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This dissertation, *IT TAKES A VILLAGE: TOWARD THE DEVELOPMENT OF AN INSTRUMENT WITH VALID AND RELIABLE SCORES FOR MEASURING FAMILY ENGAGEMENT USING Q-METHODOLOGY*, by AMBER N. MASON, was prepared under the direction of the candidate's Dissertation Advisory Committee. It is accepted by the committee members in partial fulfillment of the requirements for the degree, Doctor of Philosophy, in the College of Education & Human Development, Georgia State University.

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**IT TAKES A VILLAGE: TOWARD THE DEVELOPMENT OF AN INSTRUMENT WITH
VALID AND RELIABLE SCORES FOR MEASURING FAMILY ENGAGEMENT USING
Q-METHODOLOGY**

by

AMBER N. MASON

Under the Direction of Jennifer Esposito, Ph.D. and William Curlette, Ph.D.

ABSTRACT

State and federal educational policy makers have promoted family engagement as an important factor for helping to address the persistent achievement gap in the United States. Research suggests that when parents are involved in their children's education both at home and in early care and education programs, children demonstrate greater levels of academic success in an array of areas, such as school attendance, motivation toward learning, and overall academic performance. Despite these positive outcomes, challenges persist within research regarding how the construct of family engagement is measured, which has made it challenging to document the true impact of family engagement initiatives and interventions in educational settings. This study examined and improved ways in which family engagement is measured in a specific Head Start/Early Head Start setting that serves a predominately African American population. The study described strengths and limitations of different methods for assessing family engagement as well as evaluated valid and reliable family engagement instruments that have been used in prior research. A mixed methods instrument development process was employed where

qualitative data were used to infuse the viewpoints of participants throughout the development process using Q-methodology. Validity and reliability scores were established for the instrument through the inclusion of important instrument development procedures such as construct conceptualization, factor analysis, differential item function analyses, and a study of group differences. Ecological systems theory supported the analysis of qualitative and quantitative data throughout the instrument development process, aiding in the explanation of the complex systems of interaction that effect the ways in which family engagement occurs in educational spaces. Results from the study reveal justifiable validity and reliability scores for the instrument intended to measure family engagement for the study population. A potential three-factor structure emerged from the analyses. Further steps should be taken for the finalization and refinement of the family engagement measurement instrument.

INDEX WORDS: Instrument Development, Mixed-Methods, Q-Methodology, Family Engagement

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A Dissertation

Presented in Partial Fulfillment of Requirements for the

Degree of

Doctor of Philosophy

in

Research, Measurement, and Statistics

in

Educational Policy Studies

in

the College of Education and Human Development

Georgia State University

Atlanta, GA
2019

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DEDICATION

This dissertation is dedicated to my daughter Hannah Simone Mason. Hannah, thank you for taking this journey with me. I could not have done it without you because you inspire me to be the best version of myself. I thank God for allowing me to be your mother.

ACKNOWLEDGMENTS

I would like to thank my advisor, Dr. Jennifer Esposito for believing in me more than I believe in myself at times. Also, Dr. William Curlette, for providing me with technical guidance regarding an appropriate instrument development process. Dr. Fortner and Dr. Bingham, thank you for helping me develop a strong skill-set as a practicing researcher and evaluator. I would also like to thank the Urban Child Study Center at Georgia State University for providing me with the necessary resources to complete my dissertation.

To my family, Brenda Mason (mother), David Mason (father), DeLandon Mason (brother), Ameythyst Smith (sister): We will always be the BAADD 5! Thank you for always being the loving and strong support system that I needed to take this doctoral journey. I would also like to thank my extended family in Atlanta who helped me along the way (Chambers Family, Harrell Family, Kristy Girardeau & Family). Last but not least, I would like to thank Transformative Research and Evaluation (Taneisha Lee and Shadonna Davis) for always supporting me!

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1 THE PROBLEM

Family engagement is championed as one of the strongest predictors of children's successful academic outcomes in schools and beyond (Henrich & Gadaire, 2008; Weiss, Caspe, & Lopez, 2006; Van Voorhis, Maier, Epstein, & Lloyd, 2013). Schools and communities across the nation are actively working to develop opportunities for families and schools to collaboratively enrich children's learning at home, in schools, and in the broader community. Moreover, as there is an increased need to support growing populations of diverse students, states are increasingly employing family engagement strategies as a tool to promote educational equity (Jeynes, 2005; Wong & Hughes, 2006; Wood & Carson, 2018); thus, many states are developing new and innovative approaches to integrate family engagement programs into their education systems (Hanover Research, 2014). In fact, many of the federal laws that govern the early childhood and elementary education systems reference the importance of family engagement.

For example, since its inception in 1965, *The Head Start Act* has consistently emphasized the role of families in children's learning and development, as a key provision of the policy calls for families to receive supports based on critical needs, family aspirations, and community resources (HHS and ED, 2016). The *Individuals with Disabilities Education Act* (IDEA, 2004) emphasizes the need to enhance families' capacity to meet their children's needs and participate in their children's education. Specifically, Parts B and C of IDEA have provisions in place to protect children's and families' rights under the statute. In addition, the law calls for reporting on family engagement data under the required annual performance reports (IDEA, 2004). The *Elementary and Secondary Education Act of 1965* (ESEA) as amended by the *Every Student Succeeds Act of 2015* (ESSA, 2015) mandates that states and school districts engage parents and

families in the work of ensuring positive outcomes for all students. Specifically, Title I funded schools are required to have written parent and family engagement policies with expectations and objectives for implementing meaningful parent and family involvement strategies (ESSA, 2015). Furthermore, they are required to jointly develop district plans with parents and family members in order to improve student academic achievement and school performance. There are several other references to inclusion of parents and families in their children's education found throughout ESSA (ESSA, 2015).

While the aforementioned policies demonstrate the perceived importance of family engagement in educational settings, challenges persist that prevent the successful implementation of family engagement across educational systems and programs. First, existing policies refer to the need for family engagement in educational settings; however, there is an ambiguous understanding of how family engagement should be enacted in these settings, as many policies provide limited guidance relative to the implementation family engagement policies and practices (HHS & ED, 2016, p. 7). Also early childhood systems and programs often lack the necessary resources to adequately support systemic approaches to family engagement.

Specific issues exist relative to the implementation of family engagement in early learning settings. One considerable challenge is ineffective engagement with diverse families of young children. Early childhood settings and programs attempt to implement family engagement without sufficient attention to hiring diverse staff, training staff to be culturally and linguistically responsive, and strategically analyzing the effects of implicit biases within systems and programs (HHS & ED, 2016, p. 7). According to Hoover-Dempsey & Sandler (1997), how parents engage in educational spaces is heavily impacted by how parents view their role in children's education. Culture shapes parenting beliefs, attitudes, values, and behaviors (Chao, 2000; Garcia Coll,

Meyer, & Brillon, 1994; Li, 2003; Lopez, 2001) and consequently, the way parents and families choose to engage within the school setting. As an example, across cultural groups, parents may believe that it is their responsibility to partner with teachers in their child's education or alternately, that teachers are the sole authority on school-related matters (Garcia Coll et al., 2002; Ramirez, 2003). Similarly, parents may believe in a "concerted cultivation" approach to childrearing that values organized, structured, adult-initiated learning or alternately, in a "natural growth" approach that relies on unstructured, child-initiated learning (Lareau, 2003). As evidenced by the above examples, parents tend to view and manage how they engage in educational spaces in diverse ways, though these cultural nuances are not yet well understood.

Understanding more about the diverse nature of families in early learning spaces is important, as there is considerable variability in families in early learning spaces. Specifically, race and ethnicity is associated with differences in parenting due to different culturally based goals for children's developmental outcomes that lead parents to do more to promote the outcomes they value (Brooks-Gunn and Markman, 2005; Hopkins & Westra, 1989). There is an existing body of literature that argues that seemingly homogenous groups are indeed diverse, as the studies show that there are subgroups of people with considerable variability in these early learning spaces, specifically for low-income, Black, and Latinx parent groups (Cook, Roggman, & D'zatko, 2012; Dyer et al., 2014; Paschall et al., 2015). Despite these understandings, when implementing family engagement in early childhood settings, there is limited consideration given to culture and diversity.

Existing policies assert that in order to guide decision-making and policy change relative to family engagement, it is important to improve integrated and systemic family engagement practices by regularly collecting and analyzing data on the effectiveness of the practices (HHS &

ED, 2016). However, the pervasive challenges, in addition to the multi-faceted characteristics of family engagement often make progress hard to measure. Accordingly, this study examined and sought to improve ways in which family engagement is measured in a specific early learning setting that serves a predominately African American population. I begin with a discussion of why families matter in education, specifically in early educational environments. Further, I will discuss how parental beliefs influence the ways in which parents function in educational environments. Next, I will provide a description of existing family engagement frameworks that serve as tools for promoting family engagement in early learning settings, followed by the context for the study by stating the problem it seeks to address. I will continue with a discussion of the research questions answered in this study, the significance of the study and limitations. Finally, the chapter concludes with the theoretical framework that guided research design and data analysis for the study.

The Role of Families in Education

Parents and families play a vital role in a child's education. Parents and families are the primary educators until the child attends school and they remain a major influence on their children's learning throughout school and beyond. Research shows how when parents and families are involved in their children's learning, children perform better in both in primary and secondary school (Jeynes, 2005; Jeynes, 2003). This impact exists regardless of variables such as ethnic background, family income, maternal level of education, or child's gender (Jeynes, 2005). Research also reflects that when children who grow up in homes that place a great emphasis on learning, they tend to do better academically (van Steensel, 2006). In addition to higher academic achievement and greater cognitive competence, parental involvement leads to greater problem-

solving skills, greater school enjoyment, better school attendance, fewer behavioral problems at school, and greater social and emotional development (Melhuish et al., 2001).

Henderson and Mapp (2002) highlight multiple themes regarding family, school, and community partnerships. First, students with parents involved in schools are more likely to have better academic outcomes, social skills, attendance, and are more likely to go on to postsecondary school (p. 7). Further, family and community involvement with schools should be linked to improving academic achievement outcomes, where families are involved in a way that seek to develop specific knowledge and skills (Henderson & Mapp, 2002, p. 7). Henderson and Mapp also recognize three key practices that produce successful outcomes when engaging with diverse families: (1) building trust between families, teachers, and community members; (2) recognizing, respecting, and addressing families' needs, as well as class and cultural differences; (3) shared power and responsibility between teachers, families and community (p. 7). Despite these recommendations for key practices for engaging with diverse families in schools, a deficit view has been placed on diverse families. Research suggests that white, higher income families tend to be more visible in schools (Brewster & Railsback, 2003). Amongst diverse populations, there exists a misconception that families who are not actively involved simply "don't care about their children's education (Henderson & Mapp, 2002, p. 7). However, studies have highlighted how these underrepresented groups would like to become more active partners (Trumbull et al., 2001). We can no longer assume that these diverse groups are unwilling to become more actively involved in their children's schooling. There is a need to examine more closely how diverse families engage in school environments. Unfortunately, research has failed to adequately represent family engagement amongst diverse groups in the literature. Thus, there is a need to

understand more family engagement amongst underrepresented populations and develop stronger ways to measure the construct of family engagement for underrepresented populations.

Family Engagement Frameworks

Parent, Family, and Community Engagement Framework

In order to expand upon how we measure family engagement for underrepresented groups, it is important to understand more about the family engagement frameworks that currently exist to support all families in educational settings. Specifically, for this research, the focus is on family engagement in early learning settings. Literature contends that “engaging parents as key partners in children’s development during the preschool years is particularly important because of the positive impact that parenting practices have on child school readiness, reducing child behavior problems, enhancing child social skills, and promoting academic success” (Bierman et al., 2017, p. 4). Further, effective family engagement with parents in preschool will set the stage for positive family engagement in subsequent school years (Bierman et al., 2017).

The Office of Head Start (OHS) developed the Parent, *Family, and Community Engagement* (PFCE) Framework in partnership with programs, families, experts, and the National Center on Parent, Family, and Community Engagement (OHS, 2011). The framework was designed to help Head Start programs achieve outcomes that lead to positive and enduring change for children and families (OHS, 2011). The tool demonstrates how agencies can work together to promote parent and family engagement and children's learning and development.

The PFCE framework is organized into four sections: Program Foundations, Program Impact Areas, Family Engagement Outcomes, and Child Outcomes. The Program Foundations and Program Impact Areas sections reflect foundational inputs that are necessary for effective

family engagement outcomes to be achieved. The seven Parent and Family Engagement Outcomes are defined below:

- (1) Family Well-Being: Parents and families are safe, healthy, and have increased financial security.
- (2) Parent-Child Relationships: Beginning with transitions to parenthood, parents and families develop warm relationships that nurture their child's learning and development.
- (3) Family as Lifelong Educators: Parents and families observe, guide, promote and participate in the everyday learning of their children at home, school, and in their communities.
- (4) Family as Lifelong Learners: Parents and families advance their own learning interests through education, training and other experiences that support their parenting, careers, and life goals.
- (5) Family Engagement in Transitions: Parents and families support and advocate for their child's learning and development as they transition to new learning environments, including EHS to HS, EHS/HS to other early learning environments, and HS to Kindergarten through Elementary School.
- (6) Family Connections to Peers and Community: Parents and families form connections with peers and mentors in formal or informal social networks that are supportive and/or educational and that enhance social well-being and community life.
- (7) Families as Advocates: Families participate in leadership development, decision-making, program policy development, or community and state organizing activities to improve children's development and learning experiences. (OHS, 2011)

These family engagement outcomes, along with the foundational components of the PFCE framework have the ability to help providers assess and track progress across key indicators of effective family engagement to support children's learning and development. In addition, the components of the framework lead to one essential child outcome, which is to ensure that “children are ready for school and sustain development and learning gains through third grade” (OHS, 2011, p. 4).

Epstein's Six Types of Parental Involvement Framework

Joyce Epstein conducted studies to understand more about the family-school partnership and how it contributes to successful outcomes for children. Through this research, Epstein's Six Types of Parental Involvement Framework was developed (Epstein, 1995). According to the research, these six major types of involvement explain how schools, families, and communities, can be more involved regarding children's education at home and at school (Epstein, 1995). The

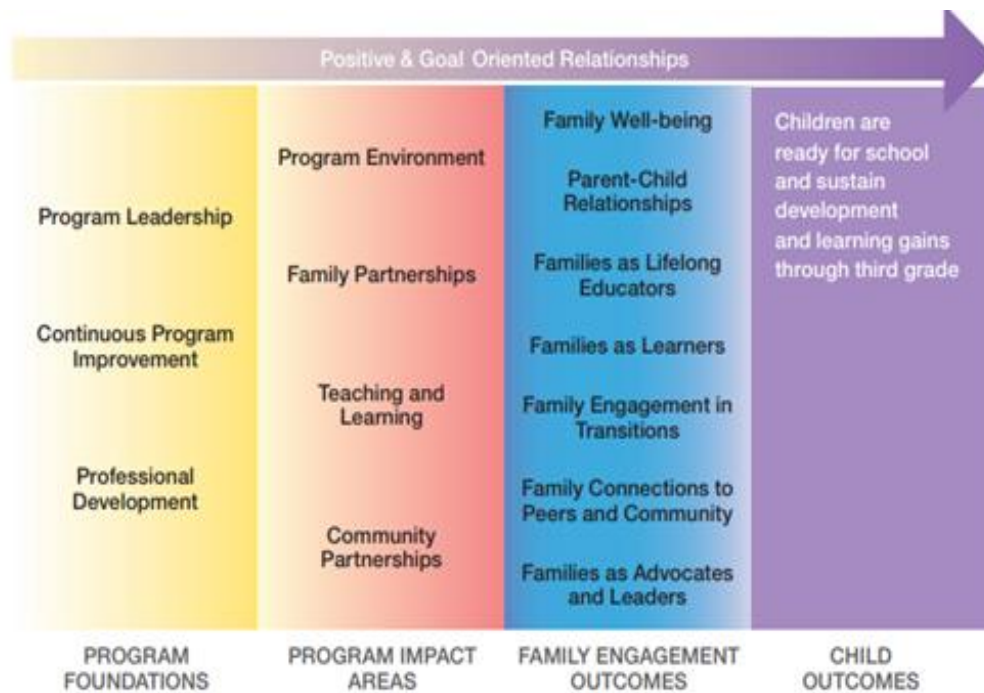


Figure 1.1 Parent Family and Community Engagement Framework

components of the framework include the following:

- (1) Parenting: assisting parents in child-rearing skills
 - (2) Communicating: school-parent communication; volunteering
 - (3) Involving parents in school volunteer opportunities
 - (4) Student learning at home: involving parents in home-based learning
 - (5) Decision making: involving parents in school decision-making
 - (6) Collaborating with the community: involving parents in school-community collaborations
- (Epstein, 1995).

While Epstein's framework has been used extensively through family-school partnership literature, especially within the development of family engagement instruments, this framework has been critiqued due to its failure to consider race, culture, and language a factor in the conceptual model (Westmoreland et al, 2009; Fantuzzo et al., 2004; McWayne et al., 2013). Greene (2013) argues that Epstein's framework theorizes the educational field to be an equal playing field between families and schools; however, it does not acknowledge the roles that ideology and hegemony play in decision-making and policies. As Onikama, Hammond, and Koki (1998) emphasize, "It is difficult for families to want to become involved with institutions that they perceive are 'owned' by a culture that discriminated against them in the past" (p. 5). Further, families' prior negative experiences with schools may impact how willing they are to trust staff members and become involved in their child's schooling (Antunez, 2000; Henderson & Mapp, 2002). It is necessary to examine family engagement beyond this framework, making a concerted effort to understand family engagement through the lens of diverse populations.

Theoretical Framework

Prior to the development of an instrument for measuring family engagement, it is necessary that family engagement is understood through a theoretical framework that explains how family engagement occurs in the context of child development. The ecological theoretical lens explains that children's development and learning occurs within a series of embedded systems, ranging from proximal (e.g. home) to distal (e.g. society). Collaborative interactions between systems (e.g. child care programs and families) promote family and children's development (Bronfenbrenner, 2004; Xu & Filler, 2008).

Ecological Systems Theory

According to Bronfenbrenner's (2004) ecological systems theory, children's development and learning occurs within a series of embedded and interactive contexts or systems. Based on Bronfenbrenner's theory, "layers" of environment are defined, showing how each layer has a significant effect on a child's development. This theory considers the interaction between the environmental layers, as well as the biological development of the child. Understanding family engagement through the lens of ecological systems theory can explain how changes or conflict in any one layer will ripple throughout other layers. Consequently, in order to study a child's development, we must not only observe the child their immediate environment, but also at the interaction of the larger environment as well. The five structural layers of Bronfenbrenner's ecological systems theory are explained below:

- (1) **Microsystem** – This layer refers to the institutions and groups that most immediately and directly impact the child's development including: family, school, religious institutions, neighborhood, and peers. (Berk, 2000). Bronfenbrenner (2004) explains that there are bi-directional influences at this level, where the relationships describe have

impact in at this level, relationships have impact both away from the child and toward the child. For example, a child's peer relationships may affect their beliefs and behavior; however, the child also affects the behavior and beliefs of their peers.

(2) Mesosystem – This layer involves the interconnections between the structures of the child's microsystem (Berk, 2000). For example, there exist connections between the child's teacher, parents, and other institutions such as church, neighborhood, etc.

(3) Exosystem – This layer describes links between indirect social settings, where the individual plays a non-active role, and the individual's immediate context. For example, a child can be impacted by their parent's work environment (i.e. work schedule, finances, work relationships), although the child does not directly interact with that specific environment.

(4) Macrosystem – This layer is consists of cultural values, customs, and laws that effect the individual (Berk, 2000). A child, his or her parent, his or her school, and his or her parent's workplace are all part of a large cultural context, where these individuals may share a common identity, heritage, and values.

(5) Chronosystem – This layer takes into account time as a dimension as it relates to a child's environments. Elements within this system may include the timing of a parent's death, divorce of parents, and general child developmental stages (Bronfenbrenner, 2004).

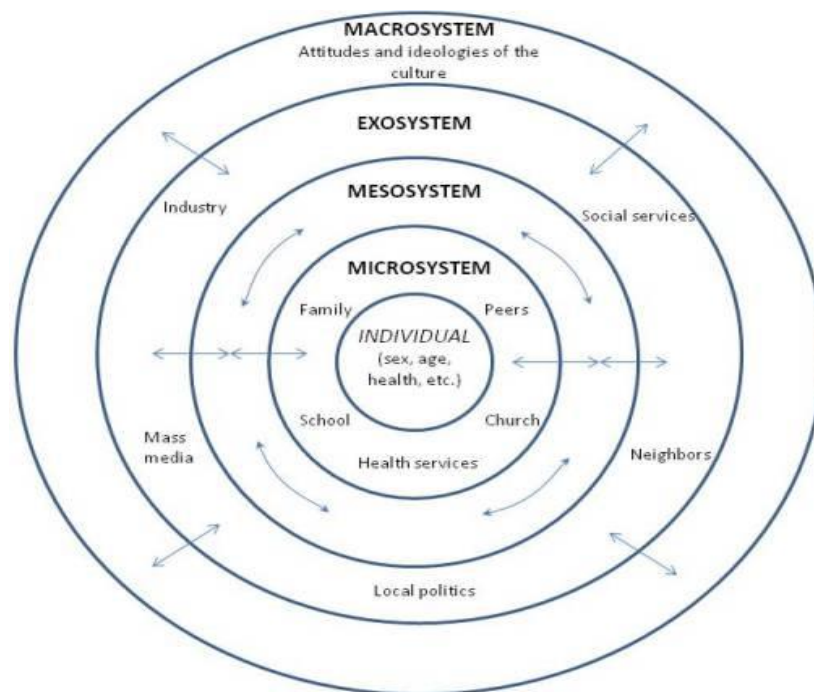


Figure 1.1 Ecological Systems Theory

The Population of Focus

The aforementioned framework has been implemented in several Head Start and Early Head Start programs across the country, however, many of these programs express a continued need to strengthen ways in which family engagement is implemented within these programs. Specifically, the population of focus for this study seeks to understand how to better measure family engagement within their sites. The population of focus for this study are stakeholders and participant families in a specific multi-site early childhood program, with sites located throughout a southeastern metropolitan city. The program is a Head Start/Early Head Start, funded by the U.S. Department of Health and Human Services, Administration for Children and Families, and Child and Adult Care Food Program (CACFP U.S. Department of Agriculture). The program also receives state funds from Bright from the Start, the state's Pre-K program, and other funding from grant funded special projects and initiatives. This early childhood program is

funded to serve approximately 2,000 children (birth to Pre-K) and families across five counties in the state. The sites offer Head Start, Early Head Start and Pre-K blended classroom experiences. The children and families served within this early childhood program come from diverse, primarily single parent, low-income homes. The demographics for this early childhood program are as follows: 83.3 percent African-American, 3.8 percent White, 10.8 percent Hispanic, 1 percent Bi-racial, and 0.4 percent Asian; 77.3 percent of the children served are being raised by a single parent; 52.5 percent of those being raised in a one parent household have an unemployed parent or guardian; 10 percent are dual language learners.

Problem Statement

Family engagement, as well as the various ways in which parents and families support their children's education and learning, has been espoused as an important protective factor, or an attribute in educational environments that seeks to eliminate risks for children's successful academic outcomes (Ginsburg-Block, Manz, & McWayne, 2010). Research has shown that high levels of family engagement are positively associated with the development of social and academic skills both at early childhood stages and during the later years (Barnard, 2004; Dearing, Kreider, Simpkins, & Weiss, 2006; Durand, 2011; Fantuzzo, McWayne, Perry, & Childs 2004; Ginsburg-Block et al., 2010; Hill & Tyson, 2009). In addition, research suggests that promoting positive family engagement helps to address the broad achievement gap between White American and ethnic minority children in the United States; this achievement gap exists in virtually every measure of educational progress, including standardized tests, GPA, dropout rate, the extent to which students are left out a grade, etc. (Jeynes, 2005; Wong & Hughes, 2006). When parents are involved in their children's education both at home and school, children demonstrate greater levels of academic success in an array of areas, such as school attendance,

motivation toward learning, and overall academic performance (Fan & Chen, 2001; Jeynes, 2003; Ginsburg-Block, Manz, & McWayne, 2010; Sheridan, Knoche, Kupzyk, Edwards, & Marvin, 2011). Despite these important outcomes, current measures of family engagement have conceptualized and developed measurement tools based primarily on White families; consequently, these measurement mechanisms might not capture family engagement behaviors unique to diverse groups, specifically African Americans. Lacking a culturally appropriate measurement limits our ability to develop programs that promote all children's successful development. This study seeks to develop a valid and reliable instrument that is capable of measuring family engagement for diverse groups of people in educational settings, giving a specific focus on conceptualizing the construct of family engagement through a process that is inclusive of the population of focus.

Research Questions

Through this research, this study will employ a mixed methods instrument development process in order to develop an instrument that is fit to measure family engagement for culturally diverse people in the population of focus; particularly African American and Latinx people. Specifically, this research will provide answers and explanations for the following questions:

1. How is family engagement conceptualized for diverse groups of people in a specific early learning environment?
2. Does the family engagement instrument function as intended?
3. To what extent can acceptable validity and reliability scores be established for an instrument developed to measure family engagement as a construct for diverse groups of people in a specific early learning environment?

Purpose

An examination of the literature on how family engagement is measured in educational settings revealed several gaps in existing academic research. Specifically, few valid and reliable family engagement instruments have been developed with consideration for diverse populations in early childhood settings. In addition, family engagement instruments that have been used in the past rely primarily on family engagement frameworks that were developed with majority white populations in mind; essentially, failing to represent African American and Latinx populations. Additionally, there is a lack of research that conceptualizes the construct of family engagement through the lens of marginalized groups, such as African Americans. This study will utilize a mixed methods instrument development approach, specifically using Q-methodology, which combines qualitative and quantitative research methods to systematically explore and describe the range of viewpoints about a topic (Stephenson, 1953). The study will also examine how the construct of family engagement is conceptualized through the lens of individuals who have a lack of representation in current conceptualizations of family engagement throughout the literature. It is important to develop a conceptual definition of the construct because the lack of a precise and detailed conceptualization of the construct can cause significant measurement errors during the remaining stages of the instrument development process (DeVellis 2011; MacKenzie et al. 2011).

Significance

This study is significant because as research suggests promoting positive family engagement helps to address the broad achievement gap between White American and ethnic minority children in the United States (Jeynes, 2005; Wong & Hughes, 2006), there is a need for measurement instruments that possess the ability to measure aspects of family engagement of

diverse people in educational spaces. Currently, these instruments do not exist, as most family engagement measurement instruments were developed based on definitions and frameworks that reflect majority white populations, which at times reflect a deficit view of non-white groups relative to family engagement. For example, because family engagement is most often evaluated from the school's vantage point, parents whose activities do not look like traditionally accepted behaviors associated with family engagement or are not visible in the school are often classified in the literature as being minimally involved (Lawson, 2003; Lareau, 2000; Lightfoot, 2004). Prior to the development of a valid and reliable instrument that is capable of measuring family engagement for diverse groups of people in educational settings, it is critically important to understand how family engagement is defined for diverse populations, as we cannot assume a homogenous definition of family engagement for all populations. Understanding family engagement through the lens of specific groups, such as African Americans, will allow for the comprehensive development of a measurement tool that is capable of measuring family engagement for African-Americans, which will ultimately strengthen ways in which family engagement can help to close the achievement gap between White American and ethnic minority children in the United States.

Limitations

There are multiple limitations that should be considered throughout the scale development process that have the ability to weaken the obtained psychometric results, limit the future applicability of the new instrument and ultimately hinder its generalizability. A possible limitation to this study could include failure to obtain an adequate sample size. A common practice in the literature states that there should be at least 10 participants for each item of the scale, making an ideal of 15:1 or 20:1 (Clark & Watson, 1995; Devellis, 2003; Hair Junior et al.,

2009). Other possible limitations that are common in instrument and scale development include failure to correctly specify the measurement model, underutilization of some techniques that are helpful in establishing construct validity (MacKenzie et al., 2011), relatively weak psychometric properties, extensive time required to administer the instrument (Hilsenroth et al., 2005), inappropriate item redaction, too few items and participants in the construction and analysis, an imbalance between items that assess positive beliefs and those that assess negative beliefs (Prados, 2007), social desirability bias (King & Bruner, 2000), among others. The following chapter will discuss in detail how family engagement is defined in educational settings, its relevance and importance in education, and ways in which family engagement has been measured throughout the literature.

2 REVIEW OF THE LITERATURE

The purpose of the study is to initiate the instrument development and validation process for an instrument that measures family engagement using a specific early learning environment population. This chapter includes a discussion of how parental belief systems impact their interaction with schools. We will then discuss how family engagement is defined in educational settings, its relevance and importance in education, and ways in which family engagement has been measured throughout the literature. The chapter will then interrogate the ways in which family engagement has been studied, focusing on the constructs that have been used within these studies. Finally, the chapter will discuss existing family engagement instruments. A review of how family engagement has been studied and existing instruments used to measure family engagement will reveal gaps in the literature surrounding the measurement of family engagement in early childhood settings.

The review of literature was conducted with the use of databases such as GALILEO, ERIC and Google Scholar, as these databases give access to comprehensive lists of scholarly articles related to family engagement. The core search terms for searching for family engagement research and evaluation studies were “family engagement”, “parent engagement”, “family involvement”, and “parent involvement”. When attempting to find measurement instruments for family engagement represented in the literature, search terms such as “family engagement instrument”, “measure family engagement”, and “valid and reliable family engagement” were used.

Parental Beliefs and Impact on Family Engagement

Prior to an examination of family engagement and its importance in education, it is necessary to discuss how parental beliefs impact how parents engage with their child’s school.

Research presents three factors that serve as strong indicators of whether or not parents and families will actively engage with their child's school: (a) parents' beliefs that participating in their children's learning is their responsibility and their evaluation of their capability to do so, (b) parents' perception of invitations or demands from schools and teachers and from their children to be involved, and (c) demand's on parents' time and energy that may conflict with the parents' ability to be involved with the school (Hoover-Dempsey & Sandler, 1997; Hoover-Dempsey, Ice, & Whitaker, 2009). Examined through an ecological lens, (Bronfenbrenner, 1986; Bronfenbrenner & Morris, 1998) research articulates that parental characteristics (e.g., parental beliefs, educational attainment, cultural experiences, etc.) and parenting practices (sensitive caregiving, appropriate autonomy setting, and home learning experiences) are connected and mutually and/or uniquely contribute to children's learning and development and how parents engage in their child's schooling (Bingham & Okagaki, 2012; Okagaki & Bingham, 2010).

Parental Characteristics through an Ecological Lens

Kohn (1989) posited that parental beliefs impacts parenting roles and their child's educational outcomes. In accordance with an ecological lens, these beliefs are developed based on personal experiences, implicit theories of childhood development, and notions conveyed by proximal individuals and groups (Okagaki & Sternberg, 1993). At large, parents differ in their beliefs regarding their role in their child's education (Hammer, Rodriguez, Lawrence, & Miccio, 2007). Research also suggests that ethnic minority parents and families are less likely to be engaged in their child's schooling than white parent (Geenen, Powers, & Lopez-Vasquez, 2001; Hughes, Gleason, & Zhang, 2005). While the specific factors causing this apparent lack of engagement are varied throughout the research, evidence exists suggesting that some factors may include language barriers (Mendez, 2010; Smith, Stern, & Shatrova, 2008), socioeconomic

constraints (Coatsworth, Duncan, Pantin, & Szapocznik, 2006), and a “mismatch” between an educational program’s goals and approach and the cultural values and beliefs of the target population(s) (Meyer & Bailey, 1993; Weiss, Bouffard, Bridgall, & Gordon, 2009). These underrepresented groups tend to feel excluded from a school system that may not necessarily reflect or acknowledge their beliefs, socioeconomic challenges, or cultural backgrounds (Hoover-Dempsey & Sandler, 1997). According to Bingham and Mason (2018), “although ecological models of parenting draw attention to ethnicity and culture as important contextual factors, they do not adequately capture the unique or shared experiences that minority children and families face” (p. 63). Garcia Coll et al. (1997) emphasizes the importance of (a) examining constructs that are unique to populations of color that contribute to children’s learning and development (oppression, racism, structural and limited access to resources and (b) attending to constructs that are universally relevant to varying populations but that might be differentially manifested or impactful to one racial or ethnic group (certain parenting behaviors). The stages of the instrument development process in the current study allowed an examination of the construct of family engagement, with a focus on African American’s experiences with family engagement in a specific early learning setting. While a discussion of how this construct was conceptualized for this study will be discussed in later chapters, it is first necessary to understand how the construct of family engagement is currently defined in the literature.

What is Family Engagement?

Definition of Family Engagement

Broadly defined, family engagement is a multidimensional construct that involves the ways in which parents support their children's education; and encompasses parents’ activities at home, at school, and in the community (Epstein, 1995). From the literature and a synthesis of

three definitions of family engagement (Henderson & Berla, 1994; Epstein, 2001; Weiss et al., 2006), Halgunseth et al. (2009) provide a comprehensive definition of family engagement featuring six factors that can be summarized as the following:

(1) Early childhood programs should promote and advocate for families taking an active role in being decision makers for academic matters related to their children.

(2) Communication should take place consistently between the family and school.

Multiple forms of communication should be considered, especially communication that is responsive to the family's linguistic preference.

(3) There should be an exchange of knowledge between families and early childhood programs. Families have "funds of knowledge" that the teacher should learn to incorporate in the curriculum and instructional practices.

(Moll et al., 1992; Gonzalez et al., 2006)

(4) Learning should be extended outside of the classroom and into the homes and communities of students in order to enhance the learning experience of each child.

(5) The family should facilitate a home environment that reflects a value for learning.

Early childhood programs and families should collaborate and establish goals for creating this environment.

(6) Early childhood education programs create an ongoing and comprehensive system for promoting family engagement by ensuring that program leadership and teachers are dedicated, trained and receive the supports they need to fully engage families (p. 3-4).

In short, parenting, communicating, volunteering, learning at home, decision making, and collaboration with the community are vital components in achieving a strong family partnership that will adequately support the child. This partnership requires a collective environment that

supports and honors reciprocal relationships, dedication from program leaders, a common vision between staff and families, learning opportunities for families and staff that support meaningful engagement, and guidelines that support meaningful family engagement (Hanover Research, 2014).

Terminology common to discussions concerning family engagement exist in certain studies. As indicated by the U.S. Department of Health and Human Services and the U.S. Department of Education (2016), “the term ‘family’ ...is inclusive of all adults who interact with early childhood systems in support of their child, to include biological, adoptive, and foster parents, grandparents, legal and informal guardians, and adult siblings” (p. 1). Given this definition, the term family engagement is inclusive of the term “parental engagement” and may be used interchangeably throughout the literature.

Common terms through the literature include the following: family involvement, family-centered services, family-school partnerships, and family engagement. Family-centered services or family-centeredness focuses on the clinical application of family services, such as demonstrating empathy, focusing on strengths, treating families with dignity, collaborating with families, and tailoring practices to meet family needs (Dunst, 2002; Dunst, Trivette, & Hamby, 2007). Also, though varying definitions exist, the terms family “involvement” and family “engagement” have often been used interchangeably. Family involvement has traditionally referred to family member support of their child's education (e.g., attending school events, helping with homework, communicating with teachers (Fantuzzo, Tighe, & Childs, 2000). Parent involvement has been characterized as including “demonstrable actions...like attendance at school events and reading to one’s child” (Jeynes, 2013, p. 730); as well as participating in prescribed activities that the school organizes (Jeynes, 2013). Goodall and Montgomery (2014)

state that involvement may be defined as “the act of taking part in an activity or event, or situation” while engagement may be defined as “the feeling of being involved in a particular activity” or “a formal arrangement to meet someone or to do something, especially as part of your public duties” (p. 400). Given this interpretation, parental engagement will involve a greater commitment, a greater ownership of action, than will parental involvement with schools (Goodall & Montgomery, 2014). Parent engagement, according to Ferlazzo (2011), is about engaging families to become partners with the school and listening to “what parents think, dream, and worry about” (p. 12). Additionally, Redding, Langdon, Meyer, and Sheley (2004) discuss qualities of parent engagement, including “building a foundation of trust and respect, reaching out to parents beyond the school” (p. 1).

There exists a strong body of research with a primary focus on parent involvement related actions in educational settings (Carlisle, Stanley, & Kemple, 2005; Mantzicopoulos, 2003; McWayne, Hampton, Fantuzzo, Cohen, & Sekino 2004; Rous, Hallam, Grove, Robinson and Machara, 2003). While all of these parental involvement activities are encouraged, family engagement calls for a deeper interaction between families, schools, and community that is not reduced to a check-list of tasks to be completed by parents and teachers. Constantino (2008) asserts that family-school relationships are the foundation for real or meaningful family engagement. Furthermore, the concept of family engagement (versus parent involvement) recognizes all members of a child’s family (not just parents) and emphasizes the importance of the reciprocal relationship between families and schools (Hagunseth et al., 2009).

Importance of Family Engagement

Research suggests that meaningful engagement of families in their children’s early learning supports school readiness and later academic success (Henrich & Gadaire, 2008; Weiss,

Caspe, & Lopez, 2006). As a means to supporting family engagement and children's learning, it is crucial that programs implement strategies for developing partnerships with families (Henderson & Mapp, 2002). These strategies should be appropriate for the diverse population programs serve and reflect a commitment to outreach (Colombo, 2006; Crawford & Zygouris-Coe, 2006). It is also important to be able to document the vital role that family engagement plays in promoting school readiness among young children through research and evaluation. Hanover Research (2014) highlight three key findings promoting family engagement research and evaluation: (1) Family engagement models may seek to achieve goals in multiple domains; (2) Family engagement initiatives are best evaluated in the context of each individual program; (3) Policymakers and program leaders employ many instruments to evaluate family engagement initiatives. (p. 4)

These findings recommend that while research advocates family engagement as a support for early school readiness and later academic success, we must also address nuanced differences in models and contexts in which family engagement initiatives are implemented. Given these differences, it is necessary to address how family engagement is measured on a local and national level.

In an effort to confront the increased need for innovative research and evaluation practices relative to family engagement in educational settings, The U.S. Departments of Health and Human Services (HHS) and Education (ED) departments have developed a joint statement which provides recommendations to early childhood systems and programs on family engagement (HHS and ED Policy Statement, 2016). The departments aim to recognize and support families as essential partners in improving child outcomes. The statement aims to advance this goal by (1) reviewing best practices in family engagement; (2) identifying core

principles of family engagement; (3) providing recommendations; (4) highlighting resources (HHS and ED Policy Statement, 2016).

A key provision within this statement calls for the continuous review and evaluation of family engagement plans and data systems in order to document progress and make needed changes for continuous improvements of these family engagement initiatives. Moreover, the statement advocates for the input of families and community partners throughout these evaluations. While federal policy has championed for the expansion and integration of specific family engagement and parent involvement programs and interventions and many federal laws that govern the early childhood and elementary education systems reference the importance of family engagement (i.e. The Head Start Act, The Child Care Development and Block Grant, IDEA, ESEA, etc.), there is an absence of theoretically grounded and rigorous evaluation studies that provide adequate evidence of impact for these programs and interventions (Mattingly et al., 2002).

Family Engagement in Early Learning Settings

The two most important settings in which children develop are their home and their early childhood education programs (Halgunseth, 2009). Furthermore, the early childhood community has recognized that working with families in a broader scope by providing supports to families and children impacts not only the child's development, but the family's ability to help the child grow and develop (Bailey et al., 1998; Bailey & Bruder, 2005; Sandall, Hemmeter, Smith, & McLean, 2005).

Bailey, McWilliam, Darkes, Hebbeler, and Simeonson (1998) present a potential framework with a goal of determining family outcomes in early learning settings and how these outcomes can be assessed. For the framework, the authors identified two broad types of family

outcomes in these early learning settings: (1) Family Perceptions of the Early Intervention Experience; (2) Impact on the Family. For each family outcome type, questions were generated that the authors believed to be consistent with current values, theories, and models of family functioning and relationships between families and professionals across the life span, and reflect outcomes that early intervention could be expected to impact. While the authors discuss various methods and instrumentation possibilities that could be used to assess family engagement outcomes, conceptual issues and methodological considerations associated with documenting these outcomes are also presented. Factors to consider in determining family outcomes should include (1) parents' perspectives on desirable family outcomes; (2) the explicit and implicit rationale for early intervention and preschool program goals; (3) variations in models of service delivery, some of which focus on family outcomes more intentionally than do others; and (4) the validity and reliability of the measured process. Also important were how federal and state regulations are interpreted.

Research and Evaluation Studies on Family Engagement

While evaluation of family engagement initiatives have been advocated for, less attention has been given in the field to how to conduct such evaluations. More specifically, there is a need to improve the ability to measure the concept of family engagement. According to Garbacz et al. (2017), while the literature reflects varying definitions of the family engagement construct from multiple perspectives (parent-, teacher-, and child-report as well as direct observation), thus far, it is not clear as to whether the varying methods and instruments are measuring the same construct or different constructs altogether. According to Barnard (2004), parent and teacher ratings of family engagement in educational settings are not highly correlated. Furthermore, research has failed to clearly specify the exact number, types, or methods for how best to

aggregate indicators of family engagement; where studies throughout the literature have suggested that the construct family engagement consists of as many as twelve dimensions, and others suggest the construct only consists of two dimensions (Desimone, 1999; Epstein & Salinas, 2004; Fan & Chen, 2001; Lee & Bowen, 2006). While family engagement instruments throughout the literature attempt to articulate the effort and impact of family engagement, the ability of these instruments to capture the interactive partnership of parents, teachers, and community is questionable based on current definitions of family engagement. Additionally, given the multiple perspectives and contexts considered throughout the literature, a consensus has not been met regarding how to define family engagement (Garbacz, 2017). The remainder of this chapter will discuss how the evaluation of family engagement has been presented throughout the literature. Though the primary focus of this study is to develop a family engagement instrument, it is necessary to understand how family engagement has been studied and what aspects of family engagement have been presented throughout the literature. The synthesis will interrogate the ways in which family engagement has been evaluated through the following foci: (1) Unidimensional versus multidimensional perspective of family engagement studies; (2) Cultural relevance in family engagement studies; (3) Environmental and community factors present in family engagement studies. The discussion will highlight the methodologies, methods, and instruments that have been utilized throughout this body of research. A review of these studies and their findings will expose gaps in existing literature, ultimately supporting the need to develop more theoretically sound and rigorous measurement tools and instruments that will provide adequate evidence of impact for family engagement programs and initiatives in diverse settings, for diverse groups of people.

Uni-dimensional Perspective of Family Engagement Measures

Literature surrounding family engagement has been approached from various perspectives. In other words, studies have been conducted to elicit perspectives regarding family engagement from parents, teachers, and children (Barnes et al., 2016; Plath et al., 2016). Some of these studies are conducted where data are collected through self-report and/or direct observation procedures.

A qualitative study in North Carolina analyzed the perspectives of 14 North Carolina childcare providers on how providers communicate with parents, how communication is received by parents, and barriers to successful parent engagement (Barnes et al., 2016). Previous research revealed that educators are underprepared to effectively engage the parents (Epstein, 2013). Additionally, many parents have difficulties understanding and engaging with their child's education system (Epstein, 2010).

The research methodology consisted of focus groups as the method of data collection for the study, where a focus group protocol was designed to capture child care providers' perceptions of parent engagement. The researchers desired to identify childcare provider participants who represent diverse child care philosophies and who hold different roles within childcare centers. Thus, focus group participants were selected using a maximum variation sampling technique, which is a sampling technique where cases are selected that are purposefully as different from each other as possible (Better Evaluation, 2014).

The study gave a detailed description of the qualitative research process, including reasons for the methodological choices used in each step in the research process. Barnes et al. (2016) acknowledge recommendations for qualitative research from Guba and Lincoln (1989) and others (Miles & Huberman, 1994), where techniques were used in the study "to establish

credibility including peer debriefing, member checking, the use of multiple coders, and the use of multiple participant perspectives” (Barnes et al., 2016, p. 363). This transparency was a strength as many studies may assume that choices in the research process are shared by all. Results from this research process revealed the following primary themes: “communication methods and styles, how parents respond to communication efforts, and desire for change in parent interactions” (Barnes et al., 2016, p. 364).

In contrast to family engagement studies that capture the perspective of teachers/child care providers alone, there also exist studies that seek to understand the perspective of parents and families. Plath et al. (2016) present the results of a mixed methods evaluation for *Got It! (Getting On Track In Time!)*, which is a family engagement intervention in Australia for children ages five to eight with emerging conduct problems during their first three years of schooling. In using a mixed methodological approach, the evaluation team utilized quantitative and qualitative data collection methods to capture the impact of the family engagement intervention from the perspective of the parents of student participants.

A sample of 60 families participated in the evaluation research. Data were collected from multiple instruments in order to generate evidence of impact for the family engagement intervention. Child behavior and parenting practices data were collected using the following instruments: *Strengths and Difficulties Questionnaire* (Goodman, 2001); the *Eyberg Child Behavior Inventory (ECBI)* (Eyberg, 1998), the *Parenting Scale (PS)* (Arnold, O’Leary, Wolff, & Acker, 1993), and the *Alabama Parenting Questionnaire (APQ)* (Shelton, Frick, & Wootton, 1996). In addition to the quantitative data, qualitative data were gathered from semi-structured interviews with parents and caretakers, which generated data relative to the impact of the program, behavior changes that parents had implemented or observed, past help-seeking

experiences, expectations, ongoing supports, and suggestions for program improvements. The results of the study showed significant improvements on quantitative outcome measures, where 85 percent of children showed improvement on the scores at the six- to eight-months follow-up. In addition, these results were supported by qualitative findings, where thematic analysis resulted in the emergence of four themes regarding the family engagement intervention impact: (1) calmer home life; (2) closer parent–child relationships; (3) strengthened support network; (4) role of the school setting (Plath, 2016, p. 14-15).

Overall, both studies contribute to the body of family engagement research as they highlight positive aspects of the impact of family engagement, possible areas for growth, and needed resources for parent-provider interactions in early childhood education. These studies also provide evidence for how qualitative and mixed methods approaches can be a valuable resource in contributing to family engagement literature at large. However, in both studies, the authors chose to utilize a unidimensional perspective approach to highlight family engagement practices in educational settings, which works against collaborative nature of family engagement that is championed throughout the literature (Hanover, 2014). As an example, two of the major themes that were generated by Barnes et al. (2016) were centered around a desire for change in how parents approach family engagement in the educational setting, but parents had no voice in this study. Similarly, in the study conducted by Plath et al. (2016), the “role of the school setting” was an emergent theme that was generated through the data, but the data were produced from the perspective of parents alone. Studies of family engagement could be strengthened by considering measuring aspects of family engagement from a multi-dimensional perspective, which would give voice to all relevant stakeholders that contribute to how family engagement functions in educational settings. Also, the body of research surrounding family engagement

could benefit from the development of instruments that support a multi-dimensional perspective approach to studying family engagement.

Race and Cultural Aspects of Family Engagement

Studies throughout the literature discuss ways in which studies of family engagement have been measured with a focus on race and ethnicity (Latunde & Clark, 2016; Delpit, 2012; Louque & Latunde, 2014). Effective family engagement of diverse families begins with understanding the local structural, attitudinal, and cultural barriers to their participation. Latunde and Clark-Louque (2016) present a study that examined aspects of family engagement of Black parents in a K-12 educational setting by identifying the strategies and resources they use in engaging with their children's education. Due to disparities in educational outcomes and inequitable treatment, the relationship between Black families and schools has been strained (Delpit, 2012; Louque & Latunde, 2014); thus, studies representing this specific population are important.

The mixed methods study administered two quantitative scales to 130 participants: Parent and School Survey (PASS) and the Parent Engagement and Learning Support (PELS) scales (Schueler, 2013). Additional open-ended questions were included along with the surveys to generate qualitative data. Through the synthesis of survey data (quantitative descriptive analysis) and qualitative interview data (thematic analysis), results of the study revealed that black families exhibited high rates of supporting learning at home, communicating with schools, and providing educational experiences in the community. Moreover, the study concluded that Black parents/guardians engaged in their children's education in two major ways: by (1) helping with learning at home; and (2) exposing their children to educational activities outside the school.

Alvarez (2015) examined how undocumented immigrant Latina/o families resist being marginalized in schools and communities, focusing on the disconnection of aspects of family engagement models and the exclusionary practices against these families in schools. The setting of the study was in Salt Lake City, Utah, which is a state that upholds multiple anti-immigration laws (Alvarez, 2015).

Participatory Action Research (PAR) was the methodology for this study, which is a type of critical research that seeks to examine socio-political factors that influence social conditioning and the impact on marginalized groups (Bogdan & Biklen, 2011). PAR as a methodology uses activities with a purpose of promoting change (i.e. letter writing, legislator phone calls, rallies, after-school teacher appreciation events, meetings with administrators, raising funds for refugee families, and other community-centered activities) as pathways of inquiry; thus creating opportunities for reflection, investigation, and the co-construction of knowledge (Alvarez, 2015).

There were 21 participants who were considered co-researchers, ranging from middle school age to adults. Through qualitative methods such as semi-structured interviews, focus group interviews, field notes, analytical memos, journal entries, and participant observations, the researchers addressed the following questions: (1) What can we do to be more engaged with the school, but on our terms? (2) What are possibilities to re-define how immigrant families engage with schools?

The results of the study indicated that despite the abundance of “inclusive” policies adopted by school districts, undocumented students and their families in the study perceived schools as exclusionary, particularly with regards to family engagement and equitable educational opportunities. The PAR research methodology encouraged participants/co-researchers to disrupt the marginalized positions of immigrant students and families in this area.

In addition, this research extends the body of research relative to family engagement, showing how family engagement research has the ability to serve as an agent of change in the community and for marginalized people.

McWayne et al. (2013) also presented a study that examined the family engagement behaviors used to support Latinx children's educational experiences. The authors asserted that “beliefs, values, and behaviors, are situated in, and reflective of, the particular cultural and psychosocial realities of individuals and groups” (McWayne et al., 2013, p. 594). In addition, due to the increasing number of English-learning Latinx children entering the public education system, there is a need for “culture-contextualized research” to have a better understanding of the factors that influence Latinx children's educational success (McWayne et al., 2013, p. 596). Thus understanding family engagement within specific populations is important, as literature champions family engagement as a vital factor in successful child outcomes.

The mixed method study used 114 parents from 14 Head Start programs. Qualitative methods consisted of focus groups that were conducted in the respective languages of the participants. This was important as the authors sought to design the focus groups in a way to evoke specific aspirations, attitudes, and practices relative to how parents and families are involved in the development of preschool Latinx children. Data analyses were guided by a grounded theory approach, where the data revealed that participating Latinx families characterized their engagement as clearly multidimensional and encompassing a wide variety of family engagement practices. This corroborates with predominant conceptualizations within the family involvement literature at large. The authors then used the codes from the qualitative portion of the study to identify four theoretically meaningful dimensions of family engagement among Latinx Head Start families, resulting in a 65-item measure across two language versions:

Parental Engagement of Families from Latinx Backgrounds (PEFL-English) and *Participación Educativa de Familias Latinas* (PEFL-Spanish) (McWayne et al., 2013). The measure was distributed to 650 primary caregiver participants for purposes of construct validation, along with a satisfaction survey and family demographic questionnaire.

The measure was then validated with a teacher report of family involvement and parent report of satisfaction with their experiences in Head Start. Exploratory factor analysis was used as a form of data analysis. Several steps were taken to further test the integrity and validity of the construct; one being a validity analysis with external criterion measures (i.e., with parent self-report of satisfaction and teacher report of parents' participation in their children's education). Results from the quantitative portion of the study validated four culturally salient and psychometrically supported dimensions of family engagement, with initial evidence supporting the external validity of the measure (McWayne et al., 2013, p. 603).

The studies presented in this section offer a perspective for studying aspects of family engagement with a regard for race and culture throughout the study. Alvarez (2015) demonstrated how the utilization of PAR methodology gives researchers an opportunity to not only provide information regarding this group's experiences with family engagement, but also invoke change through their research activities. While the studies presented seek to answer the call for a need to study family engagement through a culturally relevant lens, some studies tend to reify the absence of culturally contextualized research through methodological choices made during the study. As an example, Latunde and Clarke-Louque (2016) critique *Epstein's Framework for Six Types of Parental Involvement* (Epstein et al., 1997), stating that "Epstein's model has become a checklist for schools and lacks a cultural lens by which the intersections of race, ability, disability, income, and education can be examined" (Latunde & Clark-Louque,

2016, p. 72). However, this same study utilizes a scale, the Parent and School Survey (PASS), which is based on Epstein's six-construct framework. While the authors reject the framework due to its lack of attention to culture, the choice to use an instrument that was developed based on the same framework is contradictory.

Studies Focusing on Community and Contextual Factors

Keys (2015) conducted an exploratory, cross-sectional study to examine parents' levels of perceived family engagement to the Head Start program from different community locations. The study was conducted utilizing a cross-sectional exploratory research design in order to examine the relationship between exposure and outcome prevalence in a defined population without regard to changes over time (Aschengrau & Seage, 2013). Purposive sampling was employed, to select participants for the study. The Parent and School Survey (PASS) was used to measure parents' perceived levels of family engagement (Westmoreland et al. 2009); which consisted of twenty-four, five-point Likert scale items that measured family engagement behaviors and beliefs. Data were analyzed using a t-test statistical analysis, testing the research hypothesis, which posited that urban families will score higher on the parent involvement survey than their rural counterparts. Results indicated, on average, urban families exhibited higher levels of perceived family engagement with higher scores achieved on the parent involvement survey than their rural counterparts. The authors mentioned considerable limitations to the study relative to sampling and data collection methods (i.e. clarity of survey items, method of survey administration, self-report measure) (Keys, 2015). While utilizing an existing instrument for the measurement is ideal, it is important to consider the appropriateness of instrumentation for a specific population. One must consider why item language was not clear for this specific population.

Black et al. (2013) presented a study that evaluated the impact of *Family and Community Engagement Strategy* (FACES) across three communities. FACES is an initiative in three communities in Ontario, Canada with a goal to foster more active and responsive relationships among community partners, including school boards, and enhance family engagement in children's early learning and transitions to school. The evaluation study had a goal to answer research questions relative to the "impact of the FACES model on early learning and family and community engagement with regard to parents, children, principals, educators, and community partners; ways in which the approaches and processes undertaken in each of the three communities have moved toward meeting the FACES goals and deliverables; the lessons learned by the steering committees in the implementation of their FACES projects" (Black et al., 2013, p. 570). Social capital theory serves as the theoretical perspective for the study. Block (2009) emphasizes the importance of "bridging social capital" (p. 4). Social capital, in the context of the study, brings networks of people from a variety of backgrounds and perspectives to draw communities together in a collective, reciprocal, trusting manner, with the purpose of acting for the common good.

The two-year study used a case study research design, grounded in participatory action research. According to the authors, the approach was ethnographic, in that it built upon a picture of an emerging culture in each case and across cases (Black et al., 2013). The three communities were treated as distinct cases. Participants in the three communities included all individuals who were involved with the FACES initiative and activities in any capacity. The number of participants varied among communities and between data collection cycles. Data were collected in two cycles; an informal report was given at the end of the cycles. Data were collected using semi-structured interviews and focus groups in order to capture participants' perceptions.

Document data was also collected from each of the three communities. According to the authors, data analysis included “data reduction (review data, develop codes, code data to summarize, sort, and organize); data display (organize and compress data into matrix); and conclusion drawing/verification (make meaning of the data by noting patterns, interpretations, triangulation of sources)” (Black et al., 2013, p. 574). There was a constant analysis of data throughout the cycles, and subsequently, conclusions were drawn from results in various data displays and verification involved triangulation of data from the multiple sources across all three sites. Results were captured from each individual site, answering the research questions from the onset of the study. The results indicate, across sites, that social capital was increased through “a unified focus on the needs of children, strong local leadership, collaboration among community partners, and effective strategies embedding FACES into the culture of the community” (Black et al., 2013, p. 569).

The evaluation study was able to efficiently capture its intended goals based on the three research aims identified at the beginning of the evaluation. The evaluation was successful in legitimating the knowledge of all knowers in the environment, and not assuming a monoculture across sites, as the research design was developed based on the sites’ needs. However, the research took place over two years, which is not ideal for funders who want to understand if a program is working or not in a timely manner. Extended evaluation timelines also brings into question the replicability of this type of evaluation study. Further, the authors claim the use of PAR as a methodology, but little is done to explain specific details regarding how the researchers employ PAR throughout the research design.

Fernández-Zabala et al. (2016) presented a study with aims to (1) determine how school engagement and social support vary in accordance with sex and age; (2) analyze the relationship

between school engagement and that three contextual factors: family, peers, and school (Sinclair, Christenson, Lehr, & Reschly-Anderson, 2003). This research is relevant to family engagement as the context of family is included as an essential factor in school engagement. A correlational research design was used to explore the relationship amongst variables in this study. The study used random sampling to select over 1500 students in a select region in Spain. The study employed three instruments to explore the relationship of these variables: Social Support Questionnaire (Landro & González, 2008), Health Behavior in School-aged Children (HBSC) Questionnaire (Currey et al., 2014) 3; School Engagement Measure (SEM) (Fredericks et al., 2005). Multiple statistical analyses were used for this study: t-tests in order to analyze differences in scores according to sex and age; comparison of Pearson's correlation coefficients in order to analyze the differences between contextual variables and dimensions of school engagement; multiple linear regression was utilized to identify predictor variables for school engagement. The results revealed a significant correlation between the family contextual variable and dimensions of school engagement.

While Fernández-Zabala et al. (2016) developed a comprehensive study to analyze significant relationships relative to family engagement and school engagement, the authors' procedural choice during data collection to not reveal the purpose of the study, as this may have been an unethical choice. The study could also be strengthened by a deeper understanding of how students experience school in engagement via the contextual variables of family, school, and peer, possibly through qualitative research methods such as interviews, focus groups, or observations.

Existing Family Engagement Instruments

As evidenced through the above studies, various instruments have emerged throughout the literature with a purpose to measure aspects of family engagement in early childhood educational settings. While considering the development of a new instrument to measure family engagement, it is necessary to have an understanding of instruments that are already being utilized in the field. The *Parenting Scale* (Arnold, O’Leary, Wolff, & Archer, 1993), the *Family Involvement Questionnaire* (FIQ) (Fantuzzo, Tighe, & Childs, 2000), The *Parent and School Survey* (Ringenberger, Funk, Mullen, Wilford, and Krame, 2005), and the Family and Provider/Teacher Relationship Quality (FPTRQ) are four instruments that have been presented throughout the literature as a means to measure aspects of parent/family involvement and engagement. The following criteria were considered while examining these instruments: (1) which domains of engagement are captured in existing measures and their congruence with current multidimensional conceptualization of family engagement; (2) the utility of existing measures (ease of administration and scoring, applicability to educational settings, availability of normative data); (3) the psychometric properties data that are available for the measures.

The Parenting Scale

The *Parenting Scale* was developed to identify “parental discipline mistakes” consistent with theory that link parenting and externalizing behavior problems (Arnold et al., 1993, p. 138). According to the authors, in order to improve early parental discipline practices, it is necessary to have an efficient means of identifying parents whose discipline strategies are counterproductive (Arnold et al., 1993). The original instrument has a three-factor structure depicting ineffective discipline styles (laxness, over-reactivity, and verbosity) (Arnold et al., 1993). The laxness and over-reactivity factors are consistent with the permissive and authoritarian styles of parenting

described by Baumrind (1968). The laxness factor is consistent with empirical evidence that overly permissive discipline is associated with behavior problems (McCord et al., 1961; Patterson, 1976). In contrast, Baumrind portrayed the authoritarian parent as favoring "punitive and forceful measures" (Baumrind, 1968, p. 261), and she presented evidence that this style of parenting is associated with frustration, physical punishment, threats, and power assertion, which reflects the over-reactivity factor. The verbosity factor reflects discipline that is inadvertently reinforcing, where verbose reprimands may provide the child with attention contingent on misbehavior and with a lack of meaningful negative consequences for misbehavior (Arnold et al., 1993).

According to the scale developers, the *Parenting Scale* was developed with intentions of being a cost-effective and inclusive measure of parental discipline practices (Arnold et al., 1993, p. 138). In addition, the purpose of the scale was to "reflect current empirical knowledge, assess the domain of parental discipline broadly but directly, and still be easily and inexpensively administered" (Arnold et al., 1993, p. 138). The scale includes 30 items written at a sixth grade reading level as assessed by the Grammatika software program (Reference Software International, 1986). Researchers assert that "a strength of this scale is that it is comprised of items that are posed as hypothetical situations, in which keyed responses are not readily apparent to parents completing the measure, making it less likely for parents to respond based on social desirability" (Karazsiae et al., 2008, p. 501).

Since the introduction of the *Parenting Scale* by Arnold et al. (1993), multiple studies have explored the psychometrics of the scale in diverse samples (Reitman et al., 2001; Steele et al., 2005). Reitman et al. (2001) examined use of the *Parenting Scale* with parents of children in preschool using a predominately African American and low-income sample from a Head Start

program. Based on the analyses by Reitman et al. (2001), the original three-factor model was not confirmed. Through exploratory factor analysis, the authors were able to develop a revision of the scale that included only 10 items that loaded on two factors (over-reactivity and laxness). Steele et al. (2005) confirmed this two-factor solution in an independent sample of African American parents and extended use of this measure to parents with older children (Arnold et al. 1997).

Family Involvement Questionnaire (FIQ)

Fantuzzo, Tighe, and Childs, (2000) developed the *Family Involvement Questionnaire* (FIQ). The FIQ is a multidimensional scale of family involvement that was designed to capture aspects of family involvement in urban early childhood educational settings. Gaskins's (1994) model was used to guide the development of the FIQ. The model involves four progressive stages designed to enhance the cultural validity of psychological measurement for diverse populations. These include (a) discussing the rationale and benefit of the inquiry with representatives of the participant group, (b) reviewing the categories from which items were generated, (c) finalizing the measure in terms of items and response formats, and (d) after data analysis, reviewing and interpreting the findings (Fantuzzo et al., 2000). In addition, a research committee, consisting of university researchers, school administrators, teachers, and parent leaders, were guided by Epstein's (1995) conceptual framework of parent involvement. The development process resulted in a 42- item, 4-point Likert item scale, where three family involvement constructs were confirmed: school-based involvement, home-school conferencing, and home-based involvement.

Exploratory factor analysis was used to reveal a three-factor solution defined by the following constructs: school-based involvement, home-based involvement, and home-school

conferencing. Each of the identified factors was found to be highly reliable (Fantuzzo et al., 2000). The *School-Based Involvement* factor is defined by activities and behaviors that parents engage in at school with their children, including volunteering in the classroom, going on class trips with children, and meeting with other parents in or out of school to plan events, fundraisers, and so on (Fantuzzo et al., 2000). *Home-Based Involvement*, includes behaviors relative to the active promotion of a learning environment at home for children, such as learning materials present in the home, actively initiating and participating in learning activities at home with children, and creating learning experiences for children in the community (Fantuzzo et al., 2000). Finally, the *Home-School Conferencing* describes how parents and schools communicate regarding matters of the child's educational experiences. Items on this factor include talking with the teacher about a child's difficulties at school, the child's learning behavior, the child's accomplishments, and work to practice at home (Fantuzzo et al., 2000).

While the developers of the FIQ were able to develop and confirm the factor structure of the FIQ and provide evidence of the instrument items' congruency with Epstein's (1995) framework, the authors acknowledge limitations to this tool, stating that the development of the instrument did not consider "cohesive cultural belief structures that define and sustain family involvement" (Gadsden, 1998). A failure to address cultural beliefs of families, teachers, and children impede the ability of the instrument to make beneficial connections between large urban school systems and these families (Christenson, 1995).

Parent and School Survey (PASS)

The PASS is also based on Epstein's six dimensions of family involvement. These dimensions include the following: (1) Parenting: home environment conducive to learning; (2) Communicating: home-school communication about child's academic issues; (3) Volunteering:

activities in the school and classroom; (4) Learning at home: help and encouragement with school work; (5) Decision making: involvement with governance and shaping policies/practices at school; (6) Collaborating with the community: parent knowledge and use of community resources for learning. (Westmoreland et al., 2005, p. 6)

The PASS instrument structure consists of two sections: (1) 24 items on a 5-point Likert scale based parent involvement behaviors and beliefs; (2) 6 items on a 3-point Likert scale about level of difficulty certain barriers present to involvement (Westmoreland et al., 2009, p. 6). The PASS was developed to support grant stipulations for the Parent Information Resource Center (PIRC) Grant from the U.S. Department of Education, which called for the measurement of parental involvement (Ringenberg et al., 2005). Joyce Epstein's conceptual framework of parental and family involvement was used to develop the tool as her conceptualization was the most commonly used definition of parental and family involvement at the time (Ringenberg et al., 2005). Researchers assert that the PASS instrument was designed to “quickly, easily, and accurately measure parental involvement” (Ringenberg et al., 2005, p. 121)

Since the PASS instrument is a newer instrument and one of the few instruments used to measure parental involvement, there are limited studies that describe the psychometric properties of the instrument. Ringenberg, Funk, Mullen, Wilford, and Kramer (2005) conducted a test-retest reliability study to refine the 24 items used to measure parental involvement of the PASS instrument. The study utilized 40 participants, predominantly female and white. The participants completed the PASS instrument twice, approximately one week apart. They were then asked to complete a series of open-ended questions about their understanding of items on the PASS.

The study utilized intraclass correlation coefficients (ICC) standard deviations to analyze the items in the study. Bartko (1991) recommends ICCs for test-retest studies with interval data.

Researchers found that of the 24 items considered for the study, four items were considered poor according to Cicchetti's (1994) criteria for ICC analysis in test-retest studies; six due to low standard deviations; and two based on the open-ended responses. The items were altered accordingly.

Family and Provider/Teacher Relationship Quality (FPTRQ)

In 2014, the Administration for Children and Families' Office of Head Start and the Office of Planning, Research, and Evaluation developed a new instrument for measuring the quality of relationships between families and provider/teachers in early learning settings called the Family and Provider/Teacher Relationship Quality (FPTRQ) measures (Kim et al., 2015). The FPTRP integrates multiple perspectives of family and provider/teacher relationships and seeks to fill a gap in existing instruments used to measure family engagement by attempting to include all of the elements that research indicates are associated with effective provider/teacher facilitation of positive relationships with families (Porter et. al, 2015). The tool consists of five measures: the director measure, the provider/teacher measure, the family services staff (FSS) measure, as well as the parent measure and the FSS parent measure. These measures were developed to be used with ethnically/racially diverse families across a range of early learning settings, including center-based and family child care programs as well as Head Start and Early Head Start (Porter et al., 2015). The FPTRQ measures assess four constructs: attitudes, knowledge, practices and environmental features. The individual measure take about ten to fifteen minutes to complete, and they are available in English and Spanish, with exception to the director measure.

The FPTRQ project established psychometric properties of the measures through pilot and field studies with a wide variety of early childhood programs across the country (Kim et. al,

2015). The director, provider/teacher, and parent measures were fielded in a total of 253 early childhood programs, including center-based and family child care programs as well as Head Start and Early Head Start programs, and the FSS and FSS parent measures were piloted by 62 FSS and 102 parents (Kim et al., 2015). According to Kim et al. (2015), the samples in both the pilot and field studies were diverse, with varying characteristics for providers/teachers, FSS, parents, and programs. Data from the pilot and field studies indicate that the subscales for the provider/teacher, FSS, and both parent measures have good to excellent internal reliability overall, with Cronbach's alphas range between .74 and .98 for all measures. The test developers report that each of the measures' subscales consistently measures a single construct, and that the measures can be used with confidence (Kim et al., 2015). Despite their strong psychometric characteristics, the FPTRQ measures have some limitations: they were not tested with nationally representative samples, they were not compared to other existing family and provider/teacher relationship measures, and their relation to family/child and provider/teacher outcomes was not tested (Kim et. al, 2015).

Consistent Themes and Gaps in the Literature

Literature surrounding family engagement highlight several themes and opportunities research and development. Research suggests that meaningful engagement of families in their children's early learning supports school readiness and later academic success. Despite this strong research base supporting the positive outcomes related to family engagement, parent and family engagement is sometimes lacking in educational settings. Indicators for whether or not parents and families will choose to engage with schools have been cited in the literature (Hoover-Dempsey & Sandler, 1997; Hoover-Dempsey, Ice, & Whitaker, 2009); however, this research surrounding these indicators could be strengthened by understanding more about family

engagement. In order to understand more about family engagement in educational settings, researchers need to be able to measure family engagement more adequately.

In attempts to measure and represent findings regarding family engagement, studies have lacked consistency regarding how family engagement is defined throughout the literature, where studies have conceptualized family engagement as a unidimensional and multi-dimensional construct. Further, while researchers have attempted to learn more about family engagement relative to traditionally underrepresented and marginalized groups such as African Americans and members of the Latinx community, these studies are lacking in the use of instrumentation that have been developed with these groups in mind. There is a need to improve ways in which family engagement is measured in order to account for the complexities of the family engagement construct, as well as the diversity in families in educational settings.

While schools and educational settings have developed a myriad of surveys and questionnaires in order to measure family engagement, few valid and reliable instruments exist with a purpose to measure family engagement. Existing valid and reliable instruments have approached the measurement of families' interaction with schools from a deficit perspective, attempting to measure what parents do wrong, as opposed to attempting to understand more about the collaborative relationship that parents and families have with schools. In addition, while instruments have been developed in specific educational settings to measure the collaborative relationship of families and schools, few provide adequate psychometric data that supports the validity and reliability of these instrument. The literature also proposes a distinct difference between definitions of family engagement and family involvement; however the literature surrounding instrument development for aspects of family engagement and/or family involvement do not address these differences, as most of the instruments utilize Joyce Epstein's

conceptual framework of parental and family involvement as a foundation for defining the construct during instrument development. The use of this framework is also problematic, as the framework is based on research findings from predominately white populations, failing to reflect how one should conceptualize families of diverse populations' collaborative interaction with schools. Unfortunately, few studies address the development of an instrument for measuring family engagement without using the framework as foundation.

The existing family engagement instruments possess many of the limitations described. When attempting to validate the Parenting Scale for various ethnic minority groups, results indicated inconsistencies relative to the factor structure (Steel et al., 2005; Del Vecchio et al., 2017). Also, according to Steele et al. (2005), despite the confirmation of a 3-factor structure (Reitman et al., 2001), results from the validation study did not allow conclusions regarding the role or outcomes of specific parenting strategies in African American families, relative to other ethnic or racial groups. While the FIQ accounts for the practical considerations of time and implementation cost and the need to reduce respondent burden in large-scale program evaluation by developing a tool that significantly reduces the number of items (Boruch, 1997), developers do not make a clear distinction of what construct is being measured with the tool. Developers of the FIQ conclude that, "measuring family involvement using the FIQ allows early childhood programs to examine change in parent engagement and develop interventions" (Fantuzzo et al., 2013, p. 741). Given that literature has made a distinction between family involvement and family engagement, there is a need to develop instrumentation that makes a clear differentiation between the two terms and allows for the measurement of the family engagement specifically. Limitations exist within the PASS relative to the sample population used to examine the psychometric properties of the instrument. As an example, in a test-retest reliability study

conducted on the PASS, researchers utilized a population sample that was “more educated and probably more involved in their children’s education than average parents” (Ringenburg et al., 2005, p. 130). The use of this specific sample for understanding more about the psychometric properties of the instrument is problematic, as the tool will be calibrated and refined in a manner that is not inclusive, and has the potential to place a deficit view on individuals who are less educated, which is a characteristic that is often associated with low-income and minority groups, specifically African American and Latinx populations. Also, the researchers make a strong assumption in saying that these individuals are “probably more involved” (Ringenburg et al., 2005, p. 130). The FPTRQ has made significant advances toward developing an assessment that is representative of the varying perspectives of stakeholders in early learning environment (i.e. provider/teacher, parent, director, family, services staff, and parents working with family services staff). However, developers of the FPTRQ acknowledge the difficulty measuring cultural aspects in the early learning environment and, thus, made the decision to indirectly attend to cultural sensitivity across the subscales (Porter et al., 2015). Further, since the FPTRQ is a newer instrument, current psychometric evidence for the measures have not been examined across a national sample, which limits the knowledge of the ability of the current factor structure to hold across diverse groups (Porter et al., 2015).

The existing limitations in previous developed instruments used for measuring family engagement in early learning environments highlight a need to for instrumentation that recognizes the diversity of families in early learning spaces. First, there is a need to strengthen how the construct of family engagement is defined throughout the literature, as existing studies have not shown consistency in distinguishing between family engagement and family involvement. In addition, while previous studies have sought to provide generalizable

psychometric evidence for the universal use of parent and family measures in school settings, the existing limitations suggest a need to examine how family engagement can be measured for groups that have been traditionally underrepresented groups, as previous developed instruments lack the ability to adequately account for the unique characteristics of diverse cultural groups. Given the need to develop more innovative and robust ways of measuring family engagement for underrepresented groups, the current study seeks to develop a valid and reliable instrument for measuring family engagement in an early childhood educational setting, where a mixed methods instrument development approach was employed in an attempt to conceptualize the construct of family engagement in a manner that captures the viewpoints of all relevant stakeholders in educational settings.

3 METHODOLOGY

The review of the literature in the previous chapter suggested a need for continued development of data collection instruments to measure family engagement as a construct for the purpose of rigorous program evaluations of family engagement models in educational settings. The purpose of the research was to develop an instrument with valid and reliable scores to measure the construct of family engagement for evaluation purposes in a specific early childhood learning setting. Drawing upon previous literature regarding using classical approaches and mixed methods to develop data collection instruments, (Curlette, 2000; Onwuegbuzie et. al, 2010; Teddlie & Tashakkori, 2009), the chapter will discuss description of the sample, the research design, and instrument development procedures to answer the research questions. The chapter ends with a discussion epistemological considerations for the study as well as a brief discussion regarding the use of mixed-methods in program evaluation.

Epistemology

This study was informed by the pragmatist philosophy. According to Grbich (2013), “pragmatism seeks ways of knowing through the polarized quantitative-qualitative debate to find practical solutions to the problem of differing ideologies and methodologies” (p. 27). The pragmatist philosophy of epistemology can be summarized by the following:

The characteristic idea of philosophical pragmatism is that efficacy in practical application- in the issue of ‘which works out most effectively’- somehow provides a standard for the determination of truth in the case of statements, rightness in the case of actions, and value in the case of appraisals. (Rescher, 1995, p. 710).

Through this lens of knowledge production, the researcher will not privilege any one way of knowing. These ways of knowing can be understood through Mertens and Wilson’s (2012)

description of the four major philosophical paradigms that operate within program evaluation: post-positivist, constructivist, transformative, and pragmatic. According to Mertens (2015), within the post-positivist paradigm, the epistemological assumption of researchers is that one must conduct research in a distanced manner in order to capture knowledge that exists outside of the individual. Constructivists operate in a manner in which the evaluator needs to interact with participants and to engage in meaningful dialogue and reflection to create knowledge (Guba & Lincoln 2005). Mertens (2015) asserts that within the transformative paradigm, “knowledge is not viewed as absolute nor relative; it is created within a context of power and privilege. Evaluators need to develop respectful and collaborative relationships that are culturally responsive to the needs of the various stakeholder groups in order to establish conditions conducive to revealing knowledge from different positions” (p. 82). Within the pragmatist paradigm, however, the evaluator does not base the evaluation on whether or not they discover any one truth or the truth of any one group or individual, but on whether or not the results of the evaluation work with respect to the problem that is being studied (Mertens & Wilson, 2012). Within the pragmatist paradigm, the evaluator will then, employ the best methodological tools to guide the research.

Program Evaluation and Mixed- Methods Program Evaluation

Weiss (1998) defines program evaluation as “the systematic assessment of the operation and/or outcomes of a program or policy, compared to a set of explicit or implicit standards, as a means of contributing to the improvement of the program or policy” (p. 4). Scriven (2003) adds that evaluation should not be viewed as a means to solve social problems through research; rather, evaluation examines the merit, worth, and significance of programs and policies through research methods (p. 21). In short, program evaluation goes beyond the function of research,

which is to produce generalizable knowledge in order to advance broad knowledge and theory. Program evaluation becomes a decision-making mechanism, where the program evaluator presents options to decision makers in organizations. According to Mertens (2015) “evaluators need to develop respectful and collaborative relationships that are culturally responsive to the needs of the various stakeholder groups in order to establish conditions conducive to revealing knowledge from different positions,”(p. 82). Referencing the use of mixed methods, Ponterotto and Grieger (1999) assert that,

The researcher who can “wear two hats,” so to speak, shifting in sequenced and integrative fashion between small-group descriptive and large-group normative approaches, were more effective and better able to capture the true complexity of the phenomenon under study. (p. 56)

Additionally, mixing qualitative and quantitative methods in program evaluation is considered beneficial, not because they may increase our confidence in findings through consistency, but rather because they are able capture multiple realities, or ways of knowing that reflect the true complexity of the phenomenon (Ponterotto & Grieger, 1999). According to Dewey (1938), through the philosophical lens of pragmatism, evaluators are able to reflect critically on the instrumentation, the ways in which the evaluator is an instrument, and how the evaluation is instrumental in solving problems. Further, pragmatism opens possibilities for different types of data, methods, and even assertions to be mixed based on the premise that both means and their consequences “are developed and perfected in the processes of continuous inquiry” (Dewey, 1938, p. 11).

In an effort to be inclusive of how various ways of knowing influence the methodological process, a mixed methods research design was employed for the study. Johnson, Onwuegbuzie

and Turner (2007) provide a comprehensive definition of mixed methods research based on a synthesis of definitions from mixed methods research practitioners:

Mixed methods research is an intellectual and practical synthesis based on qualitative and quantitative research... It recognizes the importance of traditional quantitative and qualitative research but also offers a powerful third paradigm choice that often will provide the most informative, complete, balanced, and useful research results. (p. 129)

The core purpose of mixed methods research is to conduct inquiry using multiple paradigmatic perspectives, or what Green and Hall (2010) describe as “mental models,” allowing for respectful conversation, dialogue, and learning from those who are part of the space of inquiry (Green, 2007, p. xii). Using mixed methodology in program evaluation will strengthen the reliability of data, validity of the findings and recommendations, and to broaden and deepen our understanding of the processes through which program outcomes and impacts are achieved, and how these are affected by the context within which the program is implemented (Bamberger, 2012).

Collins, Onwuegbuzie, and Sutton (2006) conceptualized four rationales for mixed methods approaches in research and evaluation: participant enrichment, instrument fidelity, treatment integrity, and significance enhancement. According to Onwuegbuzie et al. (2010), of these four rationales for mixed methods approaches, instrument development has been developed least adequately, as there is a mythical perception that one must maintain a monolithic methodological tradition when developing a quantitative or qualitative instrument, respectively (p. 57). This study will utilize a mixed methods research framework for optimizing the development of a data collection instrument for purposeful use in evaluating a current family

engagement model, thus contributing to the research regarding mixed methods instrument development, writ large.

Research Design

The study was designed to answer the following research questions:

1. How is family engagement conceptualized in this specific early learning environment?
2. Does the family engagement instrument function as intended?
3. To what extent can acceptable validity and reliability estimates be established for an instrument developed to measure family engagement as a construct in early learning settings?

In order to address the research questions, the instrument development process involved classical test development procedures with aspects of mixed methods instrument development/construct validation procedure, where qualitative data were used to infuse the viewpoints of participants throughout the development process using Q-methodology. (Curlette, 2000; Brown, 1980, 1993, 2006; Onwuegbuzie et al., 2010). Overall, the process employed significant features of the test development process defined in the *Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 2014). The following sections will outline these aspects of the instrument development process.

Instrument Development and Validation Procedures

Step 1: Establishing Purpose

According to the *Standards for Educational and Psychological Testing (2014)*, the process of instrument development should “begin with a statement of the purpose(s) of the test, the intended users and uses, the construct or content domain to be measured, and the intended examinee population” (p. 76). For this study, a focus group of relevant stakeholders met to

develop this statement of purpose. This group consisted of individuals associated with the development of family engagement initiatives within the organization. Onwuegbuzie et al. (2010) contends that it is important for the instrument developer to ensure the voices of key informants are heard.

Step 2: Conceptualizing the Construct

An initial literature review was conducted to determine key elements of reliable and valid family engagement tools that are suitable in program evaluation efforts. Specifically, in the process of forming an operational definition of family engagement, relevant theoretical frameworks and/or conceptual framework(s) relative to the family engagement construct were identified. In addition to extensive literature review, Onwuegbuzie et al. (2010) suggests that instrument developers consult with a diverse set of local experts regarding the conceptualization of the construct. Within instrument development, it is important for researchers to be aware of their own personal belief systems related to their overall worldview, research philosophy, and discipline-specific philosophy (Combs, Bustamante, and Onweugbuzie, 2010). Furthermore, a key goal in this stage of development of an instrument is that the process of conceptualizing the construct possesses cultural sensitivity, so that when the instrument is developed, “it will yield data that are optimally reliable and valid” (Onweugbuzie et al., 2010, p. 63). In an effort to consider multiple worldviews and cultural sensitivity, Q methodology was employed at this point in the instrument development process.

Q methodology is a mixed-methods research approach that uses factor analysis to examine people’s shared viewpoints that reflect their underlying beliefs and values about a specific issue (Brown, 1980, Brown, 1993, Watts and Stenner, 2012). “Q methodology is a combination of conceptual framework, technique of data collection, and method of analysis that

collectively provides the basis for the scientific study of subjectivity” (Brown & Good, 2010, p.1149). Q methodology involves both quantizing (e.g., converting statements to a quasi-normal distribution that subsequently is factor analyzed; Miles & Huberman, 1994; Onwuegbuzie & Teddlie, 2003; Sandelowski, Voils, & Knafl, 2009; Tashakkori & Teddlie, 1998) and qualizing (e.g., forming narrative profiles for each emergent factor) (Tashakkori & Teddlie, 1998) within the same analysis. The procedure for conducting a study using Q-methodology consists of the following six steps: (a) developing a concourse on the research topic; (b) developing a representative Q-sample; (c) selection of P-sample; (d) conducting Q-sorting; (e) data analysis, and (6) factor interpretation. Figure 3.1 displays the six step process.

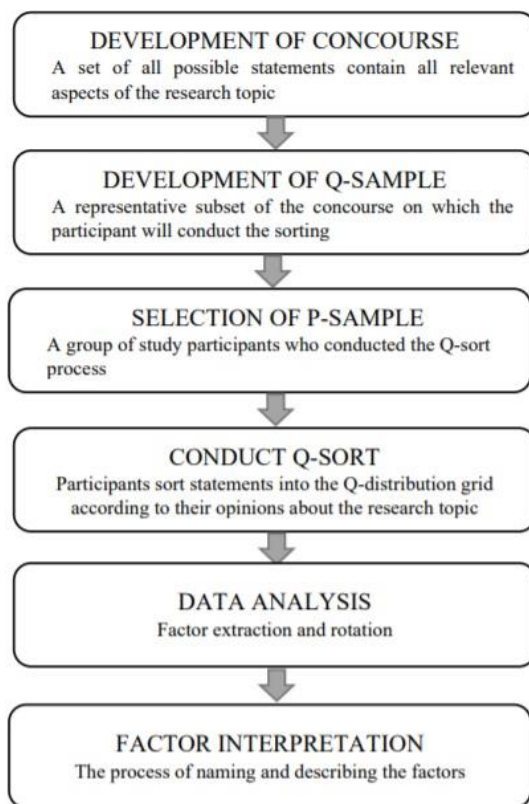


Figure 3.1 Q-Methodology Six Step Process

(a) Development of Concourse

The first step in the Q-methodology process involves the development of a concourse. The concourse is a synthesis of all ideas, beliefs, attitudes, and opinions that people say or think about research topics (Simons, 2013). The goal of this approach is to disclose a set of opinion statements about a topic (Owusu-Bempa, 2014). Qualitative methods such as interviews and existing literature are used to develop this set of statements (Hazen et al., 2016).

The participants ($n = 20$) utilized for this portion of the study were parents, teachers and family service assistants (FSAs) within two early learning centers. Participants were recruited to represent the span of viewpoints in a target population. They were purposively sampled. The participants were selected based on availability and willingness to participate in the interview. Semi-structured interviews were conducted with the participants, where interview questions sought to answer how the participants define family engagement in their own words. Appendix A shows the interview protocols used for the study. From the interviews and extant literature relative to family engagement, 52 statements were selected that reflected direct statements of how family engagement is defined from the perspectives of interview participants, as well as from family engagement literature.

(b) Development of Q-Sample

The Q-sample is a refinement and reduction of statements from the original concourse (Van de tran & Dorofeeva, 2018). The purpose of this step is not only to reduce the number of statements but also to maintain the representativeness of all the points of view contained in the concourse (Tiernon et al., 2017). An ideal number in a Q-sample is usually between 40 and 80 statements (Paige & Morin, 2014; McClelland, 2014; Martin et al., 2014). However, studies have been performed using a smaller number of statements such as 18, while others carried out up to

140 statements (Simons, 2013). For this study 40 statements were selected for the Q-Sample that reflected how participants define the construct of family engagement. The original set of statements can be found in Appendix B.

(c) Selection of P-Sample

A P-sample is the group of participants that perform the sorting of statements in the Q-sample. Participants for the P-sample are intentionally selected to represent a broad range of viewpoints within the setting (Simon, 2014; Owusu-Bempah, 2014; Hermelingmeir & Nicholas, 2013). Q-methodology does not require a large number of participants for the p-sample, as reliable results can be achieved with a small number of participants in the P-set (Yao et al., 2015; Cairns, 2012). For this stage in the study, participants (n =11) were selected from the pool of individuals who were interviewed for the development of the statement concourse. These individuals were selected because they were familiar with the current study and goals of the research project to develop a valid and reliable instrument for measuring family engagement in a diverse research setting.

(d) Conduct Q-Sort

The Q-sort process is used to capture the subjectivity expressed during the sorting procedure (Ward, 2009; Brown 1980, 1993). Q-set statements were transferred onto separate cards, randomized, and numbered. Prior to Q-sort data collection, a Q-sort distribution grid was developed to aid in participants organization of the 40 statements selected for the Q-sample. Figure 3.2 provides an example of the distribution grid used for the study. Participants were then asked to sort cards in a forced quasi-normal grid in terms of statements that are “less like how they think” to “most like how they think”. In this forced sorting process, only one statement is positioned in each space of the distribution grid. In the Q-sort process, participants must sort the

factors (Watts & Stenner, 2005). Based on this analysis, each factor, also known as a viewpoint, was given a narrative description that aided in the creation of an instrument framework and organization of how the construct of family engagement is defined. Additionally, each of these viewpoints were analyzed through the lens of ecological systems theory, in an attempt to illustrate how the interaction between the structural layers of the theory yields significant impact for family engagement that lead to successful child outcomes.

Step 3: Select Framework for Organization of Construct

The Q-study analysis aided in the selection of a framework to organize the construct and items according to themes and test specifications that were determined (Curlette, 2000; Onweugbuzie et al., 2010). According to *Standards* (2014) “test specifications should describe the purpose(s) of the test, the definition of the construct or domain measured, the intended examinee population, and interpretations of intended use” (p. 85). A table of specifications was developed in order to organize the items according to domains of the construct of family engagement. The table of specifications serves as an outline of the content of the instrument that directly relates to the research questions (Turocy, 2002). In addition, the table of specifications was used as a guide to develop appropriate questions and to assess criterion-related validity and the plan for item analysis (Turocy, 2002). Figure 3.3 displays a table of specifications for the instrument which guides the item writing process based on defining viewpoints of the family engagement construct, desired item type, and the desired number of items for each viewpoint that conceptualized family engagement. Based on this framework, the instrument will produce nine items, however, additional items will be written in order to account for the potential omission of items of the instrument throughout iterations of the instrument development process.

	Indicators of Viewpoint	Item Type	# of Items
Viewpoint 1	-Family Involvement -Family Centered Approach -Strengths Based Approach -Interaction with Families	Likert Scale	4
Viewpoint 2	-Shared responsibility of families, schools, and community -Family Empowerment	Likert Scale	2
Viewpoint 3	-Collaboration of all stakeholders -Culturally Responsive -Families as Key Decision Makers	Likert Scale	3

Figure 3.3 Table of Specifications for Family Engagement Instrument Development

Step 4: Item Type and Number of Items

During this step of the instrument development process, decisions were made regarding the type of item and test length. According to Curlette (2000), the wording of items were determined by if the items are true/false or a likert scale type. Curlette (2000) asserts the following regarding item type:

the wording difference involves putting qualifiers for the amount or degree in the stem of the item if it is a true/false item. On the other hand, if the respondent is using a scale, the degree is mostly handled by the response scale itself (p. 2).

For this study, a likert scale type was chosen. In addition, decisions were made regarding the length of the instrument, as this has an effect the overall reliability of the instrument. Length of the assessment refers to the number of items on the test as well as the amount of time it takes

(Lord & Novick, 1978). In terms of guidelines, research suggests that instruments contain a minimum of 7 or 8 items in order for the scales to exhibit sufficient reliability (Curlette, 2000). This guideline was maintained when determining test length for this study.

Step 5: Writing Initial Items

Test items were written based on the table of specification criteria and based on specific item writing guidelines. Thompson and Thurlow (2002) and Thompson, Johnstone, and Thurlow (2002) suggest that the following elements of universal design should be considered during the item writing:

- (1) Inclusive Assessment Population—Items were written to be inclusive of the assessment population. For this study, the family engagement instrument was written to be inclusive of parents/guardians within this specific early learning setting.
- (2) Precisely Defined Constructs—Items were written to reflect a clearly defined construct, minimizing all construct-irrelevant cognitive, sensory, emotional, and physical barriers.
- (3) Accessible, Non-Biased Items—*Standards* (2014) states that “accessibility is the notion that all test takers should have an unobstructed opportunity to demonstrate their standing on the construct(s) being measure” (p. 49). Accessibility was built into items from the beginning, and bias review procedures ensure that quality is retained in all items.
- (4) Simple, Clear, and Intuitive Instructions and Procedures—All instructions and procedures for the instrument are simple, clear, and presented in understandable language.

(5) Maximum Readability and Comprehensibility—A variety of readability and plain language guidelines were followed for readable and comprehensible text. According to Clark and Watson (1995) the language should be straight forward, appropriate and simple in nature. The language should also be of the reading level of target population.

Researchers recommend that materials for the public be written at the fifth or sixth-grade reading level (Doak et al., 1996; Weiss and Coyne, 1997). A researcher should avoid using trendy expressions, idioms, other language forms that vary widely with age, ethnicity, region, and gender (Clark and Watson 1995).

(6) Maximum Legibility—The items were written and presented in a format that is legible and easily readable.

From this process, 23 items were written. In addition to construct related items, items were written to collect data relative to demographic characteristics (i.e. gender, level of education, race, and ethnicity). The demographic items were useful in conducting analyses that involve grouping in other steps of the instrument development process.

Step 6: Differential Item Function Analysis using Qualitative Methods

Prior to conducting any statistical analysis on the items, items were examined for possible ethnic and gender bias, also known as differential item functioning (DIF). According to Standards (2014), DIF “occurs when different groups of test takers with similar overall ability, or similar status on an appropriate criterion, have, on average, systematically different responses to a particular item” (p. 16). The presence of DIF indicates differences in the probability of correctly responding to an item and possibly what the test item measures (Roth et al., 2013). For this stage in study, a panel of experts was selected to review test items for inappropriate characteristics. The panel consisted of individuals who are knowledgeable about the targeted

subpopulations being considered in the differential item functioning analysis. Items by the panel of experts were revised or removed from the item pool entirely. Instruments can be affected by lack of conceptual equivalence in different groups. Qualitative analyses provide information about the reasons for nonequivalence, such as changes in content, format, difficulty of words or sentences, and differences in cultural relevance (Angel, 2006; Johnson, 2006; Manly, 2006).

Allowing items to be examined by an expert panel will test content validity. The main goal of content validity is “to finalize the substantive content of the questionnaire so that the construction process can be undertaken” (Dillman, 2000, p. 141). Content validity, also known as subject validity, is primarily a judgmental process (Lester & Bishop, 2000, p. 12). Content validity is established by showing that the test items from a sample of a universe in which the investigator is interested (Cronbach & Meehl, 1955, p. 281). According to Rubio, Berg-Weber, Tebb, Lee, Rauch (2003), a panel of experts has the ability to provide constructive feedback about the quality of the instrument and the objective criteria needed to evaluate each item (p. 95). There are no numerical values involved in this process, as this process is evidence of general agreement by experts in the content area (Newman & McNeil, 1998, p.40). In effect, according to Mueller “there is no statistical index of content validity. The process must simply be documented” (1986, p. 63).

Step 7: Pilot Testing of Items

The 23 items were administered to 120 parents/guardians/adult family representatives in two school sites within a multi-site early learning program in the form of a survey instrument. Site 1 accounted for 51.7% of participants (n = 61) and site 2 accounted for 48.3% of participants (n = 57). Demographics for the overall participants are reported in Table 3.1. Due to missing data, all demographic categories do not equal the number of surveys that were administered.

Surveys were administered in a paper format. Participants were asked participate in the study during drop-off and pick-up time at the schools. Participants completed the surveys in the presence of the researcher.

Table 3.1

Frequencies and Percentages for Demographic Characteristics of Participants

Variable	n	%
Gender		
Male	19	16.1
Female	99	83.9
Age		
20-29	47	39.8
30-39	44	37.3
40-49	16	13.6
50-59	9	7.6
60 and over	2	1.7
Race and Ethnicity		
Black	107	90.7
Asian	2	1.7
Native American	1	0.8
White	1	0.08
Other	7	5.9
Latinx	8	6.8
Non-Latinx	110	93.2
Education Level		
High School or Equivalent	54	45.8
Certificate or training program	25	21.2
Associate's Degree	24	20.3
Bachelor's Degree	9	7.6
Graduate Degree	2	1.7
Other	4	3.4

Step 8: Group Differences

After pilot testing the initial instrument items, the next step consists of a method for building validity into the instrument for measuring family engagement for this population. In accordance with Curlette (2000), for this study, validity was built into the instrument by conducting a group differences studies at this specific stage of instrument development. According to Standards (2014) validity is the most fundamental consideration in developing and evaluating tests and instruments (p. 11). Validity refers to the degree to which evidence and theory support the interpretations of instrument scores and ratings for proposed uses of instruments (AERA, APA, & NCME, 2014). It is important to note that statements about validity should refer to particular interpretations for specific uses of instruments. In other words, it is incorrect to refer to “the validity of the instrument”, as evidence of validity should be based on the interpretations of the specific use of instruments and not the instrument as a whole (AERA, APA, & NCME, 2014).

One way to test the construct validity of an instrument when there is no gold standard is to examine known-groups validity (Davidson, 2014). In this approach, the instrument is administered to two groups that are known to have or that logically should have different levels of the construct to confirm whether the hypothesized difference is reflected in the scores of the two groups. For this study, a self-report question was included on the instrument that was used to identify groups of individuals who are considered low vs. high. The determined criteria were the number of events that was attended by the parent/guardian. Individuals who attend less than half of the number of events this year were considered to be “low engaging” parents, where parents/guardians who reported attendance to fifty percent or more events within the early learning setting were considered “high engaging” parents/guardians.

Curlette (2000) suggests that the means should be compared on each item for the two groups. If items have the same mean, this indicates that the item does not discriminate between the two groups. For this study group differences were analyzed by conducting a Mann-Whitney U test. Mann-Whitney U test is a non-parametric test that is used to compare two sample means that come from the same population, and used to test whether two sample means are equal or not (Mann & Whitney, 1947; Wilcoxon, 1945). Usually, the Mann-Whitney U test is used when the data is ordinal or when the assumptions of the t-test are not met (Mann & Whitney, 1947). This means difference test is appropriate as two samples from the same population are being compared and the data is ordinal. Items that show statistically significant means between the two groups show item discrimination, and thus contribute to the validity of the instrument (Curlette, 2000).

Step 9: Factor Analyses

Evidence for construct validity were obtained through factor analysis procedures. The current set of items were administered to 120 parents or guardians from the research site. These individuals are the intended recipients of the instrument. According to Onwuegbuzie et al. (2010), the sample size should be large enough to justify conducting a factor analysis and yields adequate scale score reliabilities with relatively narrow confidence intervals during this phase. While there are several rules in the literature regarding adequate sample size for conducting factor analysis, this study applied the rule stating that the subjects-to-variables ratio should be no lower than five (Gorsuch, 1983; MacCallum, Widaman, Zhang & Hong, 1999; Everitt, 1975, in Arrindell & van der Ende, 1985; Gorsuch, 1974; Arrindell & van der Ende, 1985). In other words, the instrument should be administered to five times the number of items in the pool to follow acceptable factor analysis guidelines.

Given the non-normal nature of likert-scale data, the *principal axis factoring* procedure for factor analysis was deemed most appropriate (Fabrigar et al., 1999). In an attempt to achieve a clear and more simplified factor structure, it was necessary to rotate the factors. McDonald (1985) defines rotation as “performing arithmetic to obtain a new set of factor loadings from a given set” (p. 40). Bryant and Yarnold (1995) define it as “a procedure in which the eigenvectors (factors) are rotated in an attempt to achieve simple structure” (p. 132). Bryant and Yarnold (1995) define simple structure as “a condition in which variables load at near 1 or at near 0 on an eigenvector, or factor (pp. 132-133). Variables that load near 1 are important in the interpretation of the factor, and variables that load near 0 are clearly unimportant. Thurstone (1947) first proposed the criteria that needed to be met for simple structure to be achieved: (1) Each variable should produce at least one zero loading on some factor; (2) Each factor should have at least as many zero loadings as there are factors; (3) Each pair of factors should have variables with significant loadings on one and zero loadings on the other; (4) Each pair of factors should have a large proportion of zero loadings on both factors (if there are approximately four or more factors total); (5) Each pair of factors should have only a few complex variables.

For this study, promax rotation was used due to the likelihood that the factors would be correlated (Curlette et al., 1993). Promax is an oblique rotation method and oblique rotation methods allow factors to correlate with one another (Costello & Osborne, 2005). The factor solution was estimated and rotated using SPSS version 25. (IBM Corp., 2017). Factors loadings greater than or equal to .4 are considered satisfactory (Stevens, 1992).

Step 10: Internal Consistency and Reliability

According to Standards (2014) reliability refers to the “consistency of scores across instances of testing procedure” (p. 33). Gable and Wolf (1993) assert that the reliability of a set

of items is affected by “the characteristics of the sample, the homogeneity of the item content, the number of items, and the response format” (p. 212). Internal consistency, measured by Cronbach’s alpha, is based on the correlations between different items on the same instrument. Internal consistency measures whether several items that propose to measure the same general construct produce similar scores (Henson, 2001). Cronbach’s alpha is a statistic calculated from the pairwise correlations between items (Cronbach, 1951). For this study, internal consistency reliability was calculated using the coefficient alpha procedure in SPSS. A commonly accepted rule for describing internal consistency is that the coefficient is at least .70 (George & Mallery, 2003). However, very high reliabilities (0.95 or higher) are not necessarily desirable, as this indicates that the items may be redundant (Streiner, 2003).

Additionally, reliability was examined using the standard error of measurement (SEM). According to standards for psychological testing, SEM is the standard deviation of errors of measurement that indicates the dispersion of measurement error for a specified group (American Educational Association, American Psychological Association, & National Council for Measurement in Education, 2014). The SEM is valuable to report in instrument development studies as it indicates an estimate of the range in which a true score falls (Anastasi & Urbina, 1997). Classical test theory (CTT), uses the true score model:

$$X = T + E$$

where X is the observed score or raw score, T is the true score, and E is the measurement error (Kline, 2005). SEM is a reflection of the standard deviation and reliability and produces a confidence interval to interpret the observed score, and is calculated with the following equation:

$$SEM = SD\sqrt{1 - r}$$

where SD is the standard deviation of the data and is an estimate of scale reliability (Crocker & Algina, 1986).

Step 11: Differential Item Functioning using Quantitative Methods

In addition to the qualitative DIF approach in Step 5, the final step of the instrument development and validation procedures included quantitative approach to assess item integrity. The Mantel-Haenszel (1959) approach to DIF analysis, developed by Holland and Thayer (1988), was used for this study. A non-parametric method was used, the Mantel Haenzel method for polytomous items. For the analysis, jMetrick, an item analysis statistical software was used (Meyer, 2014). DIF was determined by two conditions: a significant MH- χ^2 ($p < 0.01$; 1 df) and an effect size > 0.05 for moderate DIF or > 0.10 for large DIF as implemented in jMetrik. These results were corroborated with the qualitative DIF analysis and final decisions was made regarding which items to include in the final item pool.

For polytomous items, DIF is assessed by examining the standardized mean difference, which is the difference between the unweighted item mean of the focal group and the weighted item mean of the reference group. The weights applied to the reference group are applied so that the weighted number of reference group participants is the same as that in the focal group with the same total score. The effect size for the standardized mean difference is computed by dividing the standardized mean difference by the total group-item standard deviation. Missing item responses are scored as 0 points.

Methodological Limitations

The approach to instrument development combined and infused aspects of mixed methods instrument development (Onwuegbuzie et al., 2010), Q-methodology, and a classical instrument development approach (Curllette, 2010). While these methods complement each

other, neither approach is being followed to fidelity. Also, there are additional steps to be considered within instrument development procedures (i.e. format of instrument, norming, calculate statistics, manual development).

Summary

The chapter began with a rationale for methodological choices for this study. This was followed by a brief review of the sample followed by the research design and the research questions. The instrument design framework was used to delineate each step in the development of the instrument. The importance of the validity and reliability of the instrument was outlined. A detailed description on the statistical methods used to estimate validity and reliability were discussed. The relevance of the choice of those methods to this study was also identified.

4 RESULTS

Data were analyzed through multiple stages in the instrument development process. First, during the conceptualization of the construct, Q-methodology was employed. A principal component analysis (PCA) with varimax rotation was conducted to analyze the data from this process. The retained factors from this analysis informed the framework by which the items for the instrument were written. A panel of experts examined the resulting items for possible ethnic and gender bias through a qualitative DIF analysis. DIF occurs when different groups of test takers with similar ability, or similar status on an appropriate criterion have different responses to a particular item (Standards, 2014). Historically, concerns about instrument bias have centered around differential performance by groups based on gender or race (Kornhaber, 2004; Camilli & Shephard, 1994). As discussed in Chapter 3, the panel consisted of individuals who are knowledgeable about the targeted subpopulations considered for this study. Next, construct validity was established through an analysis of group differences through conducting the *Mann-Whitney U Test*, as well as exploratory factor analysis. Test reliability was examined through Cronbach's alpha reliability analysis in order to establish internal consistency of the instrument. Also, item integrity was assessed using the Mantel-Haenzel test, a quantitative approach to DIF analysis. These results were corroborated with the previous qualitative DIF analysis findings. A final pool of items was obtained through these analyses.

Q-Methodology: Principal Component Analysis

Q-sort data were analyzed using PQ Method software (Schmolck and Atkinson, 2014). The Q-sample consisted of 40 statements that represented how 20 participants define family engagement in the early learning setting. These statements were developed based on qualitative interviews and extant literature surrounding family engagement. A principal component analysis

(PCA) with varimax rotation was conducted in order to maximize the explained variance (Brown, 1980; Watts & Stenner, 2012). By convention, PCA with a varimax rotation is the most common routine employed for Q methodology (Brown, 1980). PCA is appropriate when data are continuous and normally distributed. Q-sort data are always continuous and normally distributed as participants are forced to arrange statements in a quasi-normal distribution (McKeown & Thomas, 1988). Factors were retained if there was an eigenvalue greater than one and if two sorts loaded significantly onto the factor (Kaiser, 1960). Based on this criterion, 3-factors were retained that represented viewpoints for this study of family engagement.

PQMethod produced multiple statistical outputs that were analyzed and interpreted for this study. Table 4.1 shows factor arrays, which were calculated for each statement using the average of all the individual Q-sorts that loaded significantly and exclusively on each retained factor. The numbers in the table represent a comparison of relative statement positions between factors. The factor arrays are based on the 9-point rating scale (-4 to +4) that participants used to organize the statements during the Q-sort process.

Table 4.1

Factor Arrays

No.	Statement	F1	F2	F3
1	Family engagement is having families come together interacting.	3	-2	1
2	Family engagement happens in the home, early childhood program, school, and community.	0	0	2
3	Family engagement is collaborative, culturally competent, and focused on improving children's learning.	-2	2	4

4	Family engagement is hands-on, not just involving a conversation or taking a survey.	0	2	3
5	Family engagement is when a parent can come to school staff and vice versa and tell them what is going on with their child or what does their child need.	0	-1	0
6	Family engagement is empowering families to the point to where they leave Head Start and they are comfortable advocating for themselves and their children.	0	-1	4
7	Family engagement is giving parents an opportunity to speak about what direction they want their school to go in.	-1	-1	2
8	Family engagement honors a family's strengths and culture, mutual respect, and shared goals for the child.	4	0	2
9	Family engagement is when it takes a village to raise a child.	-1	-3	1
10	Family engagement is helping families with resources if they are without something.	-4	-4	2
11	Family engagement is coming inside the classroom, reading to the students, coming on the playground and show them different activities, you know, like maybe kicking the soccer ball, or whatever you like to do.	-1	1	-4
12	Family engagement is a family-centered, strength-based approach to establishing and maintaining relationships with families and accomplishing change together.	3	1	0
13	Family engagement involves the parent being active with the child and the teacher by helping the classroom, volunteering in the classroom, and about taking what they learn at school and doing it at home.	0	2	1
14	Family engagement is bridging the gap between families and teachers.	0	0	2

15	Family engagement involves parents, grandparents, aunts, uncles, and siblings.	-1	0	0
16	Family engagement is following through and following up with families.	2	0	-1
17	Family engagement is having parents involved in the curriculum.	0	-4	1
18	Family engagement is seeing what the community and parents are in need of and asking them their opinion.	-3	-3	-2
19	Family engagement is when you have an open line of communication with your parents and you're able to get them involved in what is going on.	2	2	0
20	Family engagement involves viewing parents and community members as assets, not liabilities.	-1	-1	-1
21	Family engagement extends beyond simple involvement by "motivating and empowering families to recognize their own needs, strengths, and resources and to take an active role in working toward change.	-1	3	-1
22	Family engagement is keeping parents up to date with their child's progress and involving them in setting goals for their children.	2	1	-1
23	Family engagement encompasses planning following through and then re-planning if you have to go back.	-1	-2	-1
24	Family engagement is being proactive.	1	0	0
25	Family engagement in schools is defined as parents and school personnel working together at the classroom, local, and system level to support and improve the learning, development, and health of children and adolescents.	-2	3	-1
26	Family engagement is a reciprocal partnership between parents and programs that reflects a shared responsibility to foster young children's development and learning.	-2	2	2

27	Family engagement is the parents coming in to get an understanding of things that are going on here at the center.	1	-2	-3
28	Family engagement is attending meetings and events where families learn about housing, food, education, and other family needs.	1	-2	-2
29	Family engagement is building up families and kids.	0	1	-2
30	Family engagement is everybody working together as one for the best interest of the child whether it be, mentally, physically, emotionally.	2	4	-1
31	Family engagement is a shared responsibility in which schools and other community agencies and organizations are committed to reaching out to engage families in meaningful ways and in which families are committed to actively supporting their children's learning and development.	-2	4	1
32	Family engagement is forming a partnership; you are coming together as one. Anybody can volunteer, it doesn't have to be a parent. So volunteering is actually giving what you have. Giving what you have to give. But engagement is becoming a team.	0	-1	-3
33	Family engagement is families being involved in what is going on with the student at the school and at home.	3	1	-2
34	Family engagement is having parents involved in events.	4	-3	-2
35	Family engagement cuts across and reinforces learning in the multiple settings where children learn- at home, in prekindergarten programs, in school, in after school programs, in faith-based institutions, and in the community.	-2	-2	0
36	Family engagement means including families as key stakeholders and advisors in policy development, service design, and program and service evaluation.	-3	-1	3
37	Family engagement is based on the idea that parents and others who care for their children work together	1	1	0

to prepare children for success. The specific goals of the partnership for each family may vary.

38	Family engagement is the method in which schools interact with our families from a professional to a non-professional manner; educational and fun activities for families.	-3	0	-4
39	Family engagement is pulling in families for learning for knowledge or for the kids.	2	0	-3
40	Family engagement refers to the systematic inclusion of families in activities and programs that promote children's development, learning, and wellness, including in planning, development, and evaluation.	-4	3	0

Note: F1 = factor 1; F2 = factor 2; F3 = factor 3

The analysis produced by the PQMethod software was used to inform the interpretation of the qualitative data. Using the factor arrays, the highest and lowest scores assigned to particular statements for each factor are considered first. Also, statements identified as statistically distinguishing for that factor at $p < 0.05$ and $p < .01$ are considered to identify what is unique about the factor. Tables 4.2, 4.3, and 4.4 display the distinguishing statements for each viewpoint. The findings provide an explanation of the three factor groups' beliefs about family engagement. The results are presented as a set of narrative descriptions of the different viewpoints identified via the Q-factor analysis output.

Viewpoint 1

Distinguishing statements from this factor view family engagement as parents and families being involved in school events for children as well as school and community events that seek to support families. Further, family engagement should be family-centered and strengths based. This viewpoint also regards family engagement as parents and interacting with one another. This viewpoint is distinguished from other statements in that it does not emphasize

the systematic inclusion of families when defining family engagement. While much of what occurs in schools is systematic, this viewpoint places the engagement of parents and families and schools as an organic relationship between families and schools.

Table 4.2

Distinguishing Statements for Viewpoint 1

No.	Statement	Q-Sort Value and Z-Score
34	Family engagement is having parents involved in events.	+4 1.70*
12	Family engagement is a family-centered, strength-based approach to establishing and maintaining relationships with families and accomplishing change together.	+3 1.57
1	Family engagement is having families come together interacting.	+3 1.17
31	Family engagement is a shared responsibility in which schools and other community agencies and organizations are committed to reaching out to engage families in meaningful ways and in which families are committed to actively supporting their children's learning and development.	-2 -1.27*
36	Family engagement means including families as key stakeholders and advisors in policy development, service design, and program and service evaluation.	-3 -1.37
40	Family engagement refers to the systematic inclusion of families in activities and programs that promote children's development, learning, and wellness, including in planning, development, and evaluation.	-4 -1.70*

Note: Statements significant at $p < .05$; * indicates significance level at $p < .01$

Viewpoint 2

From this viewpoint, family engagement is seen as shared responsibility between parents and families, the school, and the community. From this vantage point family engagement extends beyond basic family involvement by motivating and empowering families to recognize their own needs, strengths, and resources and to take a more active role in working toward changes within

the educational setting. While this viewpoint champions parents and families taking a more active role in schools, statements in this viewpoint showed low agreement with the involvement of parents and families in the development of curriculum.

Table 4.3

Distinguishing Statements for Viewpoint 2

No.	Statement	Q-Sort Value and Z-Score
31	Family engagement is a shared responsibility in which schools and other community agencies and organizations are committed to reaching out to engage families in meaningful ways and in which families are committed to actively supporting their children's learning and development.	+4 1.73*
25	Family engagement in schools is defined as parents and school personnel working together at the classroom, local, and system level to support and improve the learning, development, and health of children and adolescents.	+3 1.52*
21	Family engagement extends beyond simple involvement by motivating and empowering families to recognize their own needs, strengths, and resources and to take an active role in working toward change.	+3 1.38*
1	Family engagement is having families come together interacting.	-2 -1.39*
9	Family engagement is when it takes a village to raise a child.	-3 -1.41*
17	Family engagement is having parents involved in the curriculum.	-4 -1.65*

Note: Statements significant at $p < .05$; * indicates significance level at $p < .01$

Viewpoint 3

Viewpoints within this factor see family engagement as collaborative. Family engagement should also be responsive to the culture of families of the school. From this view, family engagement is empowering parents and families to advocate for themselves and their

children. Views within this factor showed low agreement for the perspective of family engagement being parents coming into the classroom for various activities.

Examined through the lens of ecological systems theory, the viewpoints of participants illustrate how the interactions between the structural layers within a child's ecosystem yields significant impact for family engagement that lead to successful child outcomes. Centering the child, families and schools represent a significant and intimate part of a child's environment,

Table 4.4

Distinguishing Statements for Viewpoint 3

No.	Statement	Q-Sort Value and Z-Score
3	Family engagement is collaborative, culturally competent, and focused on improving children's learning.	+4 2.08*
6	Family engagement is empowering families to the point to where they leave Head Start and they are comfortable advocating for themselves and their children.	+4 1.49*
36	Family engagement means including families as key stakeholders and advisors in policy development, service design, and program and service evaluation.	+3 1.24*
29	Family engagement is building up families and kids.	-2 -1.12*
39	Family engagement is pulling in families for learning for knowledge or for the kids.	-3 -1.55*
11	Family engagement is coming inside the classroom, reading to the students, coming on the playground and show them different activities, you know, like maybe kicking the soccer ball, or whatever you like to do.	-4 -2.00*

Note: Statements significant at $p < .05$; * indicates significance level at $p < .01$

deeming them part of the microsystem. Within the layer, personal relationships between members of microsystem environment are very important to development of the child (Bronfenbrenner, 1989). This type of interaction is illustrated in Viewpoint 2 where study

participants showed strong agreement for the statement,

“Family engagement in schools is defined as parents and school personnel working together at the classroom, local, and system level to support and improve the learning, development, and health of children and adolescents.”

Further, these interactions are bi-directional, where families and schools actions influence one another (Bronfenbrenner, 2004).

The mesosystem encompasses the interaction of the different microsystems. Supported through this lens, Viewpoint 1 places strong emphasis on family engagement being rooted in the interactions families with schools, as well as the interactions of families with other families.

The macrosystem refers to the cultural values, customs, and laws that effect the individual (Berk, 2000). This systemic layer is echoed in Viewpoint 3 where participants agree that family engagement should exhibit “cultural competence” when focusing on improving the lives of children. In the context of schools, “cultural competence is an ongoing, contextual, dynamic, experiential and developmental process that impacts one’s ability to understand, communicate with, serve, and meet the needs of individuals who look, think, and/or behave differently from oneself” (Balcazar et al., 2010, p. 281). The chronosystem layer takes into account time as a dimension as it relates to a child’s environments, which may include significant life events and general child developmental stages (Bronfenbrenner, 2004). Important in this specific context are transitions that take place in the early learning setting. Participants showed agreement for the statement, “Family engagement is empowering families to the point to where they leave Head Start and they are comfortable advocating for themselves and their children.” This statement exhibits how time related dimensions, such as transitions from

preschool to kindergarten are important when thinking about how families and schools should engage with one another.

The exosystem references how indirect social settings, in which the child does not play an active role, can influence the child's immediate context. Missing from these viewpoints is how certain outside factors and influences can indirectly impact the ways in which families engage, which in turn affects the child. As an example, there may exist barriers that prevent parents from interacting in the school space on a regular basis. Unfortunately this type of data was not captured as the family participants in the study were primarily individuals who exhibit high levels of engagement. The voice of the parent/family representative is missing from this analysis. Future iterations of this study should consider finding ways to include these voices.

These viewpoints were then used to inform the framework by which the items for the instrument were written. Items were specifically written and developed to reflect the representative viewpoints from the Q-methodological study as represented in the table of specification in Chapter 3. Additionally, items were developed based on the suggested elements of universal design for item writing such as item length, readability, and inclusivity of assessment population (Thompson et. al. 2002). Researchers recommend that materials for the public be written at the fifth or sixth-grade reading level (Doak et al., 1996; Weiss and Coyne, 1997). Microsoft Word was used to provide the Flesch–Kincaid readability statistic of 6.1, indicating that instrument items reflect readability at a sixth grade reading level. Appendix C provides the initial set of item for the proposed instrument.

Group Differences (Mann Whitney U Test)

Construct validity of the instrument examine known-groups validity (Davidson, 2014). In logically should have different levels of the construct to confirm whether the hypothesized

difference is reflected in the scores of the two groups. This procedure examines the extent to which items have the ability to discriminate between groups. For this analysis, participants were grouped into “low engagement” and “high engagement” groups based on the self-report question, “Approximately how many family engagement events and/or meetings have you or a family member attended this school year”? Two groups were identified based on individuals who reported above and below the mean for the entire group ($M = 3.46$, $SD = 3.3$). The 73 participants in the low engagement group ($M = 1.45$, $SD = 1.0$) and the 44 participants in the high engagement group ($M = 6.8$, $SD = 3.1$), demonstrated significant differences in responses on 3 items according to the Mann-Whitney U test. For item 12, the test indicated that the “high engagement” group was more likely to attend parent meetings and other school events ($M = 4.4$) than the low engagement group ($M = 3.8$), $U = 993.0$, $p < .001$, $r = .34$. For item 13, the test indicated that the “high engagement” group indicated a higher likelihood of having positive relationships with teachers and other school staff ($M = 4.6$) than the low engagement group ($M = 4.4$), $U = 1230.5$, $p = .01$, $r = .23$. Finally, for item 14, the test indicated that the “high engagement” group was more likely to interact with other families at the school ($M = 4.4$) than the low engagement group ($M = 4.0$), $U = 1212.5$, $p = .02$, $r = .21$. There were no statistically significant differences in responses for any other items.

Factor Analysis

The method of factor analysis identifies the structure of the instrument and reduces the number of items per factor by eliminating items that load on more than one factor (indicating item multidimensionality), or that fail to load on any factor (Curllette et al., 1993). A *principal axis factoring* procedure for factor analysis with promax rotation was conducted in order to examine the factor structure for the 23-item family engagement instrument.

Multiple criterion were examined to determine the factorability of the data. The Kaiser-Meyer-Olkin measure of sampling adequacy was .93, which is above the recommended value of .6 (Worthington & Whittaker, 2006). Bartlett's test of sphericity was significant ($\gamma^2 = 3694.61, p < .05$). Finally, the communalities were all above .3, further confirming that each item shared some common variance with other items. Given these overall indicators confirm the factorability of the items.

The factor structures were examined using the criteria where factors with eigenvalues of less than 1 were eliminated (Kaiser, 1960). Figure 4.1 shows a scree plot that graphs the eigenvalue against the factor number. The initial eigenvalues showed that the first factor explained 71% of the variance, the second factor 7% of the variance, and a third factor 5% of the variance. Based on these results, a three-factor solution was deemed adequate, accounting for 83% of the explained variance.

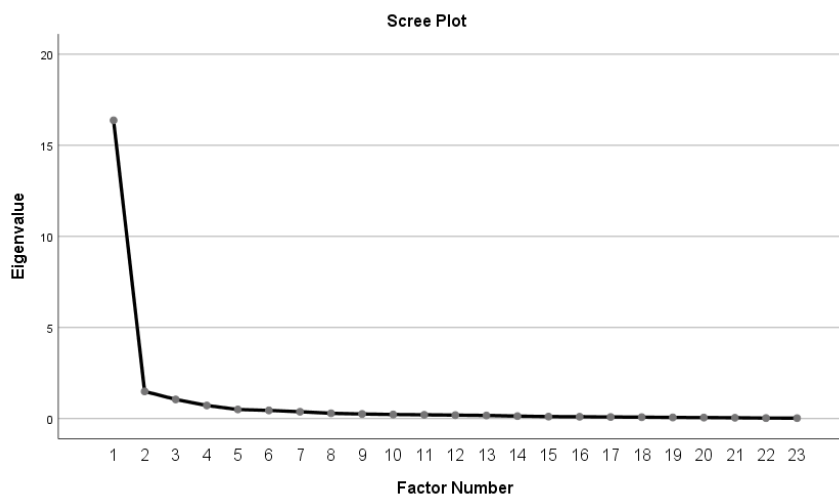


Figure 4.1 Factor Analysis Scree Plot

The factor pattern matrix is displayed in Table 4.5. Factor loadings greater than or equal to .4 were deemed satisfactory. For this iteration of the factor analysis process, 2 items had cross loadings on more than one factor. Item 11 "School staff members value my family's culture," and

Item 13 “I and/or my family have positive relationships with teachers and other school staff,” both had cross loadings above .3 on more than one factor, which does not meet the criteria for simple factor structure (Thurstone, 1947; Costello & Osborne, 2005). Table 4.6 show correlations between the three factors, which show high correlations between the factors.

Table 4.5

Factor Analysis Pattern Matrix

Item	Factor 1	Factor 2	Factor 3
Item 22	.938		
Item 21	.862		
Item 14	.856		
Item 19	.727		
Item 20	.691		
Item 12	.662		
Item 17	.622		
Item 16	.604		
Item 13	.598		.495
Item 5		.929	
Item 6		.886	
Item 10		.788	
Item 4		.710	
Item 9		.671	
Item 7		.567	.434
Item 11		.439	
Item 3			1.102
Item 2			.871
Item 1			.807
Item 8			.697
Item 23			.588
Item 18			.571
Item 15			.458

Note: Factor loadings greater than or equal to .40 are displayed in the table.

Table 4.6

Factor Correlations

Factor	1	2	3
Factor 1	-	.704	.753
Factor 2	.704	-	.745
Factor 3	.753	.745	-

Reliability and Internal Consistency

A Cronbach's alpha was calculated on the 23 items within the instrument (Cronbach, 1951). The instrument yielded high internal consistency with a coefficient of 0.98. While this commonly accepted rule for describing internal consistency is that the coefficient is at least .70 (George & Mallery, 2003), very high reliabilities (0.95 or higher) are not necessarily desirable, as this indicates that the items may be redundant (Streiner, 2003).

Reliability was also examined using the standard error of measurement (SEM). Sum scores were calculated for each subject in order to obtain this test of reliability. The SEM was calculated by this range of sum scores. The SEM was 2.48. Referencing the normal curve, there is a 95% chance that a person's true score falls between plus or minus two standard error of measurements of the obtained score and a 68 % chance that the person's true score falls between plus or minus one standard error of measurement of the obtained score. (Anastasi & Urbina, 1997). Based on the calculated SEM score, if a person's observed score for the instrument was 96, according CTT, there is a 68% chance that the person's true score will fall between 93.52 and 98.46, and a 95% chance that the person's score will fall between 91.04 and 100.96. The range of scores is small, which provides evidence of reliability for this instrument.

Item Integrity/Quantitative DIF Analysis (Cochran Mantel-Haenzel test)

The Mantel–Haenszel test (MH) for the detection of the DIF was utilized. The MH procedure is a chi-squared test statistic, which examines differences between the reference and focal groups on all items of the test, one by one (Marasculio & Slaughter, 1981). The Mantel-Haenszel method is considered a standard DIF procedure in the field of instrument development (Paek & Guo, 2011). JMetrack item analysis software was used for this analysis (Meyer, 2014).

According to Paek and Guo (2011), in practice when DIF is investigated using the MH method, it is not uncommon to have unbalanced sample sizes between the reference group and the focal groups. Given the unbalanced sample sizes for gender and race for this study, the results are tenable (Paek & Guo, 2011). For this study, males were the reference group while females were the focal group. The JMetrack item analysis software identifies three classes of DIF detection for polytomous test items: AA (negligible DIF detection), BB (intermediate DIF detection), and CC (large DIF detection), where a sign of “+” indicates DIF in favor of the focal group and a sign of “-” indicates DIF in favor of the reference group. An item falls into Class AA and shows no DIF (or negligible) in favor of any groups if that item’s absolute value of the effect size is less than or equal to 0.17 (Dorans & Holland, 1993; Holland & Thayer, 1988; Meyer, 2014). The DIF results obtained for gender in the present study showed that the majority of the items for males and females fell into Class AA. Item 14, Item 17, and Item 19 fell into Class BB+, indicating intermediate DIF in favor of females, and Item 3, Item 8, and Item 18 fell into Class BB-, indicating intermediate DIF in favor of males. Table 4.7 displays DIF results according to gender.

The DIF results obtained relative to racial groups for this study indicated that Item 10, Item 11, Item 12, Item 15, Item 16 and Item 23 fell into Class BB-, indicating intermediate DIF

in favor of individuals who do not identify as Black or African American. Item 18 and Item 19 fell into Class CC+-, indicating large DIF detection in favor of individuals who identify as Black or African American.

Table 4.7

DIF Analysis Results According to Gender

Items	Mantel	p-value	Effect size*	95% CI	DIF class**
Item 1	0.89	0.34	-0.14	[-0.49, 0.20]	AA
Item 2	0.41	0.52	-0.17	[-0.55, 0.21]	AA
Item 3	1.06	0.30	-0.22	[-0.59, 0.16]	BB-
Item 4	0.02	0.89	-0.09	[-0.41, 0.23]	AA
Item 5	0.63	0.43	0.16	[-0.24, 0.56]	AA
Item 6	0.20	0.66	0.15	[-0.20, 0.50]	AA
Item 7	0.12	0.73	-0.09	[-0.38, 0.19]	AA
Item 8	0.88	0.35	-0.21	[-0.52, 0.10]	BB-
Item 9	0.10	0.75	0.13	[-0.16, 0.41]	AA
Item 10	0.06	0.80	0.05	[-0.26, 0.35]	AA
Item 11	0.20	0.66	0.08	[-0.32, 0.48]	AA
Item 12	0.08	0.78	0.12	[-0.31, 0.55]	AA
Item 13	0.04	0.84	-0.03	[-0.37, 0.32]	AA
Item 14	1.14	0.28	0.22	[-0.30, 0.75]	BB+
Item 15	0.35	0.55	-0.05	[-0.35, 0.25]	AA
Item 16	0.00	0.98	-0.08	[-0.38, 0.21]	AA
Item 17	3.08	0.08	0.24	[-0.09, 0.57]	BB+
Item 18	0.74	0.39	-0.33	[-0.89, 0.22]	BB-
Item 19	3.96	0.05	0.31	[-0.08, 0.71]	BB+
Item 20	0.30	0.59	0.06	[-0.34, 0.45]	AA

Item 21	0.02	0.88	0.06	[-0.39, 0.50]	AA
Item 22	0.31	0.58	0.17	[-0.27, 0.60]	AA
Item 23	0.70	0.40	0.19	[-0.11, 0.50]	AA

Note: Focal group: Females: (n = 99). Reference group: Males (n = 19). DIF = differential item functioning; CI = Confidence Interval.

*The effect size for the standardized mean difference is computed by dividing the standardized mean differences by the total group-item standard deviation.

** DIF class indicates whether the DIF is negligible (AA), intermediate (BB), or large (CC). The sign “+” indicates DIF in favor of the focal group; the sign “-“ indicates DIF in favor of the reference group.

Table 4.8

DIF Analysis Results According to Race.

Items	Mantel	p-value	Effect size*	95% CI	DIF class**
Item 1	0.00	0.97	-0.02	[-0.41, 0.37]	AA
Item 2	0.09	0.77	-0.11	[-0.52, 0.29]	AA
Item 3	0.19	0.66	0.07	[-0.35, 0.50]	AA
Item 4	0.70	0.40	-0.13	[-0.47, 0.21]	AA
Item 5	0.01	0.91	-0.04	[-0.39, 0.32]	AA
Item 6	0.12	0.72	-0.13	[-0.47, 0.21]	AA
Item 7	0.99	0.32	-0.17	[-0.48, 0.14]	AA
Item 8	0.66	0.42	-0.17	[-0.53, 0.19]	AA
Item 9	0.89	0.35	-0.16	[-0.47, 0.15]	AA
Item 10	3.34	0.07	-0.26	[-0.56, 0.05]	BB-
Item 11	1.91	0.17	-0.27	[-0.68, 0.14]	BB-
Item 12	1.95	0.16	-0.32	[-0.78, 0.14]	BB-
Item 13	0.19	0.66	-0.04	[-0.41, 0.33]	AA
Item 14	0.00	0.99	0.03	[-0.38, 0.44]	AA
Item 15	1.45	0.23	-0.21	[-0.57, 0.15]	BB-
Item 16	3.74	0.05	-0.30	[-0.64, 0.03]	BB-
Item 17	0.72	0.40	0.16	[-0.24, 0.56]	AA

Item 18	5.41	0.02	0.55	[0.04, 1.07]	CC+
Item 19	4.47	0.03	0.46	[0.06, 0.86]	CC+
Item 20	0.04	0.85	0.06	[-0.36, 0.47]	AA
Item 21	0.24	0.63	-0.06	[-0.48, 0.37]	AA
Item 22	0.12	0.73	-0.01	[-0.45, 0.43]	AA
Item 23	1.37	0.24	-0.23	[-0.59, 0.12]	BB-

Note: Focal group: Individuals who identify as Black or African American: (n = 107). Reference group: Individuals who do not identify as Black or African American (n = 11). DIF = differential item functioning; CI = Confidence Interval.

*The effect size for the standardized mean difference is computed by dividing the standardized mean differences by the total group-item standard deviation.

**DIF class indicates whether the DIF is negligible (AA), intermediate (BB), or large (CC). The sign “+” indicates DIF in favor of the focal group; the sign “-“ indicates DIF in favor of the reference group.

Conclusion

Data were analyzed through multiple stages in the instrument development process. The Q-methodological study yielded three viewpoints that led to the development of items for the family engagement instrument. The retained factors from this analysis informed the framework by which the 23 items for the potential instrument were written. A panel of experts examined the resulting items for possible ethnic and gender bias through a qualitative DIF analysis. Overall, the individuals selected for this stage of the analysis did not detect DIF based on their initial assessment, however the panel discussed wording in multiple items that should be considered for revision. Next, construct validity was established through an analysis of group differences through conducting the Mann-Whitney U Test, as well as exploratory factor analysis. Through these analyses, instrument reliability was examined through Cronbach’s alpha reliability analysis in order to establish internal consistency of the instrument. Also, item integrity was assessed using the Mantel-Haenzel test, a quantitative approach to DIF analysis. Figure 4.2 displays each stage of analysis throughout the development process, and items that should be considered for revision or omission from the instrument based on the analysis.

At this point, decisions to revise or omit items have not been made. However, additional data analyses were conducted to provide fundamental information about items that are useful in assessing the usability of the current instrument. These results provide evidence for possibilities

Analysis	Item(s) in Question	Considerations for Revision
DIF (Qualitative)	a)Item 4	a) clarity of item wording
Group Differences	a)All items except: Item 12, Item 13, and Item 14	a) items do not discriminate between low and high family engagement groups
Factor Analysis	a) Item 11, Item 13	a) cross loadings on multiple factors; factor loading < .3
DIF (Quantitative)	a) Item 14, Item 17, and Item 19	a) intermediate DIF detected in favor of females
	b)Item 3, Item 8, and Item 18	b) intermediate DIF detected for
	c) Item 10, Item 11, Item 12, Item 15, Item 16, Item 23	c) intermediate DIF in favor of individuals who do not identify as Black or African American
	d) Item 18 and Item 19	d) large DIF in favor of individuals who identify as Black or African American

Figure 4.2 Item Revision Considerations

for future research as we seek to develop a valid and reliable instrument. First, the means and standard deviations of the items can provide fundamental information about which items are useful for assessing the concept of interest. Generally, the higher the variability of the item scores and the closer the mean score of the item is to the center of its distribution (i.e., median),

the better the item will perform in the target population. For items with ordinal response categories, an equal or a uniform spread across response categories yields the best differentiation (Cappelleri et al., 2014). Therefore, for the items on a five-point scale, a mean near 3.0 would increase the likelihood of increased variability, which provides insight as to whether or not the item is acceptable. Table 4.10 displays item means and standard deviations. In general, the means of each item. For these items, multiple measures of central tendency show that these items are not close to the center of its distribution, which could be an indication of poor item performance. According to Cappelleri et al. (2014) such a uniform spread is typically difficult to obtain, unless the researcher makes it a direct part of the sampling frame during the design stage, as it depends in part on the distribution of the sampled patients, which is outside the full control of the researcher. Therefore, more intentional sampling strategy could strengthen the study, as this will yield more variability in responses for the set of items.

Table 4.10

Table of Item Means

No.	Item	M	SD
1	The school and the community work together to help families.	4.41	1.023
2	The school and the community provide services and supports that honor my culture.	4.42	.990
3	The school and the community engage with our family and show support for our children's learning and successful outcomes.	4.49	1.011
4	School staff members communicate with my family though a variety of methods.	4.37	.932
5	School staff members know my family's strengths.	4.24	.980
6	School staff members help my family build on our strengths.	4.28	.964

No.	Item	M	SD
7	School staff members empower my family to advocate for my child(ren) outside of school.	4.38	.964
8	School staff members provide my family with resources to help my child learn at home.	4.49	.925
9	School staff members encourage my family to share thoughts and ideas about the school.	4.40	.891
10	School staff members help my family find resources if we are without something.	4.34	.957
11	School staff members value my family's culture.	4.46	.879
12	I and/or my family attend parent meetings and other school events.	4.03	1.021
13	I and/or my family have positive relationships with teachers and other school staff.	4.47	.854
14	I and/or my family interact with other families at my child(ren)'s school.	4.16	1.090
15	I and/or my family make an effort to know more about what is going on at my child(ren)'s school.	4.47	.884
16	I and/or my family learn about ways to help my family at my child(ren)'s school.	4.38	.914
17	I and/or my family collaborate with teachers and school staff to support successful outcomes for my child(ren).	4.40	.862
18	I and/or my family feel empowered to advocate for my family's well-being.	4.47	.809
19	I and/or my family help plan activities and events about learning at my child(ren)'s school.	4.17	1.085
20	I and/or my family share our cultural beliefs and practices with the school.	4.10	1.057
21	I and/or my family help out in my child(ren)'s classroom(s) on a regular basis.	4.07	1.076

No.	Item	M	SD
22	I and/or my family help make decisions at my child's school.	4.07	1.100
23	I and/or my family practice school learned concepts in our home.	4.48	.884

Note: The mean was based on a scale ranging from 1 (strongly disagree) to 5 (strongly agree)

The next analysis provides a distribution of all the scores, where each individual's score is reported as a mean. Reporting each individual's mean on a five-point scale makes the scores more interpretable at this stage in the process. The scores were non-normally distributed with skewness of -2.06 (SE = .223) and kurtosis of 5.43 (SE = .442) with skewness and kurtosis values greater than 1. The negative skewness value indicates negative (left) skew of scores. The positive kurtosis indicates leptokurtic distribution, which means that the data may produce more values in the tails of the distribution (outliers) than normally distributed data (Westfall, 2014). Figures 1 and 2 displays a visual distribution of means through a histogram and Q-Q plot, respectively. The histogram shows a left skewness of means, which is supported by skewness values previously indicated. In terms of kurtosis, or the shape of the distribution and size of the distribution's tail, the distribution shows to be leptokurtic, where the distribution is generally tall and pointy with relatively large tails. The Q-Q plot, compares the observed quantiles of the data (depicted as dots/circles) with the quantiles that we would expect to see if the data were normally distributed (depicted as a solid line). If the data is approximately normally distributed, the points will be on or close to the line. In addition, when looking at a Q-Q plot, the points that stray far from the line of expected values, as well as trends in the observed values are of interest. Based on these criteria, the data appears to be skewed left, with data points curving away from the line on the left. This is an indication of extreme values, or outliers. Given the presence of these outliers, a decision was made to run all analyses with the omission of these outliers from the data set in order to see if the outliers influenced the current findings. Results of the new analyses can

be found in Appendix D. Discussions regarding future iterations of the development process will be discussed in Chapter 5.

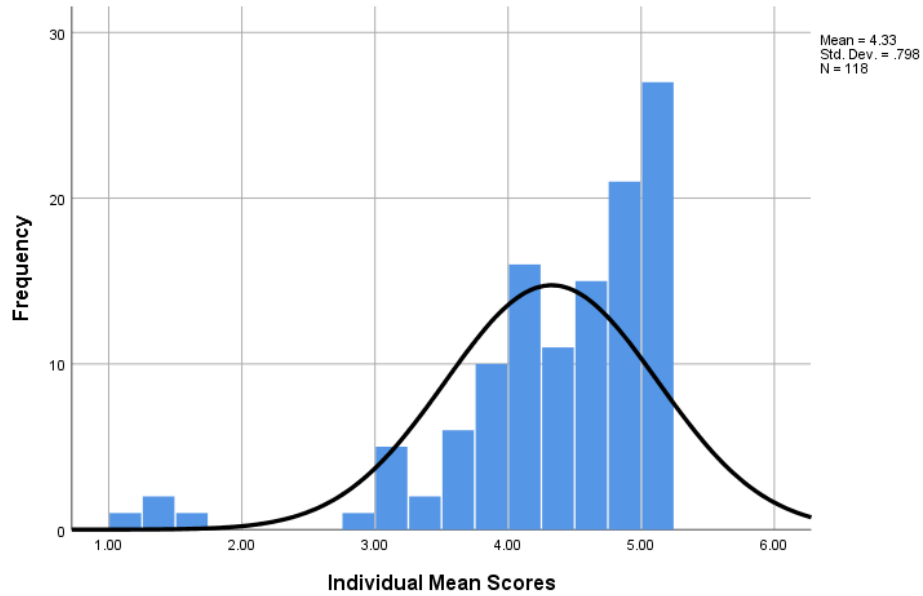


Figure 4.3 Distribution of Means

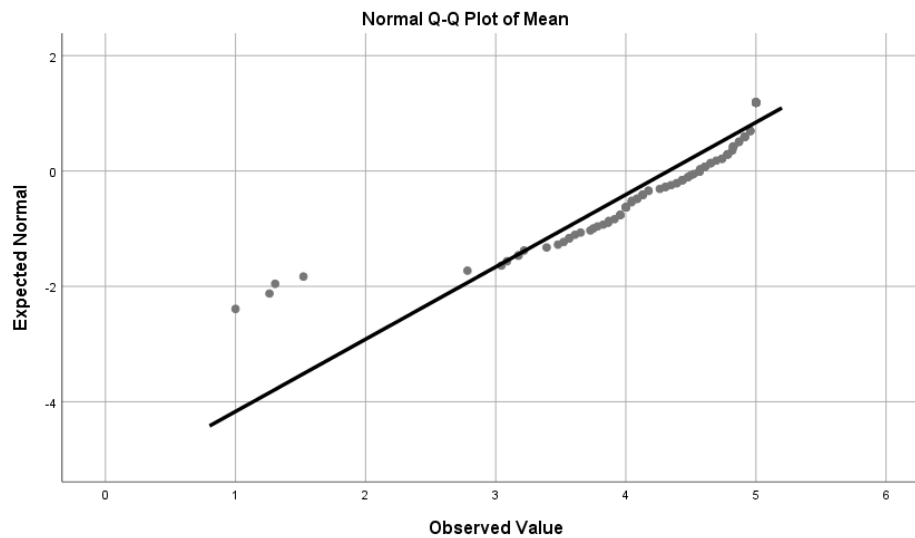


Figure 4.4 Q-Q Plot

5 DISCUSSION

The study consisted of the initial steps toward the development of an instrument with valid and reliable scores for measuring family engagement in early learning environments. This chapter will provide a summary of the study, conclusions based on the research questions, implications of the study, and recommendations for improvements within the research process employed to develop the instrument.

Summary of the Study

Through a multi-stage process, a preliminary instrument was developed with the intention to measure family engagement more adequately for underrepresented groups. The development process drew upon previously established instrument development frameworks that involve Classical Test Theory, Q-Methodology, and a mixed methods approach to instrument development (Curlette, 2000; Brown, 1980, 1993, 2006; Onwuegbuzie et al., 2010; Luyt, 2012). Further, the process employed significant features of the test development process defined in the *Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 2014). Prior to the conceptualization of the construct, there was a need to establish the purpose, intent of use, and intended examinee population. A focus group of relevant stakeholders determined a need to develop an instrument for measuring family engagement in order to (1) gauge the current level of family engagement within the organization; (2) understand more about how family engagement is being implemented within the organization. The initial set of items to parents, guardians, or an adult family member who interacts with the school on behalf of the child.

Conceptualization of the construct of family engagement involved the employment of Q-methodology. Q-methodology is a mixed-methods research approach that uses factor analysis to examine people's shared viewpoints that reflect their underlying beliefs and values about a

specific issue (Brown, 1980, Brown, 1993, Donner, 2011, Stenner et al., 2007, Stephenson, 1993, Watts and Stenner, 2012). Through the multi-phase Q-methodology process outlined in Chapter 3, three viewpoints were established that represent the construct of family engagement for this specific population. Viewpoint 1 describes family engagement as parents and families' involvement in school activities and community events. Family engagement should be family-centered and strengths-based. In addition, this viewpoint sees families interacting with one another as an indication of family engagement. Viewpoint 2 emphasizes family engagement as a shared responsibility between families, schools, and the community. From this view, family engagement involves the empowerment of families to recognize their own strengths to invoke change in their lives, the school, and the community. Finally, Viewpoint 3 once again emphasizes collaboration of all stakeholders, but further, family engagement should be responsive to the culture of families within the schools. The view also sees family engagement as involving families in key decisions, policies, programs, and evaluation within the school environment. These viewpoints served as a framework for the development of items, from which 23 initial items were developed. The items were written according to elements of universal design standards (Standards, 2014; Thompson and Thurlow, 2002; Thompson et al., 2002).

The initial set of items was analyzed through a series of methods. Items were examined for possible ethnic and gender bias using DIF analyses. The first DIF analyses employed a panel of experts, who were chosen based on their experiences with research within early childhood educational settings. During this phase, the panel participants did not specify that any items had any indications of gender or racial bias, however, multiple panel members questioned whether wording was clear enough for multiple items. Items were not adjusted at this stage as DIF would be analyzed at another stage in the development process. At that time, the results from the two

DIF analyses would be compared and decisions will be made for future revision and omission of items.

Next, factor analysis was used to identify potential patterns in the factor structure for the instrument. Based on this analysis, a possible three-factor structure was obtained. Two items (Item 11 and Item 13) were considered for future omission from the instrument based on this analysis. Instrument reliability was examined using calculations of Cronbach's alpha and SEM. Cronbach's alpha was .98 for the entire set of items, which meets the commonly accepted rules for high reliability (Gliem & Gliem, 2003), however, very high reliabilities can be a sign of item redundancy (Streiner, 2003). This is an indication that items can be reliable based on reliability estimates such as Cronbach's alpha, but an extremely high estimates of reliable can be a sign of poor construct validity. The SEM was 2.48; therefore, based on the CTT, were an individual's true score (X) is equals to the observed score (T) plus error ϵ , the true score of instrument takers will fall within a relatively small window, which implicates the possibility of satisfactory reliability of the instrument. Again, this result must be examined with scrutiny, as SEM is calculated based the estimated reliability for the items.

Finally, item integrity assessed again using the Mantel-Haenszel test, which is common method used for detection of DIF. Intermediate DIF in favor of females was detected for Item 14, Item 17, and Item 19. Intermediate DIF in favor of males was detected for Item 3, Item 8, and Item 18. Intermediate DIF in favor of individuals who do not identify as Black or African American for Item 10, Item 11, Item 12, Item 15, Item 16 and Item 23. Finally, large DIF was detected for Item 18 and Item 19. The following section will discuss how the results from this study provide insights for the study research questions.

Research Question Conclusions

The study was guided by the following research questions:

1. How is family engagement conceptualized for diverse groups of people in a specific early learning environment?
2. Does the family engagement instrument function as intended?
3. To what extent can acceptable validity and reliability estimates be established for an instrument developed to measure family engagement as a construct for diverse groups of people in a specific early learning environment?

Conceptualization of the Construct of Family Engagement

An overarching goal of this study was to begin the process of designing an instrument that conceptualized the construct of family engagement based on the viewpoints of diverse groups, specifically focusing on individuals who identify as Black or African American. Previous conceptualizations of family engagement have been critiqued due to their failure to consider race, culture, and language as factor in the conceptual model (Westmoreland et al, 2009; Fantuzzo et al., 2004; McWayne et al., 2013; Green, 2013). A key goal in this stage of development was for the process itself to possess cultural sensitivity, so that when the instrument is developed, “it will yield data that are optimally reliable and valid” (Onweugbuzie et al., 2010, p. 63). In addition, the study sought to understand more about how the construct of family engagement was conceptualized for a group that is underrepresented in literature surrounding the development of measures for family engagement. Chapter 4 highlighted three viewpoints that emerged from the study participants. These viewpoints consisted of themes that have potential to operationalize how family engagement is measured for underrepresented groups.

The data revealed that parents and school staff believe in the importance of family

involvement in school events as well as community events that seek to support families. Family involvement has traditionally referred to families supporting their child's education through activities such as attending school events, helping with homework, communicating with teachers (Fantuzzo, Tighe, & Childs, 2000). There exists a strong body of research regarding family involvement in educational settings (Carlisle, Stanley, & Kemple, 2005; Mantzicopoulos, 2003; McWayne, Hampton, Fantuzzo, Cohen, & Sekino 2004; Rous, Hallam, Grove, Robinson and Machara, 2003). In fact, the concept of family involvement is strongly embedded in existing frameworks that seek to support how families and schools can collaboratively support successful outcomes for children (OHS, 2011; Epstein, 1995). Based on the conceptualization of family engagement from this study, family involvement can be viewed as a part of family engagement as opposed to an interchangeable term. In short, seeing families involved in schools can be viewed as an indicator of family engagement.

Study participants showed agreeance with the idea that family engagement involves a family-centered and strengths-based approach to establishing and maintaining relationships with families. Family engagement extends beyond the basic involvement of families, but extends to motivating and empowering families to recognize their own needs, strengths, and resources and to take an active role in working toward change. Family-centeredness focuses on the application of family services, such as demonstrating empathy, focusing on strengths, treating families with dignity, collaborating with families, and tailoring practices to meet family needs (Dunst, 2002; Dunst, Trivette, & Hamby, 2007). Often schools, attempt to include parents and families in prescriptive ways that are aligned with traditional, White, middleclass values about education, which consequently dishonor the strength and value of families and their contributions to their child's learning experience. A strengths-based approach involves acknowledging the strengths of

families and respecting and learning from differences amongst families. Family engagement from strengths-based approach value families as equal and reciprocal partners in the educative process of their children.

Participants agreed that family engagement should be culturally responsive based on specific statements iterated during the Q-methodological process. Families come to an early childhood setting with distinct family cultures. A family's cultures are complex and influenced by many factors: family traditions, countries of origin, geographic regions, ethnic identities, cultural groups, community norms, sexual orientations, gender identities, educational and other experiences, personal choices, and home languages (Gonzalez-Mena, 2008). Cultures shape our views on key issues such as family roles and goals, caregiving practices, learning, education, school readiness, child behaviors, and the nature of childhood itself. For many families in early childhood settings, their home languages play an important role in shaping the identities of their children.

The data also supported the idea that family engagement is a shared responsibility in which schools and other community agencies and organizations are committed to engaging families in meaningful ways, where families and schools can collaboratively and actively support children's learning and development. Parents and school staff should work together at the classroom, local, and system level to support and improve the learning, development, and health of children and adolescents. Also, that family engagement includes schools viewing families as key stakeholders in school policy and program development.

The findings from this study sought to conceptualize family engagement for diverse groups in response to literature that claim existing conceptualizations of family engagement are not inclusive of underrepresented groups such as African Americans and Latinx (Westmoreland

et al, 2009; Fantuzzo et al., 2004; McWayne et al., 2013; Kim et al., 2015). However, the findings from this study do not show significant contrast to existing frameworks that provide a conceptual model for the development of family engagement instruments (i.e. *Epstein's Six Types of Parental Involvement, Head Start PFCE Framework*). Though the population for this stage of the study consisted of African American parents and school staff, the methods used to understand more about how underrepresented groups view family engagement did not yield results that support there being a difference in how family engagement is viewed for this group. This is not to say that differences do not exist, however methodological choices such as relevancy of interview questions, analysis of qualitative data, and sampling for this stage of the study could have possible impact on the findings. Recommendations for how this portion of the study could be improved will be discussed later in the chapter. Nevertheless, the conceptualization of the construct led to further stages of development of an instrument for measuring family engagement for diverse groups.

Functionality, Validity, and Reliability of Developing Instrument

Based on the evidence of the study, the internal consistency reliabilities for the items appear to be high; however, the high Cronbach's alpha of .98 for the overall instrument must be examined with scrutiny. An SEM was also calculated using Cronbach's alpha as a measure of reliability. SEM, put in simple terms, is a measure of precision of the instrument, where the smaller the SEM, the more precise the measurement capacity of the instrument (Jensen, 2015). The SEM score was then used to construct a confidence interval, which provides information about the potential range in which scores will fall. SEMs can be calculated for future administrations of the instrument. Overlapping SEM scores is evidence for test reliability, whereas, if the SEM for two scores do not overlap, then the scores are different. Different scores

is potential evidence for the instrument's lack of consistency and dependableness.

It should also be noted that the calculated SEM is a function of the reliability of the test, therefore the high reliability estimate affects the SEM. When alpha is too high, then it may suggest a high level of item redundancy; where, a number of items are asking the same question in slightly different ways (Streiner & Norman, 1989). It may also indicate items with high inter-item correlation, which exhibit a narrow coverage of the construct under consideration, thus causing construct underrepresentation and lowering the validity of the instrument (Boyle, 1991; Kline, 1979).

Additional analyses should be conducted to determine whether the high reliability estimates are truly an indicator of good internal consistency reliability for this instrument. As an example, Panayides and Walker (2013) demonstrate how alpha values do not necessarily indicate superior reliability. The study reported five Cronbach alpha calculations from studies of the *Foreign Language Classroom Anxiety Scale (FLCS)*, ranging from 0.90 to 0.96. In order to further investigate reliability, the researchers employed Item Response Theory (IRT) to examine item performance. Results showed poorly performing items due to a narrow coverage of the construct, which provided evidence that high reliability estimates can actually yield poor internal consistency reliability for an instrument (Panayides & Walker, 2013).

The initial steps toward the development of an instrument to measure family engagement for diverse groups in early learning environment have yielded interpretable results that provide much information about the current set of items. However, based on these findings, the instrument is not ready for measurement use. Improvements must be made at every step of the development process that will yield better results. Instrument development is an iterative process that requires multiple revisions and patience from the researcher. Various forms of validity and

reliability evidence should be accumulated overtime in order to produce an instrument that is acceptable, valid, and reliable for the use of measuring the construct of family engagement for diverse groups in early learning settings.

Potential Factor Structure and Connections to Previous Family Engagement Research

The factor analysis yielded a potential 3-factor solution. At this stage in the process, the factors have not been named, as item revision must take place, however item trends can be discussed. Figure 5.1 displays each factor with the items that clustered within that factor. Factor 1 displays items that represent aspects of family engagement that characterize parents and families contributions to the family engagement model within the environment. In other words, these items are indicators of the involvement of families within the school environment. Factor 2 could be characterized by items that reflect the relationship between families and school staff members. Most of these items are indicators of what school staff members do to contribute to the model of family engagement. Finally, factor 3 is relatively representative of how outside variables contribute to the family engagement model. This is inclusive of community involvement, outside resources, and the home environment. As the items are refined for potential commercial use, these factors could be scrutinized further through suggestions from an expert panel, as well as comparisons to existing family engagement and family involvement frameworks.

Previous research has presented factors that serve as strong indicators of family engagement in schools. These factors include parental beliefs surrounding responsibility for their child's learning, parents' perceptions of the demands placed upon them by schools, and demands placed on parents outside of the school setting (Hoover-Dempsey & Sandler, 1997; Hoover-Dempsey, Ice, & Whitaker, 2009). The Parent, Family, and Community, Engagement (PFCE) framework presents seven parent and family engagement outcomes: family well-being, parent-

child relationships, family as lifelong educators, family as lifelong learners, family engagement in transitions, family connections to peers and community, and family as advocates (OHS, 2011). Also, previous frameworks and instrumentation surrounding family engagement have been influenced by Epstein's six dimensions of family involvement which include the following:

Factor 1	Factor 2	Factor 3
Item 22: I and/or my family help make decisions at my child's school	Item 5: School staff members know my family's strengths.	***Item 13: I and/or my family have positive relationships with teachers and other school staff.
Item 21: I and/or my family help out in my child(ren)'s classroom(s) on a regular basis.	Item 6: School staff members help my family build on our strengths.	***Item 7: School staff members empower my family to advocate for my child(ren) outside of school.
Item 14: I and/or my family interact with other families at my child(ren)'s school.	Item 10: School staff members help my family find resources if we are without something.	Item 3: The school and the community engage with our family and show support for our children's learning and successful outcomes.
Item 19: I and/or my family help plan activities and events about learning at my child(ren)'s school.	Item 4: School staff members communicate with my family through a variety of methods.	Item 2: The school and the community provide services and supports that honor my culture.
Item 20: I and/or my family share our cultural beliefs and practices with the school.	Item 9: School staff members encourage my family to share thoughts and ideas about the school.	Item 1: The school and the community work together to help families.
Item 12: I and/or my family attend parent meetings and other school events.	Item 7: School staff members empower my family to advocate for my child(ren) outside of school.	Item 8: School staff members provide my family with resources to help my child learn at home.
Item 17: I and/or my family collaborate with teachers and school staff to support successful outcomes for my child(ren).	Item 11: School staff members value my family's culture.	Item 23: I and/or my family practice school learned concepts in our home.
Item 16: I and/or my family learn about ways to help my family at my child(ren)'s school.		Item 18: I and/or my family feel empowered to advocate for my family's well-being.
***Item 13: I and/or my family have positive relationships with teachers and other school staff.		Item 15: I and/or my family make an effort to know more about what is going on at my child(ren)'s school.

Note: *** indicates items that cross-loaded onto factors.

Figure 5.1 Items and Factors

parenting, communicating, volunteering, learning at home, decision making, and collaboration with the community (Westmoreland et al., 2005, p. 6). Findings from the current instrument development show similarities and differences to previous literature findings. As an example, the

current set of items echoes previous literature as it includes item indicators that represent family involvement, families as key decision makers, community collaboration; however, the current instrument presents additional insights in terms of how we measure engagement through indicators relative to family-centeredness, strengths-based approach to family engagement, family empowerment, and culturally responsive family engagement. The current instrument does not focus as much on the specific demands and barriers that may prevent families from consistently engaging in schools. While the current instrument was written to reflect and respect the viewpoints of those who are traditionally excluded from literature surrounding family engagement, future iterations of item development could be strengthened by refining the items to reflect aspects of existing family engagement frameworks and indicators.

Recommendations for Future Development of this Instrument

The recommendations for further research included in this section involve suggestions for improvement of the existing instrument, thus expanding the research. The first step in the process consisted of establishing the purpose of the instrument and the intent of use. While this step was conducted satisfactorily during the study, the focus group of relevant stakeholders could benefit from revisiting the goals of the instrument based on the results of this study. Based on the outcomes of this study, the following questions could be revisited: (1) Do the current set of items exemplify the purpose of the test? (2) Will the current set of items be of significant use to the intended users of the instrument? If not, what could make these items more useful? (3) Does the current set of items provide adequate insight about the intended examinee population?

Step 2 consisted of conceptualizing the construct of family engagement. Q-methodology was used as a systematic approach to defining the construct of family engagement, while honoring the viewpoints of voices that are traditionally underrepresented in literature

surrounding family engagement. To date, Q-methodology has not been applied in the conceptualization of family engagement as a construct. The process could be strengthened by expanding the population of participants for the study. Both sites utilized for the Q-methodology portion of the study have similar populations, which may constitute similar viewpoints concerning family engagement. Further, the Q-methodology method could be strengthened by a more diverse sample of parent/family representatives used during the interviews and Q-sort stage. Parents were asked to participate based on availability and willingness, which in turn generated a pool of parent/family member participants who typically engage with the school on a regular basis. Therefore, parent/family member viewpoints were not diverse. More should be known about those parents/members who do not typically engage with the school. How do they view family engagement? What are the existing barriers that hinder their engagement with the school?

Also, the study could be strengthened by allowing the qualitative data to inform the item development process more directly. In an attempt to utilize Q-methodology as a method to conceptualize the construct for the development process, the study did not allow for a deeper analysis of the qualitative data. Analysis of the interview data was limited as the only part of the qualitative data that were used for the study was parts of the data that answered how the participants defined family engagement. However, the interview data included deeper understandings of the participants' view of family engagement within the specific early learning setting. Future iterations of the development process could be strengthened by a deeper analysis of this data. As an example, the interview data could be coded in order to view emergent themes. These themes could further influence the writing of additional items and the revision of current items. Steps 3, 4, and 5 consisted of translating the viewpoints representing the conceptualization

of family engagement as a construct to items that operationalized the construct for measurement. Recalling the guidelines from Thompson and Thurlow (2002) and Thompson, Johnstone, and Thurlow (2002), it is suggested that the following elements of universal design should be considered during the item writing: inclusivity for assessment population, precisely defined construct, accessible, unbiased, maximum readability, comprehensibility, and legibility. Items were written with an attempt to follow these guidelines with fidelity; however, decisions within this process were not corroborated with other researchers for this process, which has implications for the validity of the construct. Are the items written in a way that adequately represent the construct of family engagement? These steps, albeit the entire instrument development process, could be strengthened by a research debriefing process, where the instrument developer is interviewed by disinterested peers at all stages of the development process (Onwuegzuzie et al., 2010).

Onwuegbuzie et al. (2008) introduced the concept of debriefing the researcher, where the researcher is interviewed by an individual who is not involved directly in the study, but who understands the research construct or topic that is being studied. Onwuegbuzie et al. (2008) contend that debriefing interview data helps the researcher to evaluate the decisions made at the various stages of the research process, as well as to reflect on assumptions, biases, feelings, and perceptions that were present at the beginning of the study and that evolved as the study progressed. According to Onwuegbuzie et al. (2008), having the researcher explicitly reveal these elements to the debriefing interviewer helps increase the researcher's understanding of the research process as it unfolds, as well as provides an audit trail.

Step 6 consisted of a DIF analysis utilizing qualitative methods, consisting of cognitive interviews with a panel of experts. During this phase in the process, the panel of experts did not

find any items with perceived racial or gender bias. It should be noted that errors in instrumentation might arise when important steps in selecting and using these experts are not carefully planned (Grant & Davis, 1997). At this stage in the process, more attention should be yielded toward reviewers understanding of the conceptual underpinnings and measurement model of the instrument. The panel should not only include individuals who have not knowledge of the construct, but who also have strong backgrounds in instrument development. In addition, a more defined method for this process should be employed. Proposed for use in educational testing, the think aloud protocol (TAP) is a method for examining sources of possible DIF (Ercikan et al., 2010). Through this protocol, hypotheses are generated in advance of DIF testing in order to guide analyses; the TAPs are used after DIF testing. Penfield (2007) has developed a method for identifying polytomous items that “contribute construct-irrelevant variance” to the scale score.

Next, Step 7 consisted of a pilot testing of the items. Missing from this stage of development is an instrument acceptability analysis. One aspect of psychometric acceptability is face validity, which refers to whether the instrument appears acceptable to respondents in terms of what it sets out to achieve (Malcolm et al., 1995). In future iterations of the development process, cognitive questions should be administered with the measurement items. This will provide evidence of acceptability of the instrument by population in which the instrument is administered. The additional items will provide understanding relative to interest level, difficulty, relevancy, and overall enjoyment of responding to the items. Adding this step to the process has implications for developing instruments in a culturally responsive manner (Malcolm et al., 2005).

Step 8 in the development process consisted of a group differences analysis, which was placed at this stage of development in order to build validity into the instrument (Curlette, 2000). Results from this analysis suggest that all but three of the items have the ability to discriminate between “low performing family engagement” and “high performing family engagement” groups. These groups were determined by a self-report question in the survey asking, “Approximately how many family engagement events and/or meetings have you or a family member attended this school year?” As the instrument is further developed, the criteria for determining which groups are considered low or high engagement should be determined in a more reliable manner, due to self-report item issues such as response bias, honesty, and introspective ability (Steene-Johannessen et al., 2016). As an example, respondents may have not remembered the number of family engagement events or meetings that were attended during the year, therefore an accurate response would not be rendered, which provides flawed data for this stage of instrument development.

The factor analysis conducted in Step 9 produced tenable results; however, further factor analyses are necessary in order to ensure the generalizability of the instrument to other populations. In the future sample size should be increased. Though strict rules regarding sample size have subsided, (Fabrigar et al., 1999, MacMallum, Widaman, Zhang, & Hong, 1999), larger samples tend to produce factor analysis solutions that are more accurate (Costello & Osborne, 2005).

Step 10 consisted of examining estimates of internal consistency and reliability. As previously stated, the results from this analysis should be approached with scrutiny, as overly high estimates of Cronbach’s alpha can be a symptom of item redundancy and a narrow operationalization of the construct. As items are revised, these estimates will be re-examined.

The findings from the DIF analysis using the Mantel-Haenzel method showed signs of DIF for multiple items. Future steps within the development process must include adjustments of items with detected DIF. An ultimate goal of the examination of DIF is to either modify the measure by changing or removing items or adjust for DIF. DIF adjustment follows examination of the impact of DIF (Teresi et al., 2012; Fleishman et al., 2002).

Study Implications and Suggestions for Future Research

The results of the study reveal implications for policy and research surrounding family engagement. As the instrument is developed further, more can be revealed regarding how family engagement is defined and operationalized, which could potentially influence school climate, teacher practices, and policy for how family engagement is implemented in schools (Epstein, 1995; Smith, Connell, Wright, Sizer, & Norman, 1997). This study also has implications for mixed methods instrument development for measurement in program evaluation. According to Onwuegbuzie et al. (2010) mixed methods instrument development has been developed least adequately, as there exists a perception that one must maintain a monolithic methodological tradition when developing a quantitative or qualitative instrument. This study contributed to this body of research through the employment of Q-methodology for conceptualization of the construct of family engagement.

This study has implications for additional scale development. The factor analysis yielded a potential 3-factor solution, could suggest the possibility of sub-scores, which could be used as possible subscales for the family engagement construct. At this stage in the process, the factors have not been named, as item revision must take place, however item trends can be discussed. As the items are refined for potential commercial use, these factors could be scrutinized further through suggestions from an expert panel, as well as comparisons to existing family engagement and

family involvement frameworks.

The findings from this study, inclusive of its limitations, suggest a number of possibilities for future research. Based on this study, there is an increased need to understand more about the viewpoints individuals who are often underrepresented in literature surrounding family engagement. Future studies could include a latent profile analysis (LPA) to provide more evidence for diversity in seemingly homogenous groups (Stanley et al., 2017). LPA can be applied to generate descriptive profiles of subgroups within a population. Knowing more about the intended population of studies can lead to better ways developing instruments designed for inclusivity of diverse groups.

Also, Standards (2014) suggests that instrument developers use multiple methods to establish validity of an instrument. These methods should include ways to assess content, construct, and criterion-related validity. Content-validity determines whether the content of the instrument represents universal understandings of a construct. Researchers commonly employ the techniques that evaluate the content validity of a measure using the calculation of the content validity ratio (CVR) (Lawshe, 1975). In addition, future studies could use a group of expert judges to provide content validity evidence. Construct validity can be tested further using more factor analysis procedures. As the items for the instrument are revised, a confirmatory factor analysis should be conducted in order to test hypotheses concerning the items and overall instrument.

Finally, future research could include the use of item response theory (IRT). The current development process utilized tenets from CTT, which do not provide evidence concerning the characteristics of individual items in the instrument. In recent years, item response theory (IRT) has become a preferred method for conducting psychometric evaluations of new and established

measures and educational tests (Osteen 2010). IRT can be used for scale refinement or development, as it is capable of the calculation of standard errors and therefore provides information on the quality of each item. This aids with making decisions in selecting items to exclude or include in a test or survey instrument.

Conclusion

The evidence provided in this study shows that continued attention must be rendered to understanding more about relationships between families and schools. Through continued attention to the family to school relationship, educators can build more effectively on the capacities that families bring to the school environment, which in turn leads to successful outcomes for students. Further, understanding family engagement through the lens of specific groups, such as Black families, will allow for the comprehensive development of initiatives, programming, and measurement tools that are capable of improving aspects of family engagement for these specific groups. Continued development toward valid and reliable instruments for measuring family engagement in educational settings will lend itself to helping to facilitate successful outcomes for all children.

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APPENDICES

Appendix A

Semi-Structured Interview Protocol (Parents)

Background Questions

- Tell me a little about your background.
- How long have you been a Y Parent?
- What led you to enroll your child in the Y Early Learning Centers?
- Describe your experience as a Y Parent

Inquiry Definitions and Experiences

- Can you describe for me, in your own words, what is family engagement to you?
- How do you think you developed this definition of family engagement?
- From a parent's perspective, how should parents contribute to family engagement in educational settings, if at all?
- From a parent's perspective, how should teachers contribute to family engagement in educational settings, if at all?
- From a parent's perspective, how should the community contribute to family engagement in educational settings, if at all?
- What has been your experience with family engagement within the Y?
- What are some positive aspects to the Y's approach to family engagement?
- How can the Y improve their approach to family engagement?

Semi-Structured Interview Protocol (Teachers)

Background Questions

- Tell me a little about your background.
- How long have you been a teacher at the Y?
- What led you to your current teaching position at the Y Early Learning Centers?
- Describe your experience as a teacher at the Y.

Inquiry Definitions and Experiences

- Can you describe for me, in your own words, what is family engagement to you?
- How do you think you developed this definition of family engagement?
- From a teacher's perspective, how should teachers contribute to family engagement in educational settings, if at all?
- From a teacher's perspective, how should other staff members contribute to family engagement in educational settings, if at all?
- From a teacher's perspective, how should parents contribute to family engagement in educational settings, if at all?
- From a teacher's perspective, how should the community contribute to family engagement in educational settings, if at all?
- What has been your experience with family engagement within the Y?
- What are some positive aspects to the Y's approach to family engagement?
- How can the Y improve their approach to family engagement?

Semi-Structured Interview Protocol (FSAs)

Background Questions

- Tell me a little about your background.
- How long have you been an FSA at the Y?
- What led you to your position as an FSA at the Y Early Learning Centers?
- Describe your experience as a FSA at the Y.

Inquiry Definitions and Experiences

- Can you describe for me, in your own words, what is family engagement to you?
- How do you think you developed this definition of family engagement?
- From a FSA's perspective, how should FSAs contribute to family engagement in educational settings, if at all?
- From a FSA's perspective, how should other staff members (including teachers) contribute to family engagement in educational settings, if at all?
- From a FSA's perspective, how should parents contribute to family engagement in educational settings, if at all?
- From a FSA's perspective, how should the community contribute to family engagement in educational settings, if at all?
- What has been your experience with family engagement within the Y?
- What are some positive aspects to the Y's approach to family engagement?
- How can the Y improve their approach to family engagement?

Appendix B

1. Family engagement is having families come together interacting.
2. Family engagement is meeting the needs of families.
3. Family Engagement is hands-on you know, not just involving a conversation or taking a survey.
4. Family engagement is empowering families to the point to where they leave Head Start and they are comfortable advocating for themselves and their children.
5. Family engagement is the method in which schools interact with our families from a professional to a non-professional manner; educational and fun activities for families.
6. Family engagement, is a whole community of people working together.
7. Family engagement is where the school does things where the family is in with it; Like they don't leave anybody out. If there was a sister or brother, something like that, that they would be welcome to come as well. I also like to extend it to include the school in my family.
8. Family engagement involves having event that parents can engage in (parent meetings, parent council, etc.)
9. Family engagement is when it takes a village to raise a child.
10. Family engagement is families being involved in what is going on with the student at the school and at home.
11. Family engagement is being hands on with anything that has to do with the family. Like with the school, some days I be up here to 11 o'clock to 12 o'clock until it's time to go home just because. If I'm not in my kids' classes I am in other classes.⁴
12. Family engagement involves the parent being active with the child and the teacher by helping the classroom, volunteering in the classroom, and about taking what they learn at school and doing it at home.
13. Family engagement is when a parent can come to school staff and vice versa and tell them what is going on with their child or what does their child need.
14. Family engagement is when you go in to those meetings, which is very important, so you can find out what we have to offer for you, you go to your FSA, family support associate, and they can help you find housing, food, education, you know, whatever you, housing, whatever you need for your child.
15. Family engagement is attending meetings, coming inside the classroom, reading to the students, coming on the playground and show them different activities, you know, like maybe kicking the soccer ball, or whatever you like to do.
16. Family engagement is forming a partnership; you are coming together as one. Anybody can volunteer, it doesn't have to be a parent. So volunteering is actually giving what you have. Giving what you have to give. But engagement is becoming a team.
17. Family engagement is when you have an open line of communication with your parents and you're able to get them involved in what is going on.
18. Family engagement is having parents involved in the curriculum.
19. Family engagement is giving parents an opportunity to speak about what direction they want their school to go in.
20. Family engagement is having parents involved in events,
21. Family engagement is keeping parents up to date with their child's progress and involving them in setting goals for their children.

22. Family engagement is creating opportunities or activities that they can do at home and bring back to school and vice versa.
23. Family engagement is seeing what the community and parents are in need of an, asking them their opinion
24. Family engagement is helping families with resources if they are without something.
25. Family engagement is the parents coming in to get an understanding of things that are going on here at the center.
26. Family engagement is making sure families are part of what we're doing with their children every day.
27. Family engagement is involving the families—there's mom, dad, uncle, brother, sister, etc.; involving them in what we are doing in the classroom.
28. Family engagement is bridging the gap between families and teachers.
29. Family engagement is everybody working together as one for the best interest of the child whether it be, mentally, physically, emotionally.
30. Family engagement encompasses planning following through and then re-planning if you have to go back.
31. Family engagement is following through and following up with families.
32. Family engagement is building up families and kids.
33. Family engagement is being proactive.
34. Family engagement is pulling in families for learning for knowledge or for the kids.
35. Family engagement is a shared responsibility in which schools and other community agencies and organizations are committed to reaching out to engage families in meaningful ways and in which families are committed to actively supporting their children's learning and development.
36. Family engagement cuts across and reinforces learning in the multiple settings where children learn- at home, in prekindergarten programs, in school, in after school programs, in faith-based institutions, and in the community.
37. Family engagement is collaborative, culturally competent, and focused on improving children's learning.
38. Family engagement is a reciprocal partnership between parents and programs that reflects a shared responsibility to foster young children's development and learning.
39. Family engagement extends beyond simple involvement by "motivating and empowering families to recognize their own needs, strengths, and resources and to take an active role in working toward change.
40. Family engagement refers to the systematic inclusion of families in activities and programs that promote children's development, learning, and wellness, including in planning, development, and evaluation.
41. Family engagement in schools is defined as parents and school personnel working together at the classroom, local, and system level to support and improve the learning, development, and health of children and adolescents.
42. Family engagement is the process used to build genuine relationships with families
43. Family engagement happens in the home, early childhood program, school, and community.
44. Family engagement is a family-centered, strength-based approach to establishing and maintaining relationships with families and accomplishing change together.

45. Family engagement means including families as key stakeholders and advisors in policy development, service design, and program and service evaluation.
46. Family engagement is based on the idea that parents and others who care for their children work together to prepare children for success.
47. Family engagement is based on the idea that parents and others who care for their children work together to prepare children for success. The specific goals of the partnership for each family may vary.
48. Family engagement honors a family's strengths and culture, mutual respect, and shared goals for the child.
49. Family engagement should be mandated.
50. Family engagement involves viewing parents and community members as assets, not liabilities.
51. Family engagement involves parents, grandparents, aunts, uncles, and siblings.
52. There are reciprocal benefits to family engagement

Appendix C

Family Engagement Survey (Pilot Study)

Please provide the following information about yourself and your family:

<p>What is your race? (Select one or more):</p> <p><input type="checkbox"/> Black or African American</p> <p><input type="checkbox"/> Alaska Native or American Indian</p> <p><input type="checkbox"/> Asian</p> <p><input type="checkbox"/> Native Hawaiian or Other Pacific Islander</p> <p><input type="checkbox"/> White</p> <p><input type="checkbox"/> Other</p> <p><input type="checkbox"/> Decline to State</p>	<p>Do you identify yourself as Spanish/Hispanic/Latino?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p> <p><input type="checkbox"/> Decline to State</p>
<p>What is your gender?</p> <p><input type="checkbox"/> Female</p> <p><input type="checkbox"/> Male</p>	<p>What is your age?</p> <p><input type="checkbox"/> 19 or under</p> <p><input type="checkbox"/> 20-29</p> <p><input type="checkbox"/> 30-39</p> <p><input type="checkbox"/> 40-49</p> <p><input type="checkbox"/> 50-59</p> <p><input type="checkbox"/> 60 or over</p> <p><input type="checkbox"/> Decline to State</p>
<p>What is your highest level of education?</p> <p><input type="checkbox"/> High school or equivalent</p> <p><input type="checkbox"/> Certificate or training program</p> <p><input type="checkbox"/> Associate</p> <p><input type="checkbox"/> Bachelors</p> <p><input type="checkbox"/> Masters</p> <p><input type="checkbox"/> Doctorate</p> <p><input type="checkbox"/> Other</p>	<p>What is your marital status?</p> <p><input type="checkbox"/> Single or Never married</p> <p><input type="checkbox"/> Married</p> <p><input type="checkbox"/> Separated</p> <p><input type="checkbox"/> Divorced</p> <p><input type="checkbox"/> Widowed</p> <p><input type="checkbox"/> Prefer not to say</p>
<p>How many children do you have enrolled?</p> <p>_____ (provide number)</p>	<p>Approximately how many family engagement events and/or meetings have you or a family member attended this school year?</p> <p>_____ (provide number)</p>

Please select the extent to which you agree or disagree with the statements below:

The school and the community...

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1) work together to help families.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) provide services and supports that honor my culture.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) engage with our family and show support for our children's learning and successful outcomes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

School staff members...

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
4) communicate with my family through a variety of methods.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) know my family's strengths.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6) help my family build on our strengths.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7) empower my family to advocate for my child(ren) outside of school.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8) provide my family with resources to help my child learn at home.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9) encourage my family to share thoughts and ideas about the school.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10) help my family find resources if we are without something.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11) value my family's culture.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

I and/or my family...

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
12) attend parent meetings and other school events.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13) have positive relationships with teachers and other school staff.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14) interact with other families at my child(ren)'s school.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15) make an effort to know more about what is going on at my child(ren)'s school.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16) learn about ways to help my family at my child(ren)'s school.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17) collaborate with teachers and school staff to support successful outcomes for my child(ren).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18) feel empowered to advocate for my family's well-being.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19) help plan activities and events about learning at my child's school.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20) share our cultural beliefs and practices with the school.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21) help out in my child(ren)'s classroom(s) on a regular basis.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22) help make decisions at my child's school.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23) practice school learned concepts in our home.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Thank you for your responses!

Appendix D

The new analysis item data omitted 29 outliers from the data. These observations were considered outliers as all of the participants rated all items on the survey with a 5, which could be an indicator of survey response bias. Survey response bias is a general term for a wide range of tendencies for participants to respond inaccurately or falsely to questions. These biases are prevalent in research involving participant self-report, such as structured interviews or surveys. Response biases can have a large impact on the validity of questionnaires or surveys (Dillman, 2014; Furnham, 1986, Nederhof, 1985). Some of these biases include acquiescence bias, demand bias, extreme response bias, and social desirability bias (Dillman, 2014). While taking these potential biases into consideration, the item analyses were conducted again to determine if there are any differences in the results, taking into account outliers due to response bias. Data were re-analyzed to account for this phenomenon ($n = 91$).

Group Differences (Mann Whitney-U Test)

Two groups were identified based on individuals who reported above and below the mean for the entire group ($M = 3.46$, $SD = 3.3$). The 59 participants in the low engagement group ($M = 1.41$, $SD = 1.1$) and the 31 participants in the high engagement group ($M = 6.23$, $SD = 2.8$), demonstrated significant differences in responses on 1 item according to the Mann-Whitney test. For item 12, the test indicated that the “high engagement” group was more likely to attend parent meetings and other school events ($M = 4.2$) than the low engagement group ($M = 3.5$). There were no statistically significant differences in responses for any other items.

Factor Analysis

A *principal axis factoring* procedure for factor analysis with promax rotation was conducted in order to examine the factor structure for the 23-item family engagement instrument.

Multiple criterion were examined to determine the factorability of the data. The Kaiser-Meyer-Olkin measure of sampling adequacy was .921, which is above the recommended value of .6 (Worthington & Whittaker, 2006). Bartlett's test of sphericity was significant ($\chi^2 = 2470.37$, $p < .01$). Finally, the communalities were all above .3, further confirming that each item shared some common variance with other items. Given these overall indicators confirm the factorability of the items.

The factor structures were examined using the criteria where factors with eigenvalues of less than 1 were eliminated (Kaiser, 1960). Figure A.1 displays a scree plot that graphs the eigenvalue against the factor number is shown below. The initial eigenvalues showed that the first factor explained 71% of the variance, the second factor 7% of the variance, and a third factor 5% of the variance. Based on these results, a three-factor solution was deemed adequate, accounting for 83% of the variance.

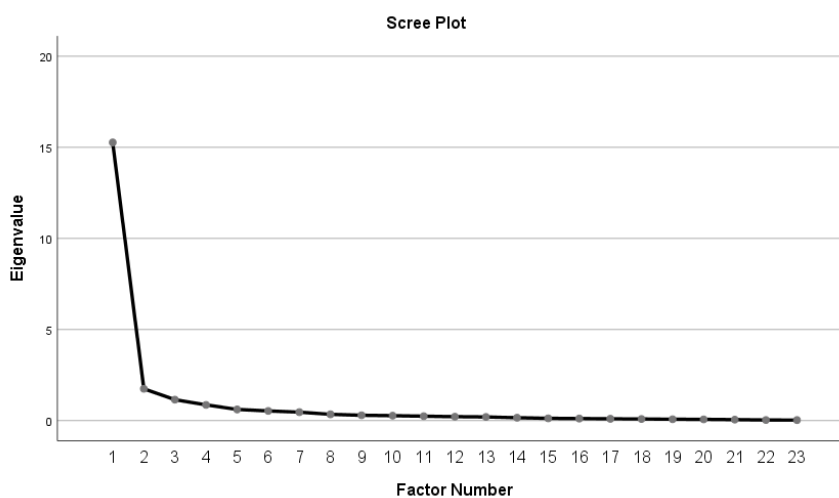


Figure A.1 Factor Analysis Scree Plot for New Analysis

The factor pattern matrix is displayed in Table A.1. Factor loadings greater than or equal to .4 were deemed satisfactory. For this iteration of the factor analysis process, 2 items had cross loadings on more than one factor. Item 11 "School staff members value my family's culture," and

Item 13 “I and/or my family have positive relationships with teachers and other school staff,” both had cross loadings above .3 on more than one factor, which does not meet the criteria for simple factor structure (Thurstone, 1947; Costello & Osborne, 2005). Table 4.6 show correlations between the three factors, which show high correlations between the factors.

Table A.1

Factor Analysis Pattern Matrix for New Analysis

Item	Factor 1	Factor 2	Factor 3
Item 1			.817
Item 2			.910
Item 3			1.041
Item 4		.727	
Item 5		.968	
Item 6		.932	
Item 7		.584	.404
Item 8			.673
Item 9		.681	
Item 10		.816	
Item 11		.484	
Item 12	.607		
Item 13	.636		.435
Item 14	.857		
Item 15	.465		
Item 16	.649		
Item 17	.661		
Item 18	.458		.530
Item 19	.739		
Item 20	.656		
Item 21	.844		
Item 22	.929		
Item 23	.582		.512

Note: Factor loadings greater than or equal to .40 are displayed in the table

Reliability and Internal Consistency

A Cronbach’s alpha was calculated on the 23 items within the instrument (Cronbach, 1951). The instrument yielded high internal consistency with a coefficient of 0.98. While this commonly accepted rule for describing internal consistency is that the coefficient is at least .70

(George & Mallery, 2003), very high reliabilities (0.95 or higher) are not necessarily desirable, as this indicates that the items may be redundant (Streiner, 2003).

Item Integrity/Quantitative DIF Analysis (Cochran Mantel-Haenzel test)

The DIF results obtained for gender and racial groups in the present study showed that all of the items fell into Class AA. An item falls into Class AA and shows no DIF (or negligible) in favor of any groups if that item's absolute value of the effect size is less than or equal to 0.17 (Dorans & Holland, 1993; Holland & Thayer, 1988; Meyer, 2014). Table A.2 and Table A.3 displays DIF results according to gender and race.

Table A.2

DIF Analysis Results According to Gender for New Analysis

Items	Mantel	p-value	Effect size*	95% CI	DIF class**
Item 1	0.80	0.37	-0.03	[-0.11, 0.06]	AA
Item 2	0.34	0.56	-0.03	[-0.15, 0.10]	AA
Item 3	0.91	0.34	-0.04	[-0.11, 0.03]	AA
Item 4	1.07	0.30	-0.04	[-0.10, 0.01]	AA
Item 5	0.72	0.39	0.05	[-0.04, 0.15]	AA
Item 6	0.12	0.73	0.05	[-0.06, 0.16]	AA
Item 7	0.19	0.66	-0.01	[-0.08, 0.05]	AA
Item 8	0.28	0.60	-0.05	[-0.14, 0.04]	AA
Item 9	0.09	0.76	0.00	[-0.07, 0.07]	AA
Item 10	0.15	0.69	-0.01	[-0.08, 0.05]	AA
Item 11	0.01	0.91	0.04	[-0.06, 0.14]	AA
Item 12	1.21	0.27	-0.06	[-0.22, 0.11]	AA
Item 13	0.01	0.94	-0.02	[-0.09, 0.06]	AA
Item 14	1.71	0.19	0.07	[-0.09, 0.24]	AA

Item 15	0.21	0.65	0.00	[-0.09, 0.09]	AA
Item 16	0.65	0.42	-0.03	[-0.11, 0.05]	AA
Item 17	1.38	0.24	0.10	[-0.06, 0.26]	AA
Item 18	0.45	0.50	0.02	[-0.04, 0.09]	AA -
Item 19	1.45	0.23	0.09	[-0.09, 0.27]	AA
Item 20	0.01	0.92	-0.0	[-0.20, 0.10]	AA
Item 21	0.16	0.69	0.06	[-0.21, 0.10]	AA
Item 22	0.01	0.91	-0.03	[-0.18, 0.12]	AA
Item 23	0.52	0.47	0.03	[-0.05, 0.10]	AA

Note: Focal group: Females: (n = 99). Reference group: Males (n = 19). DIF = differential item functioning; CI = Confidence Interval.

*The effect size for the standardized mean difference is computed by dividing the standardized mean differences by the total group-item standard deviation.

** DIF class indicates whether the DIF is negligible (AA), intermediate (BB), or large (CC). The sign “+” indicates DIF in favor of the focal group; the sign “-“ indicates DIF in favor of the reference group.

Table A.3

DIF Analysis Results According to Race for New Analysis

Items	Mantel	p-value	Effect size*	95% CI	DIF class**
Item 1	2.86	0.09	-0.06	[-0.13, 0.01]	AA
Item 2	0.00	0.98	-0.01	[-0.11, 0.09]	AA
Item 3	0.16	0.69	-0.02	[-0.09, 0.05]	AA
Item 4	0.46	0.50	0.00	[-0.08, 0.08]	AA
Item 5	0.20	0.65	0.01	[-0.04, 0.06]	AA
Item 6	0.15	0.70	-0.02	[-0.09, 0.05]	AA
Item 7	0.36	0.55	-0.02	[-0.08, 0.03]	AA
Item 8	0.08	0.78	-0.02	[-0.09, 0.05]	AA
Item 9	2.45	0.12	-0.05	[-0.11, 0.01]	AA
Item 10	3.85	0.05	-0.05	[-0.10, 0.00]	AA
Item 11	1.80	0.18	-0.04	[-0.09, 0.02]	AA

Item 12	1.49	0.22	-0.08	[-0.22, 0.05]	AA
Item 13	1.48	0.22	-0.04	[-0.04, 0.09]	AA
Item 14	0.91	0.34	0.02	[-0.05, 0.12]	AA
Item 15	1.33	0.25	0.04	[-0.11, 0.03]	AA
Item 16	4.38	0.04	-0.07	[-0.15, 0.00]	AA
Item 17	0.40	0.53	0.05	[-0.10, 0.20]	AA
Item 18	2.61	0.11	0.14	[-0.04, 0.33]	AA
Item 19	2.74	0.10	0.12	[-0.03, 0.27]	AA
Item 20	0.04	0.83	0.04	[-0.13, 0.20]	AA
Item 21	0.79	0.37	0.06	[-0.05, 0.17]	AA
Item 22	0.05	0.82	0.02	[-0.10, 0.15]	AA
Item 23	0.50	0.48	-0.01	[-0.05, 0.02]	AA

Note: Focal group: Individuals who identify as Black or African American: (n = 107). Reference group: Individuals who do not identify as Black or African American (n = 11). DIF = differential item functioning; CI = Confidence Interval.

*The effect size for the standardized mean difference is computed by dividing the standardized mean differences by the total group-item standard deviation.

**DIF class indicates whether the DIF is negligible (AA), intermediate (BB), or large (CC). The sign “+” indicates DIF in favor of the focal group; the sign “-“ indicates DIF in favor of the reference group.

Conclusion

The new analysis yielded results that support continued revision of items for future iterations of instrument development. Again, the group differences study yielded results that show that the current set of items do not discriminate between low and high family engagement groups. The new analysis results show that none of the items show any gender or racial bias based on the Mantel-Haenzel test. Items will continue to be revised for future iterations of the instrument development process. In addition, increased sample size for pilot testing may yield more test item information.

Analysis	Item(s) in Question	Considerations for Revision
Group Differences	a)All items except Item 12	a) items do not discriminate between low and high family engagement groups
Factor Analysis	a) Item 7, Item 13, Item 18, Item 23	a) cross loadings on multiple factors; factor loading < .3

Figure A.2 Item Revision Considerations for New Analysis