards like, “Okay, if you get this, I’ll give you

some candy."

She elaborated:

When I was, I would say, third grade, he taught me slope intercept form. He taught me algebra, $y = mx + b$. He taught me that when I was in third grade. He just kept—if I knew that, then he would teach me how to solve a system of equations. Then when I got to actually doing it in school, they were like, "Oh, you already know this." I'm like, "Yeah." He would just keep teaching me. Then when he was still here, which he's not, he would—just last year he actually was teaching me some of the stuff he would work on. He would make two copies of his homework. He'd be like, "Now you have to do this." (Michelle Smith, 13 y/o, Fall 2016)

Justin was integral in Michelle's learning of various mathematics skills, which helped her identify positively as one who can do mathematics. It seemed like Justin and Michelle were echoing some of the characteristics that Ms. Smith spoke of with respect to her relationship between the brother who taught her.

During winter break, I spoke with Justin, who is 6 years older than Michelle, about why he began teaching mathematics to Michelle. While Ms. Smith facilitated this facet of the siblings' relationship, the objectives for his lessons centered his own curiosity. The vignettes below relate Reginald M. Clark's (1983) assessment that "[Black] parents, therefore, use their own power to delegate responsibility to other family members so as to structure and support the organization of orderly and cooperative status relationships among siblings" (p.126) and in this case there were academic benefits.

Okay. Firstly, from my perspective, it was—when I was doing it, it wasn't from a place of, "oh, I want you to be the best in your class." That wasn't the reason that I was doing it. I think, honestly, I just did it because it was something to do. I didn't have the intentions of her being the top math student in her school or her class. It was just something that I just felt [curious about]—what would happen if I showed you this? Can you understand what I'm doing in my math class and you're in third grade or whenever I would teach it... (Justin Smith, Social network interview, Winter 2016)

Ms. Smith interjected for additional context during my interview with Justin:

Okay. This is actually how he started teaching her his [math]—because I was working, and so at night, I would tell him, "I need you to help Michelle with her homework, and I

will pay you \$50.00.” [He’d] help her with her homework, and then she’d finish doing her homework, and of course, it’d be time for him to do his...She used to have to sit there while he did his homework, and he was more so, like explaining his homework to her, and then she, in turn, just started learning. That really became repetitive behavior every night. Time to do her homework. Then it’d be, “I got to do my homework, you got to sit here.” It just became regular behavior. She, in turn, started learning all his stuff, which then gave her the advantage in school. (Ms. Smith, Social network interview with Justin, Winter 2016)

Because of Ms. Smith’s creative problem solving regarding childcare arrangements for Michelle and because of Justin’s own resourcefulness, Michelle was exposed to high-level mathematics at a very young age. Ms. Smith was not necessarily directly taking part in the review or teaching math concepts, but she organized support for Michelle. So, while Ms. Smith provided Michelle with distal support for math development, she utilized Justin to provide proximal math support. That is not to say that Ms. Smith never involved herself in homework or tests.

Michelle’s Journey of Math Success

Like Nia Spencer, Michelle Smith’s 8th-grade year was not without its challenges. By the end of the year, her admission to the elite Westlake High School was precarious. As Michelle took on her 8th-grade year, access to high-level curriculum and feelings of social isolation marked her math journey. For several years, Michelle had taken advantage of level-up math instruction. In 6th-grade, she was on the 6th-grade roster, but was given access to the 7th-grade curriculum by sitting in classes with the 7th-grade students. In 7th-grade, she was on the 7th-grade roster while attending 8th-grade classes with the 8th-grade cohort of students. Between her brother’s teachings and level-up instruction, she was accustomed to advanced math knowledge. Now that she was in the 8th-grade, Ms. Smith was concerned about how the school would continue to challenge her child since the math curriculum afforded at the school ended at 8th-grade.

Delaina: So, thinking about her 7th-grade year, because she’s in 8th-grade now, but how would you say [last year] went overall?

Ms. Smith: Excellent. Excellent. The thing about that is Michelle has always been on the roster for whatever grade she was in, but she's always taken classes above. So, she had to stay on the roster for the 7th-grade, but she took all 8th-grade classes: science, reading, math, social studies. Everything. So, she was always advanced anyway, that's one of the reasons why I'm going back and forth to the school so much now, because you guys are introducing her to the same thing she did last year in the seventh grade.

Delaina: Right, because they don't have curriculum for ninth grade.

Ms. Smith: Exactly and so that's my issue... (Ms. Smith, Fall 2016)

Michelle was among five advanced students for whom the school was struggling to provide a curriculum. As is often the case when children are not challenged, conduct problems were surfacing with Michelle as she was reintroduced to the same curriculum from the previous year (Cothran, Kulinna, Garrahy, 2009). Ms. Smith says:

As a matter of fact, this year I was just talking to them Thursday about the fact that we need to get these kids on a different level. This is repetitive work for Michelle. I've been getting calls from her teachers saying 'she's bored; she's sitting there. They say, "I tell her to go over her work," and again, like, I express to the teachers, last year you had her when she was in seventh grade, and I don't mean any disrespect and I don't want them to take this the wrong way, but you knew this day was coming. You had a whole summer to prepare something different for those five kids that you knew you were gonna be getting...you knew you were gonna have these bored kids. And that's what I mean by we need to continue to challenge these kids. If you not going to, then I need to figure out something else. (Ms. Smith, Fall 2016)

Responding to Ms. Smith's concerns, Michelle's math teacher created the Algebra Club for the five advanced students. In this instance, Ms. Smith's distal support was necessary to advocate for math coursework that was not repetitive; the support practice was appropriate, given the issue at hand. Whereas Michelle began the year retaking Algebra because of limited course offerings at the school, by the second half of the school year, the Algebra Club was tackling advanced Algebra and Geometry to help prepare them for high school. As part of the Algebra Club, Michelle received small group instruction after the teacher provided regular, whole-group math instruction for the rest of the class.

While being a member of the Algebra Club addressed, in part, the curricular issue, it also had a negative social impact on Michelle. Since Michelle had been receiving level-up instruction, this is the first year that Michelle was doing coursework with peers who were in the same grade. Previously, level-up instruction meant she spent most of her school day with an older cohort of students. Therefore, she did not have a rapport with her peers and reported a fair amount of resentment from her peers. According to Michelle, they [her peers] believed it was unfair for the Algebra Club to participate in their math class since they already knew the content. Any participation from the Algebra Club in group discussions and lessons underscored other students' perceptions of their elevated status as those who were good at math. The following excerpt came just after Michelle had explained that her math teacher had the Algebra Club "teach" or work-out math problems on the board in front of the class. She discussed the social and emotional impact of the practice.

Delaina: How does [going to the board] feel? Does it feel isolating or empowering or what?

Michelle Smith: Kind of—it makes you really nervous. It feels like you have a lot of pressure on you while you're teaching, so-called, the class. It's like if you—it's like because you just learned the concept and you have to do a problem on the board, so if you get it wrong it's like middle school students are going to laugh. It's like don't mess up! Then if you do mess up, it's like, [*in a mocking tone*] "Oh, I thought you guys were the smart ones." It's like "Wait, wait, I didn't know, okay."

Delaina: Have you ever messed up, up there?

Michelle Smith: Uh huh, I sure have.

Delaina: What happened?

Michelle Smith: I got laughed at, a couple times, actually. She'll teach us and, she was teaching—I forgot what it was, but she was teaching us something and it—again, I am horrible with shapes. I've never been good with shapes. My mind can process numbers, but not exactly shapes and then the numbers I can get—so she gave us the shape and she wanted us to do the numbers after

we get the shape. We have to—and I did the problem and I swear I thought I was right. I swear I did, but I was off, like way, way off. I was like at 100 and something and the answer was like six. She wanted me to explain my misconception and my miscalculations and I had to do it in front of the class. They were like, [*in a mocking tone*] "How did you multiply that wrong? How did you get the multiplication wrong, but didn't get that wrong? That's so stupid." I was just sitting there like "Well, I didn't know." The whole class was laughing, it was—it's middle school students.

Delaina: Were you laughing too? Or did you—

Michelle Smith: I was just sitting there like how I am now, it's just like—just kind of in front of the whole class with me, I'm like [*makes a deadpan face*] "Okay, can you stop laughing now? Are you done?" (Michelle Smith, 13 y/o, Spring 2017)

In this excerpt, Michelle was being challenged to do Geometry-related coursework—a subject that frustrates her math identity—in front of peers whom she perceived to have animosity aimed at her for her participation in advanced math coursework. When she made a mistake, the class seemed to home in on her error and question her competency as one who can do the math. To add context to how Michelle was feeling, it is important to understand the environment in which Michelle was navigating her math identity; that is to say, the social and the mathematics are linked (Gholson & Martin, 2014). As an adolescent, Michelle is aware of what her peers think of her and actively negotiates her identity in concert with their perceptions (Pahl & Way, 2006; Spano, 2004).

Furthermore, when I first interviewed Michelle, she described some of her encounters with bullying.

Delaina: Who are you friends with? Are you friends with the other math students who are doing well?

Michelle Smith: It's a mixed group. I'm friends with students who are in the [Algebra Club]. Then I do actually have friends who are on the side and—okay, that was a bad choice of words, but who actually aren't in the [Algebra Club] ...

Delaina: I'm just trying to figure out if being advanced in math somehow puts a social dampening on other friendships that you could have.

Michelle Smith: Right, like [with] the cool kids, the ones ...who refer to themselves as the “runners of the school” because they “run the school” ... Some of the students in the [Algebra Club] actually kind of get bullied on. I'm not taking that. I don't care who you—I'm not takin' that. You're not just gonna talk to me that way. They'll make them do their homework or anything. It's just like, "You know you don't have to do that. You should stand up for yourself."

Delaina: Mm-hmm. Have they tried it with you? [Laughter]

Michelle Smith: Oh, that happened. That is exactly what I [said] — “You tried it!” That's exactly what I tell 'em. I think it was Stephanie. She was like, "I'm gonna need you to do this for me." I was like, "Okay, so I'm gonna need you to do it yourself." She was like, "But you're smart." I'm like, "Yeah, but you're not gonna learn if you don't do it yourself. I can help you with it." She was like, "Okay, I don't think you know who I am." I was like, "Oh, I know your full name. I've known you for four years. I know exactly who you are." She was like, "I'm gonna need you to just do this for me, okay? Can we just keep this between—" I'm like, "You tried that. That was funny, but that's not gonna happen." Her and her little group shunned me and didn't talk to me. It was like, "I don't need more friends, especially not ones like you." (Michelle Smith, 13 y/o, Fall 2016)

Identities are authored in context (e.g., in classrooms, among teachers, peers, and the activity) and across contexts (e.g., home and school; Tan, Barton, Kang, & O'Neill, 2013). Michelle's identity as a math student and as a member of the math club (and perhaps other identities) is negotiated in this vignette. It is clear that Michelle cares about how her peers view her, she is firm with the so-called “cool kids” and fights against the perception of her as a smart girl who is also a pushover.

In our interviews, Michelle consistently expressed her tendency to stand up for herself and others. About midway through the year, Michelle got into a physical altercation. Her involvement initially began as a peacemaker. When Michelle witnessed several girls fighting with another student, she intervened to break up the fight. However, one of the girls, Brenda, 14 years old, mistook her peacemaking efforts for aggression and began hitting Michelle. Michelle's involvement was captured on video by a student bystander and was instrumental in bolstering her

claims to administrators that she was a non-aggressor. With the benefit of the exonerating evidence, Michelle received one day of suspension, instead of 3 days of suspension, for her involvement in the fight. Sometime later Michelle learned that Brenda was pregnant at the time of their brawl. This weighed heavily on Michelle.

Delaina: Okay, so what happened after the fight?

Michelle Smith: Nothing. Brenda's pregnant now. I kind of felt bad because now—she's big, which means that when we fought her, she was already pregnant. I was like oh, I kind of feel—

Delaina: Have you spoken to her since?

Michelle Smith: We had to take a test together. It was a group test. We talked about [the test], but we've never had any [other] communication. She asked me about my score on my NWEA. Other than that, no. I kind of do feel bad for her now, even though she talked a lot of stuff and she was really angry and just wanted to fight. I kind of feel bad because like now you're pregnant, now the school is talking about you, now you have rumors about you. I'm just like, that's got to be hard...

Delaina: What about your reputation? When you came back [from suspension] how did the [other students] respond to you?

Michelle Smith: Well some were like, "Oh you did that! You did that!" I'm like, "Oh I don't want to get credit from beating nobody up." I was the nice one. I kind of feel like they still thought I was the nice one. I kind of lost that reputation of being nice and actually wanting to help people and—it just kind of made me seem like the bad child of the school. Or not even the bad child of the school, [but] of the Algebra Club basically. This is bad. I'm just—I'm sorry. (Michelle Smith, 13 y/o/, Spring 2017)

Clearly, the social dynamics of the class impacted how Michelle saw herself as a participant in the math class and the Algebra Club. The fight seemed to be a physical manifestation of the on-going tensions between the “smart kids” and the “runners of the school” that eventually snapped. This fight also impacted her desires for high school. Whereas Michelle initially wanted to go to Owen Torrington High School because it felt comfortable and familiar in terms of the students, staff, and programs, after the fight she wanted to attend Westlake High because of the

anonymity it would offer—the school offered a virtual reset to the social dynamics at play in Michelle’s current school.

Delaina: How do you expect the rest of the year to go for you?

Michelle Smith: Well I have two more months of school left. I am waiting it out.

Delaina: What do you mean, in a good way or a bad way?

Michelle Smith: I don't want to make a scene, like I'm just trying to get through the school year—like I'm just trying to make sure my grades are on point and that is it, that is all. I am not trying—because they don't have any other extra-curricular activities in the school anymore. They don't have music. They don't have anything I can look forward to coming to school for. I don't talk to that many people anymore. (Michelle Smith, 13 y/o, Spring 2017)

Later Michelle expresses her wish for high school.

I want to have a fresh new start...I want to go to a high school where nobody else is going to. I still want to have my friends and communicate with you guys, but I don't want to be in high school with any of you, please leave me. I want to have a fresh new start, all new people. Going in, I'm a new person. I don't have any reputation from the previous year, anything I did the previous year, none of that. That's what I'm looking forward to. I'm looking forward to a new start. (Michelle Smith, 13 y/o, Spring 2017)

With the perceptions of peers are gaining prominence during adolescence, Michelle’s hopes for high school are linked to her desires for a peer group that is not knowledgeable of her past. New peers represent a chance to renegotiate her student and math identity that is “a fresh new start [with] all new people.”

After my final interview with the family, the plans for which high school Michelle would attend were clearer, but not necessarily palatable. Pattillo (2015) documents how many low-income African American parents in Chicago do not have a clear understanding of the school choice process, specifically when it comes to selective enrollment schools. This was true for the Smith family. Chicago’s 8th-grade students can apply to up to five high schools in preferential order. After some initial confusion on the part of Ms. Smith regarding the admissions process,

specifically the bit about ordering schools preferentially, Ms. Smith explained Michelle's options for high school.

Delaina: High school. What's going on with this high school? I done got confused.

Ms. Smith: Me and you both. She took the test for Westlake High. She missed Westlake High by four points. You needed 844. She got a 840. What they did was they allowed her to go on their waiting list for Westlake High; Then, we did this principal discretionary thing to try and get her in [Owen Torrington] because all our eggs was in the basket of Westlake High, and when she didn't score, now we scrambling to get her into school. Torrington, we knew she could get into... Torrington was listed [as our] number five [pick]. [Torrington] had to be [listed] second in order for her to get into [Torrington]. Now her second and third and fourth school [picks], she got in, but I didn't submit that thank you acceptance letter [to those schools] because [I was thinking] now we going to Torrington. Once I got the information about Torrington all the time had passed for me to say okay to the other schools. Then again, I really didn't want her on the bus traveling to and from school anyway. As it turns out our neighborhood high school is right here, and they have to take you because you're in the neighborhood. She just has to cross the street to go to school... (Ms. Smith, Spring 2017)

Much of what Ms. Smith explained was learned after the fact, as she was not very familiar with CPS policies and systems, with respect to the high school transition. Ms. Smith mentioned a second attempt to attend Owen Torrington High using principal discretion. Principal discretion is a process in CPS where students can appeal directly to the principal, who has a select number of seats that s/he may make available to students of their choosing apart from the regular application process. Citing CPS data, Sarah Karp (2018) from WBEZ News reported that the policy benefits children from the most affluent areas. During the 2016-2017 school year in which Michelle appealed for principal discretion as an alternative route to her desired high school, "two-thirds of all principal discretion seats at the city's selective enrollment schools went to students from the city's wealthiest neighborhoods, while less than four percent went to students from the poorest areas." The most coveted high schools have the highest income disparities in seat-distribution using principal discretion. At the top four high schools in the city, no seats were

admitted to students in the lowest socioeconomic tiers (Karp, 2018). The differential access to, so-called, high-quality selective enrollment schools according to income is severe.

Michelle was not keen on attending her neighborhood high school because she saw it as an extension of her current relationships with peers.

The [neighborhood] high school, that was like my last option and I'm not trying to do that. I know a lot of people who are going [there]. I live across the street from [that school], literally like directly—I can look out my window and look at the school. I don't want to be that close. I mean it's gonna cut down on bus fare, I'm telling you, but—
(Michelle Smith, 13 y/o, Spring 2017)

The neighborhood high school has a level 2 rating; it has a below-average performance that does not meet district expectations. Michelle is concerned that her opportunity for a fresh start with a new peer group in high school will be undermined by attending the neighborhood school. Ms. Smith, however, was not content to let Michelle attend the neighborhood high school indefinitely; she began talks with Michelle's school counselor to navigate the bureaucracy and often confusing rules of school choice in Chicago so that Michelle would have the option to attend a better school by 10th grade. Ultimately the plan was for her to attend the neighborhood school and in 10th-grade and transfer to Owen Torrington High until such time as she could attend Westlake High.

This was one of the rare moments in the study where I was shocked and deeply moved by an event. Whereas, before, my hopes for Michelle's educational opportunities had been high, I was unsettled by the turn of events. That Michelle would attend her neighborhood high school was not palatable to me. Shaken, I spoke with an administrator at a different CPS school. After sharing how Ms. Smith did not know to list high schools preferentially, she said (rather matter-of-factly), "No one tells them that." Similarly, others have found that when parents do not know key information, access to certain schools is curtailed for African American youth (Hastings & Weinstein, 2008; Pattillo, 2015). Hastings and Weinstein (2008) note that when low-income

African American parents are provided all the relevant information, they make school choice decisions that positively impact their children's academic performance. In this case, the information deficit means that Michelle must spend at least one year in her neighborhood high school.

Ms. Smith's Well of Community Cultural Wealth

Ms. Smith used a plethora of tools to support Michelle's mathematics development. I find that Ms. Smith's math support practices were a function of her faith, ability to motivate, relationships with school personnel, and the use of supplemental instruction for Michelle. In terms of community cultural wealth, I find that Ms. Smith leaned on aspirational capital and social capital, as well as religious capital (Frederick, 2003; Lincoln & Mamiya, 1990; Marsh, 2005) to encourage math success. These helped to shape her math support practices.

The Black struggle for freedom, civil rights, and ultimately a better life in America is linked to a tradition of religion and faith (Frederick, 2003; Marsh, 2005). In keeping with this tradition, Ms. Smith leveraged faith as the reason for her survival and the reason she survived from day to day:

Prayer is extremely important in anybody's life. I'm telling you, there's an ode my mother said, "much prayer, much power, little prayer, little power, no prayer, no power." So, if you ain't got prayer, you ain't got nothing. (Ms. Smith, Fall 2016)

She leaned heavily on her faith to provide relief from the daily stressors and struggles of life, and she encouraged Michelle to do the same when it came to her math work. When I asked Ms. Smith to address any struggles, particularly with Geometry, that she might have noticed with Michelle's math performance she said:

I don't see the struggles that Michelle see in herself. The words that she expressed, you kind of encourage them with words. "Baby you got this," "if you find yourself nervous or anxious, breath." My favorite line, honestly before anything, I tell my kids before you do anything, pray. I don't care if you take a test, before you write your name on a piece of paper, when you put your feet on the floor in the morning, when you pop your eyes open,

you need to start thanking the Lord. Again, if you get to a point on a test, or a question, or something, and you get stuck, pray. But don't waste time on one question, go to the next. Whatever works for them, works for them, but honestly, I don't see any problems with Michelle and math. (Ms. Smith, Spring 2017)

Ms. Smith linked faith with academics. Faith-based strategies are to be employed in the mundane and, particularly, during academic challenges. In addition to teaching her children how faith can work as a coping mechanism and strategy for success, Ms. Smith saw that part of her parental responsibility was to be a motivator to her children.

As a motivator, Ms. Smith engaged aspirational capital:

Aspirational capital refers to the ability to maintain hopes and dreams for the future, even in the face of real and perceived barriers. The resiliency is found in those who allow themselves and their children to dream of possibilities beyond their present circumstances, often without the objective means to attain those goals. (Yosso, 2005, pp. 77-78)

Her strategy entailed outlining education and life goals with her children:

The high school that I want for her is [Westlake High] because the better the high school, the better chances you get of getting into a better college, and the better chances you get of getting scholarship money. And that is the objective—to get more scholarship money, because I want her to go to the college of her choosing. I also need it to be free [*laughs*]. ... So, we have a lot of conversation in bed at night, and it is extremely imperative that I get her input on where she wants to be, short term and long term. I need you to set goals. She writes them down. I need you to set them; then I need you to execute them, because you got four years to do this. The year here is gonna go by so fast, so you got four years to figure out where you want to be, and what you want to do... (Ms. Smith, Fall 2016)

Ms. Smith outlined a path to college that she shared with Michelle and was, ultimately, dependent up Michelle's ability to execute the vision. So, if goal setting was one part of an equation for success, follow-through was the other half of the equation. During my interview with Michelle, she discussed what happens when her performance does not align with their shared goals for the future. In the following excerpt, Michelle relayed what would happen if she did not turn in her homework. I initially shared part of Michelle's response in the previous chapter highlighting motivation, but here I focus on the breach of shared goals and the ways Ms.

Smith leaned on aspirational capital in response.

Delaina: Have you gotten away with [not doing homework]?

Michelle Smith: I've gotten away with it before. I had 15 points extra credit. My average was 105. I was like, "Okay, I can miss this assignment." If I don't get away with it, there would be consequences. Okay, I would get probably a two-hour lecture. Then I'll have to make it up, and then I'll have to do extra credit.

Delaina: A two-hour lecture on what? [Laughter]

Michelle Smith: "This is your future. You need to be prepared for your future. If you don't do your work, you will be a hoodlum. You will not get out of the hood. I'm trying to make—I'm trying to raise a doctor here." [I] hope she heard that part. [*She raises her voice so Ms. Smith, who is in the other room, can hear*] "I'm trying to raise a doctor here...Now we're gonna talk to the teacher, and you're gonna do some extra credit because you missed that assignment. She probably knocked off points. Now you're gonna do more." That's probably what I would get. It'd be a two-hour lecture on how I just threw my life away with one assignment. (Michelle Smith, 13 y/o, Fall 2016)

Michelle confessed to me that her mom knew exactly how to get her “straight.” Even though Michelle was smart about when she could ease up on her work, with her plans to leave the “dangerous” city for college, Michelle understood that it might be helpful to refocus her efforts with certain aspirations, like “getting out of the hood” in mind.

Also, in service to their goals, Ms. Smith utilized social capital by developing relationships with Michelle’s teachers and support staff at her school:

My thing is, I talk to the teachers in the beginning, and I let them know who I am. Anything I sign, any paperwork that comes through me, my telephone number’s on, and I let the teachers know. I want to have a relationship with you. This is how my child is gonna do better. I think it’s extremely important that parents and teachers have a personal relationship with each other...I’m talking to the teacher throughout the year. (Ms. Smith, Spring 2017)

It was important for Ms. Smith to develop these relationships because she believed teachers were key to Michelle’s academic success. This relates to the community-bridging notion, wherein low-income families of color engage in strategic alliances with mobility-enhancing institutions (Jarrett, 1995). In adherence with this framework, Ms. Smith spontaneously dropped-in at the

school several times a week; she was somewhat of a regular fixture around the school:

At the beginning of the week, I start off every morning calling the lady in the office, Ms. Thomas, because even though I know my child just left here...I always call and say, "Ms. Thomas" and she go, "Hi mom, yes Michelle's here." They already know that routine. I'll go up to the school; in a week, I may go up there, maybe twice, three times, maybe four; she don't know about [that]. In front of her, I tell her two. I like to pop in and see, especially during lunchtime or recess time. ...I like looking, seeing what you doing. Outside, recess, who you hanging with? So, I'm always up there. I see a lot of the guards just be like, "Oh you popping up again? Hey mom," or something like that." (Ms. Smith, Spring 2017)

Ms. Smith's watchful eye over the academic and social milieu, even while Michelle was in school, is an instantiation of community-bridging (Jarrett, 1995), wherein low-income parents of color closely monitor their children's time, space and friendships. She engaged school personnel as extensions of her monitoring exercises. Ms. Smith had the personal phone numbers of Michelle's teachers and principals. Impromptu school visits and phone calls helped Ms. Smith cultivate a partnership with the school. For instance, when Ms. Smith and Michelle were navigating the melee of high school selection, it was the school counselor who educated and worked with Ms. Smith and Michelle to develop a plan that would allow Michelle the option to transfer to a high school with a 1 or 1+ school quality rating. Additionally, it was Ms. Smith who pushed Michelle's math teacher to challenge the students who eventually became the Algebra Club. These incidents are examples of how Ms. Smith responded to her perceived needs for Michelle—these are all necessary distal math supports. Without someone brokering access to high-level math, proximal math support for low-level math content was not likely to yield the kinds of educational opportunities that Michelle and Ms. Smith hoped for.

Ms. Smith also discussed how she utilized supplemental instruction in the form of after-school and summer programs for Michelle's personal and academic development. To highlight how instrumental these programs were for the Smith family, I provide a quote, wherein Ms. Smith spoke of the programs Michelle and Justin have attended:

...this past summer, they were at Roosevelt. The summer before that, they were at National [Louis]. The summer before that, they were at Columbia. So, there's always something dealing with school for the kids. What am I gonna do with you during the summer? I don't want you staying at home by yourself, because I still got to work; you gonna get tired and bored sitting at the house by yourself, you know what I'm saying? So, if I keep you in the program, maybe you go some place. You meeting new people from different walks of life, coming from different schools... (Ms. Smith, Fall 2016)

These community-bridging actions represent a tradition of engaging with mobility-enhancing institutions and organizations, in which Michelle has access to social and academic opportunities. Michelle participated in a mentoring program with an African American sorority that promoted the ideals of service, scholarship, sisterhood, and finer womanhood. In the following excerpt, I probed Ms. Smith about the people who were sources of support for Michelle's development:

Delaina: I do have another question. On the sources of support chart, you've marked some extended family and some friends. Who are these people that you're thinking about?

Ms. Smith: My son's wife.

Delaina: What does she do?

Ms. Smith: She talks to Michelle a lot. She has a lot of conversations with Michelle. The [Black Greek Sorority]. Some of those women converse with them. They encourage them as well, to be, what is it?

Michelle: "Finer women."

Ms. Smith: "Finer women." There is an extension outside of family that really help encourage and build up these young Black girls, and hopefully inspiring them. They can only get so much from parents, but they see other things in other people that they may not see in their parents and I get it. (Ms. Smith, Spring 2017)

In this case, the mentoring program helped Ms. Smith shape a particular kind of Black girlhood for Michelle that gave her access to Black women who had been to college through an organization that was in service to leadership and Black middle-class ideals. Through other programs, Michelle has studied Biochemistry, Trigonometry, Algebra, passed the Algebra exit

exam, visited college campuses, toured high schools, and much more. Participation in the programs helped Ms. Smith manage summers. Her daughter had a place to go, while she worked 40 or more hours per week. The programs provided peace of mind for Ms. Smith that her child was somewhere safe, and they served a practical purpose of sharpening Michelle's knowledge and skills.

Case Summary

Ms. Smith's role in Michelle's math success was one in which she orchestrated opportunities for access to advanced math. Whether level-up math, summer or after school programs, applying to selective enrollment schools, or building relationships with teachers, Ms. Smith sought multiple pathways to advanced math, which she hoped would lead to upward social mobility for Michelle. The perceived situational context largely determined the form of Ms. Smith's math support. Because Michelle was a high performing math student in the midst of transitioning to high school and was initially repeating math coursework from the previous year, Ms. Smith's support practices were distal in nature to accommodate Michelle's perceived needs. Questions that guided Ms. Smith's support and the leveraging of resources tended to be: (1) are Michelle's grades good; (2) is she on track to achieve the short-term and long-term education goals; (3) is the teacher challenging Michelle?

Ms. Smith's support practices were enacted through various forms of capital (i.e., aspirations, social, and religious) and community-bridging strategies (i.e., intense monitoring, facilitating alliances within organizations and institutions, and supportive adult network structure), which are argued to be beneficial, mobility increasing practices among low-income African American families (Jarret, 1995).

Discussion

While previous studies have foregrounded parenting in the context of socioeconomic status or parenting in the context of racial differences (Bluestone & Tamis-LeMonda, 1999; Ford, Harris, Tyson, & Trotman, 2001; Querido, Warner, & Eyberg, 2002), within-group differences remained relatively understudied. In the literature, the general idea of the African American family is synonymous with a low-income, African American family. This study is important because it illuminates the ways that African American parental support of math is influenced by socioeconomic status; that is, analyses of the Smith and Spencer family math support practices allow for a fuller discussion of the ways that parents' support practices are influenced by their life experiences and social class.

In both families, the girls were successful math students that took different 8th-grade math journeys, wherein their parents' math supportive behaviors were illuminated. An analysis of the narratives shows that socioeconomic differences impacted how the families navigate life and schooling. The parents' math supportive practices were complex and impacted by their perceptions of the child's needs, professional and personal obligations, and their wells of community cultural wealth. Parents attended to their children's math identities according to their perceived needs.

Relations between parents and schools have been found to differ by social class (Horvat, Weininger, & Lareau, 2003). In these two cases, social class impacted how the families went about the business of schooling. Social class effectively determined how a family chooses schools. While one family found their options were limited, the other family was not similarly bound. As a low-income family, the Smiths had fewer schooling options than their middle-class counterparts. Concerns for safety when riding public transportation to and from school

constrained schooling options. For Ms. Smith, notions of safety in Chicago were linked to race and gender; she questioned which school offered the safest transportation route for a *Black girl*. The gendered nature of this decision was solidified by her previous decision to let her son, Justin, attend the same school for which she later deemed the transportation route unsafe for Michelle. As a family with more financial resources, the Spencers could afford to hire a private bus company to drive their child to school. In this way, their family did not have to worry about whether their daughter would be safe in attending a certain school. They were free to choose schools based on whether they had certain desirable characteristics.

Mejia Aranda (2018) has shown that success in mathematics is thought to lead to educational and career opportunities among engineering students. Similarly, math was taken up as capital in both households; they conformed to the notion that mathematics capital leads to economic capital or upward social mobility. Mrs. Spencer saw value in advanced mathematics as a way to provide Nia with a good foundation for high school and college. For this reason, she grappled with whether to put Nia in the AP program for high school. Ms. Smith also believed that Michelle's knowledge of advanced mathematics was necessary for her to attend college on scholarship and, ultimately, obtain a high paying job. In both families, access to math capital was facilitated using social networks (e.g., teacher-colleagues, or knowledgeable family members).

Secondly, parental role construction is linked to parental support practices (Hoover-Dempsey et al., 2005). Therefore, patterns in parental behavior speak to their roles, and thus, their math support practices. I find that parents' math support practices are complex and dependent upon several situational contexts, such as their perceptions of their child's needs, their perceptions of math, professional and personal obligations, and their community cultural wealth. Since math support practices are complex, parents conformed their support to the salient context of a given

situation. These findings demonstrate how current discourses of parental involvement are not flexible enough to relate the richness of African American parents' math support practices. For example, as the "hard parent," Mrs. Spencer held her daughter to a particularly high standard for math study. She diligently watched over Nia's math performance (e.g., studying for tests, homework completion, checking grades online, etc.) during a transitional period in Nia's education. Mrs. Spencer refocused her efforts on work at a time when Nia's social standing in her new school solidified and as her own professional life became more demanding. During this time, she relented her many proximal supports.

Martin's (2000) multilevel framework highlights how individuals are socialized in math at various societal levels (i.e., sociohistorical, community, classroom, individual), which have particular salience for individuals, given a certain context. In past studies of math support, research has found that parents' employment status impacts patterns of engagement within schools (Muller, 1995; Heymann & Earle, 2000; Ruhm, 2008). This study accounts for the impact of parents' work on the kinds of math support they offer at home, thereby elaborating on the sociocultural and community level of the multilevel framework. Parents' support practices were, at times, reinforced or undermined by their professional responsibilities. Mrs. Spencer's profession as a teacher and instructional coach gave her uncommon insight into how CPS operates and the ability to recognize when, or if, Nia's math teacher was performing below par (e.g., navigational capital). In this way, she was able to ensure that Nia took part in what she deemed a high-quality learning environment. Mrs. Spencer's profession (and other roles within her church) also placed demands on her time and energy that pulled from her ability to be a "hard parent." When her role as the "hard parent" conflicted with these other demands, Mrs. Spencer's husband provided support by encouraging her to reevaluate her parenting goals and to do no

more than was necessary (e.g., social capital).

Lastly, parents attended to their children's math identities. Recent studies of mathematics socialization have documented how African American parents' mathematics socialization is influenced by issues of race (English-Clarke, Slaughter-Defoe, & Martin, 2012; English-Clarke, 2011; Martin 2000; Martin 2006, Berry, 2008). Parents relayed overt messages to students about the ways in which school math contexts can be hostile environments for Black children (English-Clarke, Slaughter-Defoe, & Martin, 2012; English-Clarke, 2011). I did not find evidence of racial-mathematics socialization among these 8th graders, however, that may be due to their relative developmental stage in comparison to the 9th and 10th graders in previous studies (English-Clarke, Slaughter-Defoe, & Martin, 2012; English-Clarke, 2011). Therefore, parents' use of racial-mathematics socialization messages may be preceded by developmental markers, such as age, grade-level, or race-salient contexts. The data do confirm that parents' math support practices (as a form of math socialization) impact math identity. In both cases, setbacks in both Nia's and Michelle's math performances were linked to challenges confronting their mathematics identities. Each mother was attentive to the cultivation of a positive math identity. For example, Mrs. Spencer worried whether Nia's math identity included the self-determination or work ethic required for success without her intense oversight. In deciding whether to enroll Nia into honors courses or AP, the fragility of Nia's math identity played a crucial role in Mrs. Spencer's decision that honors Geometry would be the next course for Nia. In Michelle's case, her math identity was strong, except for the challenges she faced in Geometry. Michelle was less confident in her ability to work with shapes, even though Ms. Smith's evaluation of Michelle's math performance led her to see Michelle as a competent and smart math student. Nevertheless, Ms. Smith thought it was important to provide Michelle with tools (e.g., prayer, rereading of the

problem, skipping the question and returning to it later, etc.) to help her when she felt like she could not perform at the high levels to which she was accustomed.

CHAPTER 6 DISCUSSION AND IMPLICATIONS

This dissertation is an intellectual and political undertaking to acknowledge the strengths of African American families and to situate African American parents as both culturally competent and good parents. By identifying the support practices of parents of successful mathematics students, I re-conceptualize parental involvement for African Americans, and I support a paradigm of research that looks for the unconventional strengths of African American parents and families, rather than their perceived, often pathologized weaknesses. This study sought to address the following research questions: (1) How do African American parents conceptualize their roles in their children's mathematics education and what support practices do they employ to enact these roles? (2) How have math reforms (i.e., CCSS-M, as part of the most recent reforms in mathematics education) impacted parents' support practices in mathematics? (3) In what ways are African American parents' roles and behaviors influenced by their life experiences and mathematics identities? Through multiple case study and narrative analyses of six African American families, I provided insight into their experiences as they supported the math development of their children. I discussed the findings of this study and its implications for future research endeavors, mathematics educators, and educational policy.

In terms of the first research question, there were three salient practices that gave parents agency in their children's math development: good stewardship of their children's education by selecting schools and programs that would ensure their access to advanced mathematics; the promotion of the knowledge, skills, and identities for math success; and the motivation of their children's persistence in math and high levels of achievement. With failing neighborhood schools concentrated in communities of color (Henricks, et al. 2017), these parents acted as good

stewards for their children's math development. The structure of CPS (e.g., types of schools, programs within schools) factored prominently into the negotiation for schools and advanced math programs. Three of the six families opted out of neighborhood schools, and the remaining three families with children in neighborhood schools either found or were in the market for a different school. Parents believed something (e.g., high-quality curriculum, the perception of safety, etc.) was missing from their neighborhood school and/or were seeking to shield their children from perceived negative outcomes associated with the neighborhood school. Future studies may seek to answer the following questions: Who gets left behind in CPS neighborhood schools in predominantly Black neighborhoods, and why? What processes reroute some African American students away from their neighborhood schools? What are the factors that Black parents consider when changing schools in CPS? With respect to mathematics and among African American families that opt out of their neighborhood school, how do the new school's mathematics environment and curriculum compare to that of their neighborhood school?

While I expected to center the analyses at the community level (e.g., parents) of Martin's (2000) multilevel framework for mathematics socialization and identity, the sociohistorical level (e.g., discriminatory policies and practices) was more prominent than I initially anticipated. Like Patillo (2015) and White (2018), I found that school choice as a method for underserved students to gain access to high-quality schools is flawed. Schooling outcomes for CPS students differ based on race; Black students are less likely to attend selective enrollment schools, and principal discretion at top-rated high schools is used for higher-income White students who lack the merit to be admitted through the normal application process. The current study extends what is known about African American parents' practices of support through considerations of the implications of district and school policies on math support. CPS's current school choice policies and

practices, (i.e., selective enrollment schools, the high school application process, principal discretion, and unofficial school-level practices, like level-up programming) implied who could and could not access “good” schools and the kinds of math curriculum students had access to, thusly impacting parental math support. These study findings are transferable to African American parents who are, not only, engaging in school choice, but also have children in schools or districts where tracking occurs. Literature has established that students of color are underserved in high-quality curricular settings such as academic tracts, Gifted and Talented programs, and Advanced Placement programs (Morris, 2001; Oakes, 1985, 1990). I provide insight into the experiences of parents and the tools (e.g. social class, insider knowledge of school district, social networks, etc.) they used to negotiate access to high quality mathematics curriculum.

While future research should consider other ways school choice policies (as well as other policies) affect parental math socialization, there are also implications for policymakers. Policymakers, in partnership with key stakeholders (e.g., parents, educators, community leaders, etc.), should reevaluate Chicago’s school choice system for its differential impact on vulnerable populations. Key stakeholders (e.g., African American parents from varying SES backgrounds, educators of students of color, community leaders, etc.) may help to illuminate areas where policies and procedures should be modified for more equitable implementation of quality schooling. For example, I shared some preliminary findings with a CPS school administrator to gain additional insight into these findings. Speaking in reference to high school applications and the “rule” that families must list their desired schools in order of preference, she was adamant that schools do not make the rules clear to African American parents. Perez (2018), from the Chicago Tribune, describes the high school application process as “a patchwork of rigid policies

and informal practices” that “can make that process a dizzying endeavor for many households.” Specifically, officials should consider how families of color, particularly low-SES families, experience the high school application process, including principal discretion, and where the process should be improved to provide high-quality schooling to those who would not have it otherwise.

In terms of equitable access to selective enrollment schools, the implications for changes in policy are complex. Toward the goal of increasing equitable access to high-quality selective enrollment schools, officials should consider ensuring enrollment numbers at selective enrollment schools, especially among the top-rated schools, is reflective of the larger CPS student population. This may mean reevaluating the practice of principal discretion and implementing stiffer parameters on who can and cannot be admitted into a school based on principal discretion.

The next salient practice of parental agency was to promote the knowledge, skills, and identities for math success. Parents assumed responsibility for ensuring certain math competencies were ascertained by their children, even when the instruction was not offered in schools. This practice provided supplemental mathematics instruction (directly and indirectly), conveyed messages that shaped students’ mathematics identities, and utilized members of the families’ social networks for math support. Parents selected programs that reinforced certain math competencies or that supplemented in-school math learning. These findings reinforce the notion that parents’ support practices are an indication of parents’ conceptions of what schools and math classrooms lack; that is, parents determine where to focus their support efforts based on how they perceive math in schools and what they believe their children need.

Irrespective of parents' own math identities, parents aimed their support at maintaining or building up their child's math identity. It was important for their children to be positively identified with mathematics. In one case, a parent with a weaker math identity shielded her child from her own negative disposition toward math by monitoring her statements about her relationship with math in the presence of her daughter. The students in this study often had STEM-related career aspirations. Parents saw math as a method to secure their child's middle-class future. Future studies should consider the ways promoting the knowledge, skills, and identities for math success among African American parents is gendered, and how the intersection of gender and SES factor into parental math support, in terms of the development of certain kinds of math identities. Potential research questions include: (1) How is math socialization among African American parents gendered and a function of social class? (2) Do the way African American parents utilize members of their social networks for math support vary as a function of social class? and (3) How do district policies influence the kinds of supplementary math programs parents choose?

The third aspect of parental math support included motivation to persist and achieve at math. The finding that African American parents acted as motivators is consistent with previous literature (Berry, 2008; Clark 1983; McGee & Spencer, 2015; Terry & McGee, 2012) and speaks to the notion that even successful African American math students get fatigued, causing parents to reinforce its importance. As African American children experience particular hardships in their quest for advanced mathematics, parents engage in the emotional work of encouraging them or highlighting the need for advanced math as a course of study. Unlike their White counterparts who often have multiple opportunities or access points to the middle-class, the educational stakes

are high for Black children. Parents recognized that advanced math was an opportunity for their child to access the middle-class.

In terms of the second research question, the goal of this research was also to assess the impact of Common Core on parents' math support practices. The parents in this study were unable to index any changes originating from CCSS-M in classroom practices and homework and were, therefore, disconnected from CCSS-M. This finding differs only somewhat from that of Remillard and Jackson (2006), who also found that parents were disempowered and disconnected from the mathematics classroom because they were not given access to certain math reform materials, and thusly their participation was undermined. Unlike the lay-parents in this study, the parents referenced by Remillard and Jackson (2006) were aware that reform math was taking place and could indicate where they saw it influence their practice at home. The grade level of the focal children in their study may help to explain the difference between the findings. Because mathematics becomes increasingly more complex and comprehensive as students advance (Hill & Taylor, 2004), as parents of 2nd and 3rd grade children, the parents in the Remillard and Jackson (2006) study were more likely to have a connection with the math content than the parents in this dissertation study, whose children were in 5th through 8th grades. Therefore, they were in a better position to identify differences in the curriculum due to the reform math context. This finding certainly speaks to a need for a clear articulation of the impact of CCSS-M on school mathematics to parents, and particularly for parents with older children. The goal for teachers is to be intentional about instruction, making every instructional move count toward mastery of the content. This goal is aided by parents who are clear about the instructional objectives, concepts, and procedures. Ensuring parents know and understand instructional objectives would help close the distance between parents and schools, and thereby

make participation from parents in homework easier. Educators and policymakers should consider that any efforts to reach out to parents should be in a mode to which parents will have reasonable access (e.g., email, website, newsletter, etc.). Furthermore, the communication should include additional resources (e.g., after-school programs, off-site math programs, educational websites for additional practice, etc.) available to parents and children. There are several communication formats educators could consider. For example, school math departments could publish a quarterly newsletter (online and in print) that outlines topics to be covered during the quarter, as well as online resources, and supplemental resources and programs available to students. Another option includes routinely video recording⁶ teachers thinking-aloud while solving an example math problem that is particularly different from “old math” and making the recordings available to parents and students. This kind of action has the potential to redress some of the distance between African American parents and the math classroom, while also allowing homework time to be more efficient for parents.

For the final research question, analyses of patterns of support revealed that parents’ life experiences and math identities played a role in whether their support practices included engaging in math-related activities with students themselves. Distal and proximal support practices meant that parents could engage in different supports depending on the situation and the perceived needs of their child. In this way, distal and proximal support practices were complex and dynamic. Parents could simultaneously be skilled overseers standing watch over their child’s progress in math and use their math knowledge to delve into math practice with their children.

⁶ This can be done by teams of math teachers outside of normal class hours.

While previous literature positioned parents as either involved or not, with respect to predetermined actions like volunteering or helping with homework (Epstein & Dauber, 1991; Dauber & Epstein, 1993; Stone & McKay, 2000), the characterization of parental support as distal and/or proximal provides an alternative lens for African American parental math engagement. It allows for a reevaluation of what it means for African American parents to be “involved” and highlights how parental math support can feature activities that do not necessarily center math. Future research directions include using the proximal/distal parent support lens on larger samples of African American parents and assessing the kinds of situations that facilitate the use of either or both kinds of math supports. Researchers should consider the relationship between student-level factors and parents’ engagement in proximal and/or distal math supports.

Additionally, this research expands what we know about African American parents’ math socialization by considering the effect of social class on parental math support practices. The within-case analyses offered a detailed insight into the lives of two African American families from different socioeconomic groups. The narratives of these two families demonstrate how schooling options can be either curtailed or expanded as a function of cultural capital and district policies. With children who were at similar places in their school trajectory, the focal children took 2 diverging paths: one a neighborhood school, and the other an accelerated path at an academic center. Social class was a marker of how these parents and children moved throughout the city and how they navigated CPS systems. Math was perceived by both moms as a form of capital that would allow their children to access a middle-class lifestyle. Cultural capital (e.g., members of family social networks, faith, navigational capital, colleagues, etc.) was used to provide access to certain educational opportunities. Research on CPS should consider the

following questions: (1) How do the math programs that parents choose for their children vary by social class? (2) During the 8th-grade transition to high school, what factors do African American parents from different SES backgrounds consider when identifying schooling options? (3) In what ways does gender factor into high school selection for parents?

In terms of race, the findings of this study differ from previous studies where race and mathematics are clearly linked in parents' narratives (English-Clark 2011; Martin 2000, 2006). I do not dispute that race and mathematics are linked, as this has clearly been established in the literature (e.g. Berry, 2008; Berry, Thunder, & McClain, 2011; English-Clark, Slaughter-Defoe, Martin, 2012; Jackson, 2009; Jackson & Remillard, 2005; Martin, 2009a, 2009b; McGee & Martin, 2011; Moses & Cobb, 2001; Remillard & Jackson, 2006; Spencer, 2009); however, in this study the linkages were more subtle. Race was not an overt animus, but its impact is keenly seen. Black students are overrepresented in CPS schools, while White students are largely underrepresented. This means that White students are attending schools elsewhere (e.g., private schools, suburban schools, home schools). While this study was not a comparison between the experiences of Black and White parents, this point speaks to a sorting process that happens a priori that filters children differently into schools based on race (and SES), therefore, White parents and students are having different experiences with schools than Black parents and students. In this way, race is already a part of the fabric of the experiences of the African American parents and children in this study. Although race seemed not to be foregrounded in the math narratives of these families, CPS operates as White institutional space (Feagin, 1996; Moore, 2008; Martin, 2008), wherein the sorting process disproportionately benefits White students. Therefore, by simply attending CPS schools, the African American students and parents of this study had a racialized experience.

With respect to race and social class, this study did find that the intersection of race and social class mattered for parents' support practices. The within-case analyses demonstrate that Middle-income African American families are living a different lifestyle than low-income African Americans and from middle-income White families. For all intents and purposes, middle-class African American families live a more privileged lifestyle than low-income African American families and a less privileged lifestyle than middle-income White families. I contend that race and social class impact how families navigate school systems with low-income African American parents at a greater disadvantage when compared to middle-income African American parents who tend to be more knowledgeable of the district and its policies and who also have social networks who are knowledgeable of the school district. In research of African American families, race and social class should be considered together because the experiences residing at the nexus of the two can vary tremendously for parents.

While this study provided a portrait of the experiences of African American parents (and students), there are some implications for schools and policies to consider when it comes to parental engagement. Educators and policymakers should consider the purposes of African American parental engagement. If the goal is for schools to have parents participate in predefined ways, this ultimately reifies narratives of a deficit when it comes to African American parents. Instead, educators and policymakers should strive to make the best use of parents' preexisting skills and supports. The foremost question for consideration should be how can the parent who has very little time and access to the math discipline be a part of the math classroom? This could include a parental engagement initiative to support schools in providing parental support, communicating with parents, supporting learning at home, offering ways parents can be a part of the decision making at schools, and ways to collaborate with the community.

Ultimately, any initiative would need to be tailored to the community being served. From this study, a school's plan for parental support should begin with understanding the varying math identities, skill levels, and responsibilities that are housed within the families they serve.

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APPENDIX A PARENTING FOR SUCCESS IN MATH: 1ST PARENT INTERVIEW GUIDE

Section 1: Personal Background & Parental Philosophy

“Thanks again for your willingness to talk with me today. Please stop me any time if you have question and remember you can skip a question if you want to at any time. To get started, I’d like to ask you some questions first about your background, just so I can get oriented.”

1. Can you tell me a little about your family growing up? What school was like for you growing up? What did your parents do for a living?
2. Tell me a bit about you and your family now. (What do you do for a living? What grade is/are the child/ren in?)
3. Where do your children attend schools? Do you like the school? Why or why not?
4. Thinking about this past 2015-2016 academic year, how would you say the year went?
5. What are your main concerns as a parent?

Section 2: Math Autobiography

“Thanks. Now I have some questions about your math background and experiences.”

1. When you look at your education through the lens of mathematics, what do you see? Did you like it? Hate it? Did you ever even think about it?
2. What was your background in math? Who or what influenced you? In what ways?
3. Do you see places where your experience in mathematics affected life choices?
4. What have you grown to believe about mathematics? What has influenced your attitude toward mathematics?

Section 3: Mathematics Socialization

“Thanks. Now I have some questions concerning your child and math.”

5. Thinking about this past 2015-2016 academic year and your child’s math class, what went well? What didn’t go well?
6. Were you pleased with your child’s math teacher? Why or why not?
7. How would you characterize your relationship with your child’s math teacher? Tell me about the last time you had an interaction with the math teacher. Would you consider that a typical interaction?
8. Was your relationship with the math teacher better or worse than other parents in your child’s class? How so?
9. Are you involved in schools or have you been? Tell me how.
10. If you are not involved, tell me reasons as to why you are not currently involved.
11. Are there things in general that you do as a parent that you believe are overlooked or undervalued by schools/educators?
12. As a parent, are there things that you do to support math learning because they overlooked by schools/educators?
13. What do you tell your children about mathematics? What have you done to promote your child’s fondness or success in mathematics?
14. How do you stress math at home? Do you make extra effort to stress math more than other subjects? How do you monitor the child’s math progress at home?
15. Do you feel you have input into the decisions about your child’s math learning at school?
16. To what do you attribute your child’s fondness for math (beliefs about his/her math ability)? To what do you attribute their healthy relationship with mathematics? What

do you do differently from other African American parents to promote a healthy relationship with mathematics?

17. What kind of grades did your child make in math, this past year?

18. How important is mathematics to your child's future success/career options?

19. Do you think parents play a role in whether or not students continue to take mathematics courses? How?

20. Who does your child talk to if s/he has a question about math?

21. Who do you call if you need help with a math question or need advice about how to handle a situation with the school? Who do you lean on for support?

22. When people are trying to provide children with the help or the background, they need to be successful in mathematics they may get information or support from different people or places. Looking at this table, put an "X" in all the boxes that represent the kinds of support your child received with math and from whom:

SOURCES OF SUPPORT

TYPE OF SUPPORT	Self	Partner	Sibling	Extended Family	Family Friend	Other (i.e., neighbor, church, etc.)
Provide games that have a math focus or uses math generally						
Provide flashcards						
Give incentives for good math grades						

SOURCES OF SUPPORT

TYPE OF SUPPORT	Self	Partner	Sibling	Extended Family	Family Friend	Other (i.e., neighbor, church, etc.)
Purchase math workbooks						
Provide opportunities to use math skills in daily life (i.e., going to store and counting change; counting objects; etc.)						
Teach/review math concepts or strategies (i.e., counting by 2s; long division, etc.)						
Teach child money management						
Discuss math development with teacher						
Play board/card games						
Enroll child in activities that use math (i.e., STEM camp, tutoring, etc.)						
Provide extra practice with math						
Provide opportunities for academic recognition at church or another forum						

SOURCES OF SUPPORT						
TYPE OF SUPPORT	Self	Partner	Sibling	Extended Family	Family Friend	Other (i.e., neighbor, church, etc.)
Provide online access for math work or math games						
Other						

Look carefully at how they’ve filled out the table a probe what’s there...

23. Which people do you or your child lean on the most for math support? How is this working out for you? When was the last time this person helped you? Can you tell me about what happened then?

24. Can you tell me a little bit about the empty boxes here? Are there other forms of support that you wish were available to your child?

25. What challenges have you faced while supporting your child’s math learning? What are some of the most difficult things when it comes to promoting excellence in math? What obstacles have you overcome?

26. Are you aware of Common Core math reform? Tell me a little bit about what you know.

27. Has your child’s school reached out to you to provide information on Common Core and the ways it will impact your child’s math education? If so, what did they tell you?

Section 4: Racial-Mathematics Beliefs

“Thanks. Now I have a few final questions I would like to ask”.

28. Do you think there are factors that prevent or discourage African American from going into mathematics, doing well, and sticking with it? What are those factors? Are those same factors present in other areas of life? Did any of those factors affect you?
29. Do you think society sends different messages to African Americans than other groups such as Whites, Asians, or Latinos about their ability to participate in mathematics? If so, how is this message different for other groups?
30. Do you think society sends different messages to boys and girls about their ability to participate in mathematics? If so, how is this message different for boys and girls?
31. Those are all my “official questions”. What have I forgotten to ask about? What else would you like to say?

“Thank you for talking to me today. I want to leave you with several parental behaviors checklists to complete on a monthly basis until we meet again for our next interview. When we meet next for our next interview you can return the completed forms to me. So, here is a packet of the parental behaviors checklist. Also is there a family you would like to nominate to participate in this study? (Give Nominations sheet.) Now as I get your cash incentive, can we talk about scheduling your next interview?

APPENDIX B PARENTING FOR SUCCESS IN MATH: 2ND PARENT INTERVIEW GUIDE

“Thank you again for your willingness to talk with me today. Please stop me any time if you have question and remember you can skip a question if you want to at any time.”

Section 1: Math Socialization

1. The last time we talked was this past summer and you were just coming off of the last (or gearing up for this next) school year. How are things going overall this school year?
2. How do you feel about your child’s math teacher?
3. What are your goals for math this year?
4. Have your child’s feelings for math changed any since the start of school?
5. How is your child doing in mathematics?
6. Since the start of this new 2016-2017 academic year, who has typically helped with math homework in your household? Who has your child gone to if s/he had a question about math?
7. Tell me about the last time your child needed help with homework, what happened?
8. Tell me about the last conversation you had with your child about math? Would you consider this a typical interaction?
9. Thinking about this school year, put an “X” in all the boxes that represent the kinds of support your child received with math and from whom:

	SOURCES OF SUPPORT					
TYPE OF SUPPORT	Self	Partner	Sibling	Extended Family	Family Friend	Other (i.e., neighbor, church, etc.)
Provide games that have a math focus or uses math generally						
Provide flashcards						
Give incentives for good math grades						
Purchase math workbooks						
Provide opportunities to use math skills in daily life (i.e., going to store and counting change; counting objects; etc.)						
Teach/review math concepts or strategies (i.e., counting by 2s; long division, etc.)						
Teach child money management						
Discuss math development with teacher						

TYPE OF SUPPORT	SOURCES OF SUPPORT					
	Self	Partner	Sibling	Extended Family	Family Friend	Other (i.e., neighbor, church, etc.)
Play board/card games						
Enroll child in activities that use math (i.e., STEM camp, tutoring, etc.)						
Provide extra practice with math						
Provide opportunities for academic recognition at church or another forum						
Provide online access for math work or math games						
Other						

Look carefully at how they've filled out the table a probe what's there...

Section 2: Common Core

10. We talked a little bit last time about Common Core and its implementation in schools and the changes that are supposed to be visible in the math classroom. Are you aware of Common Core math reform? Tell me about what you know.

11. Has your child's school reached out to you to provide information on Common Core and the ways it will impact your child's math education? If so, what did they tell you?
12. Have you noticed any differences in the math that your child is bringing home since Common Core was implemented? How do you feel about that?
13. Last time we met, you said that you engage in certain practices (refer to parent checklist). Has that changed over the school year? How so? Why?

Section 3: Familial Commitments and Obligations

“Part of this study is to understand the burdens and supports that families have at their disposal as they go about everyday life. A big part of burdens and support for some families are finances.
“

14. Thinking about other families who make about as much money as you do, would you say that your finances have to cover more, less or about the same as theirs?
15. Compared to other families in the same income bracket, I have to work harder to maintain my lifestyle. Do you agree with this statement?
16. Do you have financial obligations/commitments to extended family/social networks? If so, how does that weigh on you?
17. If you didn't have outside financial obligations, how would that impact your family?
How would it impact the time that you have available to spend with your family?
18. If you needed an emergency influx of cash would you be able to lean on your family/social networks?
19. Those are all my “official questions”. What have I forgotten to ask about? What else would you like to say?

“Thank you for talking to me today. I want to leave you with several parental behaviors checklists to complete on a monthly basis until we meet again for our next interview. When we meet next for our last interview you can return the completed forms to me. So, here is a packet of the parental behaviors checklist. Now as I get your cash incentive, can we talk about scheduling your next interview?”

APPENDIX C PARENTING FOR SUCCESS IN MATH: 3rd PARENT INTERVIEW GUIDE

“Thank you again for your willingness to talk with me today. Please stop me any time if you have question and remember you can skip a question if you want to at any time.”

Section 1: Reflections on the School Year

1. Thinking about this past 2015-2016 academic year and your child’s math class, what went well? What didn’t go well? Have you had any struggles? If so, how did you handle them?
2. How would you characterize your child’s performance in math this year?
3. How are you going to approach math next year? Is there anything you will/would do differently?
4. Are there lessons from this year that you will apply with your other children?
5. Were you pleased with your child’s math teacher? What or why not?
6. How would you characterize your relationship with your child’s math teacher? Tell me about the last time you had an interaction with the math teacher. Would you consider that a typical interaction?
7. Was your relationship with the math teacher better or worse than other parents in your child’s class? How so?
8. If you are not involved, tell me reasons as to why you are not currently involved.
9. Common core/math reform questions: Aside from Common Core, what do you know of other math reforms (nationally or in the district)? (changes in instruction; type of work; standardized tests)
10. What are your thoughts on the importance of 8th-grade algebra?
11. Are you involved in schools or have you been? Tell me how.

12. Thinking about all of the roles that you play and obligations that you have, is there anything that got in the way of you doing more with the school or with your child's academics, especially with math? If yes, what and why?

13. How do you manage parenting along with your other obligations?

14. Thinking about this school year, put an "X" in all the boxes that represent the kinds of support your child received with math and from whom:

TYPE OF SUPPORT	SOURCES OF SUPPORT					
	Self	Partner	Sibling	Extended Family	Family Friend	Other (i.e., neighbor, church, etc.)
Provide games that have a math focus or uses math generally						
Provide flashcards						
Give incentives for good math grades						
Purchase math workbooks						
Provide opportunities to use math skills in daily life (i.e., going to store and counting change; counting objects; etc.)						
Teach/review math concepts or strategies (i.e., counting by 2s; long division, etc.)						

	SOURCES OF SUPPORT					
	Self	Partner	Sibling	Extended Family	Family Friend	Other (i.e., neighbor, church, etc.)
Teach child money management						
Discuss math development with teacher						
Play board/card games						
Enroll child in activities that use math (i.e., STEM camp, tutoring, etc.)						
Provide extra practice with math						
Provide opportunities for academic recognition at church or another forum						
Provide online access for math work or math games						
Other						

Look carefully at how they've filled out the table a probe what's there...

15. Could you tell me your plans for your son/daughter? What math are they going to take next year? Do you plan on changing schools? What is your high school plan for him/her?

16. Racial socialization: Over the past year have you talked with your son/daughter about race? (i.e., Black history, Black toys/games, gone to Black cultural events, be proud to be Black, bought Black books)

17. Those are all my “official questions”. What have I forgotten to ask about? What else would you like to say?

“Thank you for talking to me today. Before I go, I will give you your cash incentive for participating in this interview. Thanks again.”

APPENDIX D PARENTING FOR SUCCESS IN MATH: 1st CHILD INTERVIEW

GUIDE

Section 1: Personal Background & Math Autobiography

“Thanks again for your willingness to talk with me today. Please stop me any time if you have question and remember you can skip a question if you want to at any time. To get started, I’d like to ask you some questions first about your personal and math background, just so I can get oriented.”

1. How old are you and what grade are you in at school? Do you like school?
2. What do you want to be when you grow up? Why?
3. How important is mathematics to your future career? Do you think it will help you? How so?
4. I want you to tell me your “math story” of how did you come to like math (or be good at math)? Have you always been good at math? How do you feel about learning math at school? Has math gotten harder or easier for you as you advance to higher grade levels? Why do you think that? Describe any experiences or mentors you have had in learning mathematics (include factors/persons who were influential in your desire/lack of desire to learn mathematics). Describe your view of yourself in the future; does mathematics have a place in your vision?
5. Thinking about this past year, what grade did you earn in math class?

Section 2: Math Socialization

“Thanks. Now I have some questions about how you learn math and the impact of your family on your learning.”

6. Is it important for you to do well in mathematics? Tell me more about why it is (not) important. Is it important to your family for you to do well in mathematics? How do you know?
7. How do your parents feel about grades? How do you know?
8. How do you know you are doing well in math? Finish the sentence: I know I am doing well in math when...
9. Do you like math? Why do you like math? Do you like math class or your math teacher? Why or why not?
10. Do you think you are good at math? Why or why not?
11. Do your parents make sure that you do your math homework? How do they check to see that you have completed your homework? What happens if you don't do your homework?
12. What would your parents do if you were not doing well in math?
13. Who would you ask for help if you were not doing well in math? Why? Would you ask your parent? Why or why not?
14. Do you remember the last time your parent helped you with math work? Can you tell me more about that? Walk me through what happened.
15. If you had a problem at school, do you think your parent could help? Can you tell me the last time you had a problem at school and your parent helped?
16. If you were not doing well in school, would your parents help you? If so, how would they help? Would someone else be able to help? Where are places where you would get help?
17. In what ways does your family support your learning mathematics? Are there other ways that your family helps you with math that I haven't asked about? What are they?

Section 3: Math Challenges & Racial-Mathematics Beliefs

“Thank you. Now I have a few final questions about challenges you may have faced with math.”

18. Thinking about this past 2015-2016 academic year, what are some of the most difficult things about learning math?

19. Is doing well in math important for other students around you? How do you know? Does this influence you at all? How so or why not?

20. As a female/male student and African American, do you think you are expected to do as well in mathematics as other students? How do you know? Has your parent ever talked with you about these kinds of issues? What did they tell you?

21. Those are all my “official questions”. What have I forgotten to ask about? What else would you like to say?

APPENDIX E PARENTING FOR SUCCESS IN MATH: 2nd CHILD INTERVIEW GUIDE

“Thanks again for your willingness to talk with me today. Please stop me any time if you have question and remember you can skip a question if you want to at any time. To get started, I’d like to ask you some questions about your experiences this year with math class.”

1. How is math going this year?
2. Do you like your math teacher?
3. Have you had any struggles? Tell me about those.
4. What grades have you earned so far this year?
5. Are you doing well in math this year? How do you know?
6. Has there been any one person who has helped you with math class? What have they helped you with?
7. Do you help others with their math work?
8. Compared to other students in your math class, do you take math class more seriously?
9. How do you expect the rest of the year to go for you? What are you plans for math next year?
10. Do you still like math? Why?
11. Do you still think you are good at math? Why?
12. Do you think there are factors that prevent or discourage African American from going into mathematics, doing well, and sticking with it? What are those factors? Are those same factors present in other areas of life? Did any of those factors affect you this year?

13. Do you think society sends different messages to African Americans than other groups such as Whites, Asians, or Latinos about their ability to participate in mathematics? If so, how is this message different for other groups?
14. Do you think society sends different messages to boys and girls about their ability to participate in mathematics? If so, how is this message different for boys and girls?
15. Those are all my “official questions”. What have I forgotten to ask about? What else would you like to say?

APPENDIX F PARENTING FOR SUCCESS IN MATH: SOCIAL NETWORK

INTERVIEW GUIDE

Section 1: Personal Background

“Thanks again for your willingness to talk with me today. Please stop me any time if you have question and remember you can skip a question if you want to at any time. To get started, I’d like to ask you some questions first about your background, just so I can get oriented.”

1. I’d like to start by getting a little background information on you. Can you tell me a little about your family growing up? What school was like for you growing up?
2. Tell me a bit about your family now. (What do you do for a living? What grade is/are the child/ren in?)
3. Where do your children attend schools? Do you like the school? Why or why not?

Section 2: Math Autobiography

“Thanks. Now I have some questions about your math background and experiences.”

4. When you look at your education through the lens of mathematics, what do you see? Did you like it? Hate it? DO you ever even think about it?
5. What was your background in math? Who or what influenced you? In what ways?
6. Do you see places where your experience in mathematics affected life choices?
7. What have you grown to believe about mathematics? What has influenced your attitude toward mathematics?

Section 3: Relationship to the family

“Thanks. Now I have some questions about your relationship to the family.”

8. How do you know the family? Who are you to them (family-friend, relative, etc.)?
9. How much time would you say you spend with the family on average?

10. Tell me about the last time you spent with the family. Is this typical?
11. When did you first begin helping the child with math work? How did you get involved?
12. What kinds of things do you help the child with?
13. Tell me about the last time you helped the child with math? Is this typical?
14. How important is mathematics to this child's future success/career options?
15. I am going to read of a list of actions. Tell me if you have done any of the following for the child?

MATH SUPPORTIVE ACTIONS (social networks)	DESCRIPTION
Purchase math workbooks	
Provide opportunities to use math skills in daily life (i.e. going to store and counting change; counting objects; etc.)	
Teach/review math concepts or strategies (i.e. counting by 2s; long division, etc.)	
Teach child money management	
Discuss math development with teacher	
Play board/card games	
Enroll child in activities that use math (i.e. STEM camp, tutoring, etc.)	
Provide extra practice with math	
Provide opportunities for academic recognition at church or another forum	
Provide online access for math work or math games	
Other	

Section 4: Racial-Mathematics Beliefs

“Thanks. Now I have a few final questions I would like to ask”.

16. Do you think there are factors that prevent or discourage African American from going into mathematics, doing well, and sticking with it? What are those factors? Are those same factors present in other areas of life? Did any of those factors affect you?
17. Do you think society sends different messages to African Americans than other groups such as Whites, Asians, or Latinos about their ability to participate in mathematics? If so, how is this message different for other groups?
18. Do you think society sends different messages to boys and girls about their ability to participate in mathematics? If so, how is this message different for boys and girls?
19. Those are all my “official questions”. What have I forgotten to ask about? What else would you like to say?

APPENDIX G DEMOGRAPHIC SHEET

Year of Birth: _____

Gender: _____

Race or Ethnicity: _____

Please list your children by age, gender, and grade level:

Do you rent or own your home (Please check one)? ☐ Rent ☐ Own

What is your highest level of education (Please check one)?

- | | |
|-------------------------------------------------------------|---------------------------------------------------------|
| <input type="checkbox"/> Did not complete high school | <input type="checkbox"/> Some post-graduate school |
| <input type="checkbox"/> High school diploma or GED | <input type="checkbox"/> Post-graduate degree or higher |
| <input type="checkbox"/> Some college or associate's degree | <input type="checkbox"/> Other (please specify): |
| <input type="checkbox"/> Bachelor's degree | |

What is your current employment status (Please check one)?

- | | |
|--------------------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Working full time | <input type="checkbox"/> Student |
| <input type="checkbox"/> Working part time | <input type="checkbox"/> Temporarily laid off |
| <input type="checkbox"/> Unemployed | <input type="checkbox"/> Permanently disabled |
| <input type="checkbox"/> Retired | <input type="checkbox"/> Looking for work |
| <input type="checkbox"/> Homemaker | <input type="checkbox"/> Other (Please specify): |

What is your job title? (If applicable):

How old is your partner?

How long have you and your partner been living together?

Are you and your partner married?

What is your partner's highest level of education (Please check one)?

- | | |
|-------------------------------------------------------------|---------------------------------------------------------|
| <input type="checkbox"/> Did not complete high school | <input type="checkbox"/> Some post-graduate school |
| <input type="checkbox"/> High school diploma or GED | <input type="checkbox"/> Post-graduate degree or higher |
| <input type="checkbox"/> Some college or associate's degree | <input type="checkbox"/> Other (please specify): |
| <input type="checkbox"/> Bachelor's degree | |

What is your partner's current employment status (Please check one)?

- | | |
|--------------------------------------------|----------------------------------------------------|
| <input type="checkbox"/> Working full time | <input type="checkbox"/> Student |
| <input type="checkbox"/> Working part time | <input type="checkbox"/> Temporarily laid off |
| <input type="checkbox"/> Unemployed | <input type="checkbox"/> Permanently disabled |
| <input type="checkbox"/> Retired | <input type="checkbox"/> Looking for work |
| <input type="checkbox"/> Homemaker | <input type="checkbox"/> Other (Please specify): _ |

What is your partner's job title? (If applicable):

What was your total household income for 2014, from all sources (Please check one)?

- ☐ Less than \$20,000
- ☐ Between \$20,000 and \$40,000
- ☐ Between \$41,000 and \$60,000
- ☐ Between \$61,000 and \$80,000
- ☐ More than \$81,000 and \$100,000
- ☐ than \$101,0000

VITAE

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EDUCATION

Ph.D., 2019 expected UNIVERSITY OF ILLINOIS AT CHICAGO, Chicago, IL
Curriculum and Instruction

M.A., 2008 NORTHWESTERN UNIVERSITY, Evanston, IL
Learning Sciences

B.S., 2006 TEXAS A&M UNIVERSITY, College Station, TX
Interdisciplinary Studies

RESEARCH EXPERIENCE

GRADUATE RESEARCH ASSISTANT, INSTITUTE FOR RESEARCH ON RACE AND PUBLIC POLICY,
University of Illinois, Chicago, IL
Fall 2018 - Spring 2019

Conducted a year-long qualitative study at a select number of schools for Chicago Public Schools and the Chicago Teachers Union to examine the importance of high-trust environments between teachers and principals, how these affect teacher's REACH observation scores, and to identify a set of "best practices" that successful schools are using that could be adopted by other schools in the district under the direction of P.I. Amanda E. Lewis.

GRADUATE RESEARCH ASSISTANT, COLLEGE OF EDUCATION, University of Illinois, Chicago, IL
Fall 2017 – Spring 2018

Conducted systematic literature reviews regarding risk and resilience among adolescents of color involved in the juvenile justice system under the direction of P.I. Aerika Brittan Loyd.

GRADUATE RESEARCH ASSISTANT, AFRICAN AMERICAN STUDIES, University of Illinois,
Chicago, IL
Fall 2016 – Spring 2017

Analyzed interview data and wrote report on the impact of Bond Court on the family and loved one of detainees under the direction of P.I. Beth Richie.

GRADUATE RESEARCH ASSISTANT, INSTITUTE FOR RESEARCH ON RACE AND PUBLIC POLICY,
University of Illinois, Chicago, IL
Spring 2011 – Summer 2017

Assisted Dr. Beth Richie in applying for grants, editing of her manuscript *Arrested Justice: Black Women, Violence and America's Prison Nation* and literature reviews. Additional duties

included creating newsletters and poster presentations featuring the work of scholars whose work is at the center of race and public policy, as well as coordinating and managing events held by the Institute for Research on Race and Public Policy.

GRADUATE RESEARCH ASSISTANT, COLLEGE OF EDUCATION, University of Illinois, Chicago, IL
Spring 2012

Collaborated with Dr. Danny Martin, Dr. Ebony McGee and Project SYNCERE to put on a series of four parent workshops for African American parents of children in 4-6th grades. Workshops centered on mathematics and science with the goal of providing parents with information about college, STEM professions, parenting strategies, and community resources useful for them as their child advances in mathematics. Duties included the facilitation/creation of workshops, gather resources for parents, and address parents' questions and concerns.

GRADUATE RESEARCH ASSISTANT, COLLEGE OF EDUCATION, University of Illinois, Chicago, IL
Spring 2011

Under the supervision of Dr. Danny Martin, I conducted after school observations of Young People's Project, a program where 8th grade students learned year-one Algebra from 11th and 12th grade students. Provided programmatic feedback to be used in future iterations of the program.

TEACHING EXPERIENCE

AAST 100: INTRO TO AFRICAN AMERICAN STUDIES, LIBERAL ARTS AND SCIENCES, University of Illinois, Chicago, IL
Spring 2019

Course Description: The African American experience, focusing on African and African American culture, the slave trade, slavery and emancipation in the Americas, Twentieth Century social relations, and struggles for civil rights.

ED 205: RACE, ETHNICITY AND EDUCATION, COLLEGE OF EDUCATION, University of Illinois, Chicago, IL
Fall 2015 & Fall 2017

Course Description: Introductory and cross-disciplinary examination of issues related to race, ethnicity, and cultural diversity in education.

ED 396: INDEPENDENT STUDY, COLLEGE OF EDUCATION, University of Illinois, Chicago, IL
Spring 2017

Course Description: Preliminary training on research with human Subjects and practical experience working on a qualitative research project.

PUBLICATIONS

Richie, B., Erin E. & Washington, D. (2017). *The impact of bond court on family members and loved ones*. Report produced for Cook County Pretrial Services Office.

Washington, P., & Washington, D. (2015). The Hunger Games: Confronting innocence and deconstructing Black prejudice through Rue. *Humanity & Society*. 1-3.

Washington, D., Torres, Z., Gholson, M., & Martin, D. (2012). Crisis as a Discursive Frame in Mathematics Education Research and Reform: Implications for Educating Black Children. In S. Mukhopadhyay & W.M. Roth (Eds.), *Alternative Forms of Knowing (in) Mathematics: Celebrations of Diversity of Mathematical Practices*. Sense Publishers, Boston, MA: Sense Publishers.

PRESENTATIONS

Washington, D. (2016). Choosing schools: Perceptions of school quality among working class African American parents. Presented at the biennial meeting of the International Conference of Urban Education, San Juan, Puerto Rico.

Washington, D. (2015). Parental practices for success in mathematics in the era of Common Core. Presented at the biennial meeting of the Conference on Research Directions, Hilton Head, South Carolina.

Washington, D., Washington, S., & Humphries, M. (2015). Social and emotional learning: Urban teachers' perceptions of the roles of parents. Presented at the biennial meeting of the Conference on Research Directions, Hilton Head, South Carolina.

Williams, B., & Washington, D. (2014, November). Social and Emotional Learning Programming in the Classroom: Urban Teachers' Perceptions of Barriers to Implementation. Presented at the biennial meeting of the International Conference on Urban Education, Montego Bay, Jamaica.

Washington, D. (2014, February). How to Create and Manage Writing Goals. Presentation given at Write-On-Site, Chicago, IL.

Washington, D. (2012, February). Parental Support and Students' Strategies for Success. Presentation given at May Elementary Community Academy for Project SYNCERE parent workshop, Chicago, IL.

PROFESSIONAL EXPERIENCE

ASSOCIATE MANAGING EDITOR, PUBLICATIONS COMMITTEE, Publications Committee, *African American Learners*

May 2015 – 2017

Provided logistical support for managing and overseeing the publication activities of the journal of African American Learners. Responsibilities include formulating strategies for promotion and optimizing editorial activities.

COLOR OF VIOLENCE 4 CONFERENCE ORGANIZER, INCITE! Chicago, IL

March 2014 – March 2015

Provided logistical support of large national conference bringing together scholars and activist interested in gender-based violence and inciting transformative possibilities. Responsibilities include venue, interpretation services, and travel arrangements.

NSF WORKSHOP ON WOMEN, IMMIGRATION, & INCARCERATION COORDINATOR, Institute for Research on Race and Public Policy, Chicago, IL

October 2013 – Present

Responsible for logistical coordination of a 3-day national workshop bringing together an interdisciplinary community of scholars, activists, and community organizations to explore the scholarly and legal implications of immigrant enforcement and detention policies and the aggressive law enforcement practices that contribute to mass incarceration and disproportionately affect women of color in the US.

CESA CONFERENCE CO-COORDINATOR, Critical Ethnic Studies Association, Chicago, IL

September 2012 – September 2013

Shared full responsibility for logistical coordination of large national conference bringing together scholars interested in critical studies in the areas of race, ethnicity, gender, and sexuality. Authored the final evaluation report of conference proceedings, including programmatic and logistical recommendations for the next conference.

PROGRAM EVALUATION CONSULTANT, Young People's Project, Chicago, IL

May 2011 – June 2011

Conducted program evaluation. Duties included constructing on-line surveys for participants and analyzing student achievement data for growth in year specified Algebra concepts. Analyzed interview/survey data for themes regarding the internalization of the program's mission by staff, the impact on career choice and future educational plans for high school students, as well as, changes in students' behavior and disposition toward mathematics. Co-authored the evaluation report, including programmatic recommendations for improvement.

YOUTH DEVELOPMENT SPECIALIST, Teen Living Programs, Chicago, IL

January 2009 – Fall 2010

Counseled homeless clients on basic life skills and other issues impeding progress toward self-sufficiency, provided crisis intervention on telephone hotline regarding client housing options and other crises, provided general supervision and conflict resolution with appropriate

interventions, maintained records and documentation in compliance with agency and external policies, and collaborated with team members to address programmatic functioning of the shelter along with youth relations within the shelter.

SUPPLEMENTAL EDUCATION SERVICES TUTOR, Knowledge Points, Chicago, IL
November 2008 – April 2009

Provided supplemental instruction to 2nd and 3rd grade students in mathematics and reading. I maintained records of students' progress toward objectives, assisted with homework, and provided novel opportunities to work towards objectives using games.

MATHEMATICS AND READING TUTOR, Harvey Mitchell Elementary, Bryan, TX
November 2006 – April 2007

Provided instruction to 1st, 3rd, and 5th grade students in mathematics and reading. I worked closely with classroom teachers to outline lesson plans and adjust the educational environment to support academic growth. All of my students took and passed the state standardized test.

CONFERENCES ATTENDED

INTERNATIONAL CONFERENCE ON URBAN EDUCATION, The Urban Education Collaborative, Building and Sustaining Global Partnerships for Learning & Development, November 3-5, 2016, San Juan, Puerto Rico

AMERICAN SOCIOLOGICAL ASSOCIATION, Rethinking Social Movements: Can Changing the Conversation Change the World, August 20-23, 2016, Seattle, WA

AMERICAN EDUCATIONAL RESEARCH ASSOCIATION, AERA Centennial Annual Meeting, April 8-12, 2016, Washington DC

CONFERENCE ON RESEARCH DIRECTIONS, The Institute for the Study of the African American Child, Wayne State University, Fourth Bi-annual Empirical Conference on African American Education 2015, May 3-6, 2015, Hilton Head, SC

INTERNATIONAL CONFERENCE ON URBAN EDUCATION, The Urban Education Collaborative, Building and Sustaining Global Partnerships for Learning & Development, November 6-8, 2014, Montego Bay, Jamaica

AMERICAN SOCIOLOGICAL ASSOCIATION, Hard Times: The Impact of Economic Inequalities on Families and Individuals, August 16-19, 2014, San Francisco, CA

PME-NA2013 CONFERENCE, Psychology of Mathematics Education, Broadening Perspectives on Mathematics Thinking and Learning, November 14-17, 2013, Chicago, IL

CRITICAL ETHNIC STUDIES CONFERENCE, Critical Ethnic Studies Association, Decolonizing Future Intellectual Legacies and Activist Practices, September 19-21, 2013, Chicago, IL

NCTM 2011 ANNUAL MEETING AND EXPOSITION, National Council of Teachers of Mathematics, Geometry: Constructing and Transforming Perspectives, April 13-16, 2011, Indianapolis, IN

JOINT ANNUAL MEETING OF THE MIDWEST SOCIOLOGICAL SOCIETY AND THE NORTH CENTRAL SOCIOLOGICAL ASSOCIATION, Midwest Sociological Society & North Central Sociological Association, Communities in an Age of Social Transformation, March 31-April 3, 2010, Chicago, IL

AWARDS AND SPECIAL RECOGNITION

ISAAC FELLOW, Institute for the Study of the African American Child, 2015

DIVERSIFYING HIGHER EDUCATION FACULTY IN ILLINOIS FELLOWSHIP, Illinois Board of Higher Education, 2013-14

RECRUITMENT SCHOLARSHIP, Northwestern University, 2007-08

CUM LAUDE, Texas A&M University, Fall 2006

UNIVERSITY EXPERIENCE

FOUNDER, Write-On-Site, Institute for Research on Race and Public Policy, University of Illinois at Chicago, Chicago, IL, 2012-2015

PROFESSIONAL MEMBERSHIPS

National Council of Teachers of Mathematics
American Educational Research Association
Critical Ethnic Studies Association