A CONSTRUCTIVIST GROUNDED THEORY STUDY OF REFUGEE PARENT EXPERIENCES WITH EDUCATION AND THE INFLUENCE ON THEIR YOUNG CHILDREN’S EDUCATION

by

Trina Campbell
A Dissertation
Submitted to the
Graduate Faculty
of
George Mason University
in Partial Fulfillment of
The Requirements for the Degree
of
Doctor of Philosophy
Education

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Date: _______________________________ Spring Semester 2013
George Mason University
Fairfax, VA
A Constructivist Grounded Theory Study of Refugee Parent Experiences with Education and the Influence on Their Young Children’s Education

A Dissertation Director submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at George Mason University

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Spring Semester 2013
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DEDICATION

To Karen and Clifton Campbell, my parents, who really had a big job.
When I graduated from college with my BS, I went to work at a learning center (I use that term loosely) teaching four year olds. There were two children who had been there since birth: Danny, who I was told was perfect, cuddly, and happy, and Keri, who was “a devil child.” I was assured that I would love Danny and find out soon enough what they meant about Keri.

Of course, I loved Keri. She was imaginative, thoughtful, interesting, and a little spunky. Danny bored me to death. It was soon afterwards that I decided to open my own preschool where I could enjoy all of these lovely children, and where hopefully they could find a place to be interesting. Keri, who I am sure has no recollection of me, was a significant influence in my development as an early childhood educator, a businessperson, and a person who values diversity.

There have been hundreds of children, including my niece and nephew, colleagues, teachers, friends, professors, authors, and even acquaintances who significantly changed my thinking and my ability to think on a daily basis. I acknowledge the constant influence and assistance of all of them.

My parents are the kind that every child deserves. My mom learned Word and how to find digital object identifiers to help me get this done. My dad listened to me whine about all the work I had to do when I commuted at six in the morning and nine at night.

No one could ever have better friends than Turtle Dove and Petra, Olive and Ever at one in the morning.

My years at George Mason have been an amazing time of growth for me and I was lucky to have been led by professionals who also appreciate diversity in their students, particularly my committee members: Dr. Julie K. Kidd, Dr. Margret Hjalmarson, and Dr. M. Susan Burns.
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ABSTRACT

A CONSTRUCTIVIST GROUND GROUNDED THEORY STUDY OF REFUGEE PARENT EXPERIENCES WITH EDUCATION AND THE INFLUENCE ON THEIR YOUNG CHILDREN’S EDUCATION

Trina Campbell, Ph.D.

George Mason University, 2013

Dissertation Director: Dr. Julie K. Kidd

The United States accepted 55,000 refugees for resettlement in 2010 (United Nations High Commissioner for Refugees, 2011). They bring unique educational, social, economic, and medical challenges to a community. Many times, they live in poverty in the US and have limited familiarity with English, both characteristics that put children at risk for academic difficulties (Hernandez, 2004). Schools new to welcoming refugees have a limited amount of time to evaluate and place children in classrooms, communicate school needs and expectations with parents, and identify additional resources or services that may be necessary (suggested by the U.S. Department of State, Bureau of Population, Refugees, and Migration, 2011). Communication between schools and immigrants can be discontinuous, without either understanding the expectations or reasoning of the other because of language, cultural, and personal backgrounds.
Using a Culturally Relevant Pedagogy (CRP), teachers and other school personnel acknowledge that children come to school with a significant body of knowledge shaped by experiences with their family and in their community (Ladson-Billings, 1994). Families, particularly from non-dominant groups, may not teach and use skills in a way that looks like traditional academics; however, teachers can help children transition into the role of student and mathematician by finding what children already know and making connections to classroom lessons.

This study used an ethnomathematics framework to identify and explore the beliefs and practices of the refugee families related to mathematics. It can be used in the classroom to facilitate building CRP lessons, but in research the framework allows the researcher to value and study all the ways people may encounter and use math in their lives. Ethnomathematics broadens the definition of math beyond academics.

The purpose of this research was to identify the practices and beliefs of refugee parents that might influence the prior knowledge of mathematics children have when they start school. Refugees from the Middle East and Africa who live in one community were interviewed as families, groups, or individuals. Constructivist grounded theory was used to identify codes and then iteratively evaluate interview questions and refine themes.

The study found that the beliefs and practices of refugee families are influenced by their experiences as students and as parents, both in the US and in their home countries. Factors like SES, gender, religion, country of origin, and family background influence the way they prepare, assist, and model mathematics with their children. If teachers learn about the educational background of a child’s family, they can access
information important to developing CRP lessons as well as encouraging more continuous relationships between schools and homes.
CHAPTER ONE

In 2010 the United Nations (UN) sent 55,000 refugees to the United States, one half of whom were children (United Nations High Commissioner for Refugees [UNHCR], 2011). As researchers begin to understand the influence parents can and should have on their children’s continuing education, educators are looking for ways to maximize the place of family and culture in the classroom. In a mini qualitative study, I interviewed a refugee from the Congo, a teacher who has had refugee children in her class, and a woman who leads her church’s refugee outreach program. Their beliefs about teacher and parent roles, the purpose of schooling, and school pedagogy diverged wildly. Most importantly, none of the three were aware of the others’ perspectives. The purpose of this study is to increase understanding of the home culture built by refugee parents’ experiences as students, experiences as parents, and the practices and beliefs that they now enact with their children.

This chapter will present the argument that there is both a need for and a dearth of information on educating young, refugee children. The refugees’ characteristics and educational experiences create a cultural group that requires attention different from immigrants or other people living in poverty. Mathematics education has a rich indigenous history (de la Rocha, 1985; Lave, 2010; Murtaugh, 1985; Nasier & Hand, 2008; Pozzi, Noss, & Hoyles, 1998; Scribner, 1985), but there is little discussion in the early childhood literature. Families entering public schools in industrialized countries like the United States have beliefs and practices that can be used to bridge transitions and
help span the education gap. The purpose of this study is to investigate the beliefs and reported practices of refugee families that influenced the culture they have created for learning and education in their homes. The focus of the study was on their background experiences that may influence their children’s learning and education.

**The Refugee Cultural Group**

This study will focus on a subgroup of families with specific demographic factors including immigration, poverty, and refugee experiences that create a distinct cultural group. Research has shown these qualities significantly influence parent expectations of schools and teacher expectations of parents (Birman, Trickett, & Bacchus, 2001; Drumbill, 2009; Lewig, Arney, & Salveron, 2010; Ryan, D’Angelo, Sales, & Rodriguez, 2010; Serpell & Mashburn, 2012).

The legally accepted definition of refugee was recognized by the United Nations and accepted by the United States in 1967.

A person who owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country; or who, not having a nationality and being outside the country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it. (UNHCR, 2010)

Those who participate in the persecution of others are not included. The intricacies of legal distinction between internally displaced persons, economic refugees, environmental refugees, and asylum seekers are not considered here because study participants either
arrived in the United States designated as refugees by the United Nations and the United States or are described as immigrants. Additional information on Special Immigrant refugees is given in Chapter Two.

The status of immigrant children who come to the United States requires special consideration. Hernandez (2004) reports that almost half of immigrant families live in overcrowded conditions. More often than immigrants in other SES groups, poor or low SES immigrants may occupy the same living space with a large number of family members and others. Overcrowded living conditions for children may lead to overstimulation, a lack of space for discovery, and fewer opportunities to try things out (Evans, Saltzman, & Cooperman, 2001; Scott-Jones, 1984). Immigrant families with a non-resident member may be ineligible, unaware, or afraid to take advantage of social resources (1984) that could mitigate problems related to immigration.

When considering the cultural context of refugee students’ lives, the definition of “immediate family” must be examined. In a study, Watson and Koblinsky (2000) found that grandparents of African American children were twice as likely to correct behaviors and instruct in a parenting role as grandparents of European descent. They also discovered that African American grandparents were more actively involved in the everyday routine of the families, to feel that they were successfully involved in their grandchildren’s lives, and to teach social skills. Many refugees come from collective cultures and immigrated with a family unit they built out of surviving, extended family and friends. With a household that might not fit the traditional, nuclear family type, educators will have to consider who is most responsible for the child’s education in the family.

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Children who live in poverty can bring additional concerns for school officials. Hart and Risley (1995) argue that the effects of life in poverty begin in early childhood and accumulate over the first few years. Although research has found that SES predicts children’s performance in school better than other variables (Henderson, 1981; Scott-Jones, 1984), some argue that the effect is not only because of lack of resources but of a culture born and sustained by the communities formed in poverty (Moynihan1, 1965; Payne, 2005).

Huston, McLoyd, and Garcia Coll (1994) say that poverty is not a culture, but it does mean an accumulation of negative experiences and stressors that those living in low income experience. The authors explain that SES is one of the variables that interact to form a “blueprint” for each child’s unique development. According to Huston et al., the facts of poverty can include the following:

- Neighborhoods where large numbers are poor also have fewer institutional supports, resources, and safety.
- Instability in the home from varying work and income combine with poor environmental conditions and unsafe neighborhoods.
- Working conditions for parents, welfare dependency, and neighborhood violence push parents to make major life decisions for their children that other parents do not have to consider.
- Some interventions have been most successful within this group of families because they have so little to start with.

---

National Crime Prevention Council (1999) highlighted the pivotal role of child care and preschools in minimizing risk factors like poverty, cultural isolation, and difficulty with critical communications that are associated with living as a refugee in America. The Council found that schools and other public institutions played a particularly important role in building attachment to the community, developing networks, providing access to support services, and reinforcing community norms about nonviolence. They believe children who have lost parents or who come from unstable countries need these connections as soon as possible to prevent further emotional distress. Head Start teachers, already responsible for facilitating relationships between families and community organizations, are also the first educational contact for parents with young children.

The school experiences of children and parents who arrive as refugees can be diverse. Many areas require refugee children to be enrolled in school within 30 days of resettlement (suggested by the U.S. Department of State, Bureau of Population, Refugees, and Migration, 2011). Therefore, refugee children are almost certain to enter school without the ability to completely communicate their understanding and needs. If these children are to be included in any instruction at that time, teachers have to make considerable attempts to engage these children in education, including appealing to their prior knowledge in creative and substantive ways to maximize consistent learning (Committee on Early Childhood Mathematics, 2009). However, because of the transient refugee background and the varying curricula of refugee camps, formal and informal knowledge is difficult to ascertain. Schooling can follow such different paths and math skills may be far above or below English skills (Jensen & Rasmussen, 2011). Placement
as they enter American schools needs to be careful and based on available records, talking with the child and available family, and appropriate testing. If parents are unable to communicate with schools, a young child’s placement may be difficult.

Experiences in camps vary in content, resources, and accessibility. The country in which families have sought refuge determines the priority and assistance education gets in camps. While other immigrants might move near family members who are already established, refugees must rely on churches or community volunteers to explain school practices, often making the transition overwhelming (UNHCR, 2012). If these facilitators do not know the background of families, it can be difficult to know how to prepare parents, even after the initial registration.

The country of origin is another characteristic that contributes to the variety of educational experiences. The top 20 countries from which the United States accepted refugees in 2010 are listed in Table 1.1. Refugees living in the area where participants were recruited are primarily from Middle Eastern and African countries; all but one of which is included in the top 20.

Table 1.1

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<td>Armenia</td>
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<td>Bangladesh</td>
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<td>China</td>
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<td>Democratic Republic of Congo (DRC)</td>
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<td>Eritrea</td>
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<td>The former Yugoslav Republic of Macedonia</td>
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<td>Georgia</td>
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<td>Guinea</td>
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<td>Country</td>
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<td>Iraq</td>
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<td>Islamic Republic of Iran</td>
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<td>Mexico</td>
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<td>Nigeria</td>
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<td>Pakistan</td>
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<td>Russian Federation</td>
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<td>Serbia/Kosovo</td>
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<td>Somalia</td>
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<td>Sri Lanka</td>
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<td>Syrian Arab Republic</td>
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<td>Turkey</td>
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Note. Data from UNHCR Yearbook 2010.

**Conceptual Framework**

Ethnomathematics, defined by D’Ambrosio “as the mathematics practiced by distinct cultural groups” (Rosa, 2008, p. 93), requires researchers to acknowledge informal mathematics as valid and valuable for study and discussion. Because this study is concerned with the knowledge refugee families bring, how they acquired that knowledge, and how and what they pass on to their children, the framework is critical for guiding the work. Using an ethnomathematics framework provided an opportunity to examine their experiences with mathematics and gather insights into their current beliefs and practices with their children. Understanding parent backgrounds is important for educators as they help children from refugee families make connections between prior mathematics knowledge and classroom lessons.

Ethnomathematics might appear in the classroom as Culturally Relevant Pedagogy (CRP) (Tutak, Bondy, & Adams, 2011). CRP requires teachers to learn about children and families and build educational experiences that respond to their unique classroom community (Ladson-Billings, 1994). “Specifically, culturally relevant teaching is a pedagogy that empowers students intellectually, socially, emotionally, and
politically by using cultural referents to impart knowledge, skills, and attitudes” (p. 20).
When a teacher practices CRP, the prior knowledge of each child is used to plan successful, educational activities. For refugee children starting their first formal schooling, the expectations and beliefs of their parents as well as practices at home are cultural referents integral to planning.

CRP addresses and requires teacher decisions in three major areas: language, authentic problems and materials, and social construction (Novick, 1996). Teaching children in a second language before they master their first language can result in loss of their native tongue and stagnation in the new one (Cummins, 2007; Reyes, 2012). In fact, students who learn in their home language develop more mathematical flexibility as they translate and connect to their own experiences (Reyes, 2001). Prior knowledge for a small child includes the language in which they communicate at home so learning in a second language unnecessarily complicates their transition to academic mathematics (Fuson, Kalchman, & Bransford, 2005).

Novick (1996) argues that Piaget’s plan that children learn by constructing a reality means they must be given familiar materials to use for construction. In the first five years, language is so closely tied to objects as children make sense of the world that familiar materials make a noticeable difference in learning mathematics as well. As educators plan for young children to have intentional interactions with math, teachers have to ask what the familiar materials are to the specific child. The National Association for Education of Young Children (NAEYC) (2009) urges practitioners to use “materials and equipment… to implement curriculum [that] reflects the lives of the
children and families as well as the diversity found in society including: gender, age, language, and diversity of ability” (Standard 2, p. 1).

Using authentic problems with children’s lives as models is particularly effective in traditionally underserved populations (Irvine, 2010). Even a traditional pedagogy is enhanced with problems and books that mirror students’ appearance and experience. Children are motivated to learn math from early childhood when they see purpose (Aunola, Leskinen, & Nurmi, 2006). Because purpose is relative to the context of each person’s life and the questions, developmentally appropriate practice demands activities and problems from the culture of each child.

Because math is a social construction, an integral part of CRP is for the teacher to understand the practices and beliefs that shape each child’s prior knowledge. For example, base ten is standard in much of the world now, but cultures that have used other bases may have different ways of knowing and manipulating numbers. Guha’s (2006) study of counting in India, where children may use their bodies to count and compute up to 40, demonstrates that knowing the materials used in a home is not enough to understand the child’s experiences with numeracy. Teachers may have to move beyond materials to understand the way the child’s specific culture creates names for numbers, procedures, and conceptualization of number.

Even within the United States, different cultural ways of knowing influence the education children bring to school. Bowers and Flinders (1990) found that African American children often tell stories in a circular fashion. The children speak English as their first language, but their skills and knowledge are particular to the way they have experienced culture. Their storytelling style can have a significant effect on how they
learn temporal relations and define a start, end, and midpoint of a narrative, all of which are English standards set for children in kindergarten (English Standards of Learning for Virginia Public Schools, 2002). “Basic” concepts can be areas of cognitive conflict that become fallacies the child builds on.

**Mathematics Education and Family Beliefs and Practices**

Several reasons ensure that there remains little information on family math practices and beliefs. First, because literacy education has been a huge effort in Head Start and through Title One legislation, parents are convinced of the importance of reading and receive support from teachers and programs (Drummond & Stipek, 2004). Second, parents feel like literacy education is reading and if they can read, they can teach the skills like they learned them (Reese & Gallimore, 2000). Parents have not been encouraged to do the same with math. Even if they practice algorithmic, rote math, any interactions with number at home, engaging parents with children, is better than none. Third, math practices may be defined narrowly or few options given when talking to parents (Tudge, Li, & Stanley, 2007).

As important as the home-school connection is in preparing children for school and teachers for children, educators rarely ask any parents what they want for their children, how they think their children learn, or what they do with their children at home to prepare for school (Buysse, Castro, West, & Skinner, 2006; Hindman & Morrison, 2011). The educational community has the responsibility to make an effort to investigate their goals because of the language barrier, little connection to their new community, and a range of values not familiar to teachers (Matthews & Ewen, 2010).
Stewart (1993) found that refugee parents are not familiar with educational practices and may have difficulties setting up expectations and rules for their children. Living in poverty and working several jobs, refugee parents may struggle to meet basic needs and may not be prepared for assisting with such unfamiliar school work. Depending on their home experiences, some parents may not feel like school work and home have any intersecting needs.

For children from non-dominant families, defined as belonging to demographic minority groups, there is often a mismatch or discontinuity between the expectations and practices at home and those at school (Graue, 2006). Despite the continuing discrimination and poverty experienced by some groups, Goldenberg, Gallimore, Reese, and Garnier (2001) found that most parents still believe that education is the only way their children will escape prejudice, establish economic strength, and develop morality. Several important conclusions follow from their study of Latino families that might be considered across other non-dominant people: Latino children are not underperforming because of a lack of parental interest or hope; Latino parents have more confidence that education will help their children be successful the longer they’re in the country; and teacher efforts to change parent beliefs probably have little effect on the performance of children.

Similarly, Reese and Gallimore’s (2000) studies of Spanish speaking families and literacy uncovered a practical discontinuity with school expectations. The models parents used to develop their children’s literacy in the study were based on experiences in their home culture as child field workers and molded by their personal experiences in school. When teachers responded to any family support with flexibility, contact, and respect, they
received high levels of parent satisfaction and participation. These experiences reshaped parents’ beliefs and practice at the family level so that younger siblings benefited the most from change.

As mentioned above, most parents in any demographic group are interested in furthering their child’s education, but they need direction and communication from schools. The school-home discontinuity creates a stress between parents and teachers that is rarely openly addressed (Graue, 2006). Despite research to the contrary, teachers, most often from white middle class backgrounds, report that black parents do not participate in the usual school activities and are therefore unenthusiastic about their child’s schooling (Hauser-Cram, Sirin, & Stipek, 2003). Teachers who may have believed they welcomed families into their classes communicated to researchers that they “saw themselves as child advocates, protectors of the child's new domain, and they stressed the developmental and emotional needs for a clear and early separation between familial patterns and the demands made upon children in school” (Lightfoot, 1981, p. 99). For families whose education experiences have been in collective communities, this may be an unfamiliar and actually, an undesirable result.

Studies from researchers say that miscommunications and a mismatch in expectations results from the contrast of home beliefs with teacher beliefs (Graue, 2006; Hwa-Froelich & Westby, 2003; Waldbart, Meyers, & Meyers, 2006; Wesley & Buysse, 2003). For small children who have a limited capacity for verbalization, it is important that communication is explicit. Ethnomathematics points attention to the importance and potential of home beliefs and practices to making connections to academic topics (Tutak et al., 2011). Most children come to school with an immense body of knowledge and
experiences from living their first few years (Committee on Early Childhood Mathematics, 2009). Because each child is a unique combination of home beliefs, teachers cannot be expected to automatically know where to meet every new student. Administrators and teacher educators can, however, be aware of places of potential discrepancy between the teacher’s and child’s experiences. Refugees and immigrants living in poverty can have home beliefs that are more diverse than those of teachers and need more assistance preventing the communication difficulties that become impediments to school success (Kagan, Britto, & Engle, 2005; Keller et al., 2006; Morelli, Rogoff, & Angelillo, 2003). Except for large-scale studies that averaged beliefs across populations (Barbarin et al., 2006; Fish et al., 2008; Han, 2008; Lin, Lawrence, & Gorrell, 2003; Pigott & Israel, 2005), the belief areas that are most important to and that differ for refugees and immigrants and their teachers have not been delineated in the literature.

Researchers and educators relate more to parents when they acknowledge that mathematics is not one topic that appears the same for each person in every situation (Abreu & Cline, 2005). Literature has been definitive that children living lives different from the American ideal can be using math in rich and elaborate ways (Carraher, Carraher, & Schliemann, 1985; Saxe, 1988). Just as Moll, Amanti, Neff, and Gonzalez (1992) found multiple early reading strategies used by Latino parents, there is reason to believe that immigrant parents might be teaching logic and math problem solving in ways unfamiliar to teachers. Ethnomathematics helps educators and researchers broaden the definition of math practices with the acknowledgement that mathematics may look different in any variation of culture and still be valid (Rosa, 2008).
Research Significance

This study examined the experiences refugee parents had in school, the experiences they have had thus far as parents, and the ways they prepare, assist, and model mathematics with their children. Current research on refugee education has mostly evaluated small-scale interventions (McBrien, 2011; Nykiel-Herbert, 2010). Although this study will also address a relatively small population, the focus is on exploring the cultural group rather than finding an intervention that more quickly assimilates families. Given the experiences in their native countries, countries of first asylum, and refugee camps as well as the demographic factors like time since immigration, socioeconomic status, and language isolation, refugee parents and their children present unique challenges to educators. CRP mathematics education requires that educators know something about the cultures to which they respond. This study will contribute to the literature on culturally relevant mathematics education by presenting information to teachers on potential knowledge of refugee parents and how they might be sharing that knowledge with their children. This knowledge should be used to inform the practice of teachers of small children.

The following research questions were used to guide the study:

- What experiences did refugee parents have as students that may influence their perceptions, beliefs, and practices of education, learning, and United States schools?

- In what ways do interactions between school personnel and refugee parents influence expectations and practices?
• How do refugee parents intentionally and unintentionally prepare, assist, and model mathematics for their children?

**Definition of Terms**

Culturally Relevant Pedagogy (CRP)- CRP is defined by Ladson-Billings (1995) as “a theoretical model that not only addresses student achievement but also helps students to accept and affirm their cultural identity while developing critical perspectives that challenge inequities that schools (and other institutions) perpetuate” (p. 469).

Family- Each family will be defined by the head of household. In the literature review, family is used when the participants are mothers, fathers, and siblings as defined by the participants and/or members of the household.

Head of Household- Defined by the National Housing Trust regulations as the member of the household who bears responsibility for paying the rent. There might be two or joint heads of household.

Mathematics- the study and practice of “number and arithmetic, geometry, measurement, patterning and algebraic thinking, and data and graphing” (Sarama & Clements, 2008, p. 67) as well as “the search for sense and meaning, patterns and relationships, order and predictability” (Copley, 2000, p. v).

Numeracy- The ability to use number, spatial skills, data organization, problem solving, and logic with respect to context (Bishop & Forgasz, 2007).

Prior Knowledge- The mathematics and numeracy known in context before a child begins to learn math in school.

Refugee- A person who owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is
outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country; or who, not having a nationality and being outside the country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it (UNHCR, 2010).

Young Child/ Small Child- A child between birth and age 8 (NAEYC, 2009).
CHAPTER TWO

The focus of this study was the mathematics learned by parents and shared at home with young children in refugee groups. Ethnomathematics is a framework that places math at the intersection of knowledge built by any and all cultures (D’Ambrosio & Rosa, 2008). Homes teach a cultural and educational foundation of beliefs and practices, and the mathematics practices in refugee homes must be considered in preparing culturally relevant classrooms. When ethnomathematics ideas are practiced in the classroom, Culturally Relevant Pedagogy (CRP) guides lesson planning and attention to learner needs that might be common to a culture (Tutak, Bondy, & Adams, 2011). When the philosophies and methods of home differ from that of teachers and administrators, the discontinuous transitions can be confusing and counterproductive (Jordan, 1985). CRP enables teachers to recognize student capabilities and prepare lessons that extend knowledge for each child and meet the call of Perry and Dockett (2005):

When children start school, they bring much mathematical power with them. This power has grown over the prior-to-school years and is ready to be nurtured, celebrated, and extended through a purposeful and meaningful program of learning in Kindergarten. (p. 4-71)

This study documents the mathematics beliefs and practices of refugee families in a common community. According to research on refugee groups described below, they might be considered a separate cultural group from other immigrant groups because of distinct and definable characteristics and similar critical experiences. There is a
significant body of existing research on refugee resettlement that addresses their unique, urgent physical and mental health needs (Betancourt, Brennan, Rubin-Smith, Fitzmaurice, & Gilman, 2010; Cluver & Orkin, 2009; Drumbill, 2009; Ellis, MacDonald, Lincoln, & Cabral, 2008; Fazel, Doll, & Stein, 2009; Long, 2007; Lustig et al., 2004; Nickerson, Bryant, Brooks, Steel, Silove, & Chen, 2011; Onyut, Neuner, Ertl, Schauer, Odenwald, & Elbert, 2009; Reed, Fazel, Jones, Panter-Brick, & Stein, 2012; Ringold, Burke, & Glass, 2005). Very little research focuses specifically on the educational experiences of refugee families and their beliefs about their children’s learning and education. Examining the mathematics practices in these homes will provide teachers with the knowledge to prepare CRP learning experiences that make young refugee children as successful in school as their peers.

This chapter presents ethnomathematics as a theoretical framework for the study of culture and education and CRP as the application of that knowledge in the classroom. The similarities and differences among refugees are discussed including the qualities they share with other populations living in poverty and as immigrants and English Language Learners (ELL). The relationship between culture and education is examined from both the family and teacher perspective. Finally, the discontinuity between families and schools is presented as it leads to the research questions.

**Theoretical Framework**

Researchers have identified valid learning processes that differ from what is taught in school (referred to as academic or formal math) and vary across cultural boundaries. Particularly, those who work within an ethnomathematics framework identify alternate routes to math education. D’Ambrosio, considered the father of
ethnomathematics, defines the theoretical framework “as the mathematics practiced by
distinct cultural groups’ which are identified as ‘indigenous societies, groups of workers,
professional classes, and groups of children of a certain age group, etc.’” (Rosa, 2008, p.
93). Ethnomathematics requires researchers to acknowledge informal mathematics as
valid and valuable for study and discussion. It shares with critical theory the goal of
“rejection of bigotry, inequity and arrogance between humans” but develops that by “a
sense of respect [by knowing the other], a sense of solidarity [by recognizing the need of
sharing knowledge] and cooperation [to face complex, non-standard and non-artificial,
questions and problems]” (sic) (p. 95). Ethnomathematicians recognize the need to meet
students where they are as individuals with backgrounds that are unique, but also as
citizens in the world as it is.

Ethnomathematics is situated within constructivist ontology where the truth of
each student is not completely knowable by a researcher. Reality is created by the unique
combination of a student’s culture, experience, family, and processing of those factors.
Because truth is constructed by individuals, research does not measure the deficit of the
participants in formal mathematics, but attempts to discover what participants know and
how they know it.

D’Ambrosio dissected the word ethnomathematics into “ethno-” to include all of
culturally identifiable groups with their jargons, codes, symbols, myths, and even specific
ways of reasoning and inferring” and mathematics as “Platonic ciphering and arithmetic,
mensuration and relations of planetary orbits, the capabilities of classifying, ordering,
inferring and modeling” (D’Ambrosio, 1985, p. 45). Combining those two ideas, a
people’s mathematical truth is shaped within their cultural identities and constructed as
they explore the universal questions in mathematics. The “ethno” part of
ethnomathematics makes the framework a sociological mode of examining math
practices (Knijnik, 2002). Eglash (1997) explained that the epistemology adds examining
the “conscious intent” or purpose of participants to the comparison of non-Western and
Western processes (p. 81). This makes it possible to acknowledge potential alternative
mathematics within any group.

If researchers accept that mathematics looks different across cultural groups, the
fundamental difference must be identified. Most ethnomathematics researchers believe
there are universal mathematical truths like $2 + 2 = 4$, but the way cultures express, teach,
learn, and incorporate math into their traditions and needs is unique. In Eglash’s words,
“cultural variation is seen only as the result of asking different questions, not getting
different answers” (p. 82). Some math constructs may not exist or have developed in the
same way because the needs of the culture have not required it. For example, although
the angles and measurements of triangles were important to the Greeks, the Xingu culture
focused on the subtle and important distinctions between “female and male triangles”
(D’Ambrosio, 1997, p.14). If mathematicians from ancient Greece observed triangles
used in the Amazonian Xingu tribe, they would find that the angles still add up to 180
degrees, have three sides and vertices, and exist in two-dimensional space. The Xingu,
however, might note which triangles fit together to form their traditional symbols and that
the triangles have the same similarities to men and women that make them motifs in
Xinguano culture (Hecklenberger, 2009). The attributes would not be false across
cultures, just less important to note.
Learning is a social event and there is attendant data students bring to school with their prior knowledge of mathematics. For example, a child might practice counting steps in the house with a parent every day and know how to count to 12 before kindergarten. Another child whose parent owns a food stand might have spent considerable time taking orders and have the ability to organize data by multiple attributes before kindergarten. Yet another child might have helped carry water for the family and have skills of conservation of volume atypical of that age. Although each child has some understanding of number, a classroom might not provide the activities that recognize and extend their experiences into academic mathematics.

The reality is that academic math in the United States is connected to the culture, beliefs, needs, economic, and historical experiences of the dominant group (Bruner, 1996). Many teachers currently do not connect the math of the dominant or academic math along with culture and beliefs (Boaler, 1993). In fact, teachers often pride themselves on teaching math without the messiness of those connections. Some argue that students have to meet common academic objectives to be part of the powerful group (Rowlands & Carson, 2002). The power may exist in those who have traditionally had access to academia, but curriculum developers and users can make choices that give all students a better chance at attaining aptitude across mathematics. Making those messy connections across culture and beliefs can become opportunities for more children to gain entry to academic mathematics.

**Culturally Relevant Pedagogy**

Some form of multicultural education is taught in classrooms around the world (Banks, 2010). Nykiel-Herbert (2010) said upon close inspection multicultural education
in the United States can reflect tokenism and a cursory, superficial recognition of difference on the way to assimilating children into America. Native-born children get a little glimpse of different cultures, but immigrants do not see enough to impact their progress. “It becomes even harder to explain why the students who are contributing the most to the linguistic and cultural variety within our classroom landscapes are the ones whose learning does not seem to benefit from such diversification” (p. 4).

CRP moves education past the introduction of diversity to acknowledging individuality and integrating cultural knowledge, beliefs, and practices to give every child opportunity. Brown-Jeffey and Cooper made the point that equity is not the same as equal opportunity (2011). “More specifically, equal opportunity does not acknowledge that students have needs that require differentiation. Giving children what they need means believing (a) difference is good, (b) differentiated instruction is essential for some, and (c) CRP practices can enhance learning” (p. 74). The authors noted that while recognizing developmental needs in cognition, emotional, and social growth it is natural to include cultural bridging needs. Teaching the “whole child” requires that teachers understand not only the probable cultural background of the child, but also the individual background experiences that have nurtured their education up until they began formal school.

Culturally Relevant Pedagogy (CRP) is closely aligned with the ethnomathematics philosophy (Tutak et al., 2011). CRP is defined by Ladson-Billings (1995) as “a theoretical model that not only addresses student achievement but also helps students to accept and affirm their cultural identity while developing critical perspectives that challenge inequities that schools (and other institutions) perpetuate” (p. 469). Some
consider mathematics to be a subject that describes truths across all people without relationship to culture or history (Boaler, 1993). When mathematical historians describe the origins of some mathematical ideas though, it is clear that many discoveries have been in answer to problems of a particular group of people. For example, the concept of zero developed as a place holder for bookkeeping in Babylon around 300 B.C.E., a void or empty set quantity in India around 900 C.E., and a directional separator for construction planning in Egypt around 1700 B.C.E. (Boyer & Merzbach, 2010). The recognition that mathematics has always been culture bound is important for young children’s CRP considerations across disciplines.

To include math in CRP, educators have to look for their students’ knowledge in a problems context. People first learn math to solve problems, which can make it harder for educators to explicate the subject from community and context like they can with social studies and language (Gonzalez, Andrade, Civil, & Moll, 2001). In cultures and families around the world, researchers have recorded groups engaged in math content that is above their years of schooling in a range of activities critical to their lives. Research on how people learn math at any level concluded that students must have relevance to understand and be motivated to learn (Young-Loveridge, 2004). For example, Carraher, Carraher, and Schliemann (1985) found that for economic necessity five Brazilian, migrant, teenage vendors calculated basic operations mentally, made change for American and Brazilian currencies, and kept simple inventory management correctly 98.2% of the time. When given the same operations without context on pencil and paper tests, the same children scored 36.8%. The context and relevance bound their knowledge so that it did not transfer to an academic situation.
Similar results were found in other settings. Saxe’s (1988) group of 23 preteen, poor vendors with less than two years of school in Brazil dealt with multiple Brazilian currencies as well as highly inflated numbers, recognized and named large numbers, and used flexible strategies with ratios. In those areas, they outperformed 37 children of the same age, location, and background, who did not work in a commercial context. In researcher questioning, both groups had difficulty with smaller numbers they rarely used.

Additional studies have found the same contextual knowledge in 10 female dieters (de la Rocha, 1985), 12 experienced nurses who figured proportions for drugs (Pozzi, Noss, & Hoyles, 1998), 150 tailors from two tribes in Liberia (Lave, 2010), 24 grocery shoppers using order of operations (Murtaugh, 1985), a group of high school basketball players figuring percents and averages (Nasir & Hand, 2008), and 300 dairy workers grouping and organizing products (Scribner, 1985).

Some researchers have found that those who have learned contextual knowledge in non-academic settings can be just as applicable and accurate as those who learned in school. Ginsburg, Posner, and Russell (1981) compared unschooled and schooled children (9- to 10-years-old and 12- to 13- years-old; third and sixth grades) and adults (merchants; first year college students) in Ivory Coast and American schooled children (second and fifth grade) and adults (first and second year college students) as they were given oral, mental addition problems. The unschooled adults had learned over time how to decompose and regroup numbers so that they were as accurate in their addition as the other groups who used the academic algorithm. The schooled population in Ivory Coast had some limited and specific knowledge greater than the unschooled population, but this was greatly reduced when they were not asked the questions in French, the language of
schools. Academic math was just as context bound as the applied math unschooled people learned.

CRP might look like schools serving indigenous populations now. Brenner (1985), observing pre-first, first, and fourth grades at four schools, found that teachers of the Vai tribe in Liberia employed both school-taught algorithms and traditional, cultural methods to solve problems. The children controlled a portion of the progress and learning in the classroom by practicing their cultural method of refusing to answer or whispering when they did not know the problem, and, as Brenner observed, “forcing” the lesson back to the point where they needed to return. Allowing the cultural norms encouraged learning and promoted independence, ownership, and the inability of the lessons to proceed past the point where they could be successful. In another indigenous program, Johnson and Johnson (1999) concluded that by mirroring the Māori cultural characteristics of interdependence, development of common goals, and resolution of conflicting solutions students were socially comfortable in an academic environment and brought the lessons to a higher cognitive level.

Children who arrive at school from poverty, ELLs, and cultural minorities are not the only ones who need culturally relevant teaching that responds to their backgrounds. Perry and Dockett (2005) followed five-year-old Harry over his kindergarten year in New Zealand through formal pre and posttest scores, math papers and portfolio, reports from the teacher, and recorded conversations at home. The curriculum stated specifically that children will start and progress at unique levels and lessons should account for all ranges. Harry brought home his textbook at the end of the year where he had completed all pages with no errors and very few erasures. When Harry was asked what he learned in math
this year, he stated “I know that you don’t have to work hard” (p. 4-65). Embedded in Harry’s comment is that he did not experience the pleasure of finishing a challenging math problem or game or practice sustained interest and work in a math problem to get to the answer. His parents, well-educated and upper middle class, had provided enough opportunities for Harry to learn math before kindergarten that his beginning of the year test scores placed him several levels beyond his grade, but because he did not receive math instruction that considered his background knowledge, the kindergarten year resulted in little to no growth.

Investigating background knowledge is also necessary to identify misconceptions that might have already developed or algorithms that are not direct (Committee on Early Childhood Mathematics, 2009). If a teacher tries to build on false knowledge, the student may always be unsuccessful and frustrated by math.

**Refugee Characteristics and Experiences**

Ethnomathematics and CRP were discussed in previous sections in terms of the literature on immigrants and native cultures. In ethnomathematics, a culture can be built of any group with similar interests and needs at a time. It can be as large as United States students or as little as one small group in one preschool class. This study focused on a group of refugees living in a community and their beliefs and practices in mathematics. Both the similarities and differences among refugees are discussed below to support the conclusion that they are a cultural group. Implications for CRP and research specific to refugees are examined in consideration of research methods.

From the definition of cultural groups given by D’Ambrosio (2008), refugees may have developed ways of using, learning, and teaching mathematical concepts that are
alternative to those recognized in teachers’ methods classes. The difficulty for researchers is recognizing mathematics outside of one’s own cultural group. To use an ethnomathematics framework, researchers must first learn the participants.

The criteria for designation as refugee is that a person has a “well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion,” is not protected by his/her country as a result, and must flee his/her home country (UNHCR, 2010b, p. 3). As of January 2011, there were 9,952,430 refugees worldwide with the most coming from Southwest Asia (2,974,030). The areas of concern for this study include the Middle East where 1,786,050 refugees originated, and East Africa and the Horn of Africa with 1,206,800 refugees. (UNHCR, 2012)

Differences Among Refugees

Table 2.1 provides statistics for countries of origin for groups of refugees as well as the United States and worldwide for frame of reference. Statistics like adult literacy rate, average pupil to teacher ratio, and average years of schooling provide a picture of the educational life of an average citizen; however, access to sanitation facilities, early childhood mortality rate, and percent married by 18-years-old are measures of basic life circumstances. Although it is difficult to know the quality of life of an Eritrean or any other refugee, with 14% of the population having access to sanitation facilities and 47% of the women married by the time they are 18-years-old, it may be concluded that choices are limited and considerable time must be devoted to basic life necessities. Similarly, in DRC, the life expectancy is 48-years-old and 19.9% of children under 5-years-old die. It is also clear from the sanitation data why cultural orientation workers report that many
refugees from Eritrea and Burundi need to learn western hygiene and bathroom practices. Expectations for gender roles and parenting practices in the country of resettlement is required education across refugees, but especially those from countries with low literacy and high marriage rates before the age of 18 (Cultural Orientation Resource Center, [CORC] 2011). The high ratio of pupil to teacher and low number of average years in school in most countries is important to the consideration of educational beliefs.

Table 2.1 also gives the occupation sector most prevalent in each country. Agriculture is the number one occupation by a clear majority in most countries but the farming done by those in Afghanistan, Burundi, Eritrea, and Sudan is for subsistence compared to the farming done in Pakistan, Somalia, and Uganda which produces more than farmers need for their own families. Countries whose citizens farm for their own subsistence on average have lower literacy rates, years of schooling, and per capita GDP and higher early childhood mortality, early marriage, and early birth rates (United States Central Intelligence Agency [CIA], 2012). In contrast, 0.7% of the United States labor force works in agriculture and 99% of the population is literate. For children learning from the context of family life, the work done by parents is critical to their math experiences.

As discussed in Chapter One, refugees designated by the United Nations Convention Relating to the Status of Refugees left home because of fear of persecution and are unable to secure protection in their native country. For this study, countries in the Middle East, West Africa, Midwest Africa, and Mideast Africa are considered. Because of their designation, all refugees share the experience of fear, homelessness, and instability. However, the circumstances in countries of origin and the reasons for forced
Table 2.1

Refugee Characteristics

<table>
<thead>
<tr>
<th>Country of Origin</th>
<th>Life expect.*</th>
<th>GDP per capita**</th>
<th>Pop. in severe poverty**</th>
<th>Under 5 yrs old mortality rate*</th>
<th>Access to sanitation facilities**</th>
<th>Women married by 18 years old*</th>
<th>Adult literacy rate (15 yrs and older)**</th>
<th>Primary school pupil/teacher ratio*</th>
<th>Average years of school*</th>
<th>Largest labor sector**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afghanistan</td>
<td>49</td>
<td>$1,321</td>
<td>36.0%</td>
<td>19.9%</td>
<td>37%</td>
<td>39%</td>
<td>28.0%</td>
<td>42.8</td>
<td>3.3</td>
<td>Agriculture (79%)</td>
</tr>
<tr>
<td>Burundi</td>
<td>50</td>
<td>$392</td>
<td>61.9%</td>
<td>16.6%</td>
<td>46%</td>
<td>18%</td>
<td>59.3%</td>
<td>51.4</td>
<td>2.7</td>
<td>Agriculture (94%)</td>
</tr>
<tr>
<td>DRC</td>
<td>48</td>
<td>$319</td>
<td>46.5%</td>
<td>19.9%</td>
<td>23%</td>
<td>39%</td>
<td>66.8%</td>
<td>37.3</td>
<td>3.5</td>
<td>N/A</td>
</tr>
<tr>
<td>Eritrea</td>
<td>62</td>
<td>$581</td>
<td>50.0%</td>
<td>5.5%</td>
<td>14%</td>
<td>47%</td>
<td>66.6%</td>
<td>38.5</td>
<td>3.4</td>
<td>Agriculture (80%)</td>
</tr>
<tr>
<td>Iraq</td>
<td>69</td>
<td>$3,548</td>
<td>3.1%</td>
<td>4.4%</td>
<td>73%</td>
<td>17%</td>
<td>78.1%</td>
<td>17.0</td>
<td>5.6</td>
<td>Services (59.8%)</td>
</tr>
<tr>
<td>Pakistan</td>
<td>65</td>
<td>$2,609</td>
<td>27.4%</td>
<td>8.7%</td>
<td>45%</td>
<td>24%</td>
<td>55.5%</td>
<td>39.7</td>
<td>4.9</td>
<td>Agriculture (45%)</td>
</tr>
<tr>
<td>Somalia</td>
<td>51</td>
<td>$600</td>
<td>65.6%</td>
<td>18%</td>
<td>23%</td>
<td>45%</td>
<td>37.8%</td>
<td>35.5</td>
<td>3.0</td>
<td>Agriculture (71%)</td>
</tr>
<tr>
<td>Sudan</td>
<td>62</td>
<td>$2,210</td>
<td>40.0%</td>
<td>10.8%</td>
<td>34%</td>
<td>34%</td>
<td>70.2%</td>
<td>38.4</td>
<td>3.1</td>
<td>Agriculture (80%)</td>
</tr>
<tr>
<td>Uganda</td>
<td>54</td>
<td>$1,217</td>
<td>39.7%</td>
<td>12.8%</td>
<td>48%</td>
<td>46%</td>
<td>73.2%</td>
<td>49.3</td>
<td>4.7</td>
<td>Agriculture (82%)</td>
</tr>
<tr>
<td>United States</td>
<td>79</td>
<td>$45,989</td>
<td>15.1%</td>
<td>0.8%</td>
<td>100%</td>
<td>N/A</td>
<td>99.0%</td>
<td>13.9</td>
<td>12.4</td>
<td>Professional/technical (37.3%)</td>
</tr>
<tr>
<td>Worldwide</td>
<td>70</td>
<td>$10,715</td>
<td>N/A</td>
<td>5.8%</td>
<td>61%</td>
<td>35%c</td>
<td>80.9%</td>
<td>N/A</td>
<td>7.4</td>
<td>Services (42.4%)</td>
</tr>
</tbody>
</table>

Note. *From Human Development Report 2011, United Nations Development Programme
** From The World Factbook, United States Central Intelligence Agency

a. “Percentage using any of the following facilities, not shared with other households: flush or pour-flush latrine connected to a piped sewerage system, septic tank or pit latrine; ventilated improved pit latrine; pit latrine with a slab; covered pit; composting toilet” (p. 145).

b. Literate is defined as “can with understanding read and write a short simple sentence on their everyday life” (p. 161).
c. Excludes China.
### Sample Country of Origin Conditions

<table>
<thead>
<tr>
<th>Country of Origin</th>
<th>Conditions Reported by UN*</th>
<th>Conditions Reported by US CIA**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afghanistan</td>
<td>Heavy insurgent activity</td>
<td>Largest world producer of opium</td>
</tr>
<tr>
<td></td>
<td>High incidents of rocket</td>
<td>“Afghanistan’s living standards</td>
</tr>
<tr>
<td></td>
<td>and IED attacks</td>
<td>are among the lowest in the</td>
</tr>
<tr>
<td></td>
<td>High narcotics trafficking</td>
<td></td>
</tr>
<tr>
<td></td>
<td>and crime</td>
<td>world.”</td>
</tr>
<tr>
<td></td>
<td>3,742 cases of violence</td>
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<td>against women March to</td>
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<td>Dec 2011</td>
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<td></td>
<td>Frequent avalanches and</td>
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<td></td>
<td>earthquakes</td>
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<td></td>
<td>Frequent kidnappings by</td>
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<td></td>
<td>security forces</td>
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<tr>
<td>Burundi</td>
<td>Civil war between Hutu and</td>
<td>1 in 15 adults has HIV/AIDS</td>
</tr>
<tr>
<td></td>
<td>Tutsi ethnic groups</td>
<td>Continued war with Rwanda over</td>
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<td></td>
<td>1993-2006</td>
<td>farming areas</td>
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<td></td>
<td>Cease fire 2009 followed</td>
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<td>by fraudulent and boycotted</td>
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<td></td>
<td>elections 2010</td>
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<td></td>
<td>Renewed attacks in Jan</td>
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<td>2011</td>
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<tr>
<td>DRC</td>
<td>Ethnic civil war 1994-1999</td>
<td>Continued violence over</td>
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<tr>
<td></td>
<td>Designated Critical Crime</td>
<td>boundaries with Uganda,</td>
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<td></td>
<td>and High Political</td>
<td>Zambia, and Angola</td>
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<td></td>
<td>Violence Post</td>
<td>Significant source of human</td>
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<td></td>
<td>202 Lord’s Resistance</td>
<td>trafficking, most by armed</td>
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<tr>
<td></td>
<td>Army (LRA) attacks</td>
<td>groups within the country</td>
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<tr>
<td></td>
<td>Sept 2011-May 2012</td>
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<td></td>
<td>Mass rapes by national</td>
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<td></td>
<td>army</td>
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<tr>
<td></td>
<td>Rape and torture widespread by security forces</td>
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<tr>
<td></td>
<td>Many children abducted to be spies, sex slaves, and soldiers</td>
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<tr>
<td>Eritrea</td>
<td>Sanctioned by the UN for “government destabilizing actions”</td>
<td>Continuing conflict with Ethiopia over land and borders</td>
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<tr>
<td></td>
<td>Harbor for multiple</td>
<td>Unable to produce necessary</td>
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<tr>
<td></td>
<td>international warlords</td>
<td>food for all inhabitants</td>
</tr>
<tr>
<td></td>
<td>Severe drought recurring</td>
<td>Significant source of human</td>
</tr>
<tr>
<td></td>
<td>Military service required</td>
<td>trafficking for sex workers and</td>
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<td></td>
<td>for children as young as</td>
<td>child labor</td>
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<td>15 and period extended</td>
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<td></td>
<td>indefinitely</td>
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<tr>
<td>Iraq</td>
<td>Major terrorist and</td>
<td>Violent conflict with United</td>
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<tr>
<td></td>
<td>political violence</td>
<td>States over sovereignty and</td>
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<tr>
<td></td>
<td>Many civilian killings</td>
<td>refusal to follow UN weapons</td>
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<tr>
<td></td>
<td>and kidnappings by al</td>
<td>requirements (1991-2011)</td>
</tr>
<tr>
<td></td>
<td>Qa’ida and allies</td>
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<tr>
<td></td>
<td>Thousands detained in 2011</td>
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<tr>
<td></td>
<td>without charges or trials</td>
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<tr>
<td></td>
<td>Torture and rape</td>
<td></td>
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<tr>
<td></td>
<td>widespread in prisons</td>
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<tr>
<td>Country</td>
<td>Issues and Conditions</td>
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<tr>
<td>Pakistan</td>
<td>12,000 currently detained in official prisons</td>
<td>Tribal areas at border with Afghanistan serve as bases for terrorism and other illegal activities</td>
</tr>
<tr>
<td>Pakistan</td>
<td>Critical threat of terrorism</td>
<td>In military dispute over territory of Kashmir with China and India</td>
</tr>
<tr>
<td>Pakistan</td>
<td>Narcotics, smuggling violence, and kidnapping prevalent</td>
<td>Major transit area for opium from Afghanistan</td>
</tr>
<tr>
<td>Pakistan</td>
<td>Frequent fuel and utility shortages</td>
<td>Significant area for financial crimes</td>
</tr>
<tr>
<td>Pakistan</td>
<td>Severe flooding recurrent</td>
<td></td>
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<tr>
<td>Pakistan</td>
<td>763 schools damaged, 246 destroyed by Taliban attacks</td>
<td></td>
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<tr>
<td>Pakistan</td>
<td>Indiscriminate attacks using IEDs and suicide bombers</td>
<td></td>
</tr>
<tr>
<td>Pakistan</td>
<td>Violent persecution of Shi’a Muslims</td>
<td></td>
</tr>
<tr>
<td>Somalia</td>
<td>In continuing military conflict with Ethiopia and Kenya</td>
<td>Famine and drought create scarcity of clean drinking water</td>
</tr>
<tr>
<td>Somalia</td>
<td>Frequent and severe risk of starvation from drought</td>
<td>Somaliland and Puntland seek secession and are in conflict over borders</td>
</tr>
<tr>
<td>Somalia</td>
<td>Military recruitment of children as young as 8-years-old for boys to work in violent conflicts and girls for chores and marriage</td>
<td>Military disputes among Ethiopian and Somali clans for resources since 1988</td>
</tr>
<tr>
<td>Somalia</td>
<td>Torture, killings, stoning, amputation of those not complying with Sharia law</td>
<td></td>
</tr>
<tr>
<td>Sudan</td>
<td>Civil wars 1955-1972, 1983-2005 for religious, cultural, economic, tribal differences</td>
<td>Widespread famine</td>
</tr>
<tr>
<td>Sudan</td>
<td>Oil ownership and cattle migration at border contentious</td>
<td>Political and military instability and poor transportation prevent much humanitarian aid</td>
</tr>
<tr>
<td>Sudan</td>
<td>Violent genocide in Darfur continues with LRA and rebel groups</td>
<td>Significant source of human trafficking including small children for street begging and vending and forced prostitution for women</td>
</tr>
<tr>
<td>Sudan</td>
<td>Rape by government forces against women and girls prevalent</td>
<td></td>
</tr>
<tr>
<td>Sudan</td>
<td>Some towns looted, displaced, and burned by militia</td>
<td></td>
</tr>
<tr>
<td>Uganda</td>
<td>Regional terrorism</td>
<td>Continuing major stronghold for LRA</td>
</tr>
<tr>
<td>Uganda</td>
<td>LRA stronghold led by Joseph Kony until 2006</td>
<td>Hostile and violent ethnic groups and rebels cross borders near and within Uganda</td>
</tr>
<tr>
<td>Uganda</td>
<td>Frequent food insecurity, flash floods, infectious disease outbreaks, and drought</td>
<td></td>
</tr>
</tbody>
</table>
migration are different for each refugee group. Table 2.2 lists the reasons many refugees left their homes.

Refugees can also be admitted to the United States under the Special Immigrant Visa (SIV) under E4 Certain Special Immigrants provision if they are (Employment-Based Immigrant Visas, n. d.)

Iraqi and Afghan nationals who have provided faithful and valuable service while employed by or on behalf of the U.S. government in Iraq for not less than one year after March 20th, 2003 or in Afghanistan for not less than one year after October 7th, 2001, and have experienced an ongoing serious threat as a consequence of that employment. (E4 number 8)

Nationals of other countries can be included under E4 if the Department of Homeland Security decides their service was critical as translators, interpreters, or contractors (National Defense Authorization Act for Fiscal Year 2006) or the Overseas Processing Entities and United States Citizenship and Immigration Services determine that they are former employees and refugees in imminent danger (GAO-10-274, 2010). Those with SIVs may come from another home country not at war and may have left a middle class life normal to their country and culture. The US Government Accountability Office (GAO) Report to Congress Committees delivered in March 2010 said that most people admitted under these conditions have at least a secondary education but because of the international economic downturn are not able to find even entry-level jobs. Though they may have held middle to high-level positions in their countries of origin and in their service to the United States government, they may have difficulty living on the assistance given to them for the eight months of support allotted to refugees.
They are often ineligible to continue translator jobs in the United States because they do not meet security clearance criteria and records of past employment are unavailable.

Each refugee’s experience is different and varies by home country, cultural or religious background, ethnic origin, and the country to which the refugee escaped. Iraq and Afghanistan have been involved in years of war or occupation with industrialized countries and exposed to their technology like Improvised Explosive Devices (IEDs) and services like education for all women (CIA, 2012). Other countries embroiled in civil or tribal wars are more likely to fear guerrilla attacks and be vulnerable to natural disasters like floods, drought, and famine. Most refugees who arrive in the United States, regardless of their origin, need training on gender roles and some level of English, and counseling for Post-Traumatic Stress Disorder (PTSD) after witnessing violence against their families, friends, and fellow citizens (CORC, 2011).

Differences in Educational Experiences

The United Nations Universal Declaration of Human Rights states that “Everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages. Elementary education shall be compulsory” (article 26). They continue that education must include peace activities and that parents have the right to choose the appropriate education for their children. Refugees are included in the declaration and have the same right to education in a camp and in their country of resettlement. Experiences in camps vary in content, resources, and accessibility. Though providing education is mandatory, the country in which families have sought refuge determines the priority and assistance education receives in camps (UNHCR, 2012). The
variety of prior experiences, sampled below, has significant implications for teachers who want to connect learning to a child’s prior knowledge.

In an orphanage in Zaire (now DRC) for children from Rwanda, Hayden (1995) found that leaders were not allowed to provide formal education because it was not available in the refugee camps. Instead the director explored natural materials with the children that were familiar to make balls and toys which connected them to their prior knowledge and provided some academic exploration. In contrast, Burundian schools in one camp had little to no equipment with more than 50 children to a teacher and did not attempt to find alternatives (Ebbeck, 2001). They explained that the primary role of early education is to “keep children off the streets” (Ebbeck, 2001, p. 3).

According to the Lutheran Services of Georgia (2007), about 20% of the “1972 Burundians” are illiterate and only primary school is free. The few skills learned in Tanzanian camp schools are not applicable or practical in camp life leaving innovation in formal education futile. Lutheran Services of Georgia reports that the most important English skills most refugees need are related to numeracy and money. As they enter American schools, refugee children at any age are not prepared to sit and listen for a typical school day.

Mareng (2010) found that the children at the Kakuma Refugee Camp in Kenya worried about enough food to eat and sometimes walked 10 kilometers to school. Some students interviewed were grateful for any chance to go to school, but others knew they were not receiving an education that would prepare them for professional level jobs. Critical thinking was not encouraged at home or school because some parents believed questioning leads to abortion.
At a conference investigating curricula and education in African countries, Aglo and Lethoko (2003) gathered information about system concerns across the continent. Conflicting concerns demonstrate the disconnected beliefs about education across countries. Eritrea had determined that their curriculum was too theoretical and didn’t prepare their students for real life applications and social problem solving as Kenya said teaching practical skills was too expensive to continue supporting. Ethiopia was having difficulty involving parents in schools while parents in Somalia were vocal about wanting to replace untrained teachers and minimal resources with their old system.

With some refugee parents coming from the school systems within these countries and others from the camp education systems set up by these countries, a distinction that can be really meaningful, knowing a child’s home country, might not be the most helpful information for a teacher.

**Similarities Across Refugees**

Although refugees may differ by their history as discussed above, they also share some important commonalities. Research has shown that children of immigrants, those living in poverty, or in linguistically isolated homes (where no one over 14-years-old speaks English fluently) are at increased risk for academic challenges or failure (Hernandez, 2004; Huston, McLoyd, & Garcia Coll, 1994). Children of refugees often belong to all three of these groups. Characteristics and problems associated with immigrants and living in poverty are necessary to consider as part of many refugees’ resettlement experience in the United States. Because they have recently arrived from countries that are violently divided by ethnicity, region, or politics, it is also important to study them apart from research on other immigrants or ethnic minorities.
**Immigrants and language.** Hernandez (2004) identified four risk factors that predict poor school outcomes: economic deprivation, a mother who did not graduate from high school, a linguistically isolated home, and one parent homes. At least 67% of immigrant families have one of the risk factors compared to 35% of native-born families. Almost half of immigrant families live in overcrowded conditions. More often than immigrants in other SES groups, poor or low SES immigrants may occupy the same living space with a large number of family members and others. Overcrowded living conditions for children may lead to overstimulation, a lack of space for discovery, and fewer opportunities to try things out (Evans, Saltzman, & Cooperman, 2001; Scott-Jones, 1984). Immigrant families with a non-resident member may be ineligible, unaware, or afraid to take advantage of social resources (1984) that could mitigate problems related to immigrant status.

One of the most significant challenges to both immigrant families and teachers is the language barrier. Research reports that immigrants should learn in their own languages while they are mastering English (Goll, 2009; Novick, 1996; Wolfe, Tesfai, Egasso, & Aradom, 1995) but the cost for dual language teachers can be prohibitive. Translators may be employed for important conferences but not for the daily communication about child development with parents (Matthews & Ewen, 2010). Refugees are often from non-dominant language groups in their own countries, which can make translators difficult to find.

Significant for math education, characteristics of language influence the acquisition of numbers skills for learners. Adults from cultures with few words for numbers performed worse on matching set sizes, arithmetic operations, and tasks
requiring exact numbers (Gordon, 2004; Pica, Lemer, Izard, & Dehaene, 2004). There are other positive qualities of languages that help in learning math. In a study across language learners, Sarnecka, Kamenskaya, Yamana, Ogura, and Yudovina (2007) compared 70 English, 44 Russian, and 48 Japanese three-year-olds who were monolingual. They found that the children who spoke Russian and English, languages that had a morphological element that differentiated singular and plural cases like the “s” in dogs, learned cardinality faster.

**Poverty.** The present study focused on a refugee community that is also living in poverty. Families living in poverty are likely to experience multiple stressors that significantly affect reading and math skills and second grade retention (Huston et al., 1994; Rouse & Fantuzzo, 2009). Feinstein (2003) reported that cognitive abilities of a child 10-years-old correlated better with SES at 2 years old than with the cognitive abilities the child has at 2.

In a study by McClelland, Cameron, Connor, Farris, Jewkes, & Morrison (2007), 310 low income children in preschool were given a Head-to-Toes Task where they had to do the opposite of what the researcher asked, a task that is used to test inhibitory control, attention, and working memory. Higher levels of behavioral regulation in the fall predicted stronger levels of achievement, math gains, and self-regulation tested by researchers in the spring. Ponitz, McClelland, Matthews, and Morrison (2009) did a follow-up study with 324 kindergartners, using the same type of behavioral regulation activity. Researcher testing of academic skills was combined with teacher and parent behavior ratings. Behavior regulation in the fall was not as highly correlated with
literature and writing as in the previous study, but it was strongly predictive of mathematics success in the spring.

In a study by Blair and Razza (2007), researchers found that executive function in 141 three- to five-year-old children from low SES homes predicted math and literacy progress in preschool and kindergarten independent of intelligence or background. In an intervention study, 147 low SES children in their second year of preschool were intentionally taught executive functioning skills (Diamond, Barnett, Thomas, & Munro, 2007). They performed above peers across SES in the spring on executive functioning tasks as well as on teacher observation tools of academic skills. Researchers proposed that teaching executive functioning skills could be an important way for teachers to address behaviors that are often found in at-risk populations.

Also significantly affected by poverty were behavioral factors involved in math learning like impulsivity and dependence in problem solving (Burns, Haywood, & Delclos, 1987), positive feelings about themselves as capable math learners (Hauser-Cram, Durand, & Warfield, 2007), and working memory, attention, and ability to follow directions (Martin, Drew, Gaddis, & Moseley, 1988; McClelland et al., 2007). Because self-regulation, the ability to try different methods, persevere, and listen, is necessary for success in the current kindergarten classroom and is mitigated by SES, it has been a good predictor of cognitive development at 13 (Evans & Rosenbaum, 2008).

**Beliefs and practices.** Beyond similarities they may share with other immigrants and Americans living in poverty, Stewart (1993) noted unique, considerable needs refugees have that require special assistance. Many refugee children suffer from PTSD and have to overcome overdeveloped fight or flight responses to settle into classrooms.
The repeated exposure to endorphins related to these responses shuts down their ability to adapt, to connect to reality, to use rational thought, and even to speak. While other immigrants might move near family members who are already established, refugees must rely on churches or community volunteers to explain school practices. If these facilitators do not know the background of families, it is difficult to know how to prepare parents, even after the initial registration.

Beliefs about the purpose and processes of education, a product of one’s culture and experiences, are factors in parent expectations that effect transitions to new schools. In Canada, Drumbill (2009) interviewed eight West African and three Asian refugee parents. All parents expressed hope for their children through education; however, they also feared that they could not protect their children from social dangers like drug use and violence because common punishment from their home countries is not acceptable. There were no differences between the refugees in expectations or frustrations, indicating that originating from a collectivist or traditional culture may be more important than the country. Lewig, Arney, and Salveron (2010) did 10 focus group interviews with eight cultural groups and about 130 participants. They learned that refugee parents across different cultural backgrounds associated meetings at school with their children being in trouble, making school to home communication a source of fear and dread. Also, immigrant and refugee families used to structured, traditional lessons may not perceive art and other creative activities as the math and literacy lessons teacher intend (Ryan et al., 2010).
Culturally Relevant Pedagogy with Refugee Children

Rodd (1996) notes, "While culture's important role in shaping child rearing and family interaction is well understood, its effect on education opportunities is not always recognized" (p. 326). Relatively little research and few interventions have been done to investigate how the culture of refugee families affects education. According to the definition, CRP lessons for refugee children require knowledge of the country and culture of origin as well as the refugee experience.

In one of the few interventions for refugees, Nykiel-Herbert (2010) placed 12 refugees from Iraq in third through fifth grade in a classroom built around their cultural norms and base knowledge. The children surpassed their peers in traditional ELL classes and in several cases tested out of ELL services. Teachers allowed such cultural practices as self-separation by gender and assisting and sometimes finishing each other’s work. The children had the opportunity to gradually learn the ways of American schools without being overwhelmed by change, and retaining some of their own cultural practices.

Play is considered one of the most important modes of teaching and learning in early childhood (Hirsch-Pasek, Golinkoff, Berk, & Singer, 2009) but must be critically evaluated with respect to CRP. Play in American classrooms might not look like play in non-industrialized countries where children mimic and prepare for work in adult tasks (Dachyshyn & Kirova, 2008) and therefore may not be supported by parents. Comparing European-American to Asian parents of 3- to 6-year-olds (Parmar, Harkness, & Super, 2008), the Asian parents reported that there is little value in play and provided fewer toys at home for their children than other cultural groups. Play as seen in American classes
was “feared and avoided” by Sudanese parents in another study (Dachyshyn & Kirova, 2008). They reported discomfort with the child-centered philosophy, embarrassment by questions from their children, and felt challenged in front of other adults.

Teachers were successful in making play a transitional, CRP environment in Dachyshyn and Kirova’s study. Sixteen children, all from refugee communities and speaking four different languages, were grouped in a class with cultural and language facilitators. Teachers infused play with lessons on number, currency, measuring, and weighing. For example, rather than a pretend cash register and shopping basket, children set up booths with familiar foods and bargained for items. Parents were comfortable coming to school and learned about American expectations. They created a common culture as well as a place where their individual culture was valued.

**Home Learning Environment and Mathematics Education**

Home Learning Environment (HLE) includes the unique combination of cultural, ethnic, familial, racial, and socioeconomic qualities that shape a child’s experiences (Melhuish et al., 2008). The context presented by parents at home meets a child’s cultural and environmental curiosities and helps them to learn new skills (Rogoff & Gardner, 1984). Although each child’s HLE is distinct, researchers and teachers find that numeracy and mathematics begin early and that some characteristics are consistently significant for mathematics success and school readiness. Beliefs and practices have been studied within families generally as well as in specific populations including refugees like those living in poverty or diverse cultures.

Number skills have a neurological basis that may begin at least at birth (Berch, 2005; Wynn, 1998). Subitization and approximation of number need little formal
instruction to develop (Coolidge & Overmann, 2012; Dehaene, 2002; Feigenson, Dehaene, & Spelke, 2004) and in fact, are commonly seen in mammals other than humans. In an interesting new study, Vonk and Beran (2012) found that American black bears “showed effects of ratio and difference comparable to those of primates” (p. 231) in choosing similar small versus large sets of dots. In light of this study, researchers have renewed reason to consider what math young children have and how it develops prior to any formal schooling or instruction.

The math children learn from birth to school entry is facilitated by the family. Tudge, Li, and Stanley (2007) noted that what researchers have found about informal math learning in families has depended largely on the measures researchers used. In the studies reported in Table 2.3, children engaged in math 0 minutes, 175 times in an hour, and “regularly.” When parents report math activities, they either receive a definition, or examples of activities that may bias their report or they are left to their own definition which can severely limit the activities they count as mathematics. Confounding the research is that families typically do not identify the mathematics they do in their lives as “real math” (Esmonde et al., 2011; Goldman & Booker, 2009).

Conclusions in some observation studies have been just as murky because coding has required verbalization of math language. Tudge et al. (2007) noted in their limitations that when they went back to their research and deleted any occurrence that was a “mention” rather than an activity, they halved the resulting count. Not only do accurate readings require knowledge of what the researchers were actually calling math in studies, but what else children might have been doing that was building math content
Table 2.3

**Reports and Measures from Math Time at Home Studies**

<table>
<thead>
<tr>
<th>Study</th>
<th>Reporting Method</th>
<th>Conclusion</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timmer, Eccles, &amp; O’Brien, 1985</td>
<td>Parent-written diary report on how they spent self-defined quality time with elementary child each day</td>
<td>Children spent less than 2 minutes per day on math at home</td>
<td>Parent report</td>
</tr>
<tr>
<td>Hofferth &amp; Sandberg, 2001</td>
<td>In-person interview with parents where researchers asked for report of 24 hour period with child (3-11 years old) Coders fit activities into 18 predetermined categories</td>
<td>Children spent less than 5 minutes per day on math at home or childcare</td>
<td>Parent report</td>
</tr>
<tr>
<td>Plewis, Mooney, &amp; Cresser, 1990</td>
<td>Phone interview where researchers asked parents of 6-year-olds for a sequential accounting of the last 24 hours Done three times each</td>
<td>Children spent 0 minutes per day on math at home</td>
<td>Parent report</td>
</tr>
<tr>
<td>Saxe, Guberman, &amp; Gearhart, 1984</td>
<td>Mother report and interviewer observation with 2.5-4.5 year olds</td>
<td>Children “regularly” participated in math tasks created by child or parent</td>
<td>Parent report</td>
</tr>
<tr>
<td>Tudge &amp; Doucet, 2004</td>
<td>18 hours live-coded, 2 hours recorded Coded into 14 categories</td>
<td>10% of children engaged in math play three or more times in one day at home and school</td>
<td>Researcher observation</td>
</tr>
<tr>
<td>Vandermaas-Peeler, Nelson, Bumpass, &amp; Sassine, 2009</td>
<td>Researcher gave parents of five-year-olds two books and toys for a videotaped one hour, home interview Coded by socio-cultural numeracy exchange and purely mathematical</td>
<td>Children involved in 10 math interactions over 15 minutes</td>
<td>Researcher observation</td>
</tr>
<tr>
<td>Levine, Suriyakham, Rowe, Huttenlocher, &amp; Gunderson, 2010</td>
<td>Researcher visited 44 homes of 14-30 month old children for 90 minutes every 4 months and recorded and transcribed A computer counted number of word utterances</td>
<td>Between 3 and 175 instances of math language with children in an hour</td>
<td>Researcher observation</td>
</tr>
</tbody>
</table>
in limited verbalization. In the young population that is learning to communicate in general, and learning vocabulary for mathematics as well, research requires broader considerations in coding. The child who spends several minutes pouring water between different sizes of containers can be making significant connections across concepts with little to no verbalization. A child who counts “1, 2, 3, go” is repeating vocabulary with no additional processing (Durkin, Shire, Riem, Crowder, & Ruther, 1986), but which is often counted as math activity in studies.

The time and thoughtfulness of activities can indicate the importance parents place on math learning and their beliefs about who can master the tasks. Saxe, Guberman, and Gearhart (1984) found in their observations of 2.5- to 4.5-year-old children that mothers adjusted their guidance of math activities to a higher or lower level as they naturally evaluated their child’s mastery.

Thus, children's socially organized experiences with number in everyday number activities are emergent ones; they are not "contained in" social practices or in the minds of the participants but are negotiated in interactions and emerge as a result of the mothers' and children's adjusted efforts to accomplish numerical tasks jointly. (p. 113)

Vandermaas-Peeler, Way, and Umpleby (2003) observed 36 mothers with their 3- to 6-year-old children as they baked cookies at home. Mothers gave more direction and intervention when working with younger children and provided a strategy or advice when working with older children.

Young children’s math work is impacted by their parents’ attitudes and beliefs about math (Pratt & Savoy-Levine, 1998). When parents are able to provide moderately
challenging support during math problems, children are more positive in their own affect as opposed to high and low levels of support. Pea and Martin (2010) argued that the culture students bring to school includes values about math like who can do it, the importance of figuring out a problem like the best deal, the ability to take the risk to be wrong, the desire for accuracy, the value of figuring something out, and feeling empowered enough to figure it out. These concepts are as important as the cognitive skills they might have in developing early math skills.

There has been less definitive research on how HLE and poverty factors interact with pre-mathematics education. As discussed above, families living in poverty have less access to resources, may have more instability in physical environment, and unmet mental health needs that contribute to lower involvement with children’s number development (Knitzer & Lefkowitz, 2006). In addition, parents from low SES may have limitations in their own education, be uncomfortable with the math skills they do have, and be unaware of the importance early experiences with number are to their children (Clements & Sarama, 2007). All of these factors contribute to less complex number engagement with parents and children in low SES homes (Saxe et al., 1984).

Anders et al. (2012), used a sample of 532 children in German preschools to study what environments are best for numeracy learning in 3- to 5-year-olds. The child’s gender, parental second language status, and SES interacted to explain low initial numeracy skills and lack of growth over time. The mother’s education had a significant effect on initial numeracy skills and the SES gap grew each year. Children whose parents were second language learners started with lower skills but showed more growth over the two years.
Research by Vandermaas-Peeler, Nelson, Bumpass, and Sassine (2009) with 5-year-olds replicated other results that high SES families engaged in more numeracy interactions and spontaneous math discussions during reading and play than low SES families; however, the rate of mathematics interactions within socio-cultural contexts was the same across SES. It is much harder to identify socio-cultural experiences that lead to math activities because they are context and culture driven, but may reveal more about the way number is used naturally at home. The high rate of contextually based activities may explain why researchers have had such varied results. For some families, namely those in middle and high SES groups, reading and play may be the culturally appropriate activities.

Low SES families may have trouble identifying and facilitating the number activities researchers and teachers value. Low SES families, and often, ethnic minority parents, consistently used more directive strategies and less to no inductive questioning when working with their small children (Deater-Deckard & Dodge, 1997). Higher SES parents elicited more expansive statements requiring inferential reasoning in interactions with their children while lower SES parents were more likely to elicit nominal statements relying on rote memory and recall of facts presented previously (Barbarin, Bryant, McCandies, Burchinal, Early, & Clifford, 2006; Mikulecky, 1996; Rush, 1999).

In another low SES population, Drummond and Stipek (2004) interviewed 234 parents with second and third grade children and found that academic beliefs did not range across African American, Caucasian, and Latino or language learner status. All parents said it was important to help their children with academics, but that it is more important to help children with reading than mathematics. When parents said they should
not help their child in math, they also said they lacked the knowledge to help their child. When parents perceive that their child is having difficulty in school, they provide more help in reading. Their teachers likewise said it was most important to give parents help on reading rather than math. Even when parents do want to help with math development, Scott-Jones (1984) found that mothers in low-income families may begin to have trouble helping with homework when the child is in first grade. Low-income mothers said they do not know current modes of learning promoted in school and they have perspectives that make their job as parents necessarily separate from the teacher.

In other research studies, academic goals for education after high school were similar across immigrant status, regardless of other predictive factors. Despite the discrimination and poverty some Latino immigrants experience, 81 parents of children in kindergarten through sixth grade expressed beliefs that education is the only way their children will escape prejudice, establish economic strength, and develop morality (Goldenberg, Gallimore, Reese, & Garnier, 2001). Ji and Koblinsky found similar beliefs among 29 low SES Chinese immigrant parents (2009). Though only 48% of parents knew the status of their child’s academic progress, 85% expected their children to study hard and go on to college. They cited difficulties communicating with teachers and finding time to attend school conferences, but did not connect those practices with expectations and academic outcomes.

Cultural approaches to education begin to affect children at birth. Kilbride’s (1972) study of infants in Baganda explored the daily training in how to sit and smile as critical steps in their social development. Their babies scored several weeks ahead of US infants on the Bayley Scale of Motor Development. The Kipsigis begin teaching their
children to walk in earnest at two to three months old (Super, 1976). Physical development, considered after emotional and cognitive development in the US, actually soothes infants, helps build attention span, and effects cognitive skills through more exploration, goal-setting, and alertness (Konner, 1976). The importance of these social skills to math learning was discussed earlier.

Because researchers have found that the mathematics parents do with their children is significantly influenced by context (Rogoff & Gardner, 1984; Saxe et al., 1984; Vandermaas-Peeler, 2008), the interaction of diverse family frameworks requires attention. Chavajay and Rogoff (2002) watched 47 Mayan mothers as each solved puzzles with groups of three six- to twelve-year old children. Mothers with less than two years of formal schooling worked in tandem with children, sharing responsibility and decision making, while mothers with more schooling parsed labor and directed decisions like a teacher-student arrangement. They theorized that when the indigenous Mayan people go through formal, Western schooling, their norms about social organization are reshaped.

Parents’ experiences with education, either as children or adults, inform their expectations for their child’s education. In a needs assessment prepared for recommendations to help Somali refugee children in Maryland, researchers found that parents of the middle and high school children felt science education should begin earlier than they observed (Birman, Trickett, & Bacchus, 2001). They wanted their children, who were serious about education, to be surrounded by other serious children rather than those they perceived to be indifferent to education in the United States. In Reese and Gallimore’s (2000) ethnographic study of 10 Spanish speaking families, parents used
models to help build literacy based on their home culture as child field workers, molded by their personal experiences in school, and reshaped by interactions as their 5-year-old children began school. Most parents did not share contemporary learning theories, believing that learning is done by repetition “until it is recorded or engraved” and that reading to small children is to impart moral lessons. In 14 focus groups, other Latino parents expressed disappointment that expected lessons like good manners, behavior at home, obedience, and getting along with others were not taught at school (Bernhard, Lefebvre, Kilbride, Chud, & Lange, 1998).

Tudge, et al. (2006), observed 79 3-year-olds over a full day in their home environments in Brazil, Kenya, and the United States. The variations in activities could not be explained by culture, race, or social class, but by the intersection. The children from Kenyan working class homes worked more and got more lessons in skills, nature, safety, and the work world. Children from Brazil had the fewest lessons of any group. White children from the United States were engaged in the most conversations. Researchers found that attending preschool and engaging in learning while there was part of the cultural expectation for all middle class children in their American population, but not for the Black, working class group. Because of that belief, the Black, working class children who did not attend an academic preschool engaged in four times fewer lessons of any kind than their peers.

Thus, American culture is clearly different from Kenyan or Brazilian culture, because of these societies’ different histories, access to resources, sense of identity, values, beliefs, and practices…Cultural groups are far from homogeneous, even when drawn from single cities, and almost every meaningful
difference that we identified needed to be examined in terms of the intersection of culture and social class. (p. 1451)

In all cultures the middle SES children were more likely to play together and do academic activities at home than low SES peers. The expectation of schools varied from Kenya where parents expect qualified teachers to prepare their children for formal readiness tests to Brazil where all SES levels expected day care from preschool so they can work.

**HLE, Schools, and Discontinuity**

When parent and teacher beliefs differ by locality, SES, and ethnicity (at least), children are stuck in a state of discontinuity (Graue, 2006). The two sources of most influence and greatest time consumers in a child’s life may be at odds in their expectations of the child, each other, and education. Teacher backgrounds and experiences can differ from students in ways meaningful for their beliefs and practices. Teacher perceptions of relationship quality with parents have strongly affected their beliefs about children’s competence, problematic behavior, and conflict, particularly for male children, African-American children, and children living in poverty (Serpell & Mashburn, 2012). When there are misunderstandings or misconceptions between home and school, the consequences can be reduced communication, negative interactions, and ultimately, unsuccessful students.

In Table 2.4 below, demographics for elementary public school teachers, Head Start lead teachers, and Head Start parents are compared. The teachers Head Start
Table 2.4

*Average Demographic Data of Elementary and Head Start Lead Teachers and Head Start Families.*

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Education</td>
<td>52% have at least a Master’s degree</td>
<td>39.45% have an Associates’ degree, 38.34% BA, 3.17% have a high school diploma or less</td>
<td>60% of mothers and 53% of fathers finished high school</td>
</tr>
<tr>
<td>Income</td>
<td>Average $49,300</td>
<td>Median $25,700</td>
<td>58% live below the poverty guideline ($22,350); 53% receive Supplemental Nutrition Assistance Program (SNAP) benefits</td>
</tr>
<tr>
<td>Ethnicity/Race</td>
<td>82.3% white, 7.7% Hispanic/ Latin, 7.2% African-American, and 1.3% Asian</td>
<td>39.98% white, 36.08% African American, 18.49% Hispanic/ Latino</td>
<td>33% African-American, 35% Hispanic/ Latino</td>
</tr>
<tr>
<td>Age</td>
<td>50% over age 40</td>
<td>63.4% over age 40</td>
<td>76.68% below 30 at the time of their child’s birth</td>
</tr>
<tr>
<td>Language</td>
<td>English language proficient</td>
<td>English language proficient</td>
<td>23% speak Spanish as the primary language</td>
</tr>
</tbody>
</table>

*Note.* *Aud, et al., 2011*

**Administration for Children and Families, 2010a**

***Administration for Children and Families, 2010b**

families encounter when they start elementary school are educated, middle aged, earn 221% of the poverty guideline for a family of four, and speak English primarily (Aud et al., 2011). Because of Head Start’s commitment to hiring within the community of
service, their demographics are a little closer to those of the families. Head Start had more African-American and Hispanic/Latino teachers, but the majority still had at least an Associate’s or Bachelor’s degree, were over age 40, and earned (by themselves) 115% of the poverty guideline (Administration for Children and Families, 2010a). In contrast, only 59.19% of Head Start families have a parent employed full time and 58% of families (all working members) live below the poverty guideline. In addition, the average Head Start teacher has been in the job 8.8 years compared to families living in extreme poverty who are more likely to work in transient jobs. Therefore, even teachers who are geographically close to the families may still be experientially removed.

Teacher beliefs were studied by Hauser-Cram, Sirin, and Stipek (2003) with teacher questionnaires, classroom observations, and independent evaluations of children’s academic skills of 105 kindergarteners and 56 teachers. Teacher backgrounds are important because, when they believed their values were different from parents’ values, they rated those children as less competent, predicted lower achievement, and had lower expectations. In the study of a diverse, very low SES area with 76% Euro-American teachers, the effect was strongest for children living in poverty and those of color. Teachers who adjusted their practices to individuals said a difference in values was less problematic and predicted greater achievement for their students.

Studies in countries with divergent histories and social interactions have concluded that schools and teachers support the predominant cultural beliefs of their own countries (Kagan, Britto, & Engle, 2005; Keller et al., 2006). Harkness et al. (2007) asked preschool and elementary/primary school teachers in Italy, The Netherlands, Poland, Spain, and the U.S. to describe their ideal student. Across cultures, teachers cited
social intelligence, motivation, and self-regulation, but there were differences specific to countries as well. Italian and Dutch teachers were interested in developing a positive emotional climate, Spanish teachers focused on good manners, Polish teachers concentrated on good classroom practices, and U. S. teachers emphasized challenging students.

Focus groups and interviews with teachers, principals, and parents, including refugees (Hwa-Froelich & Westby, 2003) have found misunderstandings and conflicting conclusions across participants in beliefs about teaching, learning, readiness, eligibility, grading, and required entry skills (Waldbart, Meyers, & Meyers, 2006; Wesley & Buysse, 2003). Similarly, in the Bernhard et al. (1998) study discussed above, researchers discovered minority parents and early childhood educators were not aware that they had different beliefs for cognition, social skills, respect, and proper parenting. Teachers felt disrespected by minority parents; however, they also reported having much less contact with the minority parents than other parents and no desire to learn about home practices. Parents, who reported discrimination, said lack of interpreters, time to interact with other parents, and disinterest in their concerns discouraged their attendance.

The apathy teachers perceive may actually be deference for their professional role (Drummond & Stipek, 2004; Lareau, 1987; Waanders, Mendez, & Downer, 2007; Zhong & Zhou, 2011). Parents who believe education is the job of schools and teachers were less involved at home, but had no difference in involvement at school (Waanders et al., 2007). In other words, parents respected teachers as professionals and were willing to do whatever teachers asked if it directly supported their children. Low income parents in Drummond and Stipek’s (2006) study reported that their primary job is “maintaining
good relationships with children and helping them learn social skills, keeping them safe, spending time with them, and getting to a better neighborhood” (p. 205). Waanders et al. (2007) found that teacher attendance records of parent involvement in children’s activities were not related to parent reports, indicating that teachers were unaware of the work parents do at home.

Discontinuities between home and school affected the capability for learning and increased opportunities for school failure in cultural minority groups (Jordan, 1985; Vogt, Jordan, & Tharp, 1987). Discontinuity in world views confuses children and parents trying to make sense of a new home. While language was a factor for some, others had basic misconceptions about cultural practices. Parents from non-dominant cultures around the world report feeling confused and misunderstood in American schools. In Tadesse, Hoot, and Watson-Thompson’s (2009) investigation of Head Start parents, Southeast Asian parents expected teachers to nurture interdependence and obedience as opposed to the independence teachers were encouraging. Sudanese refugee mothers disagreed with teachers’ emphasis on play, expecting more traditional academic materials and teaching styles. All participants believed their children were frequently assessed, misinterpreted, and stereotyped because of their culture.

The discontinuity between home and school was not just in practice, but pervaded the school leadership:

Speaking of the parents, the principal (of the low SES school) remarked, ‘They don't value education because they don't have much of one themselves. [Since] they don't value education as much as they could, they don't put those values and expectations on their kids’. (Lareau, 2000, p. 165)
Other teachers offered as truth that immigrant and low SES parents are not able to help and are not interested in their children’s education because they work too many hours, are from cultures that don’t support long term schooling, and are not linguistically available (Delgado-Gaitan, 1991). In Hindman and Morrison’s (2011) review of the Family And Child Experiences Survey, Head Start directors reported little response to their outreach efforts but authors found that when parents were invited to participate, they did and when centers encouraged families to read, they did that as well. In the Buysse, Castro, West, and Skinner (2006) survey of a national sample of early childhood program administrators, those who reported more challenges working with Latino families used fewer strategies to involve them. Parents and teachers believed their biggest challenge was lack of Latino or bilingual staff and lack of training for staff.

When teachers are asked to be reflective about their beliefs and introduced to the real lives of the students’ families, they are likely to shift changes in expectations. Once teachers become more cognizant of the forms and styles of learning within families, education may be seen more holistically and the medium and message of school can be designed to be adaptive to the values and idiom of community life (Lightfoot, 1981, p. 102).

**Interventions**

Interventions that have attempted to learn about homes and bridge the discontinuity have been most successful in affecting young children’s development. Dachyshyn and Kirova (2008) reminded readers that bringing an intervention created by researchers or school officials to diverse populations may not fill the appropriate need. Attempts to “close the achievement gap” present children as having a deficit and “in need
of intervention to bring them into line with majority culture expectations of learning and development” (p. 289). Goulah (2010) agreed, arguing that attempts to quickly assimilate refugees into the culture of school may be stripping the rich knowledge they could share with us. He says No Child Left Behind legislation was designed to “systematically strip immigrants and non-native English speakers of their native languages and cultural practices” (p. 195). Refugees from Central America, Mexico, and Haiti use naturally sustainable farming techniques that they lose in the process of Westernization. It follows that the children of these refugees learned problem solving unfamiliar to their American teachers. He suggested that the most important thing educators can do to help refugees is learn what their cultures value. Interventions, when needed, born in the population to be served, can use the prior knowledge of families and address strategies that are culturally supportive and supported.

A treatment-control intervention program had some success in raising math scores for children living in poverty from pre-kindergarten through the school year (Starkey, Klein, & Wakeley, 2004). Children in the experimental low income group scored 33% higher than their control group counterparts. A unique part of the study is that informal knowledge and nurturing informal paths to math knowledge were the focuses of testing and teaching. Their program, focused on acknowledging the math students come to preschool with and continuing to nurture their learning through informal and natural experiences, had large results for both low and middle income children. Vandermaas-Peeler, Nelson, Bumpass, and Sassine (2009) urge “Teachers and early intervention specialists (to) use the naturally occurring socio-cultural exchanges as a foundation for
encouraging low-SES parents to incorporate mathematical exchanges into their interactions with their children as well” (p. 71).

**Shifting Responsibility**

Some argue that the responsibility to bridge discontinuity is with the schools that should be ready for the range of students they meet (NAEYC, 2009a; Wesley & Buysse, 2003). Graue (2006) reframed school readiness as the

…ability of a school to meet and make successful a kindergartner at any skill level. [A receptive school] is one that is inclusive, that assumes that all children have a place in pedagogy, and that thresholds have limited value in planning instruction or placement of students. Instruction from an inclusive perspective is arranged to meet the needs of today’s children here and now rather than some mythic group from another time. (p. 48)

If schools are responsible for each child, CRP is critical as all children are met as new learners with rich backgrounds.

Talking to 150 Early Head Start minority parents, McAllister, Wilson, Green, and Baldwin (2005) found that parents too are asking if schools are ready for their children with diverse backgrounds and developmental needs. Parents believe teachers’ abilities to recognize their child’s strengths and adapt to individual children are more important than what parents can do at home to build success. Though they expect to be involved at home, they consider their role to build social and emotional health.

**Conclusion**

From the studies above, it is apparent that the relationship between parents and teachers is critical to young children’s education, that refugee families share
characteristics that can make educational success difficult to attain, and that the experiences and backgrounds of parents are important to the way their children experience and learn mathematics. The gap in available research on refugee families necessitated a review of literature on characteristics that may or may not be appropriate to the participants for this study. Not only does that mean that the applicability of research may be limited, but also that this study will fill a hole in the knowledge teachers have of families they serve. The lack of information has allowed confusion and misunderstandings to lead some teacher-home communication so that teacher may not learn about the families’ backgrounds and cannot create CRP lessons.

Research from different perspectives and experiences has shown that most people learn mathematics processes to solve the problems they encounter. Parents who come from non-dominant cultures may share mathematics with their children in the way they learned it, rather than in ways familiar to many teachers in the US. The risk of unsuccessful school experiences requires a closer look at the practices that might help children from refugee families make connections to academic lessons.
CHAPTER THREE

The questions used to guide this study are as follows:

- What experiences did refugee parents have as students that influence their perceptions, beliefs, and practices of education, learning, and United States schools?
- In what ways do interactions between school personnel and refugee parents influence expectations and practices?
- How do refugee parents intentionally and unintentionally prepare, assist, and model mathematics for their children?

Research Design

The ethnomathematics framework required a qualitative research design. As discussed in Chapter Two, ethnomathematics assumes that participants have knowledge of teaching and learning mathematics that is valuable, but may not be recognized by a dominant culture. A qualitative design was necessary because “…qualitative orientations hold that multiple realities exist. Determining those realities and their associated meanings requires flexible and evolving strategies, with a key part being personal and focused attention on the unguarded views of participants themselves” (Goodwin & Goodwin, 1996, p. 108). Interviews were used to examine the individual’s specific understandings of the topic discussed (Museus, 2007).
Group interviews were the main method of data collection. A goal of this study was to examine the beliefs of refugee parents, which are the realities of math education as defined by their experiences as a group. In their discussion of group interviews, Frey and Fontana (1991) explained that

…social investigation can be enhanced by employing the group interview technique in which several participants in a social context can be interviewed simultaneously. …group interviewing will provide data on group interaction, on realities as defined in a group context, and on interpretations of events that reflect group input. (p. 175)

They also argued that group interviews, which are collective and provide more opportunities to hear participant voices in context, can rebut some concerns that ethnography by nonnative researchers can be too imposing and influential. For practical and strategic reasons, Rostami-Povey (2006) used informal, group interviews to study Afghani women in refugee camps because a male community or family member was required for interviews with women. Although Rostami-Povey was able to do some individual interviews, she found that the informal group interviews with a family group, a group of teachers and students, or a group of men and women at a refugee camp helped her capture “the perspectives of the respondents and the facts as they perceive them and through those perspectives provide insights” (p. 6). The group interview provided the ethnographic information to answer my research questions with the associated contexts and multiple perceptions.

Individual interviews were used when possible for their relative strengths in learning from and about groups of different ethnic and linguistic backgrounds. When
possible, individual interviews were done with one or more parents in the household; however, I was prepared for group interviews whenever necessary. Some flexibility was required so interviews could be scheduled and overlap as opportunities with participants and comfort level allowed “…more so than is the case in quantitative research the phases of work in qualitative research overlap and are intermeshed” (Weiss, 1994, p. 14).

Setting

The research took place in a subsidized housing community with about 150 apartments for 450 residents including 30 3- to 5-year-old children (National Housing Trust, 2007). Families living in subsidized housing usually earn less than 50% of the median income for the area (United States Department of Housing and Urban Development, 2012). A homework club is offered in the community building where tutors provide academic support for children in first grade through high school four days a week during the school year. The community is in a city in the southeastern quarter of the United States.

Participant Selection or Sampling

“Qualitative inquiry typically focuses on relatively small samples, even single cases (N=1)…selected purposefully to permit inquiry into and understanding of a phenomenon in depth” (italics his, Patton, 2002, p. 46). Purposeful sampling (or participant selection) is specific to qualitative design because there is no effort to choose randomly. At least two of Maxwell’s (2005) four reasons to use purposeful sampling are applicable here. Choosing a small, homogeneous group that was able to communicate their perspectives and had enough time in the United States to recognize similarities and differences gave me the most accessible information about the community.
In homogeneous sampling, a subset of purposeful sampling, the researcher chooses people who have a similar trait of interest, i.e. refugees with small children living in poverty who might have similar perspectives and experiences (Patton, 2002). Although the original list of potential participants came from the apartment management, to maximize the number of potential participants, I used “snowballing” which involved asking each person to suggest others who may belong to the homogeneous group. In populations of refugees or those living in poverty, participants may be reluctant to talk with outsiders. Those with whom I already had experience were a good bridge. Goodwin and Goodwin (1996) noted that a study may not include important variability if the nominator suggests those like him/ herself, but because I was looking for a homogeneous group that was a plus rather than a minus.

Sulaiman-Hill and Thompson (2011) used snowballing in their study of Afghani and Iraqi refugees resettled in Australia. They did not use formal resettlement agency contacts to avoid those who know the “correct” response.

For many studies the design and sampling technique will be dictated by individual research goals, however the unique set of challenges encountered when working with hidden or hard to reach populations, such as refugee groups, necessitates a more pragmatic approach…The lack of clear sampling frames means that snowball sampling may be the only feasible way of locating potential participants, despite concerns around selection bias. (p. 7)

Sulaiman-Hill and Thompson acknowledged the bias that can be present in snowball sampling, but found in their study that they were able to access more women, particularly those with little to no education. They had a more welcome response from
the community when they were aware of and followed community practices, were accompanied by men or Muslim translators when applicable, and talked informally over cups of tea. All of those tips were provided by participants who knew and understood the people of their culture. I was able to talk to the participants who were reluctant when first approached, after friends more fluent in English described the experience.

**Participants**

Most participants were identified as refugees or special immigrants (holding SIVs) under the United States’ State Department criteria described in Chapter Two. Although the original intent was for all participants to be refugees or SIV immigrants, five other immigrants were included in the list given to me by Rae, the Resident Services Director. Three are from the same country as several refugees. The interviews yielded information similar to that offered by other participants so they remained in the data analysis. All participants were identified by the housing management as immigrants with children who had asked for assistance with problems related to language. For example, Nabhan(m) asked Rae for help filling out employment applications and describing his law degree on forms. Dofi(f) got help understanding the questions on the Free Application for Federal Student Aid.

The list of potential participants included all members of the community who are immigrants and able to communicate with me in English. When contacted, one couple declined to be interviewed and one couple was not fluent enough in English for communication. Both couples are from Middle Eastern countries, which were well represented in the final sample. Interviews were done with 19 participants and information was collected on an additional two wives, Rahima(f) and Shahla(f), who
were not able to communicate at all in English. In addition, Nazeera(f)’s husband and Aban(m)’s wife were not fluent in English and information was not available from their spouses. As shown in the final list of participants in Table 3.1, 16 participants were born in a Middle Eastern country and five were born in African countries. Five Middle Eastern participants spent time in another Middle Eastern country and/or Russia and three participants from the Mideast and Midwest Africa spent time in another African country before immigrating to the United States. An important distinction in the countries of origin is that refugees and SIV immigrants from the Middle East left their country because they were personally in danger. Refugees from Africa were in danger because of comprehensive religious and ethnic persecution in their country. The lengths of time participants have been in the United States varied from less than two to ten years with a median of four years. A range of composition of families was pursued but all those from the Middle East in the community are stable, nuclear families. Summary information about the participants is provided in this chapter with more detail about each family provided in Chapter Four.

As shown in Figure 3.1 and Table 3.2, a range of education levels and experiences were represented from no education at all to a professional degree. Two women, Rahima(f) and Shahla(f), attended one year of religious education at a mosque in writing and reading Koranic texts. Seven people attended private schools that ranged in ownership from a school run by refugees in a camp to a Catholic boarding school. Jobs
Table 3.1

*Interview Participants, Origin, and Family Role*

<table>
<thead>
<tr>
<th>Family Group</th>
<th>Participant</th>
<th>Area of Origin</th>
<th>Family Role</th>
<th>Refugee Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Afzal</td>
<td>Middle East</td>
<td>Father and husband</td>
<td>Refugee</td>
</tr>
<tr>
<td></td>
<td>Ziah</td>
<td>Middle East</td>
<td>Mother and wife</td>
<td>Refugee</td>
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<td>Mother and wife</td>
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<td>Father and husband</td>
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<td>Shahla</td>
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<td>SIV</td>
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<td>E</td>
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<td>Father and husband</td>
<td>SIV</td>
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<td>Mother and wife</td>
<td>SIV</td>
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<td>Aban</td>
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<td>Father and Husband</td>
<td>Immigrant</td>
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<td>Kabir</td>
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<td>J</td>
<td>Kedija</td>
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</tr>
<tr>
<td></td>
<td>Haile</td>
<td>Mideast Africa</td>
<td>Mother and wife</td>
<td>Refugee</td>
</tr>
<tr>
<td>K</td>
<td>Tarday</td>
<td>Midwest Africa</td>
<td>Single mother</td>
<td>Refugee</td>
</tr>
<tr>
<td>L</td>
<td>Ruth</td>
<td>West Africa</td>
<td>Separated mother</td>
<td>Immigrant</td>
</tr>
<tr>
<td>M</td>
<td>Dofi</td>
<td>West Africa</td>
<td>Separated mother</td>
<td>Immigrant</td>
</tr>
</tbody>
</table>
in their home countries varied from gas station attendant to lawyer. For some, there is a significant difference between the educational level necessary for the job they performed in their home country and the job they have in the United States (Figure 3.2). All women from Middle Eastern countries are stay-at-home-mothers.

Participants all have children who will attend, are currently attending, or have attended Head Start. Two participants, whose children are too young, do not have contact with area public schools yet but have friends in the community with school-aged children. The number of children in a family ranged from two to four with a mode of two, and in age from 18 months to 19 years old with a mean age of 7.3 (Figure 3.3). Some children who experienced long-term inconsistency in schooling repeated one or more grades so age, particularly in the middle grades, was not a reliable gauge of grade level found in Figure 3.4.

Language barriers were considered and a child assisted with translation as necessary for four participants. The other participants learned English in a variety of settings. Ten participants attended schools where English was taught alone or used in classes. Seven participants, all female, are currently attending English classes at church programs. Three participants, all male, reported learning English through contact with native speakers at their jobs.
Table 3.2  

**Participant School and Job Information**

<table>
<thead>
<tr>
<th>Participant</th>
<th>Final School Attended</th>
<th>School Funding</th>
<th>Job in Home Country</th>
<th>Current Job in America</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afzal</td>
<td>Completed high school</td>
<td>Government</td>
<td>Taxi driver</td>
<td>Mechanic and car detailer</td>
</tr>
<tr>
<td>Ziah</td>
<td>6th grade</td>
<td>Government</td>
<td>SAHM</td>
<td>SAHM</td>
</tr>
<tr>
<td>Nizaam</td>
<td>Bachelor’s degree + master’s classes</td>
<td>Refugee run school</td>
<td>Translator for international NGOs</td>
<td>Government translator</td>
</tr>
<tr>
<td>Fowzia</td>
<td>6th grade</td>
<td>Government</td>
<td>SAHM</td>
<td>SAHM</td>
</tr>
<tr>
<td>Shafiq</td>
<td>Completed high school</td>
<td>*</td>
<td>*</td>
<td>Taxi driver</td>
</tr>
<tr>
<td>Saida</td>
<td>Bachelor’s degree + medical doctorate classes</td>
<td>*</td>
<td>SAHM</td>
<td>SAHM</td>
</tr>
<tr>
<td>Sidiq</td>
<td>Completed high school</td>
<td>Government</td>
<td>Government translator</td>
<td>Military cultural trainer</td>
</tr>
<tr>
<td>Shahla</td>
<td>No academic education</td>
<td>Religious</td>
<td>SAHM</td>
<td>SAHM</td>
</tr>
<tr>
<td>Walid</td>
<td>Bachelor’s degree</td>
<td>Government</td>
<td>Embassy translator</td>
<td>Military cultural trainer</td>
</tr>
<tr>
<td>Rahima</td>
<td>No academic education</td>
<td>Religious</td>
<td>SAHM</td>
<td>SAHM</td>
</tr>
<tr>
<td>Nazeera</td>
<td>Completed high school</td>
<td>Government</td>
<td>Teacher</td>
<td>SAHM</td>
</tr>
<tr>
<td>Aban</td>
<td>Completed high school</td>
<td>Private</td>
<td>Gas station attendant</td>
<td>Taxi driver</td>
</tr>
<tr>
<td>Kabir</td>
<td>Completed high school</td>
<td>Private</td>
<td>Business partner</td>
<td>Taxi driver</td>
</tr>
<tr>
<td>Shama</td>
<td>Bachelor’s degree</td>
<td>Private</td>
<td>Computer programmer</td>
<td>SAHM</td>
</tr>
<tr>
<td>Nabhan</td>
<td>Legal degree</td>
<td>Government</td>
<td>Lawyer</td>
<td>Unemployed (previously gas station attendant)</td>
</tr>
<tr>
<td>Sehar</td>
<td>Associate’s degree</td>
<td>Government</td>
<td>SAHM</td>
<td>SAHM</td>
</tr>
<tr>
<td>Haile</td>
<td>No education</td>
<td>N/A</td>
<td>SAHM</td>
<td>Manufacturing</td>
</tr>
<tr>
<td>Kedija</td>
<td>Bachelor’s degree</td>
<td>Private</td>
<td>Teacher</td>
<td>Manufacturing</td>
</tr>
<tr>
<td>Name</td>
<td>Education</td>
<td>Employment</td>
<td>Qualification</td>
<td>Current Position</td>
</tr>
<tr>
<td>-------</td>
<td>--------------------</td>
<td>------------</td>
<td>---------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Tarday</td>
<td>High school + cert</td>
<td>*</td>
<td></td>
<td>Business secretary</td>
</tr>
<tr>
<td>Ruth</td>
<td>High school + cert</td>
<td>Private</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Dofi</td>
<td>High school + coll</td>
<td>Private</td>
<td>Accountant</td>
<td>Nursing aid</td>
</tr>
</tbody>
</table>

*Note. Though some argue that stay-at-home-mothering is a job that benefits from substantial and diverse skills, for this table only the minimum qualification required is considered. This is similar to the former lawyer who worked as a gas station attendant; his education was not required for the work he was doing. SAHM indicates stay-at-home-mother

*Data not collected
Figure 3.1. Percent of participants completing each level of education.

Figure 3.2. Difference in education required for job in home country and in US.
Figure 3.3. Ages of participants’ children.

Data Sources

The constructivist grounded theory (CGT) method matches the ethnomathematics framework in the basic assumption that there are many realities created by participants that are complex and participant-specific. It ensures that the context remains an integral part of theory generation. As Charmaz (2006) explained,

The constructivist view assumes an obdurate, yet ever-changing world but recognizes diverse local worlds and multiple realities and addresses how people’s actions affect their local and larger worlds. Thus, those who take a constructivist approach aim to show the complexities of particular worlds, views, and actions. (p. 132)
Charmaz (2007) says that to do this, the researcher must be prepared to “follow the leads that we define in the data” (p. 87), even if what participants reveal is not what the researcher anticipated studying. Therefore, it was critical that research and interview questions evolve.

Initially, a protocol for individual interviews was piloted with a refugee participant. I scheduled an individual appointment with Nabhan(m), but when I arrived the children had come home from school and his wife Shahla(f) was also there. All family members were anxious to be part of the conversation and Nabhan(m) seemed more comfortable with his daughters there to translate if necessary. I did not feel comfortable as a guest in their home, as a single woman in a Muslim home, and as someone essentially asking them for a favor, to insist that he and I talk alone. From that experience, it became obvious that individual interviews in the traditional sense would be unlikely and so group and family interviews were chosen as a reasonable expectation for

![Figure 3.4. Number of children in grade levels. The community schools are arranged with Head Start, kindergarten to second grade, third to fifth grade, sixth to eighth grade, and ninth to twelfth grade in different buildings.](image-url)
data collection. Semi-structured interview protocols were developed for group and individual interviews based on literature, my experiences with the participants, my research questions, and the information I was hoping to access.

The interview with Nabhan(m) and his family followed the first semi-structured interview protocol based on initial research questions. I reviewed the pilot interview and revised the protocol slightly for the next family. Using the CGT method of constant, iterative examinations, I reviewed the protocol after each interview to determine whether questions were eliciting helpful information from the participants. After three interviews, when it seemed that current questions were not generating discussion, I talked through other question options with my methodology advisor. When we discussed the type of information that was coming from the conversations, I realized that families were sharing stories that met my goals, just not my questions: to help teachers understand how refugee parents interact with mathematics with their children.

Changing the research questions helped me remain true to the experiences that impact refugee families without trying to force them into what I thought would be helpful for them. Table 3.3 shows the original research questions, which focused on parents and their beliefs about American schools, as well as the final research questions, which focused on why and how parents have developed their own cultures around education and mathematics and how they share that with their children. As the research questions became clearer, the interview questions were realigned. The final interview questions are included in Appendix A.

The process was highly iterative as I interviewed a group or individual, reviewed the transcript, began to identify themes to pursue, and then reconsidered interview
questions. As I understood the phenomena better, the clearer and more consistent the
questions became. I identified successful questions that remained in the protocol as those
that elicited significant discussion about education. Participant conversations that did not
answer the question were most illuminative as I discovered what was important to them
as they think about education, learning, and mathematics. Other questions were removed
from the protocol if participants did not seem familiar with the topic or terminology,
there were limited comments, or they appeared disinterested or confused by the
connection I was making to education. For example, I initially asked participants if they
did any patterning activities with their children. I thought “patterning” might not be a
familiar word or educational concept, but even when I asked about examples like
weaving, using colors in repeated ways, making jewelry, or in sewing, the answers were a
confused “no.” That question was not productive for my interviews or contextually
appropriate for my participants and was therefore removed.

Transcripts of audio recordings were used for data analysis. In the pilot
interview, the participants refused my use of the audio recorder so memos and field notes
(Maxwell, 2005) on that family were used. When the Resident Services Director asked
additional people to participate, she explained that a recorder would be necessary so I
would remember what was said, but that recordings would not be shared with anyone
else. After two men were interviewed with the recorder, participants did not question its
use and seemed comfortable with the questions and conversation.
Table 3.3

Original and Final Research Questions

<table>
<thead>
<tr>
<th>Original Research Questions</th>
<th>Final Research Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>What do refugee parents in a specific community believe preschool level math skills are?</td>
<td>What experiences did refugee parents have as students that affect their perceptions, beliefs, and practices of education, learning, and United States schools?</td>
</tr>
<tr>
<td>What do refugee parents in a specific community believe math education looks like in United States preschools?</td>
<td>In what ways do interactions between school personnel and refugee parents influence expectations and practices?</td>
</tr>
<tr>
<td>What do refugee parents in a specific community think schools expect their children to know about math when they arrive at preschool?</td>
<td>How do refugee parents intentionally and unintentionally prepare, assist, and model mathematics for their children?</td>
</tr>
<tr>
<td>What role do refugee parents in a specific community think they should have in preparing their children for learning math in preschool and then assisting their children in learning math in preschool?</td>
<td></td>
</tr>
<tr>
<td>What are refugee parents in a specific community doing intentionally and unintentionally to prepare their children to learn math in preschool?</td>
<td></td>
</tr>
</tbody>
</table>
Data Collection and Analysis

The Resident Services Director is a trusted person for the families. She made contact with each family first to explain my study and set up appointments for me. She is familiar with the jobs they have, the times their children come home, and other activities in which they are involved and was able to make sure the appointment took all of those factors into consideration. As a result, only one interview had to be rescheduled. As discussed earlier, another interview was cancelled and, after she talked with the husband, it became obvious that he was not comfortable talking with me and he was withdrawn from the potential participants list. Because the community is government subsidized, the participants are used to being interviewed by official and unofficial people. The Community Manager made it clear to the participants that their participation was not required.

At the first conversation with each family that agreed to participate, confidentiality and informed consent were discussed. I requested permission to record and use any conversations as data including those I had with their children. Only the scheduled interview was recorded so participants were aware of when their words might be connected specifically to a speaker. I talked to the children and explained the study and informed consent either when I met with their family or when I talked with the child and parent after homework club. Once consent was established from the child and family on that date, I did not ask the child on additional occasions. Limited information was collected from the child and primarily used to revise the interview protocol.

Because there is a high level of anxiety in the population when documents need to be signed as well as questionable literacy, they were given a copy of the informed
consent to keep, but a signature was not required. I emphasized to participants that any and all of our conversations, including informal group interviews, are anonymous. Notes were kept on my recorder locked in a file cabinet or on my computer password protected. All interviews and memos were transcribed.

Table 3.4

*Interview Types and Conditions*

<table>
<thead>
<tr>
<th>Interview Type</th>
<th>Condition(s) that Determine Type</th>
<th>Conditions for Interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual Interview</td>
<td>Participant was available, alone, comfortable with interviewer, and fluent in English</td>
<td>Participant was interviewed using the guide in Appendix A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Participant can consider responses confidential</td>
</tr>
<tr>
<td>Family Group Interview</td>
<td>Two or more participants were from the same family</td>
<td>Group was interviewed using the guide in Appendix A with a child or friend translating when necessary</td>
</tr>
<tr>
<td></td>
<td>Interview was scheduled with the mother and/ or father and more than one family member, often including children, were present</td>
<td>Group was asked to react to and supplement each other’s responses</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No expectation of confidentiality from other group members</td>
</tr>
<tr>
<td>Group Interview</td>
<td>One or more participants was from a different family group</td>
<td>Group was interviewed using the guide in Appendix A with a friend translating when necessary</td>
</tr>
<tr>
<td></td>
<td>Interview was scheduled with a mother and/ or father and additional participants were present when I arrived for the scheduled interview</td>
<td>Group was asked to react to and supplement each other’s responses</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No expectation of confidentiality from other group members</td>
</tr>
</tbody>
</table>
Twelve families were interviewed, in 13 separate discussions, in at least one of three ways described in Table 3.4. Interviews were done in the participants’ home, the home of a participant’s friend, or the empty office of the Resident Services Director, all locations comfortable to participant(s). Because the participants are members of a community and frequent visitors in each other’s homes, some interviews scheduled for an individual spontaneously became group interviews when all members present were participants in the study. The interview type for each participant is listed in Table 3.5.

Later interviews helped me confirm codes and rule out negative cases. Grounded theorists usually end with theory saturation where research is collected and compared until no alternate theories can explain the data. I used CGT so the possibility of saturation does not exist because the theories generated are not considered the only truth that could emerge from the data (Patton, 2002). Instead, after I analyzed all of the data using the above method, I noted where there might be unavoidable ambiguity, regardless of how small, that results from differences in human perspective and unique interactions as well as the participants’ country of origin. Recruitment and process effects (Parker & Tritter, 2006) as well as cultural appropriateness of instruments (McInerney, 1998; Thomas, 2008) were considered before and during analysis. After each interview (individual and group) the effectiveness of the interview questions for answering the research questions was reviewed, and then also examined at the end of the process when all interviews were done.

Through the interviewing and research question redevelopment, the three main themes evident were participant experiences as students, participant experiences as parents, and parent interactions with mathematics and their children. After the categories
were identified, I divided up all of the interviews into those three ideas. Then, I read across participants, but within ideas and developed 16 subcategories (Table 3.6) to look

Table 3.5

*Interview Mode for Each Participant*

<table>
<thead>
<tr>
<th>Family Group</th>
<th>Participant</th>
<th>Interview Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Afzal</td>
<td>Individual with son translating</td>
</tr>
<tr>
<td></td>
<td>Ziah</td>
<td>Group with Salama and Fowzia</td>
</tr>
<tr>
<td>B</td>
<td>Nizaam</td>
<td>Individual</td>
</tr>
<tr>
<td></td>
<td>Fowzia</td>
<td>Part group with Salama and Ziah, part individual</td>
</tr>
<tr>
<td>C</td>
<td>Shafiq</td>
<td>Family with wife and sons</td>
</tr>
<tr>
<td></td>
<td>Saida</td>
<td>Family with wife and sons</td>
</tr>
<tr>
<td>D</td>
<td>Sidiq</td>
<td>Group with Walid</td>
</tr>
<tr>
<td></td>
<td>Shahla</td>
<td>None</td>
</tr>
<tr>
<td>E</td>
<td>Walid</td>
<td>Group with Walid</td>
</tr>
<tr>
<td></td>
<td>Rahima</td>
<td>None</td>
</tr>
<tr>
<td>F</td>
<td>Nazeera</td>
<td>Individual</td>
</tr>
<tr>
<td>G</td>
<td>Aban</td>
<td>Group with Shama and Kabir</td>
</tr>
<tr>
<td>H</td>
<td>Kabir</td>
<td>Group with Shama and Aban</td>
</tr>
<tr>
<td></td>
<td>Shama</td>
<td>Part individual, part group with Aban and Kabir</td>
</tr>
<tr>
<td>I</td>
<td>Nabhan</td>
<td>Family with wife, daughters (translating), and son</td>
</tr>
<tr>
<td></td>
<td>Sehar</td>
<td>Family with husband, daughters (translating), and son</td>
</tr>
<tr>
<td>J</td>
<td>Kedija</td>
<td>Part family with daughter to translate, part with</td>
</tr>
<tr>
<td></td>
<td>Haile</td>
<td>daughters and husband</td>
</tr>
<tr>
<td>K</td>
<td>Tarday</td>
<td>Individual</td>
</tr>
<tr>
<td>L</td>
<td>Ruth</td>
<td>Individual</td>
</tr>
<tr>
<td>M</td>
<td>Dofi</td>
<td>Individual</td>
</tr>
</tbody>
</table>
for in line- by- line coding. I pulled all incidents of each subcategory from the
participants’ original words into one transcript and looked to see what question the data
might address and if I could find that information, to confirm or disconfirm, for each
participant. Many of these subcategories were the questions from the final interviews and
others were developed further into multiple ideas. For example, after collection of

Table 3.6

**Coding Categories**

<table>
<thead>
<tr>
<th>1.</th>
<th>Participant degree/ education</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Education through alternatives to school</td>
</tr>
<tr>
<td>3.</td>
<td>Private versus government school</td>
</tr>
<tr>
<td>4.</td>
<td>Participants’ father and mother education</td>
</tr>
<tr>
<td>5.</td>
<td>Siblings’ education</td>
</tr>
<tr>
<td>6.</td>
<td>Support for education/ homework from father/ mother/ siblings/ others</td>
</tr>
<tr>
<td>7.</td>
<td>Games played</td>
</tr>
<tr>
<td>8.</td>
<td>Participant job at home and in US</td>
</tr>
<tr>
<td>9.</td>
<td>Difference between kids’ schools and own</td>
</tr>
<tr>
<td>10.</td>
<td>Experience with manipulatives</td>
</tr>
<tr>
<td>11.</td>
<td>Participants’ parents beliefs about education</td>
</tr>
<tr>
<td>12.</td>
<td>Mentions of memorizing/ copying</td>
</tr>
<tr>
<td>13.</td>
<td>Language issues</td>
</tr>
<tr>
<td>14.</td>
<td>Assisting with child preschool or in school</td>
</tr>
<tr>
<td>15.</td>
<td>Interest in own further education</td>
</tr>
<tr>
<td>16.</td>
<td>Contact with teachers, what they would like to tell teachers</td>
</tr>
</tbody>
</table>

coding incidents, I realized that “language issues” was how parents experienced language
in their home country and how they experienced language in interactions with American
schools. Breaking interviews down into these small categories revealed the essential
details of each family’s history. Table 3.7 is an example of category one that was a
question and became a group of participant experiences from which I began to develop final subthemes.

**Ethical Considerations**

Fundamentally, a research protocol that does not maintain strict methodological standards will be more likely to come to inaccurate conclusions, and inadvertently promote false understandings. Similarly, a research study that does not adhere to the highest ethical standards will be at risk of losing the trust of a community, and either failing to obtain honest responses to questions or failing to engage participants altogether. (Ellis, Kia-Keating, & Yusuf, 2007, p. 462)

Ethics required particular consideration here because the population has myriad background cultures as well as prolonged instability in status and a history of difficulty in self-advocacy.

Table 3.7

*Example Notes from Post Line-by-Line Coding*

<table>
<thead>
<tr>
<th>Final class/degree</th>
<th>6th grade</th>
<th>12th grade</th>
<th>High School</th>
<th>Bachelor’s +</th>
<th>Notes:</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>None</td>
<td>Ziah(f)</td>
<td>Afzal(m)</td>
<td>Nizaam(m)</td>
<td>Much</td>
</tr>
<tr>
<td>Haile(f)</td>
<td></td>
<td>Fowzia(f)</td>
<td>Nazeera(f)</td>
<td>Said(f)</td>
<td>wider</td>
</tr>
<tr>
<td>Rahima(f)-religious</td>
<td></td>
<td></td>
<td>Shafiq(m)</td>
<td>Walid(m)</td>
<td>range of</td>
</tr>
<tr>
<td>but no formal</td>
<td></td>
<td></td>
<td>Sidiq(m)</td>
<td>Kedija(m)</td>
<td>education</td>
</tr>
<tr>
<td>Shahla(f)-religious</td>
<td></td>
<td></td>
<td>Kabir(m)</td>
<td>Dofi(f)</td>
<td>for women</td>
</tr>
<tr>
<td>but no formal</td>
<td></td>
<td></td>
<td>Aban(m)</td>
<td>Nabhan(f)</td>
<td>(even to the</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sehar(f)</td>
<td>high end)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Shama(f)</td>
<td></td>
</tr>
</tbody>
</table>
Although refugees are not considered “vulnerable populations” by the George Mason University Human Subjects Review Board (Exempt Research Memo, George Mason University Office of Research Subjects Protection, n.d.), their life path and potential continuing difficulties requires that they are provided extra care in research. Mackenzie, McDowell, and Pittaway (2007) discussed frequent ethical considerations in social science research with refugees. Refugees engage in protracted United Nations and United States interviews before entry that function as their reference point for what an interview is. I was concerned that for recent arrivals, the mark of authority via a white woman asking questions that are recorded might limit their perceived autonomy. The authors say refugees may distrust researcher independence and have unrealistic expectations for the research benefits. The persons responsible for giving consent, whether from the community or the family, may have changed drastically since arrival in a refugee camp or the United States. Translators complicate consenting procedures with varying dialects, different social class, or different social, political, or economic backgrounds from the native country. Refugees, both within camps and in host countries, have expressed concern that “…knowledge of their personal circumstances would follow them to countries of resettlement and prejudice the host community, or affect relationships within the resettled community” (p. 305 and reiterated in Mohamed & Loewenthal, 2009). The suggestion of the authors (instituted by Turner & Fozdar, 2010 and Mohamed & Loewenthal, 2009) is that consent be iterative so participants are given the consent information verbally before the interview day, asked what they do agree to on the day of the interview, and then asked to review and consent again when the report is completed. Though this project took place in the United States and (attempted) to focus
on issues of math education and not on money, food, safety, citizenship, or politics, it was still important to consider that members of a community group shared this with researchers:

“In the past year I have spoken to eleven people who are doing their PhD and not one of them has even sent me a report.” This kind of behaviour is seen by refugee research participants as an extreme breach of trust and exploitation of privilege. (Mackenzie, McDowell, & Pittaway, 2007, p. 306)

For both reasons above, I gave all participants an informal description of the general results, assuring them that the questions I asked were similar or the same across interviews and that their fellow community members had shared often parallel stories. For most interviews, particularly those in groups, participants seemed interested to compare experiences.

Turner and Fozdar (2010) addressed the feelings of exploitation some refugee participants may feel by instituting reciprocity (also in Mohamed & Loewenthal, 2009) as part of their study whereby students were encouraged to attend extra office hours for conferences about educational and personal concerns. The strategy does not appear to have completely addressed the exploitation concerns, however, because the authors continue that they used the additional conferences to create more research questions and gather more in-depth and relevant information. I offered small gifts to participants like fruits and coloring books. Because the final report was mine to write and I have no power over their individual situations, it would be misleading to encourage very much collaboration. The authors say they co-created research questions with students to optimize transparency, but note that other researchers have mentioned the tendency to
give more voice to those who speak English. It is true that I was not able to incorporate much data from participants who were not able to speak in English at all.

Accuracy of Representation

CGT contrasts with traditional grounded theory in several ways that affect how researchers assess the legitimacy and rigor of a study. In contrast to traditional grounded theory, Mills, Bonner, and Francis (2006) state that the researcher does not attempt to create distance from the participants or limit bias, but to explore the ways the participants and researcher co-construct phenomena. The authors also say that rather than trying to meet standards of positivist methods like detachment from participants, the researcher embraces the idea that there are multiple realities, and no one external reality that can be captured. Therefore, a CGT researcher must assume that “a) multiple realities exist, b) data reflect researchers’ and research participants’ mutual constructions, and c) the researcher enters, however incompletely, the participant’s world and is affected by it.” (Charmaz & Belgrave, 2012, p. 349)

If readers believe in the assumptions posited by Charmaz and Belgrave (2012) and are willing to reject positivist requirements for validity and reliability measures, they still require a way to measure the rigor and quality of any study. Frequently used to prove consistency and dependability of a study, reliability or co-coding is not an option if a researcher has worked alone. Only those who have been party to the interviews, those who are co-constructing the phenomena, are able to represent a version of the reality. Charmaz (2006) warns against using coders who have not been part of the scenario and who are distanced from the phenomena explored. She asks that researchers pay attention
to the interactive nature of the method and not attempt to claim that an objectivist stance is possible or desirable.

Many critics of CGT believe researchers should be able to confirm their conclusions, often through triangulation of multiple data sources. Different interview methods in this study did help to ensure all voices had an opportunity to be heard, but Willis (2007) wrote that triangulation is not necessarily needed in a study of alternate and multiple perspectives. The fundamental starting point of both ethnomathematics and CGT is that there is not one reality to find and therefore, “there is not necessarily a need to try to eliminate all but one true reality from your study’s conclusions” (p. 220).

Charmaz, (2006), who evolved grounded theory to the constructivist version, gives several characteristics that must be maintained for a researcher to say the methodology was used. First, CGT must be considered from the creation of research questions to the writing of conclusions because the researcher has to be open to changes as the theories develop. Also, interview questions should be broad enough to follow the lead of the participant with probes for greater details. As discussed above, all of my research questions changed as interviews revealed a different focus. The interview protocol was revised after each meeting as I better understood the phenomenon and to access additional data that might support or contradict the emerging themes. In Table 3.8, I’ve listed a sample interview question, the participant’s answer, and my thoughts about the question.

Second, reflexivity by the researcher is ongoing (Hammersley, 2008; Maxwell, 2005; Patton, 2002; Willis, 2007) and includes any knowledge of the literature she might have (Charmaz, 2011). I began the study with a literature review and a reflection on my
### Table 3.8

**Interview Question Evolution**

<table>
<thead>
<tr>
<th>Interview</th>
<th>Original Question and Participant Response</th>
<th>My Thoughts</th>
</tr>
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</table>
| **Number 3** | **Trina:** *What do you think kids should know before they go to school?*  
Shafiq(m): I don’t understand exactly  
Trina: *Do you think they should know their letters or numbers before they go to school?*  
Shafiq(m): Yes.  
Trina: *You think they should know that before they go to school?*  
Shafiq(m): My daughter in kindergarten now know all those things. | Did not understand question and my explanation made it a binary answer. From there, his answers made it unclear if he understood the follow ups. Beginning with participant experience might set a better stage. |
| **Number 6** | **Trina:** *Were your parents teaching you anything at home? Before you went to school?*  
Wahli: No, they were illiterate  
Trina: *So, did you know numbers?*  
Wahli: I didn’t know before I went to school I didn’t know the numbers.  
Trina: *What were you doing with your parents before you went to school?*  
Wahli: Playing around …  
Trina: *Do you think you need to teach them anything before they go to Head Start?*  
Walid(m): No. They are too little to learn anything. They in Head Start [so we] don’t have to teach them anything. Is all in the school.  
Trina: *So if they didn’t go to Head Start would you teach them before they had to go to school?*  
Walid(m) Yeah. At least you should learn them the alphabet or some animal names or how to write the letter but as long as they go to that preschool we don’t have teach them. But I think before the age 3 they cannot focus. | Initial discussion about his learning seemed to help him compare and think about what and why he teaches his children. |
own contact with refugees. Although there was little literature, I had some expectations that the participants would be more uniform in characteristics and school experiences and be less willing to talk with me than they were. I was more surprised by the diversity of the participants living in the same housing community after every interview and was able to reject some of my biases about their education and childhoods because I was just wrong. I read the ethnomathematics literature on alternate means of accessing and practicing cultural mathematics so I believed the families had math experiences parallel to native families they could share with me. Through my attempts to have participants explain their mathematics, I learned that I needed to back up and examine how their beliefs about teaching, learning, and practicing mathematics developed. I did not reject my belief that they have math experiences, but acknowledged that I may not be able to access that knowledge or that it might not be important at this time.

I maintain that some of the different experiences and characteristics I cannot share with participants that affect their stories are that they live in a poor housing community, have lived at one time in fear for their lives, are immigrants, from Africa or the Middle East, refugees, parents, and English language learners. However, I have gotten to know the participants in my roles in their housing community. I have worked for over a year as a volunteer with the school-aged children in the homework club two or more days a week helping any children with their homework across disciplines. Because I am the only tutor comfortable with math, I often work exclusively on math homework or practices for their high stakes tests. I led a program on Fridays through the summer for community children between 3- and 5-years-old with a story, snack, math, and science activities. Some parents dropped off and picked up their children, and I was introduced
to some of the participants there. Those interactions interested me in their stories and introduced me to what I thought might be unique and frustrating relationships with schools.

Third, data analysis is iterative and concurrent with data collection. Again, my adherence to those practices led me to new questions at each interview that narrowed the focus to my emergent themes. I wrote notes (or memos) as encouraged by Maxwell (2005) about my impressions of the house, the family dynamic, questions I wished I had asked, a glimmer of an idea for a category, or the need to strike a question from the guide. I made additional notes as I transcribed interviews in the margins so I could incorporate those into the line-by-line coding scheme. By the final interview, I heard similar information from participants and was able to use probes that added information to my categories, rather than to the broader themes I was developing initially.

Finally, the researcher recognizes that she is co-constructing the phenomena and that all stories are relative to the teller and listener (Charmaz, 2011). The method does not produce generalizable theories. Instead, a holistic understanding of the participants is created with the rich data collected (Martin & Woodside, 2011). Particularly because the interviews were with participants who are culturally and linguistically removed from my own background, I am sure the conversations were influenced by our mutual understandings (or misunderstandings). Even more overt than Charmaz and other CGT researchers might experience, I frequently settled on a definition, description, or idea through negotiation with participants.
Importance of Study

This study contributes to the small body of research on refugee education beliefs and practices, as well as the research on discontinuity between minority homes and schools. It provides teachers with information on parents’ experiences with education and their beliefs about preparing and helping their children with schoolwork. The research can be used by school officials and teachers to understand potential sources of miscommunication and misunderstanding that prevent relationships that promote successful school experiences. The research is also essential for sharing the educational stories, practices, and beliefs from refugees, in their own voices, with anyone who has an interest in their success in American schools. Their diverse experiences, even within the refugee group, make the case that CRP is critical for welcoming and assisting their children as they join US classrooms.
CHAPTER FOUR

This research study examined beliefs, experiences, and expectations of refugee and immigrant parents in a community using a qualitative, constructivist grounded theory design. First, I briefly describe the 13 families interviewed. Second, I present the graphic of themes that emerged with respect to parent and home culture creation and the supporting data. Then, I present the graphic of themes that emerged from the parent and home culture to affect the way these parents prepared, assisted, and modeled mathematics for their children and the supporting data. Finally, I explain how the graphics create a portrait of math learners within a family and for the family’s children.

The Families

The families in the participant group had diverse schooling and job experiences. Each is introduced below so the reader can begin to picture the diversity within the group.

Family A

Afzal(m) and Ziah(f) live with their seventh grade son (12), second grade daughter (7), and young son (2). Afzal(m) graduated from high school in his Middle Eastern home and now works as a car detailer and apprentices to be a mechanic at a car

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2 Numbers within parentheses indicate the child’s age. Often the gender of the participant is significant to understanding their experience so (f) for female or (m) for male is included after each name. Additionally, to protect the identities of the participants, when they mentioned the name of their home country I have substituted [home country] and when they mentioned the name of a violent organization that caused their departure I have substituted [terrorist organization]. All of the organizations mentioned are listed on the United States CIA web site as terrorist organizations.
dealership. His older son sat with us to clarify any language issues. His wife Ziah(f) finished sixth grade and is now a stay-at-home-mother (SAHM). She goes to English classes two to four times a week and was interviewed with her two friends, Fowzia(f) and Sehar(f) while she was getting a haircut. The family lived in a country of first refuge for several years after leaving their home country but left to avoid police extortion of immigrants at schools and in public.

**Family B**

Nizaam(m) and Fowzia(f) live with their fourth grade son (9), first grade daughter (6), daughter in her second year of Head Start (4), and baby daughter (2). Nizaam(m) lived as a refugee most of his life in another Middle Eastern country, attended a school run by refugees until he went to a private international school followed by an Oxford satellite campus to complete a bachelor’s degree. Although he worked for international refugee organizations, his SIV status has not helped him find permanent work at the same level after immigration. He works part time as a cultural and linguistic translator while Fowzia(f) stays home with their children. Nizaam(m) was the only family member to express any interest in controlling his wife’s interview when he happened to call as we began to talk. He suggested that I had enough information from him about his family and that Fowzia(f) could not speak enough English for me to understand. Fowzia(f) seemed unconcerned and was one of the friendliest and most excited immigrants I met. She is working on getting her driver’s license as her husband pursues graduate classes.

**Family C**

Shafiq(m) and Saida(f) live with their sixth (11) and seventh (12) grade sons and kindergarten daughter (5). Shafiq(m), a high school graduate from his Middle Eastern
home, works as a taxi driver now. Saida(f) was within 18 months of completing school to be a pediatrician when the [terrorist organization] eliminated all schooling for girls in her home town. Her modest goal now is to get a Child Development Certificate so she can be an assistant in a Head Start classroom. They are a soft-spoken, generous family committed to keeping their children focused on education. I talked with the whole family at one time.

**Family D**

Walid(m) lives with his wife Rahima(f) who cannot speak any English. They are SIV refugees and have four children: fourth (11) and fifth (12) grade daughters, a first grade son (7), and a son in his second year of Head Start (4). Walid(m) uses his BA in linguistics to continue work as a cultural and linguistic trainer for the United States military. He spent 5 years working in a combat zone for the US Department of Defense. Rahima(f) spent one year in a religious school learning to read and write the Koran, but learned no mathematics and never attended an academic institution. In their third year here, Rahima(f) is beginning to attend English classes. I was unable to interview Rahima(f) but enjoyed a lively discussion with Walid(m) and his friend Sidiq(m) over tea and juice.

**Family E**

Sidiq(m), his wife Shahla(f), their baby daughter (1), and kindergarten daughter (5) recently moved to the community after 18 months in the area. He is a high school graduate and like Walid(m) works for the US military as a cultural and linguistic trainer. His wife also spent one year in a religious school, no additional time in an academic institution, and is just beginning to learn English. I interviewed Sidiq(m) as he played
with his baby daughter at Walid(m)’s home. He had different concerns and interests than his neighbors who are longer residents. I could not interview Shahla(f).

**Family F**

Nazeera(f) lives with her husband, a taxi driver who was unavailable for interviews, her second grade daughter (7), and son who is a first time Head Start student (3). Their apartment is a showplace in this grouping of small and cheaply constructed buildings, which is no doubt the reason her son spends much of the day copying her sweeping and cleaning. Nazeera(f) is a high school graduate who wanted to join her brother at a university so desperately that she copied his notes over and wrote papers for him. She followed her family as refugees to another Middle Eastern country and then to Russia until the corruption and lack of work for her mildly disabled husband forced a move to the United States. She works hard on her English so she will be ready to take her citizenship test soon and then hopes her former work as a teacher will help her get a job at Head Start.

**Family G**

Shama(f) and Kabir(m) live with their first grade son (6) and daughter (3) who is a first time Head Start student. Shama(f) is usually found out on the playground closely monitoring her kids and those of her neighbors. She is an immigrant from a Middle Eastern country with a BS in computer science. She is fluent enough in English to translate for many of the other women so I interviewed her independently first. Shama(f) is interested in pursuing a Certified Nursing Assistant certificate to supplement her husband’s income from taxi driving. Her husband, Kabir(m), was a rebellious student,
missing weeks of science classes and considers himself lucky to have graduated 12th grade. He was interviewed with Shama(f) and Aban(m).

Family H

Aban(m) is the brother of Shama(f) and the only family member without a professional degree. He seems to have had difficulty in school and mirrored Kabir(m)’s tendency to avoid attendance. His wife, who stays home with their baby daughter (2), does not speak any English and was not interviewed. Aban(m) was content to agree with most of Kabir(m)’s answers and Shama(f)’s explanations. He reported working as a “helping hand” to his mother after graduating from school and now is a taxi driver.

Family I

Nabhan(m) and Sehar(f) were part of the pilot for this study, interviewed together with their ninth grade twin daughters (14), seventh grade daughter (13), and kindergarten son (5). Despite working as a lawyer for the US government in his home country, Nabhan(m) has had difficulty finding work except as a gas station attendant. His health problems mean he is currently unemployed. Sehar(f), with an associate’s degree in home economics, is able to translate for her friends and assisted in the interview with Fowzia(f) and Ziah(f) as she cut their hair.

Family J

I had a lively and engaged interview with Haile(f) and her daughters, seventh grader (12) and second year Head Start student (4), until her husband, Kedija(m) arrived. At that time Haile(f) fell asleep on the couch until her daughter, fourth grader (9) entered. The family is from a small country in Mideast Africa that has experienced ongoing civil
war. After her husband was killed, Haile(f) fled to a refugee camp with her older daughter (19) and seventh grader where she rented a small hut. She met and married Kedija(m), a former high school teacher, in his camp store. Before beginning English classes in the US, Haile(f) was raised to be a wife and mother and had never attended any formal schooling. She now goes to class four times a week and works in a manufacturing job. Kedija(m) has a BS in animal science from his home country and works in a physically demanding, manufacturing job in the US. They are one of only two families in the area from their country.

**Family K**

Tarday(f) is a never married, single mother living with her fifth grade (12) and first grade (6) daughters. Although there were limited opportunities for girls to go to school in her home country, she received a high school diploma and training as a business secretary in the refugee camp where she lived in a straw hut for 12 years. At 19, she was still attending school as her oldest daughter began kindergarten. At that time, she was sponsored and resettled in the US. She enjoys working as a medication aid at a nursing home but misses her home country, though it is not safe for people from her tribe to return.

**Families L and M**

One of the few differences between the immigrants from Africa and the refugees is in family structure. Both Ruth(f) and Dofi(f) are married women separated from their husbands who, the women believe, are wasting opportunities to go to school and get good jobs in America. As fathers, the men are infrequently present and have no consistent responsibilities for their children. Dofi(f) is finishing an associate’s degree this year
though she has a bachelor’s in accounting in her home country. Her older son (4) has been living with her mother in Africa for nine months because she “wanted to see him” and will not return for another six months. When she finishes school she expects to return to Africa with her older son and baby (2), using the degree she earned in America.

Ruth(f) has a fourth grade son (9), a second grade daughter (7), and a son in his second year of Head Start (4). She works as a Home Health Aid and hopes to go back to school to get a Registered Nurse degree after her youngest child is in elementary school. Ruth(f) also hopes to return to her country to live but wants all of her children to go through college in the US. In our individual interview, she was open and welcoming, but she is known through the community for her strict oversight of her children.

**Factors Affecting the Home Culture of Education**

From my conversations with families, it was evident that their cultural views of education were strongly influenced by their own experiences with education as students and then as parents. In this section, I discuss their experiences as students, factors that influenced those experiences, and their current views of education. Next I will share the findings from discussions of their experiences with education as parents, including what they indicated influenced their experiences and the ways these experiences affected their views of education. It was apparent from the themes that emerged across the families that, as seen in Figure 4.1, the experience each parent had with education and the resultant beliefs were fed by multiple sources. Figure 4.1 represents the path each factor takes to influence the participant’s current home culture of education. These sources were not clearly delineated in the narratives and the overlap was significant for some participants, but artificial separations have been created for closer observation. The
Figure 4.1. How participant experiences as students influence their home culture.

The figure and associated explanations begin with the participants as children, but the relationships can be followed backwards through generations as parents and time interact to influence each successive group’s experiences and opportunities with education.

In interviews, participants discussed SES, gender and religion, political status and country of origin, and language as influences in their experiences as students and parents. They shared how other factors from their childhoods, their parents’ beliefs and education, and interactions with math, influenced how they perceive math and instruction and use...
for their children. In addition, they discussed the role of communication with schools and how these interactions shaped their beliefs and expectations for their own children.

**SES Influence on Participant Education and Experiences as a Parent**

During the discussions across families, participants talked about the relationship between their socio-economic status and their opportunities for education. They believe that the SES of the family into which they were born affected their ability to go to school and the quality of their education. However, they do not believe that their current SES affects the quality of their children’s educational experiences. Parents compare the poverty of their schools, their limited ability to go to school because of local violence, and the inconsistent teacher training to the schools their children attend. Participants’ beliefs in the relative quality of their children’s schools appear to be influenced by that of the SES relative to that in their home country.

**SES in home country.** Participants said the chance for and timing of their first school attendance was largely influenced by economics. For example, Walid(m), Tarday(f), and Afzal(m) all began school at 7-years-old because their families moved frequently, did not have the money to send them, or, as Walid(m) said, “my father just did not think about sending us to school.”

In all cases, the educational opportunities parents and their community could offer were directly related to economics. All but one student, who did not go to school, said their families either paid for them to go to a private school or were required to pay fees not only for school, but for uniforms, books, transportation, and sometimes bribes. These factors were weighed against the economic need to have the child at home. For example, Kedija(m) was needed at home to shepherd and assist with farming to feed the family of
10 children until he was 14. Even after he began school, he had to miss significant time to return to his family duties. Another participant, Haile(f), was needed to help her mother gather wood and draw water, both time consuming and critical needs for survival. If the family lived in an area where education did not increase the children’s ability to improve their survival and quality of life, they would not waste those years of productivity. When asked how young he was when he started working, Afzal(m) did not answer directly but said, “[Home country] is no problem [but] like here [if] my son is here is working [officials would say] ‘tell me why you working.’ Is no problem in [home country]. Is no problem he is working, no problem work” to help support the large families. Nazeera(f) reported that if the family did not have money for school, there were plenty of children and space for them to play together outside.

Eight participants said their parents chose to send them to private school or to change jobs and move to a major city because they did not believe the education available at the public, local school was safe, rigorous, and/ or prepared enough for their children. For those who did not have the money, their school years were spent “sit[ting] on the dusty floor” (Afzal(m)), with no blackboards, tables, or chairs (Fowzia(f) and Saida(f)), sharing a desk with three to four students (Tarday(f)), in a “tent school with no books” (Nazeera(f)), and in classes with 30 to 60 children. No participants had the luxury of school sponsored bus transportation so Shafiq(m) waited for the bus for 1.5 hours some days, Tarday(f) took two cabs each way, and others ended their schooling when travel became too difficult. Learning perseverance was significant for overcoming economics and continuing through school in their home countries. However, as Dofi(f)
said, “if you have the money, your education can be as good as anyone’s, regardless of your background.”

**SES in US.** As participants talked about their experiences in the US, their SES here was rarely discussed. Participants did not express feelings that their children’s schooling or their experiences with schools have been negatively affected by their income or residence in a low income housing community. In fact, several participants talked about the opportunities they have here because of access to more resources and support acquiring resources. Shama(f)’s comparison as she explains some of her frustrations as a parent in her home country hints at how their beliefs are being shaped by the economic benefits they perceive.

Kids get same education, regardless of what they can pay for it [in America]. That’s why I am saying here we don’t have to care [worry about] if our kids are going to school. We not care [worry] about if we have to pay. Here we just have to pay our rent and our taxes and our bills. We don’t have to care [worry]. Life is not easy over there. First we have to care about their faces then when they come back from school… we have to care about their books and every book has a lot of homework and then they have to do like two, three hours work…whole lot…keep on reading and writing and…for I think no use. Then in the morning when they go we have to give them lunches because even there you have to pay money for the lunch and is very expensive. So breakfast and lunch and life is not at all easy over there.
Gender and Religion Influences on Participant Education and Experiences

Participants discussed how gender, and religious beliefs associated with gender, determined some aspect of schooling opportunities for all but the three immigrant female participants. Gender and religious views continued to affect their experiences and role in education as parents, especially when they moved to the US where their beliefs may be more traditional than other parents. All of the Middle Eastern participants are Muslim and connected religion to their educational opportunities. It is important to note that in our interviews the effects of gender and religion were indistinguishable.

Gender and religion influences for participants as students. In the two cases most strictly influenced by religion and gender, Shahla(f) and Rahima(f), who could not speak enough English to be interviewed, were only allowed to attend one year of religious school to learn Koranic rules and teachings in preparation to have their own families. The women’s husbands said the families lived far in the villages where sending females to school was considered shameful. The women’s families also believed the burqa should be worn by females, which they did not think was practical for school attendance. Shahla(f) and Rahima(f)’s husbands, Sidiq(m) and Walid(m), recalled beliefs from their childhoods:

Sidiq(m): [Some people think] when you go to school you should put a scarf and this scarf is a big matter for some religious families because they want their family to put the burqa. So when they go to school they don’t have to go with burqa because they are not allowed to do.

Walid(m): Because they couldn’t go to school with the burqa on you know. It’s just that she would have to wear a scarf.
Sidiq(m): And I remember when I was a kid people were thinking and telling [my parents] when my sister go to school [if she didn’t] wear this burqa it was not good for me. I [should not] let her go.

Walid(m): [Some people said] if girls went to school and learned to write they would write love letters.

One other participant, Nazeera(f) had to spend one year at a mosque school, but she was allowed to go on to a formal academic education and finished 12th grade. She attributes the outcome to the fact that she lived in a city and not the villages where Rahima(f) and Shahla(f) lived.

If families allowed girls to begin school, puberty was the next impediment to finishing. Male and female participants described the family shame and trouble that could result from school attendance past elementary age. For example, Afzal(m) said his father’s name would have been ruined if he allowed his daughters to continue past 6th grade. Another participant, Fowzia(f) said that if girls and boys continued together past that age, the boys would start to talk about the girls’ pretty hair, pretty scarves, and pretty dresses which, she said, would be similar to saying an American girl is having (or will have) sexual intercourse with any boys. Even when girls had a school separate from the boys to attend, transportation became an issue. Ziah(f) said her father had to work, women could not drive, and her father believed she might meet a boy or man on the long way there. Other participants, like Sidiq(m) above, said brothers commanded their sisters to stay home when their friends began to notice them and comment.

The eight women who finished high school, all from large cities in their home countries, had further trouble at the university level. For Kabir(m)’s family, he said the
entire family would have had to move to the university town for his sisters to go to college, a prospect most families could not afford or did not desire. Nazeera(f) also wanted to continue after high school in her country but the terrorist organization arrived and prevented girls from receiving any formal education. Instead she copied her brother’s university notes and wrote some of his papers just to learn. She said, “Yeah, yeah papers I am writing, I am helping my brother. I am like it. I am learn. Is good for my future, is very good.” Saida(f), within 18 months of finishing school as a pediatrician, also had to leave her university when the terrorist organization came and is still very disappointed that she did not finish. “Yes, so much [miss] because I too much like that.”

Interestingly, when asked if their mothers went to school, many participants noted the large number of children in the family and said therefore she could not help them. They also noted that large families were expected, so it is unclear if schoolwork was considered outside of the purview of mothers or if they were just too overwhelmed. Because there did not appear to be a difference in who helped with schoolwork based on birth order (accounting for mothers who had not been to school), the former seems likely.

**Gender and religion influences for participants as parents.** As students, many of the women’s ambitions were unfulfilled so as parents, they expressed a positive intent for their own children to be educated and have choices. Because Fowzia(f) did not have a chance to finish school, she is adamant that her daughters need to remain in the United States to have a chance at an education and professional job. When all of the Middle Eastern and refugee parents were asked if they would like to return home, every parent said they have to stay in America, at least until their children finish advanced degrees.
Their restricted learning opportunities have a significant effect on how the mothers have been able to assist and support their children’s schooling. Despite some of the women’s limited knowledge of English, a few more fluent husbands still expect mothers to take care of school issues alone because they are women’s issues. As adults, all of the Middle Eastern women are expected to stay home and take care of any of their children’s needs. One father, Kabir(m) did not express any interest in his children’s schooling. When I asked what he would think if his son skipped school the way he had, he said that was really a decision up to the child and he expects his wife to pay attention to “all the things kids need to know in America.” His wife replied that there is “no way he would stay home. I do not let him stay one day. Yeah, he [Kabir(m)] is like that. He don’t know anything. Yeah. He just know about his cab, his work.”

Although mothers are expected at school by teachers and husbands, those without transportation are absent like Fowzia(f) who cannot drive and whose husband is away on business for several weeks at a time. Tarday(f) is not allowed to leave work in time to attend conferences and school functions and her children’s father is not in the picture. There are some fathers who would like to visit their children’s schools but are working at jobs with long or evening hours. They do not believe they can leave work early, the family job considered most critical by at least four fathers, for school functions if the wife can be there.

**Political and Immigrant Status Influences on Participant Education and Experiences**

Danger and significant stressors in the home country affected participants’ schooling and the way they have planned for their children’s schooling. Parents
discussed the violence they experienced in their home country because of civil or international wars. The choices parents made to immigrate were often a result of the participant encounters with violence and the fear that their children would be in danger.

**Participant experiences as students affected by political status.** The time participants lived in an area involved in an ongoing war varied from their entire lives to five years and schooling was a major casualty of that inconsistency and danger. For example, Kedija(m)’s home country was at war for most of his childhood and their general closed all schools. In addition, the war left his family too poor to send him to a private school. Tarday(f)’s home country was also at war since before she was born so she did not go to school until she moved to a refugee camp at 10-years-old. In another example, Haile(f), did not attend any school because she was a female in a very rural, traditional area, but it was also unsafe for anyone to leave the area directly near their home.

For others, the arrival of a terrorist organization in several countries closed off education for women, and made males fearful to travel distances and disrupted their schooling as well. While the countries were occupied, disruptions and fear dictated the schools’ ability to provide an education to participants. Shama(f) believes that these occupations and the resultant violence are the primary reasons the schools were unprofessional and used so much corporal punishment as motivation:

Yeah, that’s why over there it’s like people so aggressive because [when] they are small and brought up in such kind of environment [that is] not at all friendly. And they just act that way, yeah, so I don’t want my kids to go over there.
On the other hand, Ruth(f) and Dofi(f), who are African immigrants, and Tarday(f), who lived in a camp for some time in the same African country, explained that the quality of education seems comparable in America, especially for those who live in towns. However, they report that life was less stressful for them than for others. The same canings, spankings, and competitive exams were common to their school experiences, but they proposed that the lack of war and danger may have left students better able to cope with school stressors.

Participant experiences as parents affected by political status. The dangers parents felt as students were exacerbated as they sent their own children to school. Some parents always intended to move their children for a better chance at schooling but others were moved to prevent what they saw as imminent dangers. For Fowzia(f) and Nizaam(m) the final factor in deciding to move to America was a day they witnessed men preparing to kidnap a child from school as a political pawn. Fowzia(f) was also intimidated to go to the schools in their country of first refuge by people who shunned their family from the “wrong” area and the “teachers who were not nice.” She is impressed with the teachers in America because they are “very nice” and anyone at school will say hello to her.

Other parents without SIV status chose to have their children “sit home and not learn [rather] than be in danger at school.” Besides kidnapping, one parent, Saida(f) heard reports that the terrorist organization in her home country sets fire to schools and poisons the water near her former home so children will have mental deficits.
Because there is war… they burn the fire [at] the school because they don’t like it, [home country] boys and girls going to school [to] learn anything like this. And putting poison in water so they can close the schools for all children.

Haile(f), who never went to school, lived in a camp where her daughter went to class in a hut with no walls that couldn’t maintain supplies unless someone was “sitting the house” at all times. The little ones learned from lecture and the teacher writing on the board. Children were only able to attend when the violence was not close to the school. When they came to the US, Haile(f)’s experience with school as a parent began at the same time as her experiences as a student. She learns letters and numbers with her little girl and gets assistance with her English class and classroom decorum from her other daughters.

Although their home was not as dangerous, Nabhan(m) and Sehar(f) left because their local schools were also unacceptable for their children. Even though they lived in a middle-upper class area, the country was in discord. The desks at their girls’ school were broken and 45 students were in each room. There was one computer at the school, which was unusual for the area, but their girls were bored and under tremendous stress to read and study and not play. In elementary school, a concession had been made for one period a day away from academics for “art” where the teacher drew something on the board and children copied it. Nabhan(m) and Sehar(f) do not know much about what their kindergarten son learns, but they have been delighted to see all of the colors, variety, and safety he enjoys here.
Language Influences on Participant Education and Experiences

Participant English language learning varied from limited exposure at a job in the US to total immersion in their home schools. As they raise their children and interact with schools, most have had some difficulties, questions, or decisions to make resulting from their language status.

Language before immigration. Language played an important role in participant experiences as learners and parents. Several participants noted their experiences learning English as students, many of which also heavily influenced the way they learned math. For example, Kabir(m) said that many students dropped out of school in ninth grade because all school subjects were taught in English at that point and they were not proficient enough to keep up. In Nazeera(f)’s experience, she learned in British English from sixth to twelfth grades, and says the language is different enough that she still does not understand the words in her children’s work. Nabhan(m) began learning in English in ninth grade as well, but that was also the point at which studies were specialized so he did not have any further math classes. However, participants were familiar enough with English for any needs in their home countries.

The influence of language on changing roles as parents. As participants moved to the US, language became a major factor in their lives. In their home countries, English was not necessary to acquire a job, support their families, or communicate with any officials. In the US, they have had to get used to speaking English, a second, third, or fourth language for each of them, for every communication they have regarding employment, housing, money, medical and social services, and school. Those who have only begun to use English upon their arrival in the US are very dependent on officials,
including school administrators and teachers, for recommendations about American practices and the fastest way to make their children successful in their new homes.

**Language acquisition.** During home visits and teacher conferences, several participants have been told to limit the use of their home language with their children. Those who comply, but are not fluent in English, do not have a way to communicate fully with their children. Afzal(m) believes that, because his 2-year-old is mixing English and their home language, he has confused him and is stunting his language growth. He also expressed doubt at several times that he could be helpful to my research, which may carry over to communication with schools. “You no problem, I’m like this speak English? …Sorry you come here I no speak English, too much babababa.”

Part of parents’ concern may be practical; months spent learning to understand in class may seem to delay learning other skills. Fowzia(f) and Nazeera(f) worried as they observed their older children struggling through several months of school until they learned English. Nazeera(f) said, “Kahla first time talking English after three month I see talking is not good. Not good.” Now, after working intensively to improve Kahla’s English, Nazeera(f) is one of only two parents who expressed sadness that her child is losing fluency in a home language.

Another parent, Kedija(m), was told by Head Start teachers, and tries to comply, not to speak to in their home language or teach her their alphabet and numbers because she was quiet in class when she began school.

Trina: Did you tell her teachers that she knows how to read this [alphabet and number chart in home language]?
Kedija(m): No. I don’t think so. They come visit. She [teacher] was tell me not to read this but now I didn’t. They ask me I will tell them [she knows].

Trina: I think you should.

Kedija(m): If they ask what she knows additional rather than in English what she talk we explain that but I don’t say because when they came they say maybe she has some problem because since she was 3 years old she didn’t speak nothing word [in class]. Never. She is smart in everything but she doesn’t talk so they were saying “what is her problem?” They ask me, they ask us, maybe we are confusing speak in our language at home.

(It should be noted that in the preschool group I had with Tanwa at the community in the summer, she spoke paragraphs, but only in my ear.) The mother, Haile(f), is a very new English speaker, and they are one of only two families from their home country living in the area. If Haile(f) has no way to communicate with her children, attachment in critical family relationships is restrained. When she has no way to communicate with others from her culture, critical connections to her heritage are lost.

A chief source of pride for parents was when their child mastered English. Even when I asked Saida(f) specifically about her first memories of her child knowing math, she talked about Sala’s transition from believing her garbled noises were number words to when others recognized her sounds in English. An accent from their home country is considered an impediment to progress in school. Nabhan(m) and Sehar(f) are particularly proud that their youngest child is able to speak in English with little accent. Shama(f) says she did not have to prepare her daughter for school because “she already know everything. She is so smart. She can do anything because you see her accent is very
good. She can speak good English every time watching cartoons. She understand other language and other people language so well.” Likewise, Tarday(f) points to her daughter’s accent as the reason she was placed two grades behind where she was in her home country. (She did not mention the inconsistent schooling or poor quality of schools in the refugee camp).

**School-home communication.** Parents indicated that they have not received help from schools to facilitate communication. No translator was provided for a scheduled appointment regarding 504 accommodations for one of Nabhan(m) and Sehar(f)’s daughters. Instead, another daughter was called from class to help with the paperwork and explanations. Nabhan(m) said that this arrangement was fine, but he does not feel comfortable going inside the school to talk with teachers unless he is formally invited. Nabhan’s(m) older daughters are 14-years-old and able to comprehend and translate for basic needs. Fowzia(f) has young children who cannot translate for her, and schools have not secured a translator for planned conferences. She says she understands more than she can speak in English right now, though her English was good enough that I had no problem understanding her meaning. She believes, whether schools overtly told her or just neglected to provide help, that she is “problem” and teachers are “very good” to try to talk with her. Kahla’s teacher asked Nazeera(f) who was going to help her with homework and indicated approval that she would go to the homework club. Nazeera(f) was a first grade teacher in her country of first refuge, graduated from high school, and learned in English for several years of schooling. The teacher did not give Nazeera(f) advice on what she could do to help Kahla at home, and she did not ask what experience Nazeera(f) has in English or with education.
Ruth(f) acknowledged that schools may not be equipped to help immigrant children as she explained how advanced she believes the schools in her home country are. Her nephew transferred to school in the US and may have been misplaced because he wasn’t fluent in English yet.

So the work and the stuff he was having problem because he say, “Daddy I already know this.” Cause they give him what he just finished. Although when they come here the accent was very different but the work they already know. So my brother said everything they giving to him he already know so they having problem with it.

Finally, language has complicated homework help for families. Ziah(f)’s children in second and seventh grades are too far ahead in English for her to help them with homework in any subject. She and Fowzia(f) both talked about their interest, particularly in math, as students, but inability to help with their children’s work which is primarily application problems.

Country of Origin and Influence on Participant Education

It is not possible to determine the factors that created the kind of school systems participants attended and difficult to know the specific conditions of each. An overlap of economics, region of the country, ethnicity, and political status within and outside of the country affected participant experiences as students. Each participant’s political status, country of origin, and current immigrant status continues to influence the home culture they create for their children.

One area of diversity in experience was teacher expertise. Only two participants, both the immigrants from Africa, had teachers who were trained at college to be
educators. According to participants, they either lived in countries that did not require professional qualifications for teachers or they were in camps or villages that could not afford and monitor qualified teachers. Kabir(m), a middle class immigrant, and Tarday(f), a refugee who lived in a poor camp, reported that their teachers were often graduates who were not able to get other jobs. Another participant, Afzal(m) blamed his intense dislike of school as a child on his ill-prepared teacher, “the teacher is no good. Every time is bad.” He believes his children’s current love of school must be proof that their teachers are excellent.

Walid(m) connected lack of teacher education with poor classroom management strategies as well. He believes the teachers’ frustration and lack of training directly affected the use of corporal punishment:

Walid(m): They are paid low. They are mean and they are beat [us] up with their fists. Parents think they are doing right, but I remember when I was in grade fifth or sixth the teacher would swat with the thing [paddle] because I sucked at math... He had big hands and he was like “Why don’t you learn? Why don’t you study?” I don’t even know and you have to be able to know to study. I have no idea what to read about and I hated it and I don’t understand it so what do I study? I can’t study it and you know that was the teacher. It was the type that smack your hand or head to make me read [and] study. I can remember flush like fire [on my face]. Like sparks they slap you hard.

Trina: But what did he want you to do at home. Do the same problems?

Walid(m): Yeah! Same problems. Keep practicing and repeating.
Conversely, Nizaam(m), who lived in a refugee camp from infancy, went to schools set up by refugees who had been committed teachers in their home country. Even though his family was very poor, the host country and non-governmental organizations (NGOs) brought materials and money for teacher salaries so an education structure was available. However, even with money for teachers and supplies, the living conditions of the camp still made it difficult for children to go to school. Small children worked in the streets and families frequently moved, preventing them from attending the schools. Because of the variability across countries and camps, Nizaam(m) and Fowzia(f) mentioned that the educational system in their home country is steadily improving because foreign teachers from American and India are bringing their “more better systems.”

The two immigrants from Africa were the only participants who described their teachers as professionals who had gone to school to learn to be educators and were surprised to hear that most countries did not demand the same.

Trina: Were your teachers trained to be teachers?

Dofi(f): Oh yeah! How would they teach us if they don’t?

Trina: Some places, they do that.

Dofi(f): (Laughing hard.) That would be ridiculous! So who is teaching who? That is funny! Listen we have a whole university for teachers. That’s where they get their training. We have so many teaching institutions and the unfortunate thing is when they get the certificate and the knowledge they travel and they come to America.
Participant Parents’ Experiences and Beliefs as Influential Factors

Just as participants’ backgrounds influenced the beliefs and practices they share with their children in the US, their own parents’ experiences affected how and when education was experienced in the home country. The way participants feel about preparation for school and roles in the home influence math education.

Apprenticeships. Discussions with participants revealed how important their parents’ experiences and beliefs were to their own development as students. At least 10 participants had parents who did not finish a formal education at an academic institution. From the discussions, it was apparent that these parents of participants, who learned their trade through apprenticeship, were more likely to teach their children the trade, even when they sent them to formal education as well. Participants reported that their home countries are in a transition to mandatory, formal, academic schooling, but practicality necessitated a twofold education where they learned a trade as an apprentice and academic topics at a formal school. For example, Afzal(m), whose father was a painter, Nazeera(f), whose father was a tailor, and Kabir(m), whose father was an oil businessperson, all learned the family trades and finished 12th grade.

Kabir(m), who lived in a middle class family, is the oldest child of his siblings. Although the others finished high school and went on to college, he had to apprentice with his father in a business that had been in the family for 70 years. The business, finding and refining oil, is fairly technical; however, his father ran it successfully with a high school education, and determined Kabir(m) could/ would do the same. Therefore, parents did not reprimand him when he skipped school (including 60 straight days of science class). As mentioned above, Kabir(m) says he is not interested in his children’s
schooling and will not pressure his children to go to college, though the same opportunity to join a family business is not available.

On the other hand, families for most of the participants included 9 to 13 siblings, a number of children each couple was expected to have. Apprenticing to be a mother and wife of such a large family was considered more pertinent schooling than learning to read and write. Their apprenticeships, however, often included significant math experiences like learning to estimate the quantities for food preparation, giving the correct money and expecting accurate change, and measuring for sewing. Shahla(f) and Rahima(f) both attended one year of religious schooling to be able to provide support from the Koran for their families, but the rest of their “schooling” was done with their own mothers. Haile(f)’s family lived in an area at war her entire life where food came as rations and she was responsible for bringing home every piece of their 26.5 lb. share. Estimating magnitude when cooking had to be accurate because there was no extra to spare.

**Participants’ parents’ support for formal education.** Participants were proud to share the accomplishments of their parents, especially when they had no formal education. Instead of learning that formal education was unnecessary, they heard that education was priceless. Sidiq(m) and Walid(m)’s parents told their children that they wanted to go to school themselves, but were needed on the farms. Other parents, like Kedija(m)’s who had no formal education, asked Socratic-like questions of his children every night, preparing them for when schools would reopen in their country.

Yeah, is very important. My father was really interested in school. Interested, is motivated. Now he would have become really amazing professor. He would have been educated.
Similarly supportive, Dofi(f)’s mother emphasized that her children should work hard not to have her experience and her father spent every evening reteaching what Dofi(f) learned in school.

Those parents who were not able to help with academic work assisted by providing opportunities and preparing children to be learners at school. Sidiq(m) shared his father’s beliefs: “He did not care about money. [His children] should have a bright future.” His father did not feel the same about or encourage his daughters’ education. Afzal(m)’s parents were illiterate and not able to help him with homework, but when asked what his mother taught him, Afzal(m) replied that she told him frequently that he should not play in school, he must have good listening, and he must go every day. Afzal(m) counted these lectures as critical lessons she could impart that were just as important as helping with homework.

Tarday(f) was an exception to the group because she was the only participant who did not receive any support for education. She lived with her grandparents who believed only males should be educated and did not care if she and her cousin made it to school. They did not encourage her to do her homework and frequently discouraged her from going. She did not say why she did go to school, but the whippings she got from the headmaster motivated her to finish her homework. Tarday(f) was also one of the few participants to say whipping was a necessary punishment and should be considered in American schools.

**Behavior management.** Many participants shuddered when they remembered the physical abuse from their schools and the possibility of their children experiencing the same. I asked if their parents supported the beatings and if not, why they did not
demand they stop. For some, they did not believe there was another option for controlling so many bodies in a room. For others, they considered corporal punishment a necessary evil and a duty for teachers.

Back home the school system is like we believe that one person born a child and community raises the child. So back home in school our kids get disciplined. I was whipped. (Laughs). Because even when you are in 12th grade you get whipped.

All participants believe there are more options for teachers here that their teachers did not have. In other words, they do not perceive the teachers had different knowledge, but different natural options.

**Participant Experiences with Mathematics Tools as Students**

When we talked about their math education specifically, participants were unable to recall or identify math activities with which they engaged before school. They report math activities parallel to those a middle-class American family might use to prepare a child for school like puzzles, board games, and car games. In general, home experiences with math were embedded within life skills lessons. I asked participants if they had experiences with three common methods some American parents use to prepare and assist their children with math education: manipulatives, games, and money.

**Manipulatives.** The manipulatives that participants recalled were different materials than those in American classrooms, but served the same purposes. A few participants remembered learning to count using manipulatives like beer bottle corks (for a bar owner’s child) and beans at home. For example, Kedija(m) used his fingers and toes and added his brothers’ digits when the numbers got larger. Eleven others recounted
the lack of “real” objects like manipulatives in their schools across subject areas. Two adult men from different countries recalled learning about microscopes in science class by reading about the physics of the mirrors and looking at a picture, but they never touched a microscope.

Kabir(m): I was bored with the science class all the time and that guy he is talking about the glasses, the mirror, the telescope and he is just [talking]… because over there we don’t have any physical stuff. So there is no microscope to look at and I was really bored because he was giving us angles on blackboard and giving us curve and like that and this mirror and these angles and specter and how to make the rainbow like that and I was bored and after that he was start asking questions me and I have no answers for all those questions. He told me I couldn’t understand so he smack my face and I never went in class again.

Afzal(m): I am read about microscope. I am no see. I am see the picture but I am not touch microscope. Everything I am see the picture, I am no touch. This is problem. Here is my kids going everything touch, looking, “what is this”… so [home country] not like this.

Participants reported that the colorful plastic bears and chips they see in their children’s classes are enhancing and facilitating experiences in math, serving a parallel purpose to the use of “whatever we could find” at home. Afzal(m) and Kabir(m) in particular were emphatic that manipulatives like actual microscopes and tools are making their children’s schooling more worthwhile than their own.

The two immigrants from Africa were less interested in manipulatives and equated them with using a calculator as an educational crutch instead of learning math.
We do not use any helps like calculator or manipulatives because in Africa the teacher will not allow you. They will want you to learn and learn good. Even if it’s math you have to calculate it with your brain. They have papers there you have to write it on paper and you wouldn’t be allowed to use the computer or calculator so that is how we learn.

One other participant, Haile(f) who had no schooling, could not relate to the concept of manipulatives because all of her mathematics was learned in context. All of the schooling she had was done as apprenticeships. It could be argued that she used manipulatives in every math lesson as she learned to cook, sew, and build.

**Games.** There were limited mentions of games, even when participants were directly asked. Most male participants named soccer and hockey as games they played and they learned some geometry and estimating measurement through these. All five African participants named games that involved counting and patterning similar to American hopscotch, jacks, jump rope, Go Fish, and the board game Sorry (called ludu). Because several participants said they played “just traditional games,” they may have chosen not to explain games or did not remember them for a variety of reasons.

**Money.** Real money may not be considered a manipulative in an American classroom, but for participants with contextual math learning experiences, money was a major venue for math education. Ruth(f) and Sidiq(m) talked about going alone to the store near home at 3- or 4-years-old to buy candy or something for their mother, paying the correct amount, and being expected to bring back the correct change. However, they and three other participants who had early money experiences said they would never give their own kids money to use at the same ages because they would eat it. Ruth(f)
attributes the different expectation to the spirit of community in her home country so there is little crime and more interaction within the neighborhood. Sidiq(m) said he had to have money because it was his father’s bribe to make him face another day at school. Walid(m)’s reasoning was the most obvious: the children here do not need it and therefore the parents do not teach it. They have tickets to buy school meals and are with an adult for any other purchase. Parents may not be choosing whether or not to teach certain skills as much as they are trading survival skills from their home country to those needed in the US.

**Participant Experiences Learning Mathematics as Students**

Workbooks and textbooks were the most significant and often mentioned tool in the participants’ math education. Not only did they find the work “boring,” that it provided “no variety,” and “complicated,” but incomplete copying and memorizing were mentioned as frequent reasons for spankings and canings. Aban(m) was one of several participants who said if he did not sit quietly working with his pencil, book, and workbook during class, he would earn a slap. Shama’s(f) remembrances were similar, “We just sit and she just stand in front of us. Like here the kids are moving but we were not supposed to move over there. We just sit and listen to the teacher.”

Participant memories of math education always included copying, memorizing, and reading and they associated those methods as the only way to learn math. They were frustrated that their children do not have work to memorize. As a child, Kabir(m), carried home textbooks each night that had to be read and copied for the teacher to check the next day. Nabhan(m), who had trouble keeping up with the teachers’ writing on the board, had to concentrate on the copying and spent evenings with friends trying to
understand the answers in their textbooks. Sidiq(m) also discussed his own difficulties learning as he began school:

The way that they were teaching us is completely different and is very complicated for the first grade to learn it. And that’s why they are smacking the children to make them understand or make them to study. Because here it is very good from preschool you teach them without any problem like I said. Like with the equipment I have seen some stuff in preschool is sand they are writing [in] so this is very good for them. But in [home country] we have just a book they are writing. They even don’t teach us how to write the letter the [right] way. Cause when you are a kid you don’t know how to write the letter the way. Even right now I don’t know.

In discussions, participants explained that memorizing, copying, and reading as learning tools necessitated specific kinds of grading. A complicated competition for year-end grades was described by Kedija(m) and Nabhan(m) where students took a comprehensive test in every subject and then were ranked. Students who ranked in the top half of the class were usually passed on to the next grade. Saida(f) reported getting a “ranking” of five in her class competitions and the next student getting a four. Therefore, if a student was correct for 99% of the material, the work was considered 20% inferior to someone who was correct for 100% of the material. Another participant, Sehar(f) says she had to start studying to the exclusion of any other activity two months before the test. If they did not work consistently, their mother would bang her head against the wall and cry. After the tests were over, they left town to get away from any reminder of
schoolwork for six weeks. Success in school was critical, but not pleasant. Schoolwork was not even necessary to ensure success as Aban(m) said:

My cousin is older than me and he told me that his time he didn’t return to class he just go, say ‘hi sir, how are you’, and then he left, and at the end of the day [year] when they have tests, like annual tests, the teachers give them books like “here you go and pass test or whatever you want to do.” If you just read it and answer all the questions and that’s it.

Tarday(f) referred back to corporal punishment as she described daily competitions in math class as follows:

They teach us and they ask you to come out and two students come out and recite it like $2 \times 2$ and if I miss it my friend gonna whip me or if my friend miss I say ‘$2 \times 9$ is what?’ and she say something else I gonna whip her because that’s how we learned. You don’t want me to whip you so you gonna learn and I don’t want you to whip me. Two person come [one asks] ‘$2$ times this is what?’ and I’d miss it and the other person [was asked] ‘$2$ times this is what?’ and they get it, she get a switch and whip me for missing it.

Dofi(f)’s experience was similar with “mental math” starting each day which she considered a significant structure for ensuring mastery of math concepts.

Despite the lack of resources, [we learn] because we learn through hard work. It is not like easy like in America, in [home country] you know not even to use a calculator. Even in the morning when you go to school, they have something like mental [math] when they say ‘what is five times six?’ you have to say out of your head. You cannot use calculator to do that so it’s like the children are very smart.
so when we come here and see all this Google thing and all the stuff like that we take advantage of that. Here [at home] the way we learn, we do it through the hard way and it’s easier in America.

None of the participants mentioned problem solving or critical thinking activities as part of their math classes. In fact, they reported confusion and are unable to assist their children even with a first grade application problem like the example below.

Your mom gives you 50 cents to buy pencils. Each pencil costs 15 cents. Draw a picture to figure out how many pencils you can buy.

When I pointed out that the problem was similar to Fowzia’s(f) own calculations when shopping, she still did not agree that she could solve it. (It’s impossible to know if language was a factor, effort and interest, and/or self-preservation.)

Nine participants used the word “easier” to describe their children’s experience compared to their own, mostly in discussions of memorizing material. Five participants reported the belief that computers make school much easier for American children than it was for them, and keep children from learning. Instead of reading and copying at night, they see their children using the computer to find factual answers, often invited and encouraged by their teachers. As Ruth(f) said,

Everything is easier here because they do everything on the computer, their work and stuff, but [in home country] you have to learn for themselves because you have to really make sure you learn it so you can do the test. Like here she [the teacher] say you can just work here on the computer and everything and you done. It’s easy to do that.
Participant Experiences as Parents in Communication with Schools

From conversations about their experiences as parents, it was apparent that communication with schools was a significant source of information and confusion about their role at school. They reported beliefs learned in their home country that they are applying to communication with US schools. Of particular interest were the responses they receive from schools and how they react to teacher requests.

When I asked “what could teachers do to help your child in school,” all but two participants reported no suggestions and feeling comfortable with school communications. They said that the formal training teachers must have confirms that they are experts in every facet of a child’s education. Kabir(m), Walid(m), and Kedija(m) separately agreed that teachers are prepared for their children.

Kabir(m): Most of teacher I think are professional here. I think before they start teaching in school they taking some classes in college so I hope they know better than me what they have to teach the kids.

Walid(m): Sometimes they have this question in the forms and I actually leave that empty. That’s a hard question, I don’t know. I think they are educators, they know better than I know. It’s hard for me to suggest anything. They are educators themselves. They are doing a great job.

Kedija(m): They know what is important for them [children]. I think they study how to do different things, what strengths they [children] have, what countries and cultures they have so they will know what is important and I don’t know what is important in school but if they ask me I will tell them.
As mentioned above, teachers expressed concern with Kedija(m) about his daughter’s progress and language development. I asked if he would tell the teachers what she does know and he responded that he would only tell if they asked.

Afzal(m) also indicated that teachers are prepared in college to meet and comfortably integrate diverse families through investigations and professionalism.

Trina: Do you think teachers understand your children’s needs ok?

Afzal(m): Yeah I know. Everyday my daughter and my son is coming to school, to home, I’m talking “how are you doing to school, what’s problem?” “No problem.” “What said teacher for you, bring your homework paper.” And I am talk, his momma talk [about school day].

Trina: When teachers are not from your culture, do you think they understand what your family is like?

Afzal(m): Yeah, because you talking to my family …other families listed, so I talk little bit for you, he is little bit, yeah so you understand.

Parents indicated that they believe teachers are trained professionals so communication with schools primarily took the form of general or behavior discussions. Some participants said they do not expect to be asked to help with behavior or academics that take place out of their sight. Ruth(f) and Shama(f) felt they should not have that communication because they wondered how they were expected to respond to behavior during the times other adults are responsible for their children. Similarly, Kabir(m) remarked that “Maybe they will not say anything to them [a child if he is not completing his work]. Our parents did not know what we are doing so we don’t know what they are doing.”
All other parents reported more concern about ensuring their child behaves at school. Shafiq(m) spoke openly with his children’s teachers about his ELL status and his need for them to be the primary support for their academics. He assured teachers that they could call and email him with any behavior concerns that would impede those goals. The conversation indicated that in their home country, Shafiq(m) may have taken a more active role with homework and schoolwork.

Nazeera(f)’s interests were similar as her youngest child started Head Start. She called his teacher in the first week to ask if he was eating well and behaving. Behavior might be of secondary concern to academics for parents, but Nazeera(f) explained that, because teachers are professional educators, she needs to be aware of with whom Kahla associates.

Some I go see who is friend with my daughter. Who is stay [near her] I am see. Very important for my people. Some people is not good. I am scared. In [home country], every time my family is come see who is my friend. I have one friend is first grade and to twelfth is finish. One friend.

Of the two participants who did not express absolute trust in teachers, Nizaam(m) was the only one truly displeased with his child’s teacher.

Nizaam(m): Honestly, I don’t favor a lot of paperwork in the US. In my opinion, rather than wasting your [teachers’] time and a lot of paperwork sitting behind computer and let students do whatever they do. I don’t like that. I have seen that in US schools.

Trina: You think the teacher is sitting behind the computer all day?
Nizaam(m): Yeah. My personal view. Every night when they [his children] are coming they bring this much stuff so you can guess what the teacher doing. Haven’t even been with the kids. If he is preparing that much extra notes, and trust me most of them are trivial stuff but there might be some stuff that which you really want to work with the teacher or that is related to your kid or their school stuff but a lot of stuff is just a waste of time and paper.

Interestingly, Nizaam(m) and his wife both spoke about rebuking their daughter over her reports that her teacher repeatedly grabbed her. After talking about his unhappiness with teachers in general, Nizaam(m) said he had never been to the school, but believes the teacher had a “good behavior treatment [plan].” Fowzia(f) described her interactions about Noorzia’s complaints.

Fowzia(f): [If you do not like] your teacher but you can learn, you can be quiet, you can sit, you can hearing, and I am tell with her ‘no, your teacher is like your mom. Teacher loves you like mom. You understanding [what is] good but you not good.’ But maybe she’s playing and her teacher say you can sit here with the chair.

Trina: So you think maybe she’s doing something wrong?

Fowzia(f): Yeah. I said ‘your teacher good.’ She said ‘no mama, every time she is putting me.’

Trina: She grabbed her?

Fowzia(f): The teacher grabbed her. I say ‘ok, you not good, your teacher good.’ She [the teacher] is nice but I don’t know, she [Noorzia] not like her. Now is my Aisha teacher.
Trina: Does Aisha like her?

Fowzia(f): Yeah, but sometimes she is complaining.

Dofi(f) was the only other participant to offer suggestions for teachers. Her child has not begun school, but she said she will explain her child’s learning style, strengths, and motivations to the teacher. Dofi(f) is also the only participant who is currently a student in a formal American class where she says she has observed interactions between American students and their teachers as accommodations are made and diverse styles identified.

Though parents would not directly talk about potential improvements to schools and teachers, they needed explanations of school terms or notes. Sarda’s teacher told Saida(f) that she was eligible for “GT” (Gifted and Talented) services because “she is so smart.” When questioned, the school office told Saida(f) that they do not offer that program in kindergarten, leaving her to wonder what, when, and where this program might be (as well as what the initials stood for).

Sidiq(m) is anxious about the illegal drugs that he has seen on television that seem to pervade all schools and all grades but he felt lost to keep his kindergartner safe. Although he did not intend to discuss that with anyone at the school, he does want future teachers to know that his daughters are Muslim and cannot be close to boys as they get older. He has been in the United States for 18 months and was dismayed to learn that his friend, Walid(m) who has been here three years, does not intend to request the same of his daughters’ teachers. In other words, parents indicated that they are unclear about their role in education, what communications are appropriate, and who to communicate with about concerns.
Math Education and the Home Culture

From the discussions, it is apparent that experiences of participants as students and parents create a home culture including beliefs and expectations for their children and the world with which they interact. Decisions about learning funnel through each unique home culture and become the way parents determine if and how they prepare, assist, and model mathematics for their children. Figures 4.1 and 4.2 are the left and right ends of the same graphic as factors influence how parents build the home culture and then the home culture influences how parents relate mathematics to their children.

Though not included in this study, one additional factor that has a significant influence on parent interactions is knowledge of their children as they grow.

Figure 4.2. How home culture affects parents, children, and their math education.
From the interviews, three different ways parents interact with math and their children were clear. Before children start school there are intentional and unintentional activities that prepare their children. During school attendance parents reported their foci for assisting their children. Then, parents model math practices, goals, and interest to their children. As seen in Figure 4.2, all three pieces contribute to the experience participants’ children have with mathematics.

Prepare for Math

There was a notable difference in what parents reported believing and doing with their children to prepare them for school and activities they mentioned actually doing. Many participants reported that they do not and should not prepare their children for school. One reason is their belief that the professional teachers have an expertise that they do not have. For example, Tarday(f) said she felt teaching is a teacher’s job so she did not work with Assa before school. She said she wanted to wait for Assa to learn in school and then for teachers to tell her if she had any difficulties.

The second factor that affects what they reported as academic preparation is their stated belief that Head Start is a comprehensive educational program for small children. Fowzia(f), Saida(f), and Shama(f) all worked with their older children before they started Head Start, but determined “everything” was taught there and did not work with their younger children. Ruth(f) said she spent a little time working with Jeffrey before he started Head Start, but did not think he understood what she was saying. Walid(m) also stated that children cannot learn numbers before 7-years-old (the time he started school). Another participant, Kabir(m) not only thinks Head Start is teaching his child “everything,” but also said that they are doing a better job than he could do. “Most of the
things they learn at school but in my country most of the things we learn from our parents. Kids are more intelligent [here] because they learn everything at school.”

Participants who did report working to prepare their children for school routinely mentioned language building activities, even when specifically asked about math. Kabir(m), Shama(f), Fowzia(f), Sehar(f), Aban(m), Haile(f), and Afzal(m) all described watching cartoons as the way they should prepare their children for school because it builds their language skills and minimizes their accents.

The other reported focus was behavior management. Aban(m) and Shafiq(m), both fathers, agreed that they prepare their children from very young “how to talk with each other people, how to behave, to do good behavior. That is the main thing she want [needs] to know. That is what we teaching.” Sidiq(m), another father said, “I always advise my kids…do not do this, do this. From this age you should start showing bads [and] good.” Mothers, who are involved in the daily child care, talked more specifically about reinforcing what they heard from schools. Shama(f) and Saida(f) repeatedly read school and class rules to their children for several days before the first day of class. Nazeera(f) described her job at home “Yeah, teacher is good [important] job. I am teaching my children every day. I say this is good this is not good. I am teacher for that.”

In actuality, many parents counted, read, and practiced writing numbers and letters with their children before school. Although they reported doing no preparation with their children, Aban(m), Fowzia(f), Kedija(m), Ziah(f), Nazeera(f), and Saida(f) said they have taught their children from very young to count in their home language. When I asked if a participant taught their child to count in their home language, a typical
response was to assure me that they are working on English. When I asked how far their small child could count, participants answers ranged from 10 to 20 in their home language and English. Aban(m)’s response was representative:

Yeah, she count to 20. Just a little bit because she needs to know English because next day [year] she will go to school. That time she needs to know hard [facts] in universe. Sometime [home language], mostly English.

**Assist with Math**

Participants stated that they assist children with homework whenever they are able. When their children reach first grade, most are enrolled in the community homework club where trained teachers are available to help four days a week. Nazeera(f), Fowzia(f), Saida(f), and Shafiq (m) related reliance on the homework club because they say they are not able to understand enough English. Saida(f) returns to her lessons on behavior as the way she can assist her children.

They are going homework club and learn everything in there. But I says for them “don’t play when you are going to the homework club. Just do attention for your homework because I want you get grade like A.”

Dofi(f)’s child is living with her mother in Africa for a year where he goes to a Head Start-like program. I asked if anyone helps him learn at home and she said that her mother hired tutors who teach him manners and how to behave at school. About everything that a child has to know before he goes further in life…They teach them even how to behave. So many things [like] how to talk manners because you know sometimes if you don’t train the child the way he should go
he may lose certain values and that is what they instill apart from what they learn in class. They teach so many things. I think it’s good in a way because it helps you to be more attentive and respectful when somebody is talking to you, you have to listen. And there are so many thing we learn over there so when we come here, hmmph. We get surprised at how children talk.

Also noteworthy, Dofi said her son is not learning about anything “inside himself,” referring to common American preschool lessons on who the child is, how to express feelings, and what their wants are.

Fowzia(f), Ziah(f), and Ruth(f) said they enjoyed math as children and are comfortable with the arithmetic and algorithms, but do not understand the application problems. As described earlier, the participants experienced math education as copying, reading, and memorizing so math as a process and contextual tool is unfamiliar.

Afzal(m) is still able to remember and understand the algebraic concepts Sulem is learning in seventh grade, but is stymied by terminology like “number line” and “set.” But, he says “I’m understanding, I am helping.” Nazeera(f) echoed his statement, adding, “no understand is big problem.” Shafiq(m) agreed, “is now only teacher [who can help].” Parents, like Nizaam(m), who are used to owning and memorizing textbooks report frustration that books are not allowed out of the school building so they can read what to do with their children.

Ruth(f) addresses this problem by turning her efforts to monitoring signals that they need help, securing appropriate resources, and making sure the children take advantage of opportunities.
But to me as a parent, even if you don’t know, you need to get help for your kids to do their homework cause if you see Michael and Stacey report they did really good. Cause I make sure they sit down- even if they go to homework club in the evening- [I] make sure to go through and see if you [the children] finish it or everything because that is important because that is their life.

Discussed above, the use of calculators is a continued source of dismay to Dofi(f), Kedija(m), and Ruth(f) so they require their children redo incorrect problems from the week without support. Included in these exercises are behavior reminders.

Even if their school work, if they bring it home the math and get it wrong I will just let them sit there and do it over again and I say, “Why you get this wrong? You can do better than this! I want you to do it again.” And sometime he will do it right and I let him know that “you don’t have to rush, you see you get everything right,” so sometime he bring home school paper he get D or something he is afraid to show it to me. “Do it again!”

A few participants explained a philosophy for assisting children that sounds more passive than reports of intentional behavior instruction. They submit that whether or not a parent helps with homework is dependent on differences in children and if they need and want help. Three participants shared that, in a room of 40 to 60 classmates, the child must choose to sit at the front of the room, focus on the teacher, and ignore others who play and talk. The unspoken belief is that responsible parents should have spent considerable time and effort teaching children to make those choices.

Fowzia(f) said that she tries to read the workbook examples when she can to understand and assist her fourth grade son, but the difficulty with language is recurrent.
Fowzia(f), Ziah(f), and Sehar(f) turn to the computer for help learning the English in their children’s math problems. Sidiq(m) related a story of attempting to help his daughter with her homework, but missing the tools.

They say you should practice at home. If I do not know the name [of items on the worksheet] how should I practice? Like animals that the teacher is sending with the pictures to the parents, it should be at least at English name on every animal picture. Some of the parents that they don’t know in English but when it is written in English they can maybe read.

In one interview, a child was doing a math problem that asked her to find the probability that a girl name would win the spin of a wheel with six names. The mother and daughter needed help determining which names were female. Their background is a cultural naming system highly structured by gender so they questioned why Pam was female when they knew Sam as a male name.

Another common idea among participants was siblings as teachers. Older children often assisted with the care of younger children and were more available and better educated than the mothers for homework. Therefore, mothers are comfortable relegating some tasks to other children. Nazeera(f) asks her daughter to read to the younger child each night just as Ruth(f) leaves homework assistance to her older son. Sehar(f)’s daughters have learned that they are responsible for the younger children’s work and position them at the table as they come home.

Model Math

Modeling learning behaviors is a critical tool parents have for ensuring their children’s success. Because many participants have at least a high school diploma, the
atmosphere is decidedly primed for academic rigor. The majority of participants said their children’s education played a major role in their reasons for leaving a home country and they are clear in modeling to their children in word and deed the importance of school. Afzal(m)’s dedication is representative of other participants.

My love is my family. I came here, I got out of [home country]. I went to the other places [countries of first and second refuge] because of my family, because of daughter and my son so they can learn English and go to college like they work better, have a good life and stuff and that’s why.

Besides international migration, children see parents investing in their own educations. Seven mothers are attending two to four English classes a week, three participants are preparing to begin programs at the community college, one intends to take the GED this month, one is studying for her citizenship test, one is finishing an associate’s degree, and two with bachelor’s degrees in their own countries are pursuing opportunities for master’s degrees. In addition, two African mothers modeled the importance of school by dismissing their less ambitious spouses from the household.

From above, regardless of their reports, parents are counting and working with their children and numbers. Three parents who are not fluent or were not educated up to the level of their children do their math homework alongside them. Mothers ask each other and the homework club tutors to explain the answers to word problems. Perhaps most importantly, they continue the apprenticeship model from their own experiences by teaching estimating, measuring, and timing in context. In addition, those with young children like Aban(m), Sidiq(m), and Nazeera(f) are exposing them to American learning
toys and math games. Ruth(f), who was an accountant at home, does math calculations when they walk or drive.

Conclusion

Parents expressed some confusion or even denial that their experiences fit in with the lives they are building in America with their children. Parents do not seem to recognize the math skills they are sharing with their children not available through schools. Kedija(m) and Walid(m) each stated that their primary job as their children prepare and go to school is to provide steady monetary support.

Most parents expressed hope and expectations for the opportunities their children have now. In contrast, two of the same parents also said their children “too much like school” here and will not even stay home when they are sick. They are used to crying when a child has to go to school. Another parent worried that the school day is so long and they do not have enough time at home in the evening. At least a few parents have begun to worry that the large, and usually pleasant, role school has in their children’s lives is taking too much time and interest away from the family.

The most remarkable commonality among participants is how diverse their backgrounds are. From interviews it appears that parents do not know what little training many teachers have in assisting diverse families. They do not seem to know that teachers cannot be familiar with each child’s cultural background, especially when so many factors create a unique culture for each child. However, none of the participants talked about teachers asking for any ways that a child’s math knowledge and experiences might be used to make connections within the classroom.
CHAPTER FIVE

Refugee families are being integrated into more communities each year as the UN works to close camps that have been homes to some for decades. The literature is clear that both immigrant and native-born children benefit from diverse classrooms. To ensure that the relationship is mutually beneficial, schools must have practices that invite new families into an experience that might not be familiar to them. Besides refugee parents, families living in poverty, those with unclear immigrant statuses, and other underserved populations have backgrounds that may make their relationships with teachers discontinuous and put their children’s scholastic success at risk. Conversations between families and teachers can provide critical information for bridging differences in beliefs and expectations. Because of the diversity of families, it is important to understand the context of each child’s home.

In this study, I explored refugee parents’ experiences as students in their home countries, as parents in the United States (US), and the ways they interact with mathematics with their children. Three major themes emerged from the interviews:

- Parents would like their children to have a different school experience than they had.
- Parent experiences with schools as students and as parents influenced their beliefs about education and learning.
• Parents prepare, assist, and model mathematics for their children as influenced by their own backgrounds and experiences.

In this chapter, I discuss how these findings support and extend current literature. I address the research questions that guided the study by summarizing the results with respect to the literature and then confirm or dismiss the expectations I had before the study. Then, I discuss limitations of the study. Finally, I discuss implications for future research as well as for people who work with refugee and immigrant families, particularly in assisting with math education.

Constructivist grounded theory was used for ongoing analysis. Interview data in a variety of forms and compositions provided checks on themes. The diversity of the group in country of origin, school and vocational backgrounds, past SES, and refugee experiences also supported the theory development. Ethnomathematics was used as a framework, which enabled me to identify any participant experiences and beliefs that could be significant to the development of a family or home culture for math education. Across the diverse interview types and family demographics, multiple themes emerged to indicate that research in education experiences with mathematics in immigrant populations, and refugees particularly, is valid and valuable. Important to the discussion is the inclusion of two non-refugee African immigrants and three non-refugee Middle Eastern immigrants. In my findings, I highlighted the few times when their beliefs and/or experiences deviated from the group of refugees.

The research questions with which I began this study asked about the relationship between parents and their knowledge of the American educational system, young children, parent roles, and mathematics education. The ethnomathematics framework
and constructivist grounded theory methodology helped me find that the story of these families was strongly influenced by their histories as students and parents, who then enact math practices and beliefs built on those histories. The research questions that evolved, and the fact that they did evolve, reflect the emphasis on participant voices and the validity of their stories.

**Influence of Parent Experiences on Children’s Experiences**

Interview data about participants as students revealed a common theme; all are hoping their children will have a student experience different from their own. Though there were parts of their education that a few would like to see replicated in the United States, overall parents seemed ready to accept most differences in schooling practices in exchange for the opportunities their children have. Opportunities, gender-based roles, learning strategies, and manipulatives were significant sources of discussion in relation to their own histories.

**Differences in Practice**

Some research has concluded that immigrant parent practices change in response to the new opportunities their children have (Birman, Trickett, & Bacchus, 2001). For the participants of this study, new opportunities do seem influential, but parents also have a belief system deeply embedded in their own history that must be considered.

The SES of participants as students, and the fact that everyone had to pay for education, influenced the school they attended, the experiences they had there, and the beliefs they have about education. Behavior management was a tool participants were taught by their parents as good consumers of education. Several participants talked about the sacrifices their parents made to send them to school like moving to a new location or
living more austerely to pay fees. They learned that education has a monetary value, and in deference to their parents, they had to take advantage of their time at school. This may be a reason why parents are now teaching their children to pay attention and behave in a way that they believe ensures that the children maximize their educational experience. Participants noted that their lives here are less stressful because they do not pay for the school, but that has not appeared to affect their belief about how serious their children should be about their studies. Several of the children reported hearing from their parents what participants say they heard from their own parents: they will pay for any materials or rewards in any amount to make sure their child has a good education. A difference is that Sidiq(m)’s father bought him safe transportation and textbooks and Sidiq(m) bought his sons an expensive electronic game as motivation for hard work.

Across countries, SES, and families, participants agreed that behavior management consisted only of corporal punishment in their home schools. They talked about their fear of going to school and methods they used to avoid going. I expected to hear that parents want stricter behavior management techniques at school that are closer to their own experiences; however, even the two mothers who would like to see some corporal punishment do not support the severity of the punishments they received in their home countries. Though many agreed that corporal punishment was the only way schools in their home countries could manage behavior with large class sizes and poorly or untrained teachers, they believe the methods used in their children’s classes are more efficient and appropriate for young children. They also appreciate that their children are happy to go to school and therefore learn more while there. Contrary to Drumbill’s (2009) study where participants wanted to use corporal punishments and were dismayed
that the option was not culturally acceptable in Canada, all but two of my participants do not support any physical punishments at school or at home. Another reason they are satisfied without corporal punishment is that they believe their primary job with relation to education is to teach their children to behave in ways that maximize their ability to learn. It seems they believe that if they are successful at the job of raising their children, corporal punishment is not necessary.

The participants’ focus on their children’s behavior in the US may make a sizeable difference in success at school. The research on children living in poverty that predicted lower achievement and math gains (McClelland, Cameron, Connor, Farris, Jewkes, & Morrison, 2007) and slow math and literacy acquisition relative to peers (Blair & Razza, 2007) were the result of low executive functioning and behavior regulation that may not be delayed in this population as it was in the research groups. Similar to the results of Drummond and Stipek’s (2004) study, some parents reported that they focus on helping their children learn the social skills to relate to adults and other children, ensuring the monetary needs for their family to be safe, and instilling the respect and cultural values that are important to them. Parents in this study spend significant time and effort not on playing games or formal preparation for school, but teaching their children to listen to adults, pay attention to their work, focus on doing their work completely and to the best of their ability, and maintaining a strong connection to the family. In other words, they are teaching the executive functioning and behavior regulation skills that are consistent with success in school (Blair & Razza, 2007; Martin, Drew, Gaddis, & Moseley, 1988; McClelland et al., 2007).
Gender-Based Parents’ Roles

Another factor participants discussed as influencing their experiences and beliefs is gender-based roles. Though some women reported that they did not go to school because their families’ religion and/or gender beliefs prohibited it, they have no intention of giving their daughters fewer opportunities to be academically and financially successful than their sons. Except for one father who said he would not push his children (male and female) to go on to higher schooling, mothers and fathers were equally insistent that all of their children will go on to advanced degrees. Several parents did discuss the traditional, cultural family roles they are training their children to play, but that does not seem to extend beyond the home. It is unclear how parents will reconcile the academic success and professional careers they expect from daughters with the full time, stay-at-home role they expect from mothers.

In interviews, there were subtle mentions of pieces of their culture parents feel children are leaving behind. Kedifa(m) and Nazeera(f) both mentioned language, and Walid(m) mentioned respect for adults as factors they would have nurtured differently in their home countries. However, overall, parents appear to believe that children will not abandon family religious and cultural beliefs, even as they assimilate into American society and despite some possible suggestions from schools. I expected that parents, especially those with mothers who did not attend or finish school, would not encourage their daughters past high school. I believe if the interviews had ventured further into gender role expectations, I might have discovered more nuanced or subconscious differences between the preparation of daughters and sons to be mothers and fathers.
Mothers who did not go to school are still expected to be the parent who deals with all school communication, homework, and preparations. Even when the mother speaks no or very little English, she is responsible for ensuring her child’s success. There is an interesting challenge for teachers who attempt to talk with mothers about math. Because several of the mothers did not complete 12th grade, their experiences with mathematics have been solely contextual and essentially hidden as academic knowledge. Their experiences appear to have made some females feel school, and math particularly, was not valuable to their lives, nor were they valuable to their communities as educated women. Many are the same women who are not as fluent in English as their husbands or able to drive to school. Their role as the parent who is “supposed” to communicate with schools and ensure their child’s success is difficult to fulfill with such limited views of their own knowledge. Interestingly, when asked if their mothers went to school, many participants noted the large number of children in the family and said therefore she could not help them. They also noted that large families were expected, so it is unclear if schoolwork was considered outside of the purview of mothers or if they were just too overwhelmed. Because there did not appear to be a difference in gender for siblings who helped with schoolwork based on birth order (accounting for mothers who had not been to school), the former seems likely.

The distinction between academic math and informal math makes a difference in who has the valued knowledge and how parents transmit it to their children. Female parents who apprenticed with their mothers to learn housekeeping did not identify any math elements in their day-to-day work (Esmonde et al., 2011; Goldman & Booker, 2009). Their work is not considered skilled in their home countries or in the United
States, yet there are pieces that require mastery of some math skills. The academic math, which is not considered the math they practiced at home, was valued by the dominant group and by their families. Even as mothers pass on mathematics with housekeeping skills, they deny the importance of their knowledge.

**Learning Strategies**

Across participants, it seemed that copying, memorizing, reading, and high stakes evaluations were the only ways they experienced education. Just like participants in Reese and Gallimore’s (2000) study with Latino parents, these participants reported learning math by copying, memorizing, and reading and use those strategies to help their children. Unlike in the Dachyshyn & Kirova (2008) study, most parents did not report discomfort with unfamiliar teaching strategies. Most seem pleased that their children are happy to go to school and are willing to believe that the differences in schooling practices are positive because they see positive outcomes. On the other hand, several parents still seem unsure about how to learn math if children are not reading, copying, and memorizing and are still using those tools as they help their children with homework. It is likely that because they have not had any other experiences with learning, they are not aware of how to practice the learning strategies their children use.

Parents may retain beliefs about the importance of memorizing and repeated algorithmic calculations because they were told that calculators and computers would make their own math skills weak. These messages came from some participants’ parents, who ran successful businesses by calculating in their heads, and some schools, which were too poor to afford tools. In the United States, some participants have seen adults at
work or the community college who have no number sense or calculation competency and make a logical connection to their lack of fluency with math facts.

However, it appears that most parents are willing to forgo the benefits they perceive from their own math education for the pleasant atmosphere, a free education, and opportunities for further education they believe their children have. Even though several parents talked about how well they know basic arithmetic because of daily drills and the threat of punishment, they say they would not want their children to have the same threats and pressure to perform from their own schools. Other parents are using their tools to supplement the US schools by requiring their children to redo calculations or to do their homework in both the way children are taught and the way they were taught.

Another factor that influenced the teaching strategies participants experienced was the lack of trained teachers in their home countries. Their awareness of teacher training in the United States strengthens their belief that they can and should defer to the professional teachers. Not only did they say that they delay intervention in scholastic or behavior matters at school because of their trust in teacher training, but they also indicated that they make changes in their family and cultural lives because they believe teachers are well taught to be culturally aware and sensitive. Their reliance on teacher expertise makes it unlikely that they would directly criticize school activities. Even Nizaam(m), who said teachers are sitting behind computers producing too much paperwork, said he will not talk with anyone at the school about the girls’ repeated complaints that the teacher is physically rough with them. It seems that participants believe anyone can prosper in America, but the road begins with success in American
schools and therefore, professionals in those schools can be trusted to know how to best stay on that path.

**Manipulatives**

Parent experiences in school with math rarely included interactions with manipulatives. Unlike the Sudanese refugee participants in the Dachyshyn and Kirova (2008) study, parents seem to have a general idea that what looks like toys and playtime in US schools are often instructional activities. They do not know how the toys in their child’s classroom are used for learning though (Ryan, D’Angelo, Sales, & Rodriguez, 2010) and probably cannot replicate most of the school learning practices at home. They seem to know that these tools are some of the ways that make their children’s learning experiences different from their own in positive ways. Several of the mothers talked about the colors and pictures they see in their children’s classrooms and how friendly it appears. They attributed these features to part of the overall atmospheric contrast between their own experiences as students and as parents.

One source of manipulative practice that was common across participants as students was the use of money in context. Participants identified skills they learned as children like using currency and measuring, but do not always pass those on to their children because situations where children need money do not occur. For example, parents reported using money at the store in their home countries at three or four years old, but do not give their own young children money because they say they believe the children would eat it. When there was an opportunity to safely go to small stores and a need to get items for a mother with other children at home, the relevance and motivation
Learning, School, and Mathematics

The education and expectations of parents appear to contribute to the way their children experience mathematics. Through parents’ beliefs about preparing their children for school and interactions with schools, refugee families are adapting to fit into US schools.

Preparation

None of the study participants reported going to kindergarten or preschool in their home countries and all were at least 6-years-old when they started school. This may have contributed to the belief expressed by participants that children do not have the memory or attention span to learn before they begin Head Start at age three. Because of the economics involved in school entry, learning theory was probably not considered by schools or families as the participants’ parents made choices about how and when to send their children to school. For example, in her home country, Tarday(f) said even a 23-year-old would be in fifth grade with children (rather than going to an adult education class) if that was the correct knowledge level. In some cases, participants’ parents did not specifically tell the children why they were being sent to school at a certain age so participants have adopted their own beliefs like the approximate age of ability to learn.

I expected to find that parents are playing traditional games at home, perhaps singing songs or reading books in their home languages, or sharing other ways they experienced numbers unique to their culture or country with their young children. It is possible that there are activities the families engage in with math that were not revealed to learn math was strong (Young-Loveridge, 2004). When the need for the skill is absent, parents do not seem to consider sharing the same tools in nontraditional ways.
in interviews. Few parents mentioned playing games from their country with their children and then the occurrence seemed rare. They talked about singing songs to memorize math operations and spelling as children, but say their children go to school before they would begin those practices at home. My expectation, that they were teaching their children math to ready them for school in ways unique to their culture or backgrounds that might not be available to teachers, was not directly supported by the parent interviews.

The participants are teaching their children contextual and rote mathematics. As apprentices in their culture and in roles in a family, children learn how to use mathematics. For example, the children learn to cook with measuring and estimating. They also learn to count in their home language so they can communicate within the family in the US and in their home country. I expected them to teach their children in different ways that relate to their own experiences, but they do not seem to have made connections. The math they learned when they were young children in their home countries was context bound and most research has found that difficult to transfer to new situations, particularly academic ones (Carraher, Carraher, & Schliemann, 1985; de la Rocha 1985; Lave, 2010; Murtaugh, 1985; Nasir & Hand, 2008; Pozzi, Noss, & Hoyles, 1998; Saxe, 1988; Scribner, 1985).

Parents appear to plan and make decisions on what they will teach their children based on what they need at the time to survive in their home. Similar to results from Waanders, Mendez, and Downder (2007) and Drummond and Stipek (2004), they believe academic skills, the math children will need to survive in the classroom, are for professionals to teach. This is one of the reasons there was a disparity in what they
reported as preparation versus actual practices with children. The parents who reported that they leave education to teachers, that children are too young to learn anything before they enter school, and that they need to focus on speaking English, were in many cases also teaching their children to count in their home language from very young. They taught their children to say numbers in the home language to communicate at home and play with other children, not necessarily to make connections to English numbers. They may not be teaching them as preparation for school, but to transmit culture, perhaps without feeling guilty that they are speaking their home language. Therefore, when I asked how they prepare their children for school, their answer “nothing,” is complete based on their perceptions and expectations of their roles.

**Interactions with School**

My experience in professional development projects and talking with school administrators indicated that teachers have been taught how important maintaining the home language is for family cohesion, the child’s transitions, and even increased intellectual development. I predicted that the parents in my study had probably not had much communication with the teachers and that any communication they did have would have been very general, but that the interactions would have been positive and supportive. It was true that parents did not have a lot of contact with schools, but what they did hear was direct instruction to stop using their home language. At least three participants had these conversations with staff from Head Start in home visits.

Though not overt, parents may have also received the message that they are not their children’s teachers if they cannot teach them in English. Kahla’s teacher asked Nazeera(f) who would help her with homework and indicated approval when told she
would go to the homework club. The club has been very helpful in making the community children successful, but Nazeera(f) is a former first grade teacher. It is likely she has the knowledge base and the ability to communicate across languages in a way that would be at least as helpful to Kahla as the American-born tutors.

Although some studies have shown that teachers believe parents do not provide support for education at home (Waldbart, Meyers, & Meyers, 2006; Wesley & Buysse, 2003), the difference is more likely in the definition of “support.” Again, parents emphasized that the main way they assist their children is by ensuring an attitude and behaviors for success. As discussed in Chapter Four, parents are aware and impressed by the professional requirements of teachers and therefore believe teachers are experts in every facet of a child’s education. Nazeera(f) harbors no belief that she is as competent in teaching as her daughter’s teacher. This may be part of a larger belief of some that what comes from America is inherently better than anything in the home country. Some parents talked about how much better home countries had become after US teachers arrived.

**Limitations**

This study revealed some important information about parent beliefs and experiences that has not been reported in the literature. However, one limitation of the study is that the conclusions are unique to the participants and not generalizable to all refugee populations. Within the group, the participants have diverse home countries and refugee experiences. I was able to see a wider variety of perspectives, but a more homogenous group may have allowed deeper exploration into specific cultures or backgrounds.
This group is also different than some refugee groups because the community has a Community Services Director (Rae) to assist them with job applications, deciphering bills, using a computer, and communication with schools. Additionally, the homework club where all participants send their children is sponsored by the apartment complex. The features of the community seem to function in the way the National Crime Prevention Council (1999) suggested schools can, by building attachment and helping members develop support networks. Most refugee and immigrant populations do not have Rae to advocate for them at schools or neighbors who are in similar circumstances from their home country. The participants may be better equipped to negotiate with schools and resist attempts to eliminate their culture. Similar interviews in another population could reveal greater discontinuity between schools and parents and more frustration as they try to assist with homework.

The constructivist grounded theory (CGT) interview methodology used in the study allowed me the latitude to follow participants to where their story was, rather than where I had predicted it would be. The diversity I found in their experiences would not have been possible to identify and extricate with a prewritten questionnaire. Although the methodology and interview protocol required flexibility in questions, questioning, and group composition, the question guide has not been evaluated for reliability. As is expected in CGT, questions changed several times as new themes emerged so all participants did not answer the same prompts. Some information gathered in early interviews was eliminated from data analysis because it did not relate to the final research questions. I began with Weiss’ questionnaire, which has a reliability rating, but I
followed the conversation and the participants’ lead instead of maintaining the strict protocol, which was not open-ended.

I chose to study only the parents’ stories and not interview those who might be considered “key informants” because the focus was on perspectives. Therefore, teachers and schools were not consulted about their interactions with participants. Even if interactions were not exactly as reported, they are the recollections of participants that led to their beliefs and expectations about schools and math education. Likewise, it was not possible to verify the parents’ histories, but they are most certainly the way the participants perceived their histories.

I anticipated significant difficulties with multiple participant languages and fluencies. Rae had identified participants who could be interviewed alone and those with whom she believed I would be unable to communicate. Different combinations of interviewees allowed children or friends to clarify questions when necessary so translators were not necessary. Participants also reported that they understand more than they can speak so as long as I was patient, they were able to find the English words to answer my questions. At times, I did have to break a complex question into one or two smaller ones so they knew what I was asking, but that ensured they were answering the correct question rather than limiting their response. I was not able to interview some of the community members because of language, and as newer immigrants, they may have had different information to add.

There were two families where the father’s dominance was apparent at the interview and may have restrained their answers. Fowzia(f) did not seem affected by her husband’s conversation with me at the beginning of the interview, but Haile(f) offered no
further information after Kedija(m) entered, even when asked. Other interviewees did not hesitate when answering questions, regardless of with whom they were interviewed. Their delicate political status may have kept some from answering more detailed questions about their backgrounds, but the interview rarely went in that direction. A few participants mentioned the affect a terrorist organization had on their experiences, but they seem to feel safe in the United States.

Finally, most participants recognize me as a tutor in the homework club who works with their children. The connection to the apartment community was a critical introduction and they seemed to report positives and negatives with equal freedom. It is unlikely that they were positive about education because of my position because the homework club is an option they actively encourage at home.

**Considerations and Implications**

I was attracted to ethnomathematics as a framework for this study because it allows the researcher to consider any activity an opportunity for mathematics. I could look beyond the skills most Americans associate with learning in math class. The core value of ethnomathematics, to open researchers and readers to non-dominant ideas about mathematics, makes it difficult for anyone to define what “mathematics” includes. In fact, I found estimating magnitude and measuring were the primary math skills transmitted in participant homes. These topics may fall under science in some classrooms, which is not a subject that requires the kind of exploration, class time, and concentration on mastery for high-stakes testing that “academic math” does. Therefore, the incentive to use measuring and estimating in the classroom or to investigate student knowledge in the area may not be as strong as other topics. The problem for teachers or
researchers who have to write standards and teach mathematics is trying to create a culturally unbounded definition for items that are necessarily culturally bound.

I was hoping to learn from families about the math they do at home so I could share that information with teachers, who might then shape their lessons using culturally relevant pedagogy (CRP), to bridge home-school learning. The information I found cannot easily be listed or summarized for teachers to absorb as practices that occur across the board, but I found specific areas and ideas teachers could investigate to help the children in their own classes. Without a belief that home culture is important, it is unlikely that teachers could effectively identify and use this information in their planning. However, mathematics is a major area for testing that is high stakes for teachers and students and research shows that mathematics exists in almost every home (Gonzalez, Andrade, Civil, & Moll, 2001). As a practical matter, teachers may be convinced to tap into that knowledge if they believe students will understand new concepts or apply those learned at home deeper, faster, and with more flexibility. Perhaps if teachers went looking for this information with families to improve standardized test scores, they would learn about families and begin to develop some conversations and relationships that could lead to pedagogical shifts.

The conversation about what mathematics is and how it can be developed could be rich for both parents and teachers. Because parents have been exposed almost exclusively to school math through reading, memorizing, and copying, teachers have the opportunity to show parents that they are using significant math skills at home. As students, parents learned that math was not a process, but a product to repeat which is why they can be frustrated or confused that their children do not have work to memorize.
Teachers can also affirm the importance of the math participants are teaching their children as apprenticeships within the family. Once parents are aware of what math may look like apart from their school experiences, they can share the natural experiences that they encounter throughout their day at home. Teachers can learn about ways to use CRP to bridge the home-school transitions, but they can also show parents how important the processes of math are.

The findings of this study are important for teachers and schools who serve immigrant and/or refugee families. Participants in this study have diverse backgrounds from teachers, but also from each other. A teacher who has had a refugee in the class before, even from the same country, meets each family with all new needs and beliefs. Of course, that is true for all of the students in a class, but it is unlikely that refugee parents will initiate conversations with schools. To provide the CRP curriculum defined by Ladson-Billings (1995) teachers must learn about individual families.

One aspect of this study that needs investigation by schools and professional development experts is the discouragement of families from maintaining their home culture and language discussed above. All of the Middle Eastern participants and most of the African immigrants have neighbors from their home country and have built a support system that values their culture at home. The stress and isolation a refugee experiences during their immigration (Stewart, 1993) has occurred, but most do have neighbors who speak the same language, help with translating, and share information about schools and teachers. There is a remarkable difference between these refugees and Kedija(m) and Haile(f) who are the only ones from their home country in the area. The school has not been able to identify an interpreter who speaks their home language. This difficulty may
be a consideration as teachers instruct Kedija(m) and Haile(f) to speak only in English to their children. They may be more vulnerable to such suggestions than those who have a support system. Principle six of the 2008 Office of Head Start document, *Revisiting and Updating the Multicultural Principles for Head Start Programs Serving Children Ages Birth to Five*, states that “Effective programs for children who speak languages other than English require continued development of the first language while the acquisition of English is facilitated” (p. 45). The training Head Start teachers receive for home visits may need some investigation to confirm that their practices for immigrant and ELL families are carried out consistently and in ways that are representative of the spirit of the organization. Schools at every level can evaluate their practices with immigrant and ELL families to ensure there are similar opportunities for families and school personnel to share their backgrounds and expectations. It is also necessary for schools to impart explicit messages about support for multi-lingual families, the resources they have to welcome families to the schools, and appropriate contact people who can negotiate any language issues that potentially limit communication.

Prior research by Lewig, Arney, and Salvern (2010) and Bernhard, Lefebvre, Kilbride, Chud, and Lange (1998) has shown that immigrant and refugee parents do not feel welcomed at school and believe they do not get complete information about their children. Participants in this study did not verbalize those conclusions, but they did share scenarios with similar results. Nabhan(m), who said he felt it was “fine” for his daughter to translate for him in planned meetings with school officials, also said he does not feel comfortable going inside the school to talk with teachers when he has not been invited. Failure to provide adequate translating assistance is a significant impediment to their
communication, but perhaps more importantly to the relationship between family and school. Further work needs to be done to identify what requirements are optimum and practical for schools to accommodate language needs and culturally diverse families and procedures to ensure that is done.

A key feature of CRP is expressed in principle five of the Head Start document, “Every individual has the right to maintain his or her own identity while acquiring the skills required to function in our diverse society” (p. 41). It is understandable that refugees who have been persecuted in their home countries, lived in camps, separated from families, moved to foreign countries, resettled multiple times, and then were given the opportunity they cherish to enroll their children in American schools are willing to do whatever necessary to comply with teacher requests. Combined with the parents’ belief that teachers are the ultimate authority for all educational matters, teachers may need to be particularly mindful of suggestions they make to families so they help families find a place at school without a rush to assimilate and eliminate home culture.

Most families reported that they have not been encouraged to bring their cultures and knowledge to the classrooms in any form. Because other research has shown that many teachers implement multicultural lessons but not CRP curricula (Nykiel-Herbert, 2010), I expected to hear that children in elementary school had been asked to bring in food or cultural items to represent their home. This was also overly optimistic; some children have been asked to report on their home country as part of a biographical assignment, but they were merely reporting a fact like a child who was born in Michigan or California. The teachers may have been attempting to normalize immigration by treating their home countries as just another place a child can be born, but returning to the
Brown-Jeffey and Cooper (2011) discussion, equity and equality are not synonymous. The refugee children do have significantly different backgrounds, and those differences could be explored and celebrated so the children who are immigrants learn pride and their classmates learn appreciation for diversity.

A discontinuity described by Graue (2006) when parents and teachers have different backgrounds is exemplified here as parents are reporting that they want to go to school, be informed, and assist their children but may not feel like they are hearing a welcoming message. The responsibility for home-school communication must lie with the teacher to make multiple entreaties to the parent, offering multiple modes and times for communication. Although I did not ask if parents had disregarded school messages or been unable to meet requests by teachers, it seems from participant interviews that any contact would have been appreciated and pursued. Most participants have email addresses that they use often and they do sign homework papers for their children, even when they cannot read what they are signing. These conclusions support those of Dachyshyn and Kirvova (2008) that any kind of intervention has to address the need perceived by the population served. Some communication disconnection is occurring, but it is unclear where it is. It may be necessary for teachers to be explicit with parents when they visit classrooms in the fall about how they will communicate, especially child-specific, critical messages, and what responses parents can expect to receive.

Likewise, parents have some responsibility for questioning teachers and pursuing instructions they do not understand. Some parents are inadvertently perpetuating the discontinuity. Parents like Tarday(f), who said she was waiting for direct instruction from the teacher before she will assist with homework, may have sent the message to her
child’s teacher that she is uninterested or unable to have contact with teachers. If Tarday(f) did not show interest when her child started school, it may be unlikely that they would approach her later.

Teachers might have conversations with parents about their family’s experiences with learning and mathematics to bridge discontinuity and identify specific needs. Haile(f), who had never been to a school, might need more direction on routines and expectations for homework. Saida(f), who was pursuing an advanced degree, might benefit from particular activities that would build her children’s math skills. Immigrant parents are in an opportune place for assisting with critical thinking in math because they teach their children in home contexts every day. Parents who reported having trouble understanding the homework problems may understand the concept if teachers were able to make some connections to their own experiences. It might be easier, and more effective, if parents knew that recreating the money experiences they had at stores in their own country is at least as good as giving the children oral computation problems. However, the CRP practice that might make the home to school relationship more continuous may be learning about the parents’ backgrounds with math. To ensure that parents from these diverse families are supporting their children’s learning as researchers and educators report necessary, parents may need educators to make a connection to the practices of their childhood.

Many of the mothers are full-time, stay-at-home mothers and could be amazing resources if teachers invited them into the rooms. If schools are ready for the children from their community, the teachers are responsible for bridging the discontinuity and encouraging families to be present (NAEYC, 2009b; Wesley & Buysse 2003). If a parent
is invited one time, the teacher may learn enough about the family to value their experiences and expertise, and to want to learn more about them. In several studies, researchers have found that parents are willing to help in and outside of the classroom, but they are waiting for instructions from the teachers (Waanders, Mendez, & Downer, 2007; Zhong & Zhou, 2011). Teachers can also acknowledge that parents are working very hard at the responsibilities they claim, to provide monetary support for the family and a well-behaved child for the school (Drummond & Stipek, 2004).

In my review, research into immigrant success in school has not focused on the connection between parent behavior focus at home, social skills exhibited at school, and academic performance, but this may be an additional area where knowledge from home practice can inform CRP in teachers’ classroom management. Parents appear to be working hard at what they believe makes their students successful. Those tools may be supplemented, reinforced, and redirected at schools so a stronger partnership is available for refugee children.

**Conclusion**

The culture around education that families create at home is influenced by their own experiences as students and parents. Most families teach contextual math as a way they share cultural practices and housekeeping, but teachers are not always able to access this knowledge to promote children’s mathematical development. Teachers must be aware that they can learn something from all parents about making connections to mathematics for their child. If teachers use CRP to plan their teaching, continuity can be built from home to school as families are involved in the classroom and recognized as individuals. By being more aware of parents’ experiences and beliefs about the teaching
of mathematics and the wealth of knowledge children bring to the classroom, teachers can better help children learn to be mathematically flexible, and also to be successful in their new country.
APPENDIX A

Partial List of Interview Questions/ Prompts- (varied by participant, context, answers, and conversation)

Did you go to school in your home country?

Did you go to a government or private school?

Where did you live when you went to school?

How old were you when you started school?

How far did you go in school?

Did you come straight from your home country to the US?

Did your children go to a school in another country? What was school like compared to the one in your home country and here? Did you visit the school?

Where do you work?

What kind of work did you do when you were in your country?

When you went to school in your country, did it look the same as your kids’ school does?

What looks different/ same?

What did you do at home before you went to school?

What kind of work did your dad do?

How much school did your mother/ father get to?

What do your siblings do now? Did they finish school?

What did/ Did your parents do anything to help you get ready to go to school?

What kind of things did your parents teach you?
What kind of math did your mom/dad know?

How do you prepare your children to start school?

Do you help your kids with their homework? What do you do?

What did your parents have to pay for?

What do you want your kids to learn in school?

How far do you want your kids to go in school? What is your plan for them?

Are you hoping to go back to your country? Why/When?

What kind of games do you play with your kids? What kind of games did you play when you were little?

What do you wish your kids’ teachers knew about your family?

What other ways could schools help you and your children?

Is there anything else about school in your country that you think I should know about?
REFERENCES


Trina Campbell has worked as an educator all of her professional life with learners from birth to 65 years old. She believes that math should be accessible to everyone and that each person has valuable knowledge and experiences with mathematics to share.