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Rethinking Parent Involvement: African American Mothers Construct their Roles in the Mathematics Education of their Children

Kara Jackson and Janine T. Remillard

Abstract

This article presents initial findings from a study that examined how African American mothers from a low-income neighborhood conceptualized their roles in their children's mathematics learning. Based on interviews and observations focusing on ten mothers' involvement in their children's education, we offer a framework that expands typical characterizations of parent involvement. This framework privileges practices that are both traditionally visible and invisible to the school and highlights how parents act as "intellectual resources" in their children's education (Civil, Guevara, & Allexsaht-Snider, 2002). Our findings offer evidence that traditional understandings of parent involvement may overlook ways that low-income parents deliberately involve themselves in their children's education. Our findings also identify challenges that these parents face in relation to their children's mathematics education. Some of these challenges were due in part to stereotypes held by practitioners about the families they serve in low-income urban schools.

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Introduction

In recent years, educational reform efforts seeking to reach children in low-income communities have resulted in a surge of calls for "parental involvement"

in education (Mattingly, Prislin, McKenzie, Rodriquez, & Kayzar, 2002; No Child Left Behind Act, 2001; Peressini, 1998). While there is disagreement among researchers, policy makers, and practitioners over what comprises parental involvement (Lewis & Forman, 2002; Mattingly et al.), these calls are

> grounded in notions that parental involvement may improve student achievement, produce lower drop-out rates, foster positive attitudes toward learning and school, increase parent-child communication, promote positive student behaviors, enhance the educational experiences of "disadvantaged" students, increase home and community support for schools, and be a basic "right" of all parents in the process of public education. (Peressini, 1998, p. 557)

Despite current research on parent involvement that challenges the assumption that parents are problems to be overcome (e.g., Barton, Drake, Perez, St. Louis, & George, 2004; Civil, 2001; Civil, Guevara, & Allexsaht-Snider, 2002; Fine, 1993; Henry, 1996; Trumbull, Rothstein-Fisch, & Hernandez, 2004; Vincent, 1996), the idea that parents, particularly those from low-income communities, are deficits to their children remains in circulation in schools (e.g., see Epstein & Dauber, 1991; Lawson, 2003, on teachers' perceptions of low-income parents).

In the area of mathematics education, there are few attempts to systematically involve parents in their children's mathematics learning (Epstein & Dauber, 1991; Peressini, 1998, 1996). Further, particularly in the mathematics education literature, parents are "portrayed as stumbling blocks for reform" as "their beliefs about learning and mathematics [are thought to] actually reinforce their children's failure in mathematics" (Peressini, 1998, p. 567; see also Lehrer & Shumow, 1997). In this literature, parents are depicted as either (a) not understanding mathematics themselves, (b) not understanding their children's mathematics and thus characterizing their children's work as "wrong," (c) not interested in their children's (math) learning, or (d) resistant to change.

Critics of deficit views of parents, on the other hand, call on schools to view parents as "intellectual resources" for their children (Civil et al., 2002, p. 1756). Civil and her colleagues highlight mathematical practices embedded in the daily activities of low-income, Latino parents and assist teachers and schools in integrating them into the mathematics curriculum. Building on this perspective, our research explores the ways parents can and do act as resources for their children's education. Through examining the activities of ten mothers, we ask the following questions: (a) How do African American mothers in a low-income neighborhood conceptualize their roles in their children's education? and (b) What are the challenges they face in enacting these

roles? Our aim is to use concrete examples of parents' practices in relation to their children's mathematics education to construct a framework for examining parent involvement and to illustrate ways that parents serve as intellectual resources for their children's learning. While our findings are not representative of all African American parents in low-income neighborhoods, they offer a portrait of parent involvement in these settings that is infrequently represented in the literature.

Perspectives on Parent Involvement

Parent involvement has multiple meanings. In general, "the language of parent involvement is used when schools are the unit of analysis and children's academic achievement is the primary focus" (Lawson, 2003, p. 79). Thus, Lawson argues, much research on parent involvement looks at how parents are engaged in activities that are designed by the school. Their involvement tends to be classified along a "schoolcentric" continuum. On this continuum, parents have "little power or influence over school decision-making processes," and their "involvement" ranges from participating in extra-curricular, school sponsored activities to serving as classroom assistants or participating on a school council to, at the most extreme, serving as "partners in school problem solving" (p. 79).

Epstein (1996; Epstein & Dauber, 1991) created a typology that characterizes six categories of ways that schools can be involved with parents. They offer these types of "school and family connections" as a framework that schools can use in developing programs to encourage relationships with parents. The types of school-family involvement include "parenting" (e.g., helping parents with basic childrearing), "communicating" (e.g., sending home report cards), "volunteering" (e.g., involving parents as assistants in the school), "learning at home" (e.g., advising parents on how to help their children with homework), "decision making" (e.g., including parents in schoolwide decisions), and "collaborating with community" (1996, pp. 215-216). Epstein's typology validates the work that parents do in the home as well as the school in support of their children's schooling. However, the types of connections identified privilege the school's role in determining "what counts" as parent involvement. Further, it is not evident that this characterization of parent involvement begins with exploration into what parents are already doing for their children, in ways visible and invisible to the school.

Recently, Barton et al. (2004) proposed an alternative framework for examining parental involvement, which they call the "Ecologies of Parental Engagement." They deliberately chose to use the word *engagement* rather than

involvement to "expand [their] understanding of involvement [typically understood as what parents do] to also include parents' orientations to the world and how those orientations frame the things they do" (p. 4). Their framework highlights the context within which parents are involved in a particular event, "including [the parent's] relationships with other individuals, the history of the event, and the resources available to both the individual parent and the event designers" (p. 4).

Because parent involvement is most often evaluated from the school's vantage point, parents whose activities do not look like traditionally accepted behaviors associated with parent involvement or are not visible in the school are often classified in the literature as being minimally involved. Most often, low-income parents are classified in this way (Lawson, 2003; see also Lareau, 2000; Lightfoot, 2004). Researchers vary on the ways they frame low-income parents' minimal involvement. Lareau (1987) identified three perspectives taken in the literature. Some subscribe to the "culture-of-poverty thesis," arguing that "lower class culture has distinct values and forms of social organization," and thus, lower class families do not value education as highly as middle class families. Others "accuse schools of institutional discrimination, claiming that they make middle class families 'feel more welcome' than lower class families." Finally, some researchers argue that "institutional differentiation, particularly the role of teacher leadership, is a critical determinant of parental involvement in schooling" (p. 73). While these stances are different from one another in critical ways, they all operate from the "schoolcentric" model. That is, they seek to explain low levels of involvement among low-income parents from the vantage point of the school.

In relation to mathematics education, parents currently encounter substantial reform efforts promoted by the National Council of Teachers of Mathematics (NCTM) and represented in new standards and curricula. These efforts call for increased emphasis on conceptual understanding, reasoning, and problem solving, and decreased emphasis on the memorization of isolated facts and procedures. This vision for school mathematics was introduced in a set of standards, published in 1989 and subsequently revised in 2000 (NCTM). In the 1990s the National Science Foundation funded a number of curriculum development projects that resulted in instructional materials that supported the standards. These materials, now used in districts across the country, are referred to as Standards-based curricula (Senk & Thompson, 2003) and use approaches unfamiliar to most parents in the United States (Peressini, 1998).

Methods

The data analyzed for this paper were collected as part of a project, Parent-Child Numeracy Connections (PCNC), that examines parent-child interactions around mathematics learning in an urban, public elementary school. The aims of PCNC are to (a) understand how parents act as resources for their children, (b) consider how they might be supported in doing so, and (c) make their practices more apparent in schools. In this paper, we examine how African American mothers construct their roles in their children's mathematics education.

Research Context

The participants in the study were mothers and grandmothers of children involved in an Educational Scholarship Program (ESP). (Note: All names of participants and of the educational scholarship organization and school are pseudonyms.) This program has provided full college scholarships since 1987 to minority students from low-income communities who successfully complete high school. In 2000, the program began working with the families of 50 kindergarteners enrolled at Maple Elementary School.

At the time of the current study, 39 students were in the ESP in this cohort at Maple Elementary, with 33 in third grade and 6 in second grade. (Several students moved to other schools and a few had been asked to leave the program.) All were African American. Fifty-five percent of the ESP parents had finished high school, and 3 had bachelor's degrees. Maple Elementary School was one of 60 schools in a large urban school district identified as low performing by the state. The school was located in a low-income, predominantly African American neighborhood and, at the time of the study, served 670 preK-6th grade students. The district had adopted a new mathematics curriculum the previous year. This curriculum, *Everyday Mathematics* (University of Chicago School Mathematics Project, 2001), was designed to support the NCTM Standards.

Researchers' Identities

PCNC is led by a team of mathematics educators and researchers. Janine Remillard, a mathematics educator and teacher educator who has taught elementary school mathematics, is the principal investigator, and Kara Jackson, a doctoral candidate in mathematics education and education, culture, and society who has taught elementary and high school mathematics, is a research

assistant for the project. Both of us are White women who currently adopt middle-class lifestyles. We differ in significant ways from the participants in PCNC, particularly with regard to our racial identification, social class, and formal education backgrounds. It was essential to build trust with the participants from the start of PCNC. Thus, we focused specifically on trust building during the first 6 months of the project; we collected very little formal data during this time and instead focused on developing understandings of the participants' concerns and experiences with their own and their children's mathematics education. One of us (Kara Jackson) has organized and taught in the mathematics component of ESP's summer program since Summer 2003 and has taught mathematics in ESP's after-school program since September 2003. This has allowed for many informal conversations with parents, grandparents, teachers, and children.

Inevitably, our identities have influenced our interpretations as well as our interactions with the ESP families. Rather than attempt to present our interpretations as "objective," we have engaged in what Hammersley and Atkinson (1995) term "reflexivity." That is, we acknowledge that just as the families are actively making sense of their world and of our presence, we, too, are making sense of them and their interpretations. We have continued to reflect on how our particular positioning affects our interpretations and on how our interpretations may differ from or agree with the parents' interpretations.

Data Collection and Analysis

Within the larger project we undertook a number of activities designed to study parent-child interactions around mathematics and respond to parents' questions and concerns about mathematics instruction. These activities included focus group meetings for parents to discuss their children's mathematics education, family math evenings, home interviews with parents, and a six-week parent math course. All interactions with parents, from the informal to the formal, were documented using field notes and, when appropriate, audio or video recording.

The primary data source for this paper was a set of parent interviews undertaken during home observations. We interviewed eight mothers and two grandmothers. As explained later, both grandmothers played primary caretaking roles with their grandchildren. Thus, we refer to the women we interviewed as mothers throughout this paper. Eight of the ten interviews took place in the home, allowing us to observe practices and artifacts related to the parents' descriptions. (Only two of the parents requested that the interview take place in the school rather than at home.) These interviews took place after three

activities—focus groups, family math evening observations, and a parent math course. We designed the semi-structured interview to elicit parents' thoughts on and experiences with their own and their children's mathematics, both in and out of school, as well as details about their interactions with their children's school and teachers. The interviews lasted between 45 and 150 minutes, with an average length of 60 minutes. The interviews were audiotaped and later transcribed.

We began our process of analysis by first reading through the interviews and field notes from home observations to identify the salient cross-cutting themes and patterns in the parents' perspectives and practices (Maxwell, 1996). Using these patterns, we generated emergent codes that we used to index the interviews using QSR NVIVO. We then looked for themes across parents. Our analysis of these themes revealed a number of patterns in the ways these parents were involved in their children's education that may not have been detected using a schoolcentric approach. We then examined these themes in light of Epstein's (1997; Epstein & Dauber, 1991) six types of involvement, looking for overlap, conflicts, and additional types of involvement. Because all of the parents we interviewed had participated in one or more of our project activities (i.e., focus groups, family math evenings, parent math course), we were able to confirm these themes using alternative sources of data.

Participants

As the project proceeded and as we became familiar with a number of parents, we invited them to be interviewed. Six of the interviewees volunteered to be interviewed after attending a focus group session, one mother agreed to be interviewed after we observed her and her child during a family math evening, and three parents agreed to be interviewed after attending our Spring 2004 six-week parent math course.

All ten mothers we interviewed were African American adults living in a low-income neighborhood. We recognize the dangers of essentializing these parents according to race or social class and acknowledge that their experiences can be framed in multiple ways. At the same time, low-income families of color have historically been prone to being characterized as a barrier to their children's learning (Valencia & Solórzano, 1997). Further, children of color from low socioeconomic backgrounds continue to struggle with mathematics in relation to their white, middle class peers (Ladson-Billings, 1997; Lee, 2002; Tate, 1997). Thus, it seems particularly important to understand how these parents see themselves with respect to their children's mathematics education.

It is important to note that while we speak to issues related to *parent*

involvement, all of our data come from *mothers*. Indeed, Gadsden (2002) warns that mothers are often the default category in parent-child studies with respect to low-income, minority communities. We acknowledge that further research is warranted on fathers' perception of their involvement in this particular community. Second, it is necessary to point out that four of these ten mothers were among the most active parents in the scholarship program. While we acknowledge that these parents are not representative of all the parents in ESP and in the school, we believe a close examination of these parents' views and practices can inform conceptions of parent involvement.

Table 1 shows the variation among the ten mothers interviewed. They were all African American women living in a low-income neighborhood, yet they showed distinct variation across the following demographic variables: age, level of education, current employment, age when first child was born, and whether or not they were living in a two-parent household. Variables such as age, employment status, and household description are not fixed, but represent the status of the interviewees at the time of the interview. The interviewees included eight mothers and two grandmothers (Betty and Alma) of ESP children. Betty was the primary caretaker of her granddaughter, Aisha, during the school year. Alma, the mother of Tanya and grandmother of Latrice (an ESP student), also had a 12-year-old son at Maple Elementary School. She played a significant role monitoring her son's and her two granddaughters' school progress.

Table 1. Demographic Variables of Mothers

Interviewee	Age	Age of Children	Level of Education	Current Employment	Household Status
Alma *grandmother	49	~30, 29, 24, 21, 12	Did not complete high school	None	Single mother
Anna	26	9 , 7	High School Diploma	None	Single mother
Betty *grandmother	~50	5 children over 20	Certificate from clerical school	Full time	Single mother
Beverly	48	9	B.S. in mathematics	Part-time; receiving unemployment benefits	Single mother; contact with father
Cassandra	~30	13, 9, 8	High School Diploma	Full time	Fiancée living in home; Limited contact with father

Jackie	~40	25, 23, 14, 9	Certified as medical assistant	None	Two parents living in home
Lucille	~50	31, 15, 8, 6	Did not complete high school	Part-time	Two parents living in home
Sienna	26	8	B.A. in psychology; pursuing A.A.-early childhood	Full time	Single mother Contact with father
Shanice	~40	20, 16, 8	A.A. in nursing	Full time	Two parents living in home
Tanya	Early 30s	12, 9	High School Diploma	Full time	Single mother

Uncovering Parent Involvement

The portrayal of parents as the problem to be overcome or as uninvolved in general assumes a particular image of the nature of parent involvement in education. From this perspective, most parents, especially African American parents from low-income communities, are labeled as minimally involved in schooling and its educational practices, and are sometimes referred to as "hard to reach" (e.g., Chavkin, 1989; Chavkin & Williams, 1989; Vincent & Tomlinson, 1997; Vincent & Warren, 1998). In contrast, our analyses suggest that while their involvement might not fit "schoolcentric" definitions of parental involvement, the ten parents we spoke with were all highly involved in their children's education. We found that all ten parents played clear roles as advocates for their children's education and took it upon themselves to identify and create opportunities for their children's learning outside of school. First, we explore the forms that their advocacy took and then consider different ways the parents positioned themselves as advocates. Second, we look at the ways that they created learning opportunities for their children outside of school.

Advocates for Children's Education

All the parents we interviewed took seriously their roles as advocates for their children's education. They showed evidence of thinking proactively and strategically about their children's futures and the kinds of opportunities they wanted them to have. As Cassandra, a mother of three, explained, "I look forward to the future, you know, because I want them to become productive young adults, you know having goals, having a career, you know doing something that they enjoy doing, and not just settling for anything."

Specifically, these mothers made it clear that they expected their children to do well in school, graduate from high school, and go on to college. Moreover, most acknowledged that meeting this goal would require overcoming considerable barriers. Anna, a 26-year-old single mother of two girls, ages 7 and 9, spoke clearly about the importance of education in the aspirations she had for her daughters:

> I want my kids to be in their books; I want my kids to graduate and go to high school. I want my kids to graduate from the top. I want my kids to be focused and learn, because a lot of people I know didn't make it through high school. Or didn't make it to this grade, they out there selling this, selling that, I don't want my kids to do that.

Anna's desire for her children reflected sentiments shared by all the parents we interviewed.

Cassandra said that her "objective" was to have her three children go away to college, something she was unable to do, given that she had her first child while finishing high school.

> [My] objective is to make sure that my kids go to college, and the experience. You know like I wish I could've went away to college just for the experience…The college experience period nurtures your child, too, as they get older.

Shanice, a mother of three who worked the night shift as a nurse, spoke of the importance of education for her children, regardless of whether they went to a traditional college.

> Education is the strongest thing. No matter how you do it, it gots to be done. You know if you don't go to college you could go to a trade school, you still going to school; you still learning. You're learning something that you wanna do.

The aspirations that the parents expressed were not limited to success in school. Several parents were clear about their responsibilities raising children in their particular social context. Independence was a strong theme in the voices of many of these mothers. They indicated the importance of independence and self-reliance at an early age. Anna, for instance, spoke of helping her two daughters become independent:

> Some parents think that I let my kids be independent so early. Look, that's how I was raised on and I let my kids raised on the same thing. I let my kids be independent. They're gonna be two African American women out there in the world, and after that they know how to do different things on they own. They don't need to continually get help.

> Just get a little bit, just what they need, but they don't have to lean back on somebody else.

Anna went on to explain that she fostered independence in her young daughters by giving them responsibilities for household tasks like laundry and cooking. She noted that some parents might disapprove of her approach, but stated frankly, "That's how I raised and that's how I'm raising my babies. I know they young, but still, the younger they are, they'll know how to do stuff on they own."

Similarly, other mothers spoke of their desire to foster independence in their children. Beverly, a 38-year-old mother, described how she and her daughter cook together and how she used these activities to help her develop independence as well as to learn about measuring. She emphasized, "I think she's gotta be independent, because I know a few classmates of hers, they already do it…So I try to get her in the habit. She needs practice. But I be right there with her." Tanya spoke of how she wanted her children to "know their math" so that they would not have to rely on others when making decisions that involved calculating. She stressed she wanted her daughters to be "comfortable" with math so that they "just don't take what [others] say. [They] have to know [themselves]."

The aspirations these mothers had for their children's futures led them to play an advocacy role in their children's education. While only three of the parents we interviewed were able to spend considerable amounts of time at the school, all ten found ways to monitor their children's progress, assist with homework, navigate the terrain of an unfamiliar approach to teaching math, and seek out the information or resources they needed to address gaps in their understanding.

Monitoring Progress

We noted how closely the parents we spoke with monitored their children's progress in school. They all seemed to know how their children were doing and where they were having difficulty, and had developed strategies for gathering information about their children's work in school on a regular basis. Beverly, who had a bachelor's degree in mathematics and was highly committed to her daughter becoming mathematically proficient, explained that one of her reasons for focusing on math at home was that her daughter seemed to be doing well in other subjects:

> On the weekends I give her math. The reading is up to par. The vocabulary is up to par. Because all of her vocabulary is A or A-, and the

> 25 spelling words she didn't even get a B, everything was A. So I kept those, but I focus on the math.

Similarly, Sienna spoke of her assessment of her daughter's different strengths in reading and math and the way they led to different kinds of parent-child interaction:

> She loves to read. And, she'll just go off and read, and so I just have to get into her space and say "What you reading?" and have her read it to me. Reading is not a basic problem…I use that technique to go to her and she normally comes to me with math, and I give her what she needs.

While the mothers seemed to know a lot about how their children were doing in school, they had different strategies for gathering this information. These differences seemed, in part, related to the parents' availability during the school day. Lucille, a mother of four in her late forties, and Beverly, employed part-time, both had time during the day and spent a great deal of time at the school volunteering in classrooms or at the sign-in desk and checking up on their children. Lucille told us that she told her son's teacher, "if things are not going well, then let me know because I'm downstairs. I'll be right up there." Alma, who did not work during the day, was able to spend time at the school and monitor the progress of her son as well as her two granddaughters (Tanya's children).

Other parents explained how they used homework or other activities at home to monitor their children's progress. As Sienna told us, "With her math especially she'll do it and then she'll ask me just to check it…So when I go over it I will see her weaknesses…She's getting better." Several mothers who were not in the school regularly explained that homework was often the impetus for more contact with the child's teacher. Anna, Shanice, Betty, and Jackie described visiting their children's classroom to observe or speak to the teacher after confusion emerged from homework, or it was evident that the child did not understand a particular concept. Jackie, who served as the Home and School Association president, was regularly in the school but was unable to spend time in the classroom. However, if she noticed her daughter was having difficulties with her homework, she stopped by the classroom and asked for additional work to give her. "I trust [the teacher's] teaching…[But if I know that my daughter needs additional work] I don't go up there and harp and say you need to do this…I let her know I'm going to give [extra work] to her." Anna, Cassandra, Sienna, and Tanya spoke about writing notes to teachers to clear up confusion over homework.

Homework Assistance

As the previous section suggests, the mothers we interviewed indicated that they played a substantial role in assisting their children with homework. It was evident that most parents had routines and structures associated with homework. Anna, for example, explained that she encouraged her two daughters to work alone on their assignments before coming to her for help. Eventually, she took turns assisting each as needed, sometimes seeking the help of a friend when the math became too difficult. Sienna, who was in school herself, described sitting down with her daughter while she worked:

> A lot of times when she's doing her homework she'll just tell me she needs help, and sometimes she really don't need help, but she likes me to sit there with her. So what I have done is that I will sit there with her…and she always says, "Mom, do your homework!" and I says, "I can't because as soon as I get into my homework you're gonna call me and then you're gonna throw me off." So, I will try my best to sit here with her or sit somewhere near her [so] that I could help her.

Navigating a New Approach to Teaching Mathematics

A critical part of advocating for their children's education involved navigating an unfamiliar approach to mathematics instruction. As we mentioned previously, the mathematics program used in the school was new and focused on developing fluency with numbers and conceptual understanding. In so doing, it used a number of conventions for and representations of mathematical ideas and relationships that were unfamiliar to most children and adults. It was also unfamiliar in its lack of focus on isolated computational mastery. Thus, in seeking to support their children, these parents worked hard to find their way through this unfamiliar terrain. As Sienna put it:

> Just getting over the hurdle with this new math about how to make sure that I'm learning it so I can teach it to her and make sure I'm doing it with her right. So that was like the biggest hurdle with this new math.

It is also important for us to point out at this juncture that in some way each parent we interviewed expressed extreme frustration about their struggles with the new approach to teaching math. During the interviews, focus group meetings, and parent math classes, parents offered multiple examples of homework assignments that they found unclear and confusing. In particular, they described specific examples of conventions used in the assignments that they did not understand or know how to use. Several parents spoke about visiting

their child's classroom or speaking with the teacher in order to understand a particular approach or representation. In some cases they reported encountering a teacher equally frustrated with the new curriculum or being turned away with few answers.

Several parents made reference to a hardbound reference book that is occasionally called for in homework assignments. They reported that the teachers did not send the reference book home for fear of losing it. Instead, they sent home sheets from a consumable workbook. According to the parents, many of the assignments were difficult to interpret or impossible to complete without the reference book. The message we heard repeatedly in interviews and focus group sessions was, "We need the book!" At one session attended by 12 parents, Lucille described how she went to her son's teacher and insisted on taking a book home. After promising to take care of it and return it at the end of the year, she was permitted to take it home and used it regularly with her son.

As one of the parents at this meeting, Sienna was surprised to learn about the reference book. In her interview many weeks later she explained:

> Lucille was the one who told me about the reference book. I had no idea! I was reading and it says "Refer to your reference book." And I was like, all she has is this book. What is the reference book? And I always just thought it was the text book they kept back at school, because at the other school we couldn't bring our math books home anyway. So I figured that's what was going on…We had to copy the problems from the book before we went home. And then we did [them] at home. So I associated with that.

Sienna went on to explain that once she learned about the reference book, "That made me feel so much better." Further, she noted that once she actually saw the reference book, "I was like 'This is my bible!'"

Providing Learning Opportunities Out of School

Another pattern that cut across all ten mothers was the extent to which they provided learning opportunities for their children outside of school. These opportunities often took the form of daily, household, or family activities that the parents explicitly saw as or made educational. Some of these opportunities were spontaneous, while others were calculated and included purchased educational materials. The data discussed here focus on the opportunities that were mathematical in nature. However, it is worth noting that these parents provided distinct learning experiences for their children in reading and writing, as well as others that were not subject-specific. For example, Shanice spoke about taking her children to the art museum, while Anna talked about teaching her

children how to do laundry at the local laundromat. Alma and Tanya spoke of taking their children to the city's libraries for different programs offered to the public. Interestingly, many of these activities did not look like familiar school tasks. On the other hand, each parent had purchased a number of educational games and materials that fit the mold of school-based activities.

Creating Informal Learning Opportunities

We identified many of the learning opportunities created by parents as "informal" because they were activities initiated, often spontaneously, by parents that drew on household practices. For example, Shanice explained how she took advantage of common tasks to create learning opportunities for her 8-year-old son:

> So we just sit down and you know, make up little games: counting games, it could be a piece of paper, it could be something that, spelling words like only in the dictionary…The calendar. We like doing the calendar things, too…I said December 31st is the last of 2003, so what day was that on? And he'll say, "What is the first?" "Thursday," so that starts the calendar off. So that's helpful to know how many weeks is in the year. And what month has five weeks in it. He had to figure that out, too. So it's like counting. These are like different games that we actually do. You can do things around that house that you can do. You can do silverware. We go through silverware as far as washing dishes. How many forks do we need tonight? How many knives do we need tonight? How many do we need altogether? It's just different things—buttons, we use shoes, we use steps. We count different things.

Other mothers described similar household activities they used to create learning opportunities. While removing decorations from her Christmas tree during her interview, Beverly described how she had her daughter sort the ornaments into different groups before putting them on the tree:

> Like the Christmas balls, yeah because that was a good tool to put things in equal parts. Because like if you have 3 people, now I had 3 bags, how am I gonna divide these 30 balls into 3 bags. You know different things, not just the book stuff, but hands-on, different stuff.

Sienna described having her daughter total her monthly bills once she had paid them all. Alma described having her son help her with gardening as a way to have him practice measuring. Betty played different card games with her granddaughter at a young age as a way to help her learn numbers. Most of the parents told us that they often cooked with their children and noted the value of measuring and combining quantities of ingredients.

Several parents stressed the need for their children to know how to count money correctly and anticipate change. While Cassandra did not purchase anything to address this need, she insisted that when she gave her 8-year-old son change, he had to be able to count it correctly in order to spend it. Anna insisted that her 2 daughters, ages 7 and 9, keep a record of the money they have in their banks and of any money that they spent.

> [They] know that every time they get money from my dad or a dollar from my mom, I tell them to write in their book; they have a little money book. "Alright how much did grandma give you that day? How much did papa give you that day? Now add it up together." They know how to add it. Then after that, I say, "You took the quarter out. How much do you have left?"

Obtaining Educational Materials

In addition to creating informal learning opportunities for their children, all of the parents we spoke with obtained educational materials aimed at supporting their children in their school work. Five parents spoke of computer software and games they purchased to provide their children with practice with basic computational facts and other skills. Many bought flashcards and board games. For example, Shanice purchased Monopoly and regularly held "family nights" where she, her husband, three boys, and sometimes nieces and nephews, played into the middle of the night. "It's a good thing to teach them, not only to visit money. It's how to go out and purchase a property. You have to go and buy your first home or something. So that teaches you how to do the math." Sienna purchased Jenga, and said specifically that it was a "spatial math game." Beverly bought her daughter a play cash register when she found that her daughter did not know how to count money. Jackie, Lucille, and Betty bought education workbooks in reading and math every August to help their children get ready for the new school year.

In addition to purchasing resources to help support the learning experiences of their children and in response to perceived learning needs, two parents spoke of these resources as alternatives to being able to pay for tutors for their children. Lucille said:

> I always felt, when you can't afford a tutor you do the next best thing. And buying the material was the solution, because when I was growing up, my mother was not able to buy the extra things, and we had our math books and that's all we had, and I'm fortunate enough to get the extra things to help my kids.

She also added that these materials sometimes functioned as a substitute, of sorts, for her. She noted that when she was tired her children could use them on their own.

Discussion

In the following discussion, we consider what our findings illuminate about how this group of African American mothers in a low-income neighborhood conceptualized their roles in their children's mathematics education and the challenges they faced in enacting these roles. While we do not claim that these mothers were representative of the range of parents in the school or in ESP, our data show creative and deliberate ways that parents were involved in their children's education, including ways that may have been overlooked by other studies of parent involvement. Uncovering the different forms of parent involvement that are not always visible to school officials led us to develop a framework for examining the kinds of involvement taken up by other parents in the school. This framework identifies specific practices that parents might engage in and that schools might acknowledge, nurture, and build on. As others have shown (e.g., Chavkin, 1989; Chavkin & Williams, 1989; Lawson, 2003), we found parents to be involved in their children's education in a variety of ways. Yet, the forms that their involvement took were not typically recognized as "parent involvement," particularly when articulated by those working in schools. As a result of our findings, we offer an expanded and "parentcentric" conception of parental involvement in education. We also identified significant challenges that parents faced with respect to being involved in the mathematics education of their children.

Reconceptualizing Parent Involvement

"Parent involvement," when called for by schools, districts, or even national policy, is generally understood as activity that is visible to school officials and teachers, such as volunteering in the child's classroom or attending school-sponsored meetings (Lawson, 2003). Given our analysis, we propose an alternative way of characterizing different types of parent involvement. Similar to Epstein and her colleagues (Epstein & Dauber, 1991) we include both schools and homes as sites for involvement. However, we do not take a school-centric perspective. Instead, we view education broadly, primarily as planned opportunities for learning, and consider the ways that parents involved themselves in these opportunities for their children. Similar to Barton and her colleagues (2004), we highlight the importance of examining what parents do

to support their children, the context within which they make such choices, and their perceptions of the actions they choose to take on behalf of their children. However, our framework expands beyond examining parent involvement in the school and is designed to recognize and highlight parents' involvement in their children's learning outside of school-sanctioned activities.

The first kind of involvement we identified is *involvement in children's learning*. By this, we mean the ways that parents work to structure, foster, and support their children's learning in a variety of contexts, not just those that are related to school. All ten of the mothers we interviewed engaged substantially in this form of involvement. For these women, involvement in their children's learning occurred in the home, in the grocery store, and in the laundromat. Recall the ways Shanice described making math games throughout the day for her children. These games were not connected to particular school activities, but they served to support her children's mathematics learning in ways that she saw fit. We argue that these informal learning activities are the ones that schoolcentric modes of viewing parental involvement tend to overlook.

Second, we found *involvement in children's schooling* which refers to the ways parents took active roles in supporting their children's progress in school. This includes assisting with homework and communicating with the teacher when difficulties arose. It also includes finding ways to monitor children's progress in school, whether through traditional modes of communication (such as volunteering in a child's classroom, notes between the teacher and parent, or report cards) or alternative avenues (such as arranging for a relative who works in the school to check up on a child's progress). To some extent all ten mothers we interviewed engaged in this sort of activity, but to differing degrees and in different forms.

The third type of parent involvement we found is *involvement in children's school*. Here, we refer to the ways parents have an active presence in the school through volunteering and attending school functions. While each of the parents had some involvement at this level, it was quite minimal for three of them. However, this kind of visible involvement is what is often used to categorize parents as more or less involved.

In fact, the ways that the ten women we interviewed varied across these three types of involvement is not surprising. While all ten were actively involved in their children's learning, those most visible in their children's school did not have full-time employment outside the school. Even though there are disputes in the research on the effect of maternal employment on student achievement (e.g., Milne, Myers, Rosenthal, & Ginsburg, 1986; Muller, 1995), there is general agreement that mothers who are employed full-time are "less involved" in their children's education compared to those who are employed part-time

(Muller, 1995; Weiss, Kreider, Vaughan, Dearing, Hencke, & Pinto, 2003).[1]

Distinguishing between parent involvement in children's learning and in their schooling is critical to understanding parents' potential as intellectual resources for their children. The parents we studied constructed roles for themselves in relation to their children's learning that went beyond the offerings of the school. In addition to supporting their children's learning through school, they took it upon themselves to provide additional learning opportunities that reflected their own goals for their children and assessment of their needs. Doing so required parents to develop a set of learning goals (many of which were not necessarily aligned with the school's curriculum), assess their children with respect to these goals, and find and create opportunities to foster their learning. The fact that low-income parents, who often have limited formal education (Kirsch, Jungeblut, Jenkins, & Kolstad, 1993), are intellectual resources for their children in ways that are not directly related to schooling is infrequently addressed in the literature.

Challenges to Parent Involvement

Despite the active roles these parents played in supporting their children's mathematics learning, all of them faced significant challenges in this process. The emphasis on conceptual understanding is new to most parents who are products of a school system that previously emphasized rules and procedures. Unsurprisingly, parents found the Standards-based mathematics instruction to be unfamiliar in emphasis and approach. They did not recognize many of the conventions used in the curriculum and did not understand the reasoning behind them. While these are challenges faced by parents at all economic levels, navigating this unfamiliar terrain is likely to be more challenging for parents with limited mathematical knowledge. It is important to note that the parents we spoke with stated that they had received little information about the reasons the curriculum had changed or the new approach itself. (See Remillard & Jackson, in press, for details on how parents navigated these unfamiliar approaches to teaching mathematics.)

Other challenges the parents faced were directly related to the parents' income status. At Maple Elementary School, children were not allowed to take home their hard-bound reference books that were integral to the *Everyday Mathematics* curriculum. Teachers feared that these books would not be returned to school, and the school's funds for curriculum materials did not allow for new books to be purchased each year. However, without the reference book, parents were uncertain about how to help their children with their homework. At least two parents we spoke with obtained copies of the book by convincing

their children's teacher that they would take responsibility for its care. This example, however, illustrates the way limited resources and stereotypes put parents in the position of having to ask for materials that curriculum developers assumed would be sent home, reflecting the mistrust that schools have of parents living in low-income neighborhoods.

Conclusion and Implications

Our findings have substantial implications for how parent involvement is conceptualized and studied and how parents from low-income neighborhoods are framed in relation to their children's mathematics education. Even though the parents we studied are not necessarily representative of other parents in the school, neighborhood, or other low-income communities, our findings highlight the importance of examining the ways parents are intellectual and educational resources for their children beyond the boundaries of schools. In order to highlight the ways that parents act as "intellectual resources," Marta Civil and her colleagues have used practices that parents engage in regularly in their daily lives as contexts for mathematics teaching. While we see identifying and building on these "funds of knowledge" (Moll, Amanti, Neff, & González, 1992) to be a powerful approach to validate what families do outside of school, we found that there are other ways to recognize parents as intellectual resources. Our analyses showed that in addition to acting as advocates for their children in school, parents actively created opportunities for their children to learn mathematics in everyday, realistic situations. Further research is needed to understand the knowledge parents draw on in undertaking this work and to consider ways that this work can be supported within schools. It is equally important to understand the circumstances under which parents do not take on such roles. Uncovering the different forms of parent involvement that are less visible than others provides us with a framework for examining the kinds of involvement taken up by parents who thus far have been less visible to us.

Our findings have a number of implications for practices within schools that relate to parent involvement. We assert that taking a broad, parentcentric view of parent involvement can have multiple benefits for school practices. In addition to acknowledging the work that parents do outside of school, such a stance can initiate critical exchanges between teachers and parents about both educational ends and means. Moreover, such a stance on parent involvement should influence the kinds of opportunities schools offer for parents. While it was evident that parents at Maple Elementary would have benefited from more background on the rationale behind the Standards-based approach to mathematics instruction, they would have also benefited from a deeper

understanding of approaches and conventions that were central to the curriculum. We must assume that parents will continue to create informal learning opportunities for their children. Providing these parents with opportunities to develop knowledge and strategies that are aligned with the curricular approach used in the school can be viewed as a way of bringing them into the educational conversation and treating them as partners in rather than as barriers to their children's education.

Endnotes

[1]Both Muller's (1995) analysis, based on NELS data, and Weiss et al.'s (2003) analysis, based on School Transition Study (STS) data as well as ethnographic interviews, show that part-time employed mothers are generally the most involved, compared to unemployed and full-time employed mothers. While Weiss et al.'s analysis focused on low-income mothers, Muller included mothers from varied income brackets.

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