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# Home Visiting Quality and Parent Involvement: Examining Mediation in Home Visiting

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Home Visiting Quality and Parent Involvement: Examining Mediation in Home Visiting

by

Rachel Eisenberg

Presented to the Graduate and Research Committee  
of Lehigh University  
in Candidacy for the Degree of  
Doctor of Philosophy

in

School Psychology

Lehigh University

April 2015

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2015

## Certificate of Approval

Approved and recommended for acceptance as a dissertation in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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## Abstract

High quality home visiting service delivery is a national priority to advance positive outcomes for low-income, ethnically diverse families of infants and toddlers. Home visiting quality is a multi-dimensional construct addressing various home visitor and parent behaviors (i.e., responsiveness, relationship, facilitation, and non-intrusiveness), yet limited work has examined the quality of home visiting, particularly as it relates to parenting behavior outcomes. One of the goals of child-development focused home visiting is to increase parents' involvement with children in early learning experiences that promote academic gains. Current examinations of parent involvement behaviors as outcomes of Early Head Start (EHS) home visiting are limited in scope. A comprehensive understanding of parent involvement in children's early learning as an outcome of home visiting has yet to be examined in the EHS population. To better understand EHS home visiting parent outcomes, mechanisms of parent behavior change need to be considered. One well-recognized mechanism of parent behavior change is parents' self-efficacy for parenting. Therefore, the current study examined a multi-dimensional construct of home visiting quality and whether it predicted parents' self-efficacy for parenting and parent involvement behaviors. Parents' self-efficacy was first evaluated as a mechanism of change in home visiting by examining it as a mediator in a mediation model between home visiting quality and parent involvement. In a second mediation model, parent involvement was evaluated as a mediator between home visiting quality and parents' self-efficacy. The transactional relationship between parents' self-efficacy and parent involvement was explored. Measures of home visiting quality, parents' self-efficacy, and parent involvement were collected at one point in time from a sample of 41 EHS families,

who collectively received home visiting services from eight home visitors. Based on ordinary least squares (OLS) regression analysis with a hierarchical approach and OLS path analysis for indirect and direct effects in mediation, neither mediation model demonstrated a significant mediation. Parents' self-efficacy and parent involvement positively and moderately predicted each other. Exploratory, *post hoc* examination of the individual dimensions of home visiting quality demonstrated preliminary support for a significant direct effect between responsiveness of the home visitor and parents' self-efficacy.

## Chapter I: Introduction

Childhood poverty presents serious risk for poor long-term developmental outcomes for children aged birth to 3 (Anthony, King, & Austin, 2011). Families living in environments of low-income and poverty experience contextual risk for fewer positive parent-child interactions early in children's development (Anthony et al., 2011; Evans, 2004; Sameroff & Rosenblum, 2006). Family-level factors that often impact parent-child interactions in low-income settings include single motherhood, teenage parenthood, lower education level, and unemployment. Parents' and children's experience of risk in multiple domains is likely to constrain parents' provision of and involvement in early learning activities (Fantuzzo, Tighe, & Childs, 2000; Kohl, Lengua, & McMahon, 2000; Vogel et al., 2011). High quality supports for services for these families have the potential to promote greater parent involvement in children's early learning and development (Chazan-Cohen & Kisker, 2013; Raikes et al., 2014; Vogel et al., 2013, 2015).

Unfortunately, socioeconomic disadvantage and associated social complexities are most prevalent among families that include the nation's youngest children. Almost half (47%) of children aged birth to 3 in the U.S. live in low-income families, with one quarter (25%) living in poverty (Jiang, Ekono, & Skinner, 2015). Low-income is defined as the income level threshold required for a family to meet minimum basic needs, which equates to double the federal poverty level. Even more unsettling is that the percentage of infants and toddlers living in low-income families is greater than the percentage of low-income adults and older children, and low-income population percentages were higher in 2013 than in 2007 (44% low-income; Jiang et al., 2015).

The disproportionate prevalence of socioeconomic disadvantage among Hispanic and African American children age 3 or younger intensifies the need for addressing this low-income population. A majority of Hispanic (65%) and African American (70%) infants and toddlers live in low-income families, compared to about one third (34%) of Caucasian infants and toddlers (Jiang et al., 2015). In addition, the U.S. Census Bureau (Humes, Jones, & Ramirez, 2011) reports indicate increases in the Hispanic (43% increase) and African American (12.3% increase) populations of the U.S. in the last decade, whereas the non-Hispanic Caucasian population had less growth (1.2% increase). The growing trends of ethnic and racial minorities in the U.S., coupled with the increased risk they experience for poverty, heightens the critical importance for improving and directing services to these particular ethnic groups.

From birth to age 3, parent-child interactions at home are the primary natural contexts for early learning; however, such contexts vary by family income. Low-income parents often have limited resources for providing language- and literacy-rich home environments (Linver, Brooks-Gunn, & Kohen, 2002). They often have fewer books available in the home and are less likely to visit community learning centers (e.g., libraries, zoo) with their children (Evans, 2004; Korat & Haglili, 2008). Low-income parents also report greater stress and more frequent poor mental health than higher income parents (Kenney, 2012), decreasing their likelihood to participate in educational activities (e.g., book reading, storytelling) with their children (Evans, 2004; Kenney, 2012). When they do engage with children, low-income parents are at risk for using fewer words and less enriching language than more affluent parents (Evans, 2004; Hart & Risley, 1995). In their seminal work, Hart and Risley (1995) found that the frequency of

parent talk and the quality of words spoken differ for families of varying income status by the time children are 9 months old.

Moreover, even when controlling for differences in income status, the amount of parent-child interaction in the home surrounding language learning opportunities varies by family ethnicity and language (Kenney, 2012; Yarosz & Barnett, 2001). Kenney (2012) examined the early home learning opportunities experienced by toddlers and preschoolers and found that, holding family income constant, Hispanic and African American toddlers and preschoolers had parents who read to them less, told stories less, and visited community learning centers less than parents of their Caucasian counterparts. In addition, non-English speaking low-income families were more likely to experience poor maternal mental health, parenting stress, low parent education, and fewer reading and storytelling parent-child interactions than English speaking high-income families. As children's language and literacy development is related to their early learning interactions and routines with parents (Hart & Risley, 1995; Klein & Knitzer, 2007; Martin, Razza, & Brooks-Gunn, 2012), variations in parent participation in early learning activities with children must be better understood.

Child school readiness outcomes are negatively impacted by the lower quantity and quality of parent-child learning activities in the home for low-income children. Poor neighborhood conditions (e.g., limited access to recreational activities, no library, poor physical conditions) predicted fewer days per week that parents spent reading with their children (Kenney, 2012) and lower preschooler learning outcomes in the areas of language, math, and social skills (Hanson et al., 2011). Notably, risk associated with the low-income family environment for child development outcomes is especially prevalent

for children from ethnically and racially diverse backgrounds. Preschoolers from non-English speaking backgrounds are more likely to have lower school readiness related to lower vocabulary and math scores (Hanson et al., 2011). Further, children from low-income homes and children from homes in which the primary language spoken is not English have lower English oral language skills upon kindergarten entry than middle-class, English-speaking children (Hoff, 2013).

Ongoing, frequent supports for parents who are raising their young children in the context of socioeconomic disadvantage are necessary. Guiding parents in enhancing their interactions with children, particularly in the areas of early learning, will foster children's development of fundamental competencies necessary for learning and later school success (e.g., language skills, self-regulation; Chazan-Cohen et al., 2009; Roberts, Jurgins, & Burchinal, 2005), as well as secure attachment relationships (Ainsworth, 1969). Building upon young children's self-regulation, language, and secure attachment contributes to adaptive systems of resilience in these children (Masten & Coatsworth, 1998). A promising means of intervention to promote resilience in young children from low-income settings is home visiting.

### **Home Visiting**

Home visiting is an important element of prevention for promoting resilience in this population that has been serving children and families for more than 120 years (Sweet & Appelbaum, 2004). It has grown as a model for service delivery that can reduce the risks experienced by low-income families while promoting parenting competence and positive child development outcomes (Azzi-Lessing, 2011). Home visiting for low-income families can build parenting capacity to support children's early language and



social/emotional development, thus preventing risk and poor developmental cascades (Roggman, Boyce, & Cook, 2009). A key component to the importance of home visiting for low-income infants and toddlers is that it enables a comprehensive approach for fostering children's development within the natural home context and through the child's primary caregivers (Anthony et al., 2011). Home visiting programs provide low-income families access to early intervention, healthcare, and education services; enable providers to observe, assess, and intervene with the parent and child in the natural home environment; engage the family in intervention; and provide ongoing support and resources for families to sustain effective interventions (Sweet & Appelbaum, 2004).

**Early Head Start (EHS).** EHS is the most comprehensive, nationally recognized home visiting program for families living in poverty with children aged birth to 3. EHS uses the method of home visiting service delivery to support infants' and toddlers' growth and development (Azzi-Lessing, 2011). Consistent with Bronfenbrenner's (1986) developmental ecological theory, EHS supports parents' well-being and assists parents in providing for children's development (Love et al., 2002; Vogel, Brooks-Gunn, Martin, & Klute, 2013). For example, maternal-level findings demonstrate that parents who participate in EHS have fewer mental health difficulties (e.g., depression) and can support their children's development better than parents who do not participate in EHS (Love et al., 2002). Vogel and colleagues (2013) also found that mothers who participated in EHS were more involved in learning activities with their toddlers as an outcome of the program than mothers who did not receive EHS services. Parents' provision for stimulating home environments (e.g., reading with children) as an outcome of EHS programming is important because it has favorable effects on children's language

and social/emotional development (Bradley, McKelvey, & Whiteside-Mansell, 2011; Chazan-Cohen et al., 2009; Love et al., 2005). Such participation-based approaches that involve the home visitor and parent within the home and community (e.g., library, playground) settings provide for significantly greater parent engagement in home visitor- and child-interactions during the visit than traditional intervention approaches (Campbell & Sawyer, 2007).

EHS services are directed by Head Start (HS) performance standards (2006), with specific regulations for improving parents' competence for promoting their children's health and development, specifically for fostering early learning. Based on these standards, home visitors must engage in complex relationships with parents during home visits to assist and teach parents to improve skills for building productive child learning environments. These activities meet HS performance standards that address home visiting quality as a necessary service model (45 C.F.R. 1306.33 [b]).

Further, HS Performance Standards that address parent involvement in child development and education (45 C.F.R. 1304.40 [e]) require that parents learn, build competence, and increase involvement in children's early learning activities appropriate for children's developmental needs. This addresses a critical need for examining best practices to support parent competence for and active involvement in children's early learning.

In addition to federal HS standards, examination of practices in home visiting for low-income families aligns with the recent federal authorization of the Maternal, Infant, and Early Childhood Home Visiting (MIECHV) program through the Patient Protection and Affordable Care Act of 2010. MIECHV regulation is designed to increase the

coordination of comprehensive service delivery to at-risk communities. Specifically, this regulation is a federal effort to enhance empirically based home visiting programs for at-risk families (§ 2951, 42 U.S.C. § 711 [a]) and to understand home visiting processes that improve parenting skills (§ 2951, 42 U.S.C. § 711 [d] [2] [b] [iii]). Such federal standards and regulation highlights the critical importance of better understanding home visiting processes.

Currently, however, evidence-based studies of home visiting demonstrate mixed support for parenting practices. The Home Visiting Evidence of Effectiveness (HomVEE; <http://homvee.acf.hhs.gov>) review is a national effort initiated by the U.S. Department of Health and Human Services (U.S. DHHS, n.d.) to evaluate outcomes from nationally recognized home visiting programs. Among the 17 existing home visiting programs that meet the HomVEE criteria for “evidence-based” models (i.e., significant favorable impacts across outcome domains or studies), about one tenth (12%) do not assess positive parenting practices (Avellar, Paulsell, Sama-Miller, & Del Grosso, 2012; Office of Planning, Research, and Evaluation, 2014; U.S. DHHS, n.d.). Of the programs that measure parenting outcomes, only a moderate percentage of outcomes observed demonstrated favorable impacts for parenting (14%; U.S. DHHS, n.d.). Early Head Start home visiting was found to increase positive parenting practices; however, only 13% of the parenting outcomes measured by EHS had favorable impacts (Avellar et al., 2012; U.S. DHHS, n.d.). A recent EHS evaluation report indicated that parenting outcomes are evident mostly at the end of program services (Vogel et al., 2015). Inconsistent outcomes for improved parent competence for appropriately interacting with one’s child co-occur with limited positive findings for parent-child interaction behaviors in the home,

including implementing bedtime routines, supporting child play, reading daily, and promoting positive behavior (U.S. DHHS, n.d.). The mixed parent-level findings of the HomVEE review are consistent with the mixed outcomes of home visiting programs reported by recent reviews of home visitation services (Azzi-Lessing, 2011; Sweet & Appelbaum, 2004).

Variability across studies may be due to parent characteristics. For example, single parents, parents with lower levels of education, and Spanish-speaking Hispanic parents have less participation in home visits (Raikes, Green et al., 2006). Variability may also be due to program practices; obtaining a precise picture of home visiting's effectiveness on parenting behaviors is challenging given variations in programs' content focus and service delivery (Azzi-Lessing, 2011; Sweet & Appelbaum, 2004). For example, programs may be designed primarily to support parents in their personal life circumstances, to focus on child development, or to adopt a dual generation approach. Child development focused content is an important factor in supporting family interaction with children and in home visiting quality (Raikes, Green et al., 2006). Regarding service delivery, programs vary in the length and frequency of home visiting and in the use of professional or paraprofessional home visitors.

The quality of home visiting services is another potential source of variation across programs (Korfmacher, Laszewski, Sparr, & Hammel, 2012; Vogel et al., 2015). Higher quality is associated with greater effectiveness of the home visit (Vogel et al., 2015), yet home visiting quality is not often measured (Allen, 2007). Child development focused home visiting programs often assume that a trusting relationship between the home visitor and parent is the mechanism for enhancing children's development

(Korfmacher, Green, Spellmann, & Thornburg, 2007; Paulsell, Boller, Hallgren, & Esposito, 2010; Raikes, Green et al., 2006). However, the effective and interpersonal elements of this are less clear.

Parents' perceptions of quality home visiting are associated with parents' perceptions of home visitors' use of strengths-based practices (Korfmacher et al., 2007). However, parent- and home visitor-reports of quality relationships are positively biased compared to more objective observations of quality (Vogel et al., 2011). Thus, limitations in understanding the interpersonal factors in quality home visiting result from reactivity of parent and home visitor reports (Korfmacher et al., 2008; Paulsell et al., 2010). Processes associated with home visiting quality require additional research (Korfmacher et al., 2007).

**Home visiting quality.** The quality of the home visit depends not on the home visitor's behaviors or the parent's behaviors alone; rather, the home visitor-parent interaction is a key element of successful home visiting (Wagner, Spiker, Linn, Gerlach-Downie, & Hernandez, 2003). Raikes, Green, and colleagues (2006) describe three primary components of home visits: quantity, content, and quality. Quantity is the amount of home visiting provided (e.g., length of visits, duration of program, number of visits). Content is the focus of the visit (e.g., child or parent focus). Quality (see Figure 1) is the third and arguably more complex component, as it centers on the formation of productive interactions between the home visitor and the parent that enhance the parent's understanding of and competence for enhancing child development (Korfmacher et al., 2008; Paulsell et al., 2010; Raikes, Green et al., 2006). High quality home visiting (e.g., a

healthy home visitor-parent relationship) is a key component of parent participation in home visits (Korfmacher et al., 2007).

In the home visiting literature, various factors contribute to home visiting quality. Raikes, Green, and colleagues (2006) use EHS home visitors' reports of parents' participation overall and during each specific visit as indicators of home visiting quality. Korfmacher and colleagues (2007, 2008) later examined the quality of home visiting by examining parent reports of the quality of the relationship that they had with their EHS home visitor, which Korfmacher and colleagues found to most strongly correlate with parents' participation in home visits (i.e., quantity) and also with parents' satisfaction with EHS home visitor services. Other conceptualizations of home visiting quality address processes of home visiting, including interactions among individuals present in the home visit, parent engagement in home visit activities, as well as the modeling, teaching, and listening role of the home visitor (McBride & Peterson, 1997).

To expand upon the understanding of the processes of home visiting, later conceptualizations have advanced a multi-dimensional understanding of home visiting quality. In 2001, Roggman refined the construct of home visit quality in collaboration with an EHS program, which resulted in a broader definition of quality. Quality included the elements of the McBride and Peterson (1997) model of home visiting quality, with the added focus on home visitors' facilitation of parent child interaction (Roggman, Boyce, Cook, & Jump, 2001). Continued development of the quality construct is based on a model that home visitors facilitate developmentally appropriate parenting and tailor the home visit to provide parents with appropriate skills and resources to meet children's needs (Roggman, Boyce, & Innocenti, 2008; Vogel et al., 2015). This has led to

Roggman and colleagues' (2012) multi-dimensional definition of quality home visiting with four key domains (see Figure 1): (a) responsiveness to the family, (b) relationship with the family, (c) facilitation of parent-child interaction, and (d) collaboration/non-intrusiveness.

***Responsiveness.*** Responsiveness is the home visitor's consideration and application of parent input when planning for the home visit (Roggman et al., 2012). Home visitors support parents' strengths for behaviors that enhance child development. In doing so, home visitors are culturally sensitive to families' unique backgrounds, knowledge, and experiences and individually tailor activities for each family (Roggman, Boyce et al., 2008). For example, by asking appropriate, child-centered questions during conversations with families, families may have specific questions, concerns, or ideas for activities to be completed during the home visit (Bernstein, 2002; Roggman, Boyce et al., 2008). Responsive home visitors are flexible and adjust program activities to make them meaningful for each family. Flexibility to meet parents' needs increases opportunities for parents to participate in home visit activities that build child development (Woods, Kashinath, & Goldstein, 2004).

***Relationship.*** Relationships in home visiting are defined as the home visitors' interactions with the parents using warmth, positive emotions, and respect (Roggman et al., 2012). Parent and home visitor report of the quality of the relationship, though positively biased when rated by mothers, is a significant predictor of parents' program participation (i.e., quantity; Korfmacher et al., 2007; Raikes, Green et al., 2006). The quality of the relationship is also key to the home visitor being able to deliver the content

of the visit (Paulsell et al., 2010). Therefore, the relationship between the home visitor and the parent is a critical component of the home visit.

Home visitors and parents mutually develop the relationship that impacts the parents' engagement in the visit (Korfmacher et al., 2008). Mutual competence provides for stronger home visiting relationships in which parents feel more competent and can recognize and build on their existing strengths (Bernstein, 2002; Roggman, Boyce et al., 2008). Home visitors who engage the parent during the home visit are associated with greater family improvements as rated by home visiting staff (Roggman et al., 2001). Roggman and colleagues' (2001) evaluation of the preliminary multi-dimensional home visiting quality construct found that parents largely had very positive ratings of their relationships with their home visitors, whereas home visitors and researcher observers rated the home visits more moderately and with greater variation across the range of possible codes. Parents who rated visits to be positive also perceived strong relationships with their home visitors. Home visitors' perceptions of strong home visiting relationships were associated with parent engagement in the home visit activities.

Stronger relationships in home visiting are associated with greater parent participation in, engagement in, and satisfaction with home visiting activities (Korfmacher et al., 2007, 2008). Parent-level outcomes are also associated with home visitor-parent relationship quality. Greater quality of parent engagement in EHS and other similar home visiting has been shown to improve parent-level factors (e.g., competence, mental health, daily reading with children, books in home; Chazan-Cohen & Kisker, 2013; Duggan, Berlin, Cassidy, Burrell, & Tandon, 2009; Krysik, LeCroy, & Ashford, 2008, Raikes, Green et al., 2006).



***Facilitation of parent-child interaction.*** Facilitation within the home visit is intended to guide the parent in engaging the child in positive early learning activities (Roggman, Boyce et al., 2008; Roggman et al., 2012). Facilitation behaviors include flexibility in guiding the parent and child interaction during the home visit when needed, providing encouragement, helping parents observe their children's behavior, and offering suggestions (Roggman et al., 2001). Home visitors also make suggestions or ask questions of parents to help parents understand children's behavior and how certain parenting practices link to children's development (Roggman, Boyce et al., 2008).

Facilitation behaviors by home visitors relate to parent engagement in the home visit activities and parenting behavior changes (Guralnick, 2011; Mahoney et al., 1999; Roggman et al., 2001). In a study of home visitor facilitation of parent-child interactions during EHS home visiting, Roggman and colleagues (2001) found that home visitor facilitation behaviors were positively correlated with researcher observed ratings of parent engagement in the home visit. Observer ratings of stronger facilitation behaviors were also related to greater home visitor-rated family improvement over the course of a year of EHS. Overall, though the researcher observed facilitation quality ratings were moderate, the facilitation of parent-child interactions during the home visit has demonstrated preliminary benefits for parent behaviors that involve the child in early learning during the home visit.

***Collaboration/non-intrusiveness.*** Collaboration and non-intrusiveness in the home visit is the home visitors' support of parents as the primary teacher of the child without interrupting the parent (Roggman et al., 2012). In this role, home visitors act as a consultant and supportive observer of the parent-child interaction. They offer specific,

detailed, in vivo observations and suggestions to the parents as the parents engage in early learning activities with the child during the visit, allowing the parent to be the primary person interacting with the child (Roggman, Boyce et al., 2008; Roggman et al., 2012). Materials needed for the home visit are provided to the parent to give to the child; the home visitor allows the parent to initiate interactions with the child (Roggman et al., 2001). Through such an approach, home visitors' collaboration with families allows for integration of home visiting teaching into natural activities in which parents engage with their children. Incorporation of home visit activities into natural routines increases parents' likelihood to maintain strong involvement in early learning activities with children (Dunst, Trivette, Hamby, & Bruder, 2006).

Due to the inconsistent outcomes of home visiting programs, with potential variation among programs on the quality of home visiting processes, these four key dimensions of home visiting quality must be further examined. More empirical research is needed to examine the parenting outcomes associated with this multi-dimensional home visiting construct; however, preliminary evidence demonstrates benefits of these dimensions on parenting competence (e.g., Krysik et al., 2008) and parenting involvement behaviors (e.g., Chazan-Cohen & Kisker, 2013; Duggan et al., 2009; Dunst et al., 2006; Guralnick, 2011; Raikes, Green et al., 2006). Further consideration of the connections between home visiting quality and parenting outcomes of home visiting in the areas of competence and involvement in children's early learning will help illuminate the means by which the multi-dimensional processes within home visiting impacts parents' behaviors.

## **Parenting Self-Efficacy**

Related to the interpersonal processes that occur within home visiting, parents perceive home visiting to be helpful in part due to home visitor social support (Brookes, Summers, Thornburg, Ispa, & Lane, 2006). Multifaceted quality home visiting (e.g., Roggman et al., 2012) can aid parents in developing parenting skills. Social learning theory and empirical findings assert that social support, modeling, and parent education build parents' confidence in promoting children's learning, and are critical for low-income parents with lower education (Bandura, 1997; Hoover-Dempsey, Bassler, & Brissie, 1992; Izzo, Weiss, Shanahan, & Rodriguez-Brown, 2000). A parent's belief that he or she can make a desirable impact on child development is parenting self-efficacy (PSE; see Figure 1; Bandura, 1997). PSE is important because it is a precursor to parents' educational involvement (Hoover-Dempsey & Sandler, 1995; Walker, Wilkins, Dallaire, Sandler, & Hoover-Dempsey, 2005).

**Parenting self-efficacy in home visiting.** Reviews of home visiting literature suggest that the quality of home visiting, particularly the domain of relationship with the parent, may influence the effectiveness of the home visiting process and parents' engagement in the program (Korfmacher et al., 2007). Quality home visiting includes strong home visitor-parent interactions, including support for the parent from the home visitor in the form of modeling and listening (McBride & Peterson, 1997; Roggman et al., 2012). When home visiting relationships are strong and home visitors emphasize a mutual-competence approach, parents feel more competent in their parenting abilities (Roggman, Boyce et al., 2008). Two qualitative studies of home visiting quality highlight the importance of supportive, responsive, and collaborative home visitor-parent

partnerships in building parents' confidence and skills (Brookes et al., 2006; Krysik et al., 2008). Brookes et al. (2006) found that EHS parents reported strong relationships with their home visitors, which provided social support (e.g., meaningful advice, general support, empathy) that was otherwise unavailable. Social support is critical, as good support networks have been found to positively support PSE for generally being a good parent (Elliott, 2007). The second study, conducted by Krysik et al. (2008) found that parents attribute home visiting program successes (e.g., skills learned, personal growth) to the close, non-judgmental, and supportive relationships with their home visitor.

Although qualitative studies have demonstrated the importance of the quality of the home visiting relationship on parents' perceptions of their ability to parent, only three studies have examined PSE as an experimental outcome of home visiting. Healthy Families Hawaii home visiting significantly improved PSE for primarily Hawaiian, Filipino, or unspecified multiracial parents (Duggan et al., 1999) after two years of home visiting. In another study of primarily Caucasian and Alaskan Native families, Healthy Families Alaska home visiting improved PSE over control group parents after two years of the program (Caldera et al., 2007). Most recently, a study of the Home Instruction of Parents of Preschool Youngsters (HIPPO) program found improved low-income Hispanic mothers' PSE and enhanced home learning environments for long-term child academic gains (Nievar, Jacobson, Chen, Johnson, & Dier, 2011). All three of these studies that examined PSE as an outcome of home visiting included at least 60% of families below the poverty level (Caldera et al., 2007; Duggan et al., 1999; Nievar et al., 2011). Thus, home visiting can favorably impact PSE, which in turn can benefit home learning

environments. However, PSE has not been examined as an outcome of EHS home visiting with primarily Hispanic or African American families (U.S. DHHS, n.d.).

**Parenting self-efficacy impact on parent-child interactions.** Hoover-Dempsey and Sandler's (1995) theoretical model includes PSE as a central component of the processes that shape parents' educational involvement in children's early learning activities. The model suggests that PSE for helping a child reach educational goals is based in the parent's beliefs that the parent has adequate skills to help the child, that the child can learn what the parent has to offer, and that the parent knows what resources can be accessed if requiring assistance. Empirical findings also demonstrate that PSE for supporting a child's learning significantly predicts parents' actual involvement in learning activities at home (e.g., reading, cooking) for children (Giallo, Treyvaud, Cooklin, & Wade, 2013; Green, Walker, Hoover-Dempsey, & Sandler, 2007; Hoover-Dempsey et al., 1992). Parents with high PSE are more likely than parents with low PSE to engage their children in learning activities (Iruka, 2008). The impact of PSE on parents' educational engagement of children is evident for Hispanic and African American parents of Head Start preschoolers (Iruka, 2008; Machida, Taylor, & Kim, 2002; Waanders, Mendez, & Downer, 2007). Specifically, Machida and colleagues (2002) found that Hispanic Head Start mothers' PSE significantly predicted the mothers' involvement in learning activities at home. Waanders and colleagues (2007) also found that Head Start parents' self reports of PSE were significantly related to self-reported parent involvement in learning activities with their preschool-aged children.

Similar PSE outcomes from the HIPPIY home visiting program have also been examined. Nievar and colleagues (2011) found that low-income Hispanic mothers

demonstrated improved efficacy and enhanced home learning environments (e.g., more learning materials, language stimulation, warmth, acceptance) after participating in the preschool home visiting program, compared to control group families. PSE predicted the home learning environment even when controlling for parent income and education level. Thus, home visiting can improve PSE, which in turn can impact parent involvement in home-based learning activities with young children that have long-term positive educational outcomes. Parent involvement must be more closely examined to further understand how quality home visiting benefits parent-child interactions in early learning activities.

### **Parent Involvement in Children's Early Learning**

The phrase, “parent involvement” has many applications (e.g., parents’ participation in home visiting services; Love et al., 2005). This study targets parents’ active educational involvement of the child in experiences that promote early learning (see Figure 1). Parent educational involvement outside of the home visit is a distinct behavior that improves child outcomes (Fantuzzo et al., 2000; Fantuzzo, McWayne, Perry, & Childs, 2004; Manz, Fantuzzo, & Power, 2004). Theoretical models of parent involvement in children’s learning activities suggest that involvement includes parent behaviors that directly engage children in academic activities (Epstein, 1995).

Parent involvement spans home and school settings for children of school and preschool age (Green et al., 2007; Fantuzzo et al., 2000, 2004; Ingram, Wolfe, & Lieberman, 2007; Manz et al., 2004; Walker et al., 2005). For example, Manz and colleagues (2004) found that parents of low-income, primarily African American elementary school students demonstrated home-based involvement, school-based

involvement, and home-school conferencing behaviors. Parent reports indicated that home-based involvement for elementary school children included involvement in learning opportunities in the home and community (e.g., visiting a library), provision of places to do work (e.g., homework), and engaging in educational activities with the child. Although parents of elementary school age children report involvement at home and school, home-based involvement is more preferred than school-based involvement for low-income parents of elementary school students at mixed ethnicity (Hispanic, Caucasian, African American) schools (Green et al., 2007; Ingram et al., 2007).

Involvement in learning activities in the home is also a preferred mode of involvement for low-income parents of preschool children (Fantuzzo et al., 2000, 2004). Parent involvement in early learning activities at home consists of maintaining routines (e.g., bedtime), sharing stories, reading books, doing creative activities, and participating in learning activities in the community. Not only is home-based parent involvement preferred among low-income ethnically diverse parents, but it is also a significant predictor of improved language and proactive behaviors (Fantuzzo et al., 2004).

**Parent involvement outcomes of home visiting.** Growing evidence demonstrates favorable home visiting outcomes for specific parent involvement behaviors. In a recent national evaluation of EHS, some key home-based learning activities with infants and toddlers were described as positive outcomes of home visiting program provision, including parents' reports of reading daily, initiating teaching activities, providing for language and learning supports, and creating routines (e.g., bedtime), as well as observations of parents supporting children during play (Chazan-Cohen & Kisker, 2013; Raikes et al., 2014; Vogel et al., 2013). Parents' reported daily

reading and involvement in teaching activities were sustained through a follow-up assessment when children were 5 years old (Vogel et al., 2013). These recent findings demonstrate that specific, at-home parent involvement behaviors are important, and that parents of infants and toddlers do engage in these behaviors.

Currently, however, the measures used to examine parent involvement as a home visiting outcome are limited in scope and psychometric quality. Many studies of parents' educational involvement in the infant and toddler home visiting range examine involvement using the Home Observation for Measurement of the Environment (HOME; Caldwell & Bradley, 1984) or study-specific parent reports or observations (Manz, Gernhart, Bracaliello, Pressimone, & Eisenberg., 2015; U.S. DHHS, n.d.). The measures in these home visiting studies lack adequate psychometric quality especially for non-English-speaking parents. Specifically, subscales of the HOME repeatedly demonstrated weak internal consistency in EHS evaluation studies (e.g., Love et al., 2002, 2005); other EHS evaluation studies only focus on discrete parent reports or observed activities (e.g., Vogel et al., 2015). A more comprehensive, conceptualization of parents' educational involvement with children is lacking in the EHS outcomes literature. Emergence of a psychometrically sound scale demonstrates promise for examining parents' educational involvement outcomes of home visiting for this age group (Manz et al., 2015). Using this more comprehensive measure to understand associations among home visiting quality and PSE will be an important contribution to EHS home visiting outcomes.

**Parent involvement to parenting self-efficacy.** Although EHS outcome studies to date have not examined PSE, other studies have demonstrated links between parent involvement and PSE. Parent involvement is correlated with PSE for parents of school-



age children (Hoover-Dempsey et al., 1992) and preschoolers (Giallo et al., 2013; Machida et al., 2002; Nievar et al., 2011; Waanders et al., 2007). For example, Waanders and colleagues (2007) found that Head Start parents' self reports of PSE were significantly related to parent involvement. Nievar and colleagues (2011) extended the relationship between PSE and involvement to home visiting contexts. Models between variables in these studies have suggested that the direction of the relationship is that PSE predicts parent involvement. Theory supports the direction of this relationship (e.g., Hoover-Dempsey & Sandler, 1995; Walker et al., 2005); however, theoretical arguments postulated by Bandura (1997) suggest the potential for the reverse direction (i.e., parent involvement predicting PSE).

Efficacy theory suggests that one's experience with success in performance, particularly with feedback on the improved performance, enhances one's cognitive perceptions of personal performance, and thus increases efficacy (Bandura, 1997). Ongoing feedback on improved performance offers opportunities for experiencing mastery performance (Bandura, 1997, 2012). Quality EHS home visiting offers parents multiple opportunities for involvement in children's early learning, with direct, immediate feedback (Korfmacher et al., 2007; Roggman et al., 2001; Roggman, Boyce et al., 2008). Further, parent involvement behaviors are found to be direct outcomes of EHS home visiting (e.g., Vogel et al., 2015), suggesting that parent involvement behaviors are a direct outcome of quality home visiting. Even with direct parenting behavior outcomes of home visiting, internal parent-level factors (e.g., mental health, depression) are not always immediately apparent following home visiting (Chazan-Cohen et al., 2007). Other examinations of PSE outcomes only found PSE increases after two years of home visiting

(Caldera et al., 2007; Duggan et al., 1999). Thus, parent involvement behaviors may be a direct outcome of quality home visiting, with success opportunities in greater parent involvement resulting in later PSE improvement. With the feedback provided through quality home visiting (e.g., Roggman, Boyce et al., 2008), it is possible that practice for parent involvement within the home visit increases PSE. At present, however, parent involvement as a direct predictor of PSE has not yet been examined.

### **Theoretical Framework**

Home visiting's approach in EHS is rooted in developmental ecological theory, with a family-centered approach (Zigler & Muenchow, 1992). Research reviewed by Bronfenbrenner (1986) suggests that, functioning within the context of the exosystem, family supports (e.g., strong social networks) improve mothers' attitudes about their young children and reduce poor maternal psychosocial outcomes (e.g., stress). This is particularly true for mothers in low-income settings. In Bronfenbrenner's person-process-context model, the parent characteristics are critical in determining the impact of the external environment on family processes and the family's developmental outcomes (Bronfenbrenner, 1986). Home visiting is grounded in the premise that parents mediate outcomes for children; therefore, many programs maintain priorities for building parents' skills for helping their children (Sweet & Appelbaum, 2004). The developmental ecological family-centered approach is central to Early Head Start (EHS) programming (Zigler & Muenchow, 1992).

To build on the theoretical grounding of EHS and to illustrate the interrelationships among constructs in the present study, a logic model is presented in Figure 2, using Duggan and Supplee's (2012) framework. Through quality EHS home

visiting, home visitors build parents' skills for helping their children by facilitating home visitor-parent interactions (McBride & Peterson, 1997; Roggman et al., 2012). Within this family-centered EHS service model, home visitors offer child development focused modeling, social support, and education to parents, which results in higher quality home visiting and can enhance PSE (Bandura, 1997; Hoover-Dempsey et al., 1992; Seigny & Loutzenhiser, 2010). Home visitors in EHS also provide modeling and guided practice for high quality home visiting for parents to improve and master their skills for involvement in children's early learning activities, which can also enhance parent involvement behaviors (Bandura, 1997, 2012; Roggman, Boyce et al., 2008; Chazan-Cohen & Kisker, 2013). With some emerging support, it is theoretically plausible that quality home visiting will correspond with enhanced PSE and parent involvement. Furthermore, greater PSE theoretically (Walker et al., 2005) and empirically (Giallo et al., 2013; Iruka, 2008; Waanders et al., 2007), predicts parents' educational involvement of their young children. Extending the theoretical connections, PSE enhanced by high quality home visiting may increase parents' educational involvement in early learning activities. In addition, more opportunities for parent involvement behaviors during the home visit, with direct, immediate feedback on parents' growing involvement skills, may also enhance PSE (e.g., Bandura, 1997). Therefore, parent involvement enhanced by high quality home visiting may increase parents' PSE. The purpose of the present study was to empirically affirm this logic model within EHS.

### **Significance of the Present Study**

National Head Start and Maternal, Infant, and Early Childhood Home Visiting (MIECHV) standards and regulations highlight the critical importance of better

understanding home visiting processes in quality home visiting. Home visiting quality is a multi-faceted construct that consists of processes of interactions between the parent and the home visitor (Roggman, Cook, Jump Norman et al., 2008; Roggman et al., 2012). Quality home visiting processes include the home visitor's responsiveness to the parent, relationship with the parent, facilitation of parent-child interaction, and non-intrusiveness and collaboration with the parent during the home visit. This multi-dimensional construct of home visiting quality opens avenues to study the importance of quality on parent behaviors, as home visiting improves child outcomes by enhancing parents' provision of a rich and developmentally appropriate home environment (Roggman et al., 2001). To date, however, few studies have examined home visiting quality as a multi-dimensional construct as it impacts parenting outcomes of home visiting.

Processes that occur in quality home visiting to increase parents' educational involvement are key to understanding EHS mechanisms of change. Parents' beliefs in their ability to provide for children's early learning are important precursors to active involvement (Walker et al., 2005). Parenting self-efficacy describes parents' beliefs in supporting children's learning (Bandura, 1997), making PSE a fundamental mediating mechanism for parents in quality home visiting. Examining quality home visiting supports for parents' PSE will highlight processes that inform the PSE to parent involvement relationship noted in preschool populations (Giallo et al., 2013; Iruka, 2008; Waanders et al., 2007). Additionally, opportunity for parents to practice parent involvement behaviors, with feedback on growth in performance during home visiting, is an important precursor to parents' perceived competence (Bandura, 1997). Examining parent involvement as a mediating mechanism for parents' PSE as an outcome of quality

home visiting will contribute to existing conceptualizations of PSE and parent involvement. To date, parent involvement outcomes have not been considered as mediators between home visiting services and PSE.

Extant literature and theory illustrate the importance of home visiting and parent involvement to enhance the development of infants and toddlers from low-income, ethnically diverse families (Azzi-Lessing, 2011). Home visiting can increase parents' competence for and active involvement in children's learning activities (Caldera et al., 2007; Vogel et al., 2013, 2015). To meet Head Start Performance Standards (2006) and federal calls for quality, evidence-based home visiting, a better understanding of EHS home visiting processes that support parents' involvement in children's early learning is timely and critical.

### **Purpose of the Present Study**

The primary purpose of the present study was to build on the limited literature that examines the quality home visiting for low-income, ethnically diverse parents, and examine the specific impact that quality home visiting has on PSE and parent involvement in infants' and toddlers' early learning activities. A second purpose was to examine the potential for mediation relationships among these constructs. PSE was examined as a mediator of the relationship between home visiting quality and parent involvement in children's early learning. Parent involvement was also examined as a mediator of the relationship between quality home visiting and PSE. Two sets of research questions were addressed, with a third, exploratory question comparing the mediation models.

1. The first set of research questions and hypotheses addressed the broad question of whether PSE mediates the relationship between home visiting quality and parent involvement.

1.1. Does EHS home visiting quality, represented by multiple facets related to child development interactions between home visitors and parents, predict parent involvement in infant and toddler early learning activities? Quality home visiting consists of several dimensions of home visitor activities with parents that support parent interaction with the child during the home visit (Roggman, Boyce et al., 2008; Roggman et al., 2012). Components of quality home visiting have demonstrated improved parenting outcomes (Roggman et al., 2001). It is likely that multi-dimensional, child development-focused and family-centered quality home visiting will lead to the expectation of parent involvement in early learning activities with the child outside of home visiting activities. Although comprehensive, psychometrically strong measures of parent involvement are limited (Manz et al., 2015), there is research support for home visiting enhancing home environments in which parents engage with infants and toddlers in early learning activities in the home (e.g., Vogel et al., 2013, 2015). Therefore, it is hypothesized that home visits of greater quality will significantly positively predict parent involvement in children's early learning activities.

1.2. Second, does EHS home visiting quality predict PSE for infant and toddler parenting? Examinations of other home visiting programs evidences improved PSE outcomes (Caldera et al., 2007; Nievar et al., 2011). Based on parents'

perceptions that strong, supportive relationships with their home visitors build parenting competence (Brookes et al., 2006; Krysik et al., 2006), it is anticipated that home visiting quality, consisting of responsiveness, strong relationships, collaboration, and facilitation of parent-child interaction (Roggman et al., 2012), is a key factor in enhancing PSE. Theory also suggests that the social support offered by strong relationships, such as those provided within home visiting relationships, and the mastery experiences offered during within-visit parent-child interaction practice, can improve PSE (e.g., Bandura, 1997). Parents' knowledge of resources for parenting support leads to increased PSE (e.g., Hoover-Dempsey & Sandler, 1995). It is therefore hypothesized that greater home visiting quality will significantly positively predict PSE.

1.3. Third, in the context of EHS home visiting, does PSE predict parents' involvement in infants' and toddlers' early learning activities? Empirically supported theory indicates that PSE for educational involvement is supported by parents' knowledge of available resources for parenting support (e.g., Green et al., 2007; Hoover-Dempsey & Sandler, 1995; Walker et al., 2005). Additional empirical findings have demonstrated that PSE is positively associated with parents' educational involvement in children's early learning activities (e.g., Giallo et al., 2013). For families participating in Head Start home visiting, PSE is also positively associated with parents' involvement in preschoolers' learning activities (e.g., Waanders et al., 2007). It is therefore hypothesized that higher levels of PSE will correspond with significantly

higher involvement in infants' and toddlers' early learning activities among this sample of EHS parents.

1.4. Fourth, does PSE mediate the relationship between EHS home visiting quality and parents' involvement in infants' and toddlers' early learning activities? Home visiting, through quality child development focused exchanges between home visitors and parents (Roggman, Boyce et al., 2008; Roggman et al., 2012), provides consistent support for parents (e.g., Brookes et al., 2006). Consistent support and knowledge of supportive resources is a key ingredient in PSE (e.g., Bandura, 1997), which impacts parent involvement (e.g., Giallo et al., 2013; Waanders et al., 2007). It is thus anticipated that quality home visiting indirectly promotes parent involvement through increasing PSE. Therefore, it is hypothesized that PSE will mediate the relationship between home visiting quality and parent involvement in children's early learning activities.

2. The second set of RQs and hypotheses addresses the broad question of whether parent involvement mediates the home visiting quality and PSE relationship.

2.1. First, does EHS home visiting quality, represented by multiple facets related to child development focused interactions between home visitors and parents, predict PSE for infant and toddler parenting? As noted above, other home visiting program outcomes include improved PSE (Caldera et al., 2007; Nievar et al., 2011). Because parents perceive strong, supportive relationships with home visitors to build parent competence (Brookes et al., 2006; Krysik et al., 2006), home visiting quality (e.g., responsiveness, relationship, facilitation



of parent-child interaction, non-intrusiveness and collaboration; Roggman et al., 2012), is anticipated to be an important component of PSE. Therefore, it is hypothesized that greater home visiting quality will significantly positively predict PSE.

2.2. Second, does EHS home visiting quality predict parent involvement in infant and toddler early learning activities? As noted above, quality home visiting includes multiple aspects of home visitors' activities during the home visit, including facilitation of parent-child interactions (Roggman, Boyce et al., 2008; Roggman et al., 2012). Within-visit parent-child interaction will likely generalize to parents engaging in early learning activities with their children outside of the home visit. Despite the existence of few comprehensive, psychometrically strong conceptualizations of parent involvement (Manz et al., 2015), parent involvement in early learning activities with infants and toddlers has been evidenced as an outcome of home visiting (e.g., Vogel et al., 2013, 2015). Therefore, it is hypothesized that home visits of greater quality will significantly positively predict parent involvement in children's early learning activities.

2.3. Third, in the context of EHS home visiting, does parents' involvement in infants' and toddlers' early learning activities predict PSE? Efficacy theory suggests that consistent and ongoing opportunities for positive feedback toward mastery performance are central to the development of strong efficacy beliefs (e.g., Bandura, 1997, 2012). Quality home visiting consists of home visitor behaviors that facilitate and offer direct feedback for within-visit

parent-child interactions (Roggman, Boyce et al., 2008; Roggman et al., 2012). It is anticipated that parents who have more opportunities for practice with involvement in children's learning activities during the home visit will have more successes that will improve PSE beliefs for engaging their children in early learning. It is therefore hypothesized that higher levels of parents' involvement in infant and toddler early learning activities will correspond with significantly higher PSE among this sample of EHS parents.

2.4. Fourth, does parents' involvement in infants' and toddlers' early learning activities mediate the relationship between EHS home visiting quality and PSE? Through supportive and collaborative relationships with parents, quality home visiting includes the facilitation of parent-child interactions (Roggman, Boyce et al., 2008; Roggman et al., 2012). Parent-child interactions can extend beyond the home visit context as parent involvement in children's early learning activities outside of the home visit (e.g., Vogel et al., 2013, 2015). Greater parent involvement with increased opportunities for successful involvement, as supported by quality home visiting, can increase PSE (e.g., Bandura, 1997). It is thus anticipated that quality home visiting indirectly promotes PSE by providing opportunities for parents' mastery of educational involvement. Therefore, it is hypothesized that parent involvement in children's early learning activities will mediate the relationship between home visiting quality and PSE.

3. Does comparison of the mediation models indicate the emergence of a stronger mediation model to explain the effect of home visiting quality on PSE and parent

involvement? The expectation of the mediation of home visiting quality to involvement by PSE is suggested based on the understanding that quality home visiting (Roggman et al., 2012), provides consistent support for parents (e.g., Brookes et al., 2006) and results in growth in parenting practices (Roggman et al., 2001). Consistent support and knowledge of supportive resources is a key ingredient in PSE (e.g., Bandura, 1997; Hoover-Dempsey & Sandler, 1995), which impacts parent involvement (e.g., Giallo et al., 2013; Waanders et al., 2007). Alternatively, the expectation of the mediation of home visiting quality to PSE by involvement is suggested based on home visiting quality (Roggman et al., 2012) supporting within-visit parent interaction behaviors, which do extend beyond the home visit (e.g., Vogel et al., 2013, 2015). Such increased opportunities for successful, in-visit parent involvement can increase PSE (e.g., Bandura, 1997, 2012). Therefore, it is anticipated that PSE and parent involvement will be reciprocally related. As this research question on the differential strengths of the indirect effects for each of the mediation models in the present study is exploratory, no hypotheses could be generated.

## **Chapter II: Literature Review**

Home visiting to support child development is a timely and critical issue in the U.S. to address the multiple environmental risks experienced by low-income, ethnic minority families with infants and toddlers (Jiang, Ekono, & Skinner, 2015). To examine how home visiting quality influences parent support of child development, three key conceptual constructs will be examined in the proposed study: (a) home visiting quality, (b) parenting self-efficacy (PSE), and (c) parent involvement in children's early learning activities. First, the quality home visitor practices within Early Head Start (EHS) home visiting services are key areas of quality home visiting service provision to examine related to parent involvement in child early learning activities (Korfmacher, Green, Spellman, & Thornburg, 2007; Raikes, Green et al., 2006). Second, social learning theory and PSE suggest a model for learning and change through which a parent can build competence for behaviors that involve children in appropriate learning activities (Bandura, 1997). Finally, parent involvement in child early learning specific to home-based activities outside of home visiting service provision is a key indicator of parent outcomes (Walker, Wilkins, Dallaire, Sandler, & Hoover-Dempsey, 2005). Each of these three constructs for examination in the present study is defined in Figure 1 and is detailed below.

### **Home Visiting Components**

Home visiting is examined based on quantity, content, and quality (Korfmacher et al., 2008; Paulsell, Boller, Hallgren, & Esposito, 2010; Raikes, Green et al., 2006). Home visiting content includes the information shared with the caregiver during the home visit. Home visiting quantity is the intensity or amount of home visiting over time. Home

visiting quality is the examination of the quality of the services provided and the quality of the relationships in the home visit (Korfmacher, 2007; Paulsell et al., 2010; Raikes, Green et al., 2006). Studies have found that all three home visiting components have positive outcomes for child and family development (Raikes, Green et al., 2006).

**Home visiting quantity.** Home visiting quantity consists of the number of home visits, the duration of the home visiting program, the length of the visits, and the intensity of visits (e.g., the frequency of visits within a set time period; Korfmacher et al., 2008; Raikes, Green et al., 2006). In a study of EHS home visiting, the duration of the visits was found to relate to improvements in the home environment, specifically related to language and literacy activities (Raikes, Green et al., 2006). Home visiting programs vary based on the quantity of visits provided (Korfmacher et al., 2008). For example, Korfmacher and colleagues (2008) describe that some programs like EHS have a more frequent home visiting schedule (e.g., once per week), whereas other programs are more flexible in the frequency of scheduling visits. Another quantity-level difference between programs is that parents may receive home visits from the same visitor every week, whereas other programs may have center-based services on some weeks. The average length of visits and the family's availability by week or long term may also vary. Overall, quantity aspects of home visiting provide for a great deal of variability across home visiting programs.

**Home visiting content.** Research on home visiting content typically examines the extent to which home visits are child-focused (Raikes, Green et al., 2006). Raikes, Green, and colleagues (2006) evaluated EHS programs to find that home visits that are more child-centered result in growth in child language and vocabulary, improvements in the

home environment, and positive child cognitive development. Positive outcomes may be due to parents' increased likelihood to participate in home visits and reduced likelihood to drop out of the program when home visits are focused on the child (Peterson, Luze, Eshbaugh, Jeon, & Kantz, 2007; Roggman, Cook, Peterson, & Raikes, 2008). In a more recent wide-scale examination of EHS programs (Vogel et al., 2011), child-focused play was a very common activity during the home visit, but only about half of the home visiting time was focused on solely child-focused activities, with the remaining time split between a focus on parent-child interaction and parent- or family-focused activities.

While maintaining a child-level focus for content to support child outcomes, family-centered approaches for providing content within home visiting (i.e., working with the parent and child together during the home visit) are important for home visiting outcomes. Family-centered relationships that align with family-centered home visiting results in the parent-home visitor relationship being a salient predictor of the intensity of interventions parents believe that they receive (Allen, 2007). Family-centered home visiting that also focuses on supporting child development through parenting supports is effective in building children's cognitive development (Roggman, Boyce, & Cook, 2009) and maintaining family engagement in the home visiting services (Roggman, Cook, Peterson et al., 2008). EHS home visitors who focused on helping parents support their children were related to child cognitive development gains at 3 years of age (Roggman et al., 2009). This corroborates Roggman's earlier findings that home visitors who rated families as improving the most were observed to more effectively engage parents and facilitate parent-child interaction than home visitors who rated their parents not to improve (Roggman, Boyce, Cook, & Jump, 2001). Roggman and colleagues (2001)

demonstrated that service delivery through supportive and reinforcing home visiting relationships between home visitors and parents aligned with the theory of change of the local EHS program to support parent-infant relationships, and found that observations of the home visit supported this theory of change. Thus, child-centered focus and family-centered approaches are important to promoting quality outcomes. Relationships in home visiting contribute to the overall quality of the home visit.

**Home visiting quality.** Examinations of quality indicators in home visiting is an emerging area, and as such, has only been a focus for research in the past 10 years (Korfmacher et al., 2007). Initially, home visiting quality was largely conceptualized as the relationship between the home visitor and the parent. Korfmacher and colleagues (2007) found only five studies prior to 2007 that examined the relationship between parents and home visitors. One was a qualitative examination of parents' perceptions of quality (Brookes et al., 2006). Four others included quantitative investigations of the quality of the relationship. Two developed measures designed for home visiting programming (Green, McAllister, & Tarte, 2004; Roggman et al., 2001), and two used psychotherapy measures associated with the working alliance to examine maternal-level variables that impacted the working relationship between the mother and the home visitor.

One of the first models for home visiting quality that addressed more than simply home visiting relationships was McBride and Peterson's (1997) examination of the processes within home visiting, including interactions among individuals present in the home visit, parent engagement in home visit activities, as well as the modeling, teaching, and listening role of the home visitor (McBride & Peterson, 1997). Expanding upon this

model, more recent conceptualizations have advanced a multi-dimensional understanding of home visiting quality. In 2001, Roggman refined the construct of home visit quality in collaboration with an EHS program, which resulted in a broader definition of quality. Quality included the elements of the McBride and Peterson (1997) model, with the added focus on home visitors' facilitation of parent child interaction (Roggman, Boyce, Cook, & Jump, 2001). Continued development of the quality construct is based on a model that home visitors facilitate developmentally appropriate parenting and tailor the home visit to provide parents with proper skills and resources to meet children's needs (Vogel et al., 2015). Teaching, modeling, and supporting parents in adopting developmentally appropriate behaviors for parenting their children is not a unique approach, but given its benefits for child development (Roggman, Boyce et al., 2008), is an important framework for quality home visiting.

The developmental approach within home visiting is one that addresses the needs of children's early development (Roggman, Boyce et al., 2008). Such an approach facilitates parents' behaviors for supporting children's development. Through encouragement of a family's strengths, suggestions to support parents' weaknesses, provision of opportunities for parents to observe and interact with their children, and responsiveness to parents' needs and available resources, the developmental framework for home visiting underlies the need for examining multiple dimensions of quality. The development of a more comprehensive understanding of home visiting quality is timely, with a growing need for such an approach (Korfmacher, Laszewski, Sparr, & Hammel, 2012). The most recent multi-dimensional definition of quality home visiting consists of four key domains (see Figure 1): (a) responsiveness to the family, (b) relationship with



the family, (c) facilitation of parent-child interaction, and (d) collaboration/non-intrusiveness (Roggman et al., 2012). These four domains of quality, and parenting outcomes associated with each, are described in more detail below.

***Responsiveness.*** Responsiveness is the home visitor's consideration and integration of parent input when planning for the home visit (Roggman et al., 2012). Roggman and colleagues (2012) defined specific behaviors of responsive home visitors, which include preparation, collection of needed information from the parent, observation of the parent and child in the home visit, and elicitation of parent input for visit activities. Home visitors support parents' strengths for behaviors that enhance child development. In doing so, home visitors are culturally sensitive to families' unique backgrounds, knowledge, and experiences and individually tailor activities for each family (Roggman, Boyce et al., 2008). For example, during conversations with home visitors, families may have specific questions or ideas for activities to be completed during the home visit. Responsive home visitors are flexible and adjust program activities to make them meaningful for each family. Ultimately, parents are the experts on their children, not home visitors, so gathering information from the parent on the child's behavior and the strategies attempted to support the child's development is a genuine, responsive way to provide home visiting services (Bernstein, 2002). Questions directed to the parent about the child allow the home visitor to be more flexible in meeting the parent's needs.

Flexibility to meet parents' needs increases opportunities for parents to participate in home-based activities that build child development (Woods, Kashinath, & Goldstein, 2004). Woods and colleagues (2004) examined parent-child activities for toddlers with special needs. They provided flexibility during the home visits by allowing the families to

choose the materials based on children's interests each week. Timing of the visits was also flexible based on parent and child needs. Following the use of these processes in home visiting, Woods and colleagues found that parents improved in their use of the strategies taught for teaching their children. Other responsive behaviors identified by Woods and Lindeman (2008) include discussions with families to problem-solve, observations to understand the home context, conversations to map home visiting activities within daily routines, and planning for supporting parent involvement through community-based activities.

***Relationship.*** Home visiting relationships consist of home visitor warmth, positive interactions with the parent and family members, and respect for the family (Roggman et al., 2012). Relationship formation is a key element of home visiting quality (Korfmacher et al., 2007; Paulsell et al., 2010; Raikes, Green et al., 2006). Quality relationship formation between a home visitor and a parent is similar to the relationship formation important for helping relationships, or the working alliance (Horvath, 1994). Despite some clear differences, namely that the helping relationship in a home visiting context is often free and that the home visiting program often seeks out the parent, such relationships are emerging as key factors to examine to understand the home visiting helping relationship (Korfmacher et al., 2007, 2008).

Home visitors and parents mutually develop the relationship that impacts the parents' engagement in the visit (Korfmacher et al., 2008). Mutual competence provides for stronger home visiting relationships in which parents feel more competent and can recognize and build on their existing strengths (Bernstein, 2002; Roggman, Boyce et al., 2008). Home visitors who engage the parent during the home visit are more likely to have

families on their caseload who demonstrate greater family improvements as rated by home visiting staff (Roggman et al., 2001). Roggman and colleagues' (2001) evaluation of the preliminary multi-dimensional construct of home visiting quality found that, parents largely had very positive ratings of their relationships with their home visitors, whereas home visitors and researcher observers rated the home visits more moderately and with greater variation across the range of possible codes (Roggman et al., 2001). Parents who rated visits to be positive also perceived strong relationships with their home visitors. Home visitors' perceptions of strong home visiting relationships were associated with parent engagement in the home visit activities. Raikes, Green, and colleagues (2006) also found that strong home visiting relationships are related to parent supportiveness and positive home environments. Home visiting quality is also related to the quantity of home visits and the ability of the home visitor to deliver content during the visit (Raikes, Green et al., 2006). The relationship between the home visitor and the parent is one of the key components to supporting parents' engagement and participation in the program (Korfmacher et al., 2007; Roggman, Cook, Peterson et al., 2008).

Home visiting relationships also affect parents' perceptions of their competence for parenting their children. Two qualitative examinations of home visiting relationships provide a unique and important perspective of the family factors impacting home visiting engagement and perceptions of home visiting quality. Family characteristics and parent personality factors are key areas that impact parent engagement in EHS service provision. Brookes and colleagues conducted a qualitative examination of EHS parents and home visitors across two EHS sites (Brookes, Summers, Thornburg, Ispa, & Lane, 2006). They found that family characteristics (e.g., transience, employment ending or beginning,

phone service disruptions, multiple children in the home, legal problems, or lack of resources to accommodate demands) and parent-level characteristics (e.g., personality traits, motivation, cognitive resources, health issues) could impact parents' participation in EHS programming, as perceived by parents and home visitors (Brookes et al., 2006). Parents who experience risk have differential home visiting program engagement; however, the quality of the relationship between the home visitor and the parent may impact at-risk parents' program engagement.

Brookes and colleagues (2006) found that one of the key facilitators to successful EHS program engagement is the provision of social support to parents. After working with home visitors for an extended period of time, at-risk mothers who previously had minimal or negative social support developed strong relationships with their home visitors. The home visitors provided helpful social support that was otherwise unavailable to the mothers. Mothers defined social support as the provision of helpful advice and support, as well as the presence of someone else to talk to about their concerns.

More recently, Krysik, LeCroy, and Ashford (2008) conducted another qualitative examination of parents' perceptions of home visiting quality with a specific focus on the characteristics of a quality, supportive home visiting relationship. More than half (63%) of parents characterized their relationship with their home visitor as a friendship, not as a teaching relationship. Parents felt close emotional bonds with their home visitors and enjoyed the social support that they received. A critical component of the quality of social support and emotional bond was the degree to which the parent was comfortable with the home visitor being nonjudgmental, regardless of the parent's question or topic of conversation. Parents also reported enjoying the personal characteristics of the home

visitor (e.g., caring, nice) and the help provided by the home visitor (e.g., advice, materials, transportation to store or doctor). Parents' engagement in the program, which enabled the home visitor to address key parenting behaviors critical to support the child's development, was due to the high quality relationship with the home visitor. Finally, parents' self-reported personal growth over the course of the program was also attributed to high quality relationships experienced with the home visitor.

Qualitative examinations of home visiting quality provide rich information about relationship quality (Brookes et al., 2006; Krysik et al., 2008); however, few studies report experimental outcomes of home visiting relationship quality (e.g., Korfmacher et al., 2007; Raikes, Green et al., 2006). The quality of home visitor-parent relationship is difficult to measure and is not often measured in home visiting research (Allen, 2007). Further, when relationship quality is measured, it is based more on biased parent or home visitor reports, and less on the observed quality of the home visit (e.g., Roggman et al., 2001).

**Facilitation.** Facilitation within the home visit is intended to guide the parent in engaging the child in positive early learning activities (Roggman, Boyce et al., 2008; Roggman et al., 2012). Facilitation behaviors include encouragement for parent leadership in parent-child interactions, engagement of the parent and the child equally, and use of materials available in the home (Roggman et al., 2001, 2012). Home visitors also make suggestions or ask questions of parents to help parents understand children's behavior and how certain parenting practices link to children's development (Roggman, Boyce et al., 2008).

Facilitation behaviors by home visitors relate to parent engagement in the home visit activities and parenting behavior changes. In a study of home visitor facilitation of parent-child interactions during EHS home visiting, Roggman and colleagues (2001) found that home visitor facilitation behaviors were positively correlated with researcher observed ratings of parent engagement in the home visit. Observer ratings of stronger facilitation behaviors were also related to greater home visitor-rated family improvement over the course of a year of EHS. Overall, though the researcher observed facilitation quality ratings were moderate, facilitation of parent-child interactions during the home visit have demonstrated preliminary benefits for parent behaviors that involve the child in early learning during the home visit.

A review of literature conducted by Mahoney and colleagues (1999) found that during home visiting activities in which services were provided to the parent and the child together, parent-child interactions improved. It follows, then that it is a primary aim of home-based services for young children to ensure the development of sustainable parent-child interaction patterns (Guralnick, 2011). In sum, home visitor facilitation of parent-child interaction improves parents' likelihood to interact with the child during the visit and can result in parenting behavior changes.

***Collaboration.*** Collaboration and non-intrusiveness in the home visit is the home visitors' support of parents as the primary teacher of the child without interrupting the parent (Roggman et al., 2012). In this role, home visitors share control of the visit with the parent, are flexible, and act as a consultant and supportive observer of the parent-child interaction. They offer specific, detailed, in vivo observations and suggestions to the parents as the parents engage in early learning activities with the child during the visit,

allowing the parent to be the primary person interacting with the child (Roggman, Boyce et al., 2008; Roggman et al., 2012). Materials needed for the home visit are provided to the parent to give to the child; the home visitor allows the parent to initiate interactions with the child (Roggman et al., 2001). Through such an approach, home visitors' collaboration with families allows for integration of home visiting teaching into natural activities in which parents engage with their children. Incorporation of home visit activities into natural routines increases parents' likelihood to maintain strong involvement in early learning activities with children (Dunst, Trivette, Hamby, & Bruder, 2006).

*Overall quality outcomes.* Home visiting quality as a multi-dimensional construct was examined in a national study of 89 EHS programs (Vogel et al., 2011), using an observational measure of multiple dimensions of home visiting quality (Roggman et al., 2010). Vogel and colleagues' (2011) examination of home visiting quality using this observational measure was the first use of this quality measure to examine EHS programming on a large scale. Outcomes indicated that most children and families receive home visits of moderate quality. Across all four key dimensions of quality home visiting, the highest quality ratings were found in home visitors' relationship with the family. Similar high ratings of home visitor engagement were identified in another more recent EHS evaluation report (Vogel et al., 2015). In the 2011 evaluation report, Vogel and colleagues found that even though observational ratings resulted in variable outcomes, parent and home visitor self-reports of the relationship quality were high, suggesting home visitors and parents may be biased in their reporting of the quality of home visits. Specific to qualities of the home visitor, visiting quality was modestly

positively correlated with having a highly qualified home visitor and a home visitor with good job satisfaction (Vogel et al., 2011).

***Relationship quality measurement.*** Studies in home visiting relationship quality call for a need for strong measurement of the relationship between the home visitor and the parent (Korfmacher et al., 2008). A review of home visiting literature indicates that two primary types of measurement have been used to examine the quality of the relationship between the home visitor and the parent: home visitor or parent reports, and direct observations of interactions during the home visit (Paulsell et al., 2010). The utility of each for home visiting quality evaluation is outlined below.

Home visitor ratings and parent ratings of relationship quality allow for measurement of the perception of the relationship; however, home visitor and parent reports are either nonsignificantly or weakly correlated (e.g., Raikes, Green et al., 2006; Roggman et al., 2001). Even when home visitor and parent ratings are weakly correlated, only home visitors' ratings of quality are correlated with observational ratings of quality (Roggman et al., 2001). However, an additional difficulty is that home visitor reports of relationships with parents are more variable than parents' ratings of relationships with the home visitor (Roggman et al., 2001). Parent reports of the helping relationship are positively biased, but they are a significant predictor of program participation beyond general satisfaction with the EHS program (Korfmacher et al., 2007; Roggman et al., 2001). One reason for the inconsistency in measurement between parent and home visitor ratings, and within home visitor ratings, is the restricted range of parent and home visitor-reports, which limits their empirical and clinical utility (Korfmacher et al., 2008).



Few studies use direct observation ratings to measure the specific processes within individual home visits to examine the quality of home visiting (McBride & Peterson, 1997; Roggman et al., 2001, Roggman, Cook, Jump Norman et al., 2008). One of the first observation measures, the Home Visit Observation Form (HVOF) was developed and used by McBride and Peterson (1997). Trained observers of the home visitor-parent interaction rate the quality of the relationship on the HVOF, which measured the content of the interactions between pairs of individuals on the home visit (e.g., home visitor and parent, parent and child). By examining the content of what was discussed on the home visit, McBride and Peterson (1997) found that the child-focused content was most common; however, child-focused content was more likely to occur when the family had adequate resources to support the child. Others have also used the HVOF (McBride & Peterson, 1997) with slight study-specific modifications to examine the home visitor's relationship with the parent during home visiting aimed to support parent behaviors that can promote infants', toddlers', and preschoolers' learning and school readiness (Campbell & Sawyer, 2007; Knoche, Sheridan, Edwards, & Osborn, 2010; Peterson, Luze, Eshbaugh, Jeon, & Kantz, 2007).

Using direct observations of home visit activities, Campbell and Sawyer (2007) also examined home visitor behaviors by developing and using the Natural Environments Rating Scale to objectively observe and better understand the settings (e.g., home, neighborhood setting) and activities occurring during child-focused home visiting (e.g., activity type, materials used, leader of the activity, engagement of the child, role of the parent and home visitor). Campbell and Sawyer found that home visitors were more likely to lead the activities of the home visit, often even when the parent was present

during the visit. The low parent engagement in the visit occurred more often in families' homes than in neighborhood settings. It is not atypical for home visiting quality examinations to find that home visitors often work directly with the child, without parent participation (Campbell & Sawyer, 2007; McBride & Peterson, 1997). The existing measures of home visiting quality assess components of interactions (e.g., rate of interactions among parent, child, and home visitor), roles (e.g., home visitor, parent), and content covered; however, a more complex understanding of the processes that occur between the home visitor and the family in child-focused home visiting with a family-centered approach would offer insight into the more nuanced processes that occur within quality home visiting.

With a directed focus on the rich interactions that occur during individual home visits, Roggman, Cook, Jump Norman and colleagues (2008) refined an earlier model for home visiting quality observation (Roggman et al., 2001) to create the Home Visit Rating Scale – Adapted (HOVRS-A). It is an observation measure in which an external rater observes and evaluates the relationship between the home visitor and the parent. Hallgren, Boller, and Paulsell (2010) used this measure in their pilot examination of a home visiting program. The HOVRS-A (Roggman, Cook, Jump Norman et al., 2008) examined home visitor strategies and parent engagement with the home visitor, and was intended to help home visiting staff improve the quality of home visits. An updated revision of this observational measure (Roggman et al., 2010) was also used in a national study of EHS program services to examine home visitor-parent relationship quality and its impact on home visit activities (Vogel et al., 2011). Most recently, the HOVRS-A was adapted and revised to the Home Visiting Rating Scale – Adapted and Extended

(HOVRS –A+), which has more specific indicator ratings comparable to items with four possible anchor ratings each that make up each individual scale (Roggman et al., 2012).

**Home visiting quality and parenting self-efficacy.** In a recent EHS evaluation study report (Vogel et al., 2015), higher observer ratings on the processes of the home visit (i.e., responsiveness, relationship, facilitation of parent-child interaction, non-intrusiveness) specifically related to fewer home visitor mental health difficulties (e.g., depression). Therefore, quality is a critical component of home visiting that is sensitive to various contextual home visiting factors that may affect the overall home visiting outcome for improved parent-level factors.

Specifically examining the relationship dimension of home visiting, a practical outcome of a positive relationship between the home visitor and the parent within the home visiting intervention context for low-income, at-risk families, is to improve the parents' perceptions of their abilities to support their children's learning and development (Coleman & Karraker, 1997). Qualitative examinations of home visiting service delivery demonstrate that parents perceive home visiting to be helpful in part due to the social support they receive from their home visitors (Brookes et al., 2006). The relationship between parents and home visitors, who are usually community-based paraprofessionals who have similar life experiences as the families receiving services (Korfmacher et al., 2008; Sweet & Appelbaum, 2004), is a way to support parents as they develop parenting skills. Support from others in the community relates to parenting practices, partly because greater social support is associated with greater parental efficacy (Izzo, Weiss, Shanahan, & Rodriguez-Brown, 2000). Izzo and colleagues (2000) found this relationship between social support from friends and family and maternal self-efficacy among Mexican

immigrant mothers of elementary school children. Further, home visiting programming specifically has been demonstrated to have an impact on parenting efficacy for Hispanic parents (Caldera et al., 2007; Nievar, Jacobson, Chen, Johnson, & Dier, 2011). To further understand the role of parenting self-efficacy, its foundation in general efficacy and social learning theory, as well as its application to parenting contexts, must be examined.

### **Self-Efficacy**

Efficacy is the belief that one has the ability to make a desirable impact on one's behavior or actions that are necessary to manage future situations (Bandura, 1995, 1997; see Figure 1). It was a theoretical construct introduced by Bandura about 35 years ago (Coleman & Karraker, 1997) that has since gained theoretical and empirical support. Personal efficacy beliefs describe how individuals think, feel, and behave (Bandura, 1995). However, individual-level factors, including psychosocial functioning (e.g., depression, stress), impact self-efficacy beliefs (Bandura, 1997).

Broadly, self-efficacy beliefs are grounded in perception of one's ability to perform competently and to have specific knowledge required for a given domain and task (Bandura, 1989). This has been demonstrated empirically. Parents who perceive themselves to have less competence related to parenting preschoolers report lower self-efficacy (Jackson & Huang, 2000). Hess, Teti, and Hussey-Gardner (2004) expanded this finding to infants, finding that lower maternal competence was associated with lower maternal self-efficacy. Further, Hess and colleagues found that knowledge moderated the relationship between maternal competence and maternal self-efficacy, suggesting the importance of knowledge. Knowledge and skills, and building on parents' levels of competence, may have influence on parents' self-efficacy beliefs. The application of

social support to build knowledge and skills and thus impact parents' self-efficacy beliefs is based in a foundation of social learning theory (Bandura, 1997).

**Social learning theory.** Social learning theory provides a theory for learning and change; learning is a key feature of the change that occurs within self-efficacy (Bandura, 2012). Grounded in a social learning theory framework, the environment influences the individual, but the individual's personal experiences, skills, and knowledge further influences the individual and the environment (Bandura, 1997). This is a transactional relationship among individuals' experiences, skills, and knowledge and the external environment. It highlights the contribution of the external environment on parents' experiences, skills, and knowledge, which influence personal feelings of self-efficacy (Bandura, 1989, 1995, 1997). Based in social learning theory, four information sources are key to a parent feeling efficacious (Bandura, 1995; Coleman & Karraker, 1997). First, parents must have experienced mastery or success in parenting. Second, parents must have opportunities to observe others' successful parenting behaviors. Third, verbal reinforcement or persuasion can influence parents' perceptions of accomplishments at parenting. Finally, parents rely on psychological and emotional states as informants of personal efficacy levels (Bandura, 1995). Lower levels of emotional arousal (e.g., anxiety) are likely to be associated with greater success, and thus better PSE (Coleman & Karraker, 1997).

Empirical investigations of parents' reports of self-efficacy have demonstrated the role of social learning theory in parents' development of parenting self-efficacy. Parents gain self-efficacy through social modeling of others' successes and through involvement in programs with trained professionals that support parent growth and involvement in

child educational activities (Bloomfield & Kendall, 2012). Bloomfield and Kendall (2012) conducted an examination of parenting efficacy following involvement in a parenting program through which parents learned from other parents and trained group facilitators. Parents, primarily mothers, of children younger than age 10 in Britain participated in a parenting education program. Parents completed self-efficacy self-report measures both before and after completing the 6-session group- and center-based parenting program. The parenting program was designed to allow parents to listen to other parents and share parenting experiences. Group facilitators, trained in the specific program and generally in managing group programs, supported parents' learning of parenting strategies and helped parents tailor techniques to individual family circumstances. Results indicated that parenting self-efficacy increased from pre-program to post-program participation.

Social learning theory influences have also been evident in the self-efficacy reports of parents from low-income and ethnic minority families. In a study of low-income Hispanic and African American parents of preschool-aged children, parents who participated in a community-based prevention program aimed to promote parenting competence had greater parenting efficacy for parenting their toddlers compared to controls and had significant improvements in parenting efficacy following program participation (Breitenstein et al., 2012). The program incorporated weekly group sessions with other parents and group leaders who facilitated parent skill building in positive parenting and behavior management. Significant parenting efficacy outcomes compared to controls were greater for Hispanic families than African American families, and pre-post gains were also greater for Hispanic self-reported parenting efficacy than African

American self-reported parenting efficacy. Overall, however, building social modeling and direct teaching of key parenting behaviors improved parenting self-efficacy among low-income, Hispanic and African American caregivers. Therefore, programs that are based in social learning theory and provide parents support for successful parenting experiences can have positive outcomes for parents' beliefs in their abilities to parent a child (Bloomfield & Kendall, 2012; Breitenstein et al., 2012).

**Efficacy domains.** Broadly, there are three types of self-efficacy: (a) general self-efficacy, (b) domain-specific self-efficacy, and (c) task-specific self-efficacy (Coleman & Karraker, 1997, 2003). Although there are broad measures of self-efficacy, measuring general self-efficacy when examining a specific population (e.g., parents, adolescents, children) provides less population-relevant information (Coleman & Karraker, 2003). To better understand the efficacy beliefs of a specific population, more specific, domain-relevant measures are better. However, there can be no single quality measure of a broad domain of self-efficacy (Bandura, 2012). Domains of efficacy include broad indicators of a specific type of efficacy, like efficacy for parenting (e.g., parenting self-efficacy; PSE). Self-efficacy is different across domains and is different even among different facets or tasks within that domain (Bandura, 1989, 2012). Comparatively, domain-specific, and task-specific measures within domains, are better at predicting behavior than general self-efficacy measures (Bandura, 1989; Coleman & Karraker, 1997).

Coleman and Karraker (2003) examined the predictive validity of measures of general self-efficacy, domain-general PSE, and task-specific PSE for toddlers. Middle-class, Caucasian mothers completed a general measure of self-efficacy, a general parenting self-efficacy (PSE) measure, a measure of toddler-specific PSE, and a measure

of infant-specific PSE. They found that outcomes of general self-efficacy measures had a weak, positive correlation with domain-specific PSE for toddlers. Domain-general self-efficacy was moderately positively correlated with domain-specific PSE for toddlers. Finally, domain-specific PSE for toddlers was weakly positively correlated with domain-specific PSE for infants. Coleman and Karraker (2003) also examined the predictive validity of different types of self-efficacy measures. They found that the domain-specific PSE measure for parenting toddlers was a significant predictor of child development outcomes and toddler behavior (e.g., affection, compliance, enthusiasm, low avoidance, and low negativity), yet domain-general PSE was not a significant predictor of toddler development or behavior. These findings suggest the specificity of efficacy and the need for defining efficacy not only at the domain level, but also at the task-specific level within domains to have the most meaningful predictive value.

Despite this call for domain- and task-specific efficacy, which are grounded in the perspective that self-efficacy is malleable over time and tasks (Bandura, 1989, 2012), some researchers suggest that self-efficacy is a stable personality trait (Coleman & Karraker, 1997). Researchers who conceptualize self-efficacy as a stable trait conceptualize self-efficacy as somewhat distinct concepts, like self-agency (Dumka, Stoerzinger, Jackson, & Roosa, 1996) or competence (Johnston & Mash, 1989).

**Parenting self-efficacy.** Parenting self-efficacy (PSE) is a domain-specific, theoretical construct that has a strong impact on parenting behavior. Parents who feel more efficacious and competent in their ability to engage in parenting behaviors and tasks that positively support their children's development are more likely to engage in such behaviors (Coleman & Karraker, 1997, 2003; Jones & Prinz, 2005). Based in Bandura's



self-efficacy theory (1989, 1997), PSE requires knowledge of appropriate behaviors to parent a child, as well as confidence in one's ability to engage in those appropriate behaviors and beliefs that children will respond positively to them (Coleman & Karraker, 1997). Thus, PSE for any specific age range is task-specific. Because PSE is not stable over time or tasks demanded by children of different ages (Bandura, 2012), task-specific PSE suggests that parents who feel efficacious for parenting an infant may have varying levels of PSE for parenting a toddler, as the child develops (Gross & Rocissano, 1988). Further, Coleman and Karraker (1997) assert that an additional important component of PSE is that others in the social context, including family members and friends of the parent, will be supportive of the parent's efforts to parent the child.

PSE and knowledge are important for understanding the quality of parent-child interactions (Conrad, Gross, Fogg, & Ruchala, 1992). Conrad and colleagues (1992) examined the parenting knowledge and PSE for toddlers of 50 middle-income, primarily Caucasian mothers of toddlers aged 1 to 3 years. Mothers with low PSE for parenting a toddler did not have levels of quality of interaction that varied by amount of maternal knowledge for parenting a toddler. However, for parents with higher levels of PSE, having greater knowledge for parenting a toddler resulted in significantly higher quality interactions with the toddler than high PSE mothers with low knowledge (Conrad et al., 1992). Grounded in Bandura's (1997) social learning and self-efficacy theories, specifically that self-efficacy mediates the connection between knowledge and behavior, Teti and Gelfand (1991) examined parental self-efficacy of low-income mothers for caring for their infants. Maternal self-efficacy was significantly related to maternal confidence in parenting behaviors.

*Parents' efficacy to involvement in children's early learning.* PSE theory suggests that PSE for school-aged children's educational attainment may be derived from (a) parents' direct, positive personal experience with helping child at school, (b) persuasion that involvement in child's education is important, (c) observing effective parental involvement in others, and (d) emotional investment in the child's education (Hoover-Dempsey & Sandler, 1995). Because home visiting provides social support and modeling necessary for the development of PSE (e.g., Brookes et al., 2006), examination of PSE may help explain home visiting outcomes (e.g., Duggan, Berlin, Cassidy, Burrell, & Tandon, 2009).

Parenting efficacy for involvement in an infant or toddler's home learning can impact children's outcomes; however, there are mixed findings of child outcomes immediately following the implementation of parenting programs. Some parenting programs demonstrate that immediate child behavior is evident. Breitenstein and colleagues (2012) found that parent training programs for toddlers' behavior in low-income Hispanic and African American families can result in parent-reported improvement in child behavior immediately following the program; however, these positive gains faded compared to control group families 6 to 12 months following the program. Some parenting programs demonstrate that immediate child behavior changes are not evident, but that parent outcomes mediate child outcomes. Bloomfield and Kendall (2012) found that PSE was associated with parenting outcomes, and the parenting outcomes then related to parent-reported child behavior outcomes.

Studies also report non-immediate outcomes are also evident for child learning outcomes. PSE impacts child learning and knowledge outcomes by impacting parenting

involvement in child educational activities (Hoover-Dempsey & Sandler, 1995; Walker, Wilkins, Dallaire, Sandler, & Hoover-Dempsey, 2005). Hoover-Dempsey and Sandler (1995) suggested that PSE for helping a child reach educational goals is based in the parent's beliefs that the parent has adequate skills to help the child, that the child can learn what the parent has to offer, and that the parent knows what resources can be accessed if the parent requires assistance. PSE is a key component of parental motivation for involvement in school-based and home-based activities (Hoover-Dempsey & Sandler, 1995, 1997; Hoover-Dempsey et al., 2005; Walker et al., 2005). Examinations of theoretical models of parenting efficacy for parental involvement in child educational activities is associated with educational activities at the school-age level. The concept that parental involvement in child-centered activities can impact infants' and toddlers' developmental and educational outcomes is consistent with the family-centered approach and ecological theory foundations of EHS programming (e.g., Zigler & Muenchow, 1992).

Application of PSE is relatively new in the field of self-efficacy literature, and there are associated limitations with it being new in the field (Coleman & Karraker, 1997). Naturally occurring PSE within the home context, particularly with consideration for task-specific efficacy, was just emerging as a construct to be examined in the last two decades (Teti & Gelfand, 1991). Most self-efficacy research has focused on narrowly defined tasks, but parenting behavior encompasses multiple complex behaviors that differ by child age (Coleman & Karraker, 1997). Empirical evaluations of PSE have also been examined to be related to low-income, ethnically diverse families with infants and toddlers.

PSE is inversely related with parental stress and depression (Bloomfield & Kendall, 2012; Holland et al., 2011; Jackson & Huang, 2000; Jones & Prinz, 2005) and can thus act as a protective factor against the deleterious effects of parenting stress and negative mental health outcomes, especially for parents from low-income environments (Coleman & Karraker, 1997). Jackson and Huang (2000) found this inverse relationship in African American mothers of preschool children. Farkas and Valdes (2010) studied PSE in low-income Chilean mothers of infants and found that specific demographic factors impacted the relationship between PSE and maternal stress. Larger household size and single parenthood during pregnancy were predictive of more stress and lower PSE. Other studies and efficacy theory corroborate parents' lower PSE associated with economic pressures of single parenthood for African American parents (Bandura, 1995; Elder, Eccles, Ardel, & Lord, 1995).

There are some conflicting findings related to parenting efficacy relationship with depressive symptoms across ethnicities, which may be due to the limited psychometrically strong PSE measures across ethnicities (Coleman & Karraker, 1997). Many studies report that PSE for parenting an infant or toddler is inversely related to depressive symptoms in African American and Hispanic families of varying income levels (Holland et al., 2011; Jackson & Huang, 2000; Le & Lambert, 2008). However, some studies report that PSE is not related to depressive symptoms in low-income African American or Hispanic mothers (O'Neil, Wilson, Shaw, & Dishion, 2009).

Overall, studies generally indicate that PSE is inversely related to poor parental mental health outcomes. In fact, parental efficacy mediates the relationship between parent well-being (i.e., depression and stress) and parent involvement in infant- and

toddler-focused early learning and play activities outside of the home visiting context (Giallo, Treyvaud, Cooklin, & Wade, 2013). Home visiting services have also been found to reduce parental depression (Vogel et al., 2013), suggesting another possible link between home visitor support of parent positive child-focused interactions in the home and PSE.

Consistent with PSE theory, which asserts that PSE is associated with school-based and home-based parental involvement in child learning (Hoover-Dempsey & Sandler, 1995, 1997; Hoover-Dempsey et al., 2005; Walker et al., 2005), empirical studies demonstrate that PSE is associated with parent involvement in child-focused early learning activities (Hoover-Dempsey et al., 1992; Giallo et al., 2013; Machida Taylor, & Kim, 2002; Nievar, Jacobson, Chen, Johnson, & Dier, 2011). Hoover-Dempsey and colleagues (1992) examined parenting efficacy of 390 middle-class parents of children in kindergarten through fourth grade. They found that higher levels of parent-reported PSE were associated with more parent-reported classroom involvement (e.g., more hours of classroom volunteering) and more home-based involvement (e.g., more hours spent in educational activities with their children).

PSE association with parent involvement specific to early learning activities at home, outside of the home visiting context, was studied by Giallo and colleagues (2013), who used path analysis to examine mothers' and fathers' self-efficacy as it related to parental mental health and parents' self-reported involvement in their infants' and toddlers' educational development. Among a sample of 982 Australian parents (primarily mothers), Giallo and colleagues found that PSE predicted parent involvement in children's early learning activities. PSE also mediated the relationship between parent

well-being (e.g., stress, anxiety, and depression) and parent involvement in learning activities.

Giallo and colleagues (2013) corroborated Machida and colleagues' (2002) earlier findings among primarily Hispanic Head Start families. Machida and colleagues found that PSE mediated the relationship between family stress and home learning. PSE also mediated effects of difficult child temperament on mothers' family involvement in learning activities at home. Mothers with fewer family stressors (e.g., moving to a new house, losing a job, victim of violence, birth of a child) or with children with less difficult temperament had higher levels of PSE.

PSE outcomes of home visiting were demonstrated in a study of the Home Instruction of Parents of Preschool Youngsters (HIPPY). The HIPPY program increased PSE of low-income Hispanic mothers and enhanced home learning environments (e.g., more learning materials, language stimulation, warmth, acceptance; Nievar et al., 2011). Even when controlling for parent income and education level, PSE significantly predicted the home learning environment. In sum, PSE is a task-specific construct that has some mixed outcomes, but generally results in improved child (e.g., behavior and learning) and parent (e.g., parenting involvement) outcomes. When using the appropriate (i.e., task-specific) measure, these outcomes generalize across ages, income levels, and cultures.

### **Parent Involvement in Children's Early Learning**

Parents' involvement in child-focused early learning (see Figure 1) has been found to relate to parental perceptions of their abilities to support their infants' and toddlers' development (Giallo et al., 2013). This suggests that parents' positive perception of the agency for impacting their children's development, or PSE, is a key

potential mechanism by which parents' involvement, and thus child outcomes, can be affected. Parent interactions with the child in the home, to support learning behaviors, are important general parent behaviors that support children's learning. Aspects of parental role construction and PSE, in conjunction with parents' invitations to become involved and personal-level factors (e.g., stress), are greater predictors of home-based involvement in educational activities than of school-based involvement (Walker et al., 2005). Parent involvement for toddlers and preschoolers includes maintaining routines (e.g., bedtime), sharing stories, reading books, playing with toys or games, creating activities with the child, involving the child in household chores, and participating in learning activities in the community (e.g., playground, park, library; Downer & Mendez, 2005; Fantuzzo, Tighe, & Childs, 2000; Manz, Gernhart, Bracaliello, Pressimone, & Eisenberg, 2015). However, most involvement studies for toddlers examine parent involvement in home visiting activities (Love et al., 2005), not general involvement in home-based early learning activities.

Involvement in home visiting is defined as the parents' connections with the program and the parents' use of the program as best as the parent and program are able to allow (Korfmacher et al., 2008). For example, Knoche, Sheridan, Edwards, and Collins (2010) examined parent engagement during EHS and Head Start (HS) home visits related to the use of an intervention within the context of home visitation provided through both of these programs. Parent involvement was conceptualized as engagement in the program (Knoche et al., 2010). However, studies of older (i.e., school- and preschool-aged) children demonstrate that parent involvement in children's learning is a distinct behavior

that has a positive impact on children's outcomes (Fantuzzo et al., 2000; Fantuzzo, McWayne, Perry, & Childs, 2004; Manz, Fantuzzo, & Power, 2004).

**Parent involvement theory.** Theoretical models of parent involvement in children's learning activities have been documented for parents of school-age children; however, theoretical models of parents' involvement in early learning activities for infants and toddlers is less developed. Theory suggests that involvement includes parent behaviors that directly engage children in academic activities and provide for children's basic needs and resources necessary for educational achievement (Epstein, 1995). Schools, families, and communities interact to impact children's learning and development. Recent models for parent involvement in children's learning suggest that parents' involvement spans the home and school environments (LeFevre & Shaw, 2011; Walker et al., 2005). Involvement behaviors of school-age parents have been examined for how they extend to parents of children prior to entry into elementary school (Fantuzzo et al., 2000, 2004).

**Parent involvement behaviors.** Family involvement behaviors extend across home and school settings for children of school age (Green et al., 2007; Ingram, Wolfe, & Lieberman, 2007; Kohl, Lengua, & McMahon, 2000; Manz, Fantuzzo, & Power, 2004; Walker et al., 2005). Studies demonstrate that families of school-age children have an affinity for home-based involvement as one way to support their children's development (Green et al., 2007; Ingram et al., 2007; Manz et al., 2004). Involvement in learning activities in the home has also been demonstrated as a preferred mode of involvement in low-income families with children of the preschool age (Fantuzzo et al., 2000, 2004). Home-based involvement described by Fantuzzo and colleagues (2000) was determined



based on focus group discussions about the frequent and valued involvement behaviors of Head Start teachers, parent leaders, and school administrators, with researcher contributions. Exploratory factor analysis found three primary factors, including school-based involvement, home-school conferencing, and home-based involvement (Fantuzzo et al., 2000). The items on the home-based involvement factor of the parent involvement measure developed by Fantuzzo and colleagues (2000) indicate that home-based involvement includes not just homework or other school-based activities at home, but home-based activities that support children's learning like maintaining morning and bedtime routines, sharing stories about when the parent was in school, spending time on creative activities with the child, and participating in learning experiences in the community.

Home-based involvement at the preschool level is associated with parent and child outcomes. In an examination of low-income Head Start parents' involvement in home-based educational activities with their preschool children, Waanders, Mendez, and Downer (2007) found that parents' self-report of PSE was significantly related to self-reported home-based parent involvement. Higher levels of PSE predicted high levels of parent involvement in home-based learning activities with their preschool-aged children. Home-based involvement is not only a common outcome of Head Start, it is also associated with children's educational gains (Fantuzzo et al., 2004).

Home-based involvement is valued among low-income, Latino families (Calzada, Fernandez, & Cortes, 2010; Downer & Mendez, 2005; Fantuzzo et al., 2000; Ingram et al., 2007). Downer and Mendez (2005) studied the school- and home-based involvement of African American fathers of Head Start children. These fathers preferred home-based

involvement activities over school-based involvement, and they performed more home-based involvement activities when they believed that their children's education outcomes were benefitting from such involvement. Home-based involvement included activities like playing toys or games, talking about what happened at Head Start, taking the child on errands, involving the child in household chores, visiting the playground, going to the park, having a picnic, going to the mall, or attending church.

Parent involvement behaviors demonstrate child academic (e.g., vocabulary gains; Fantuzzo et al., 2004) and behavior gains (e.g., emotional regulation; Downer & Mendez, 2005). With the practice that parents gain when participating in early learning activities with their young children, parent involvement behaviors may also enhance parents' perceptions of competence to provide for and be involved in their children's early learning. Experience with success in performance, particularly with feedback on improved performance, enhances cognitive self-perceptions of personal performance, thus increasing efficacy (Bandura, 1997). Ongoing feedback on improved performance offers opportunities for enhancing mastery performance (Bandura, 1997, 2012). Through quality EHS home visiting, home visitors provide parents with multiple opportunities for involvement in children's early learning with direct, immediate feedback (Korfmacher et al., 2007; Roggman et al., 2001; Roggman, Boyce et al., 2008). Therefore, parent involvement behaviors practiced during the home visit may directly impact parent involvement as a home visiting outcome, with the subsequent outcome of improved PSE.

The consideration of PSE as a delayed outcome following improved parent involvement behaviors that are more direct outcomes of quality home visiting is postulated based on evidence that parent internalizing outcomes (e.g., mental health,

depression) are not evident immediately following the completion of EHS home visiting services (Chazan-Cohen et al., 2007). Internal parent level factors may take longer to change than parents' outward behaviors. Changes in parent involvement behaviors, with opportunities for increased success and mastery, may occur first, with subsequent improvements in PSE. Relationships between parent involvement and PSE have been demonstrated among parents of Head Start preschoolers (Waanders et al., 2007) and parents of preschoolers in home visiting (e.g., Nievar et al., 2011). To date, however, parent involvement has not yet been examined as a direct predictor of PSE.

A majority of the current studies have examined parenting involvement for parents of children in preschool and elementary school. However, the parent involvement construct must also be understood at the infant and toddler level to more fully understand appropriate parent involvement behaviors at that age. Parent involvement in activities and strategies that support the child's development and education must be developmentally appropriate for the child (Hoover-Dempsey & Sandler, 1995). Therefore, the current preschool or school-aged involvement models must be downwardly extended to parents of infants and toddlers.

Many studies of parents' educational involvement in the infant and toddler home visiting range examine involvement using the Home Observation for Measurement of the Environment (HOME; Caldwell & Bradley, 1984) or study-specific parent reports or observations (Manz et al., 2015; U.S. DHHS, n.d.). The measures in these home visiting studies lack adequate psychometric quality especially for non-English-speaking parents. Specifically, subscales of the HOME repeatedly demonstrated weak internal consistency in EHS evaluation studies (e.g., Love et al., 2002, 2005), and other EHS evaluation

studies only focus on discrete parent-reports or observational activities (e.g., Raikes, Green et al., 2014; Vogel et al., 2015). A more comprehensive, conceptualization of parents' educational involvement with children is lacking in the EHS outcomes literature.

Recently, a measure of at-home involvement for school-age and preschool-age children was extended to toddlers aged 2 and 3. A single, home-based family involvement dimension was found to exist on this measure (Manz et al., 2015). Home-based involvement behaviors for toddlers included many similar behaviors to the home-based behaviors for preschool and school-aged children: read books, tell stories, visit community learning centers (e.g., library), and teach new words. Although there are no studies on parent involvement in infancy, Manz and colleagues (2015) demonstrate that the parent involvement for toddlers is fully home-based, similar to the home-based parent involvement factor for preschool.

### **Contributions of the Proposed Study to the Current Literature**

Although there is extensive literature in the area of PSE, there are limited studies that examine the quality of the home visit and comprehensive parent involvement for infants and toddlers as a home visiting outcome. The limited amount of existing research on home visiting quality is problematic, given the potential for strong outcomes of home visiting programs and the recent national attention to home visiting (The Patient Protection and Affordable Care Act, 2010). The current study aimed to address several gaps in the literature. First, this study expanded on the limited literature that examined home visiting quality with low-income, ethnically diverse parents. Existing studies on home visiting quality demonstrate increased parenting behaviors (Roggman et al., 2001).

However, few studies examined outcomes associated with the multi-dimensional construct of home visiting quality.

Quality home visiting processes that impact parent involvement are not well understood. Therefore, a second primary contribution of this study was to directly examine PSE as an outcome of home visiting relationship quality. Home visiting in general has resulted in improved PSE (e.g., Nievar et al., 2011), and components of home visiting quality have demonstrated qualitatively improved parent competence (Brookes et al., 2006; Krysik et al., 2008), yet PSE as an outcome of overall home visiting quality in EHS has not been examined. Finally, conceptually and psychometrically strong indicators of parent involvement in children's early learning have been limited in the literature. This study aimed to examine parent involvement as an outcome of EHS home visiting. Interrelationships among PSE and parent involvement were also examined to illuminate potential mechanisms for parenting outcomes within quality EHS home visiting.

In conclusion, the purpose for the this study was to build on the limited literature that examines the multi-dimensional construct of quality of home visiting for low-income, primarily Hispanic and African American parents in EHS. Outcomes examined were PSE and parent involvement in children's early learning. A secondary purpose of the proposed study was to examine mediation relationships that extend from the predictor of home visiting quality. PSE was examined as a mediator with parent involvement as an outcome, and parent involvement was examined with PSE as an outcome.

## Chapter III: Method

### Participants and Setting

Participants were home visitors and families who participated in a large-scale evaluation of a home visiting storybook sharing study conducted in partnership with an Early Head Start (EHS) program in eastern Pennsylvania (Manz, 2012). Each home visitor in this EHS program provided EHS home visiting services for eight to nine families.

Inclusion criteria for the present study, based on the recruited participants from the Manz (2012) longitudinal evaluation study, were: (a) families completed home visiting quality, parent efficacy, and parent involvement measures at the baseline assessment point; and (b) parents were the infants' or toddlers' primary caregivers, as identified by the EHS program. Overall, 43 families were recruited. One family was excluded from the present sample because at the time of data collection, the mother was 9 months pregnant, so the parenting self-efficacy (PSE) and involvement measures were not applicable. A second family was removed from the analyses because the parent only completed half of the PSE measure at baseline of the larger study. Therefore, the final sample included 41 parents.

**Home visitor demographics.** Eight home visitors participated in the present study. All of the home visitors were female. Regarding race/ethnicity, half of the visitors ( $n = 4$ ) were Latino, and the remainder reported to be Caucasian ( $n = 3$ ) or a mix of Caucasian and African American ( $n = 1$ ). Most of the home visitors ( $n = 5$ ) reported English to be their native language, with the remaining visitors reporting Spanish to be their native language. All of the Spanish-speaking home visitors, as well as one of the

English-speaking home visitors, were bilingual in English and Spanish, and had English- and Spanish-speaking families on their caseloads. At the time of assessment, the average number of years that home visitors had lived in the mainland United States was approximately 27 years ( $M = 27.42$ ,  $SD = 10.24$ ). Most of the home visitors were born in the mainland U.S. (75%). The remaining two home visitors were born in Peru and Puerto Rico, and each had been living in the mainland U.S. for more than 10 years.

Home visitors' training and experience was illustrated by their report of their education level and the years they spent working in home visiting programs. All of the home visitors were trained beyond a high school education. Most attended a four-year college ( $n = 6$ ), one received her Master's, and one received a Child Development Associate's degree. On average, participating home visitors worked for the participating EHS program for about 4 years ( $M = 3.80$ ,  $SD = 3.97$ ), varying from less than 1 year (i.e., two home visitors with 3 and 5 months of experience) to 10 years across the eight home visitors. About half ( $n = 5$ ) of the home visitors also had experience working for another home visiting program for an average across home visitors of about 3 years experience in other programs ( $M = 3.10$ ,  $SD = 3.40$ ). In all, each home visitor's experience with home visiting in any program was about 6 years ( $M = 5.74$ ,  $SD = 3.30$ , range = 8.75). The number of participating families on each home visitor's caseload varied from two to eight families (range = 6).

**Parent and family demographics.** The 41 parent participants in the present study were mostly mothers (95.1%) with two participants who were fathers (see Table 1 for parent demographic frequencies). All parents were the children's primary caregivers. For one family, the father completed the demographic form, but the mother completed the

remainder of the assessments. This father's information was removed from the parent-specific demographic information (e.g., ethnicity, education level). Family-level (e.g., primary language at home) and child-level (e.g., child age) information were retained from this father's demographic report. Most of the families were recruited during the first round of recruitment ( $n = 39$ ).

On average, parents were about 28 years of age ( $M = 28.40$ ,  $SD = 6.76$ ) and had lived in the mainland U.S. for approximately 19 years ( $M = 19.43$ ,  $SD = 10.88$ ; range = 3 to 46 years). Parents born in Puerto Rico or other countries (e.g., Dominican Republic, Mexico) had lived in the mainland U.S. for an average of 11 years ( $M = 11.20$ ,  $SD = 7.33$ ). Half spoke Spanish as their native language (52.5%), and most parents completed high school and some college (70.0%). At the time of the assessment, parents had participated in the EHS program with the child currently enrolled in the program for an average of 10 months ( $M = 10.49$ ,  $SD = 8.90$ , range = 0 to 30 months), and had worked with their present home visitor for an average of 7 months ( $M = 7.10$ ,  $SD = 6.64$ , range = 0 to 22 months).

The average child age of participating families was 17 months ( $M = 17.12$ ,  $SD = 8.58$ , range = 0 to 33 months) at the time of assessment. Most children were female (58.5%), and most were reported to be of Latino race/ethnicity (85.4%; see Table 2 for child demographic frequencies). Among children who were not of Latino race/ethnicity, most (7.3%) were African American, and there was one child of each of the following races: Caucasian, mixed African American and Caucasian, Egyptian. Of the Latino families, many (37%) reported to be of Dominican Republic ( $n = 8$ ) or Puerto Rican ( $n = 5$ ) nationality. A small group of children (9.8%) in the present sample was reported to



have special needs. Of these children, one had speech and language delays, another had speech and language needs with a chronic health impairment, and two did not specify the type of special needs. These families, in addition to two others, reported participating in other programs (14.6%). Most of these families participated in day care programs (66.7%), one participated in early intervention services (16.7%), and one received visits from another child development professional (16.7%). Due to sample size constraints in the present study, all of these participants were retained in the sample. As such, the results should be interpreted with caution.

### **Measures**

**Home visiting quality.** The quality of the home visit was assessed using an observational measure of multiple dimensions of home visit quality, the Home Visit Rating Scales – Adapted and Extended (HOVRS-A+; Roggman et al., 2012). The HOVRS-A+ examines four dimensions of strategies used by home visitors (Home Visit Practice Scales [HVPS]) and three parent and child behaviors (Family Engagement Scales [FES]). HVPS scales include home visitor responsiveness to the family (6 items), relationship with the family (7 items), facilitation of parent-child interactions (6 items), and collaboration with the family (5 items). FES scales were not used in this study. Coders used observational ratings during a 30 minute core of the child-development focused activities that typically take place during the home visit. Observations were conducted via videotaped recording. The child was required to be awake for at least 25% of the home visit for an observer to rate any item related to observations involving the child.

Each of the items across the seven scales consists of a single observational Likert-type item with four anchors (1 = *inadequate*, 3 = *adequate*, 5 = *good*, 7 = *excellent*). Several descriptors are provided for each anchor term to guide the observer's ratings. When combining scores for the overall scale score, the low scores of 1 are weighted to reflect very low quality on that item, such that a 1 is equivalent to -1 when averaging the item scores for the scale score. The mean of the item scores for each scale is provided as the scale score. The mean of the scale scores for the four HVPS scales serves as the HVPS score. The same scoring procedures are used to calculate scores on the three FES scales and on the overall FES. For the present study, only the HVPS scale summative scores for the home visitor practices were used as the measure of home visiting quality.

The psychometric properties of the HOVRS-A+ (Roggman et al., 2012) were evaluated based on its administration to 60 families across two EHS programs (Roggman, Cook, Jump Norman, Christiansen, Boyce, & Innocenti, 2008). The validation study demonstrated acceptable reliability based on 25% of the observations conducted (inter-rater agreement > 85%;  $\kappa > .75$ ). This observational measure was designed as a tool for use by observers who do not have home visiting or clinical experience working with families (Roggman et al., 2008). Inter-rater agreement results for the present study are presented below.

Convergent validity for the HOVRS-A+ (Roggman et al., 2012) was demonstrated on an earlier version of the measure, the original HOVRS, which had significant predictive relationships ( $\beta = .29, p < .05$ ) with quality of language and literacy aspects of the home environment for children 3 years of age (Home Observation Measure of the Environment; Caldwell & Bradley, 1984). Predictive validity was also

demonstrated with children's receptive vocabulary at age 3 ( $\beta = .30, p < .05$ ; Peabody Picture Vocabulary Test [PPVT]; Dunn & Dunn, 1997). In addition, content validity was demonstrated based on strong empirical evidence for the seven scales on the HOVRS-A+ related to responsiveness to families and parent-child interactions. Hallgren, Boller, and Paulsell (2010) used the HOVRS-A (Roggman et al., 2008), an adapted version of the original measure, to evaluate home visiting quality for English- and Spanish-speaking families and found that internal consistency was strong for the overall rating ( $\alpha = .87$ ) and the indices (HVPS  $\alpha = .76$ ; FES  $\alpha = .93$ ).

Internal consistency of the HVPS for the present study was measured to be strong (Cronbach's  $\alpha = .93$ ). Internal consistency on one of the four scales of the HVPS just missed the cutoff for adequacy (Responsiveness  $\alpha = .69$ ), and was strong on the remaining three scales of the HVPS (Relationship  $\alpha = .86$ , Facilitation  $\alpha = .86$ , Non-Intrusiveness  $\alpha = .82$ ). Feedback on the cultural relevance of the measure for the EHS population was sought and provided from three members of the EHS community (one bilingual, Latino home visitor, two families). The measure was described to be understandable with appropriate wording that would be appropriate for the practices within the EHS program.

To examine inter-rater agreement across coders for the HOVRS-A+, 20% of the 41 families' HOVRS-A+ videos ( $n = 8$ ) were randomly selected to be double-coded by a second coder. Double coding checks took place monthly. The randomly selected HOVRS-A+ videos were distributed across home visitors, including videos from seven of the eight home visitors and videos with varying language use (English,  $n = 4$ , Spanish  $n = 3$ , English and Spanish mix  $n = 1$ ). Agreement between coders was determined when the

two coders were within 1 point coding difference on a scale or within 2 points coding difference on an item. Scores of the original coder were used. If disagreements occurred (e.g., more than 1 point difference on overall scale, more than 2 point difference on an item), then the two coders discussed their codes, resolved the differences, and the new scores of the original coder were used. Of the eight files on which inter-rater agreement was calculated, four files had consensus score changes. Of the four files that had consensus score changes, the percentage of item score changes per file ranged from 4% of the items to 50% of the items across the HVPS scales (4%, 13%, 25%, 50% respectively).

Agreement was additionally examined for the item-level ratings using intra-class correlations (ICCs) for inter-rater agreement. A one-way random effects model with consistency computation was used (Shrout & Fleiss, 1979). This type of intra-class correlation examines agreement between two raters' scores, examining whether the scores are highly correlated (i.e., consistent), even if they are not identical. Using the one-way random effects model, the raters are considered to be a random selection of the total possible pool of raters; rater variance is absorbed into error variance. Expected agreement would meet 80% agreement between coders (McHugh, 2012). Measured inter-rater reliability ICCs for the HVPS scales for the coders' ratings prior to consensus in the present study were fair for the overall HVPS scale (ICC = 56%) and the four component scales: Responsiveness (ICC = 39%), Relationship (ICC = 56%), Facilitation of Parent-Child Interaction (ICC = 66%), and Non-Intrusiveness (ICC = 61%). For this randomly selected, double-coded 20% of the videos, the consensus scores were used in the analyses; therefore, the post-consensus scores would have had better agreement ratings.

**Parenting self-efficacy.** Parenting self-efficacy (PSE) was measured using the Maternal Self-Efficacy Scale (Teti & Gelfand, 1991). The Maternal Self-Efficacy Scale is a 10-item measure that examines parents' personal perceptions of their abilities to care for and parent their infants and toddlers. Nine items examine PSE specific to parenting a young child (example item: "How good are you at getting your child to pay attention to you?"); the tenth item is broader ("In general, how good a mother do you feel you are with your child?"). Response options are in the form of a 4-point Likert scale (1 = *not good at all*, 4 = *very good*). Ratings across items are averaged for a total mean PSE score that will be used as the present study's measure of PSE.

Content of the Maternal Self-Efficacy Scale (Teti & Gelfand, 1991) was driven by task-specific PSE theory (Bandura, 2012) to derive a single conceptual factor of maternal self-efficacy. Psychometric properties of the Maternal Self-Efficacy Scale were evaluated based on a pilot administration with 29 parents and a second administration with 86 Caucasian, low-income parents of children aged 3 to 13 months. Discriminant validity was demonstrated via a significant strong negative correlation ( $r = -.57$ ) with a measure of maternal depression (*Beck Depression Inventory*; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). Teti and Gelfand (1991) demonstrated reliability of the 10-item scale based on strong internal consistency in the pilot ( $\alpha = 0.79$ ) and full ( $\alpha = 0.86$ ) samples. Internal consistency was confirmed to be strong for the present sample (Cronbach's  $\alpha = .90$ ). Examining the internal consistency of the Maternal Self-Efficacy Scale separately with parents who completed the measure in the present sample in English ( $n = 26$ , Cronbach's  $\alpha = .73$ ) and Spanish ( $n = 15$ , Cronbach's  $\alpha = .95$ ) indicated

adequate internal consistency in both subsamples, with stronger internal consistency for the Spanish measure subsample.

The Maternal Self-Efficacy Scale was translated into Spanish by a research team member, and was then reviewed and backtranslated by a bilingual, Latino EHS home visitor for evaluation of appropriate Spanish wording. Differences were reconciled by a bilingual community member and a researcher with community-based research experience within this EHS population. In addition, three members of the EHS community (one bilingual, Latino home visitor, two families) provided feedback on the cultural relevance of the measure for the EHS population. The measure was described to be understandable with appropriate wording that would be good for any family.

**Parent involvement in early learning.** Parent involvement in children's early learning activities was measured using the Parent Involvement in Early Learning scale (PIEL; Manz, Gernhart, Bracaliello, Pressimone, & Eisenberg, 2015). The PIEL has a 17-item English version and an 18-item Spanish version that obtain parents' self-ratings of the frequency with which they provide and engage their children in experiences that promote early learning and development (example item: "Tell stories together"). This example item, in addition to 14 other items, is common to both language versions. Parents rate the frequency with which they or another member of their family provide for or engage the child on a 4-point Likert scale (0 = *rarely*, 4 = *always*). Ratings across items are summed for a total parent involvement score.

The PIEL (Manz et al., 2015) measure was intentionally designed for use in home visiting programs with children below the age of 3. It was constructed in partnership with home visitors and families associated with a national home visiting program (Parent

Child Home Program). Exploratory factor analysis and Rasch modeling indicated that the 17-item English and 18-item Spanish versions of the measure have consistent item-difficulty across items and represented a single involvement factor. Adequate internal consistency has been demonstrated for English-speaking parents ( $\alpha = .84$ ). The measure has also been translated into Spanish. Adequate internal consistency has also been demonstrated for Spanish-speaking parents on this Spanish translation ( $\alpha = .83$ ). This demonstrated satisfactory equivalence across English- and Spanish-speaking groups.

To create a single version that could be used in this study's analyses, Rasch modeling was conducted to create a single English and Spanish version of the PIEL measure (Manz et al., 2015). The original 25 item set, in both English and Spanish translations, was submitted to Rasch modeling as a part of the larger project (Manz, 2012). Rasch incorporates classical test theory and item response theory to identify the latent structure and item fit and functioning (Smith, Conrad, Chang, & Piazza, 2002). A single dimension of the scale was identified within Rasch procedures, which was followed by an examination of item fit, scale functioning, and distributions of item difficulty and person ability. Items were removed based on *z*-standardized fit statistics if they fell above 2.00 (Donahue, Fu, & Smith, 2012). After several iterations, a final set of items, with mean square fit statistics within the acceptable range, emerged. This process was conducted with both the English and Spanish translations of the measure, and resulted in an 11-item English measure and a 14-item Spanish that had eight common items. Based on equating from these common items, a single score for each individual in this sample was derived. This score was the person ability metric, falling in a range from

-.65 to 5.40. Internal consistency of the English (Cronbach's  $\alpha = .77$ ) and Spanish (Cronbach's  $\alpha = .79$ ) versions of the measure was adequate.

Construct validity of the PIEL (Manz et al., 2015) for the current sample was also examined in two ways. First, content validity of the measure for the present sample of toddlers as well as infants was examined by surveying stakeholders from the EHS community and parents of infants. Four members of the EHS community (one Latino female home visitor, one Caucasian female supervisor, two families) and eight mothers of infants reviewed each item for its cultural relevance and for its applicability to infants. Consensus across the items was that they are applicable to infants. The item with the fewest agreements for appropriateness for infants had three agreements (i.e., "do creative activities, like drawing or shaping play dough") from the two EHS staff members and one additional parent. The two community parents also reported that the items were relevant for any EHS family. Feedback on this item was that "creative" required broad interpretation for such a young age. Second, the four members of the EHS community (two staff members and two parents) provided feedback on the generalizability of the measure to the EHS population. They described the measure as understandable with appropriate wording for any family.

**Demographics.** Parents completed a demographic form used for the larger study (Manz, 2012) to report basic demographic information (see Appendices H and I). Information about the length of time that parents were in the EHS program and worked with their home visitor were obtained through review of EHS records in partnership with the EHS program. Home visitors completed a demographic form used for the larger study to report basic demographic information (see Appendix G).



## **Procedures**

Procedures for the present study consist of a portion of the activities taking place in the larger study (Manz, 2012).

**Recruitment.** Participants for the present study were participants recruited from the larger study conducting an evaluation of home visiting storybook sharing conducted in partnership with the EHS program (Manz, 2012). No additional participants were recruited for the present study.

***Home visitor recruitment.*** For the larger evaluation study, eight of the EHS program's home visitors were randomly selected from the program's total pool of 15 home visitors to participate in a 6-month RCT. The eight home visitors were selected for the larger study from the total pool by using stratified random sampling, with stratification on language spoken (English only or bilingual English and Spanish) and number of years working for the EHS program. For the purposes of the present study, the participants in the larger study were examined at baseline.

All eight home visitors and the total possible 71 families summed across their existing EHS caseloads were recruited for the present study. To recruit home visitors, doctoral students visited EHS to share information about the program with EHS administrators and home visitor staff and to request informed consent from the home visitors (see Appendices A and B). At that time, doctoral students obtained written informed consent from the eight home visitors (100% home visitor recruitment rate). Informed consent documents (see Appendices A and B) were created for the larger study.

***Family/parent recruitment.*** Home visitors and EHS program administration requested that home visitors conduct parent recruitment independently, due to the

families' familiarity with the home visitors, and subsequent increased likelihood to participate. In the interest of maintaining partnership with the EHS program and of maximum recruitment, home visitors conducted recruitment of families. To train home visitors to recruit the families for the larger evaluation study, doctoral student researchers provided more detailed project information during two group trainings.

Prior to conducting parent recruitment, parent informed consents were developed by project researchers (Manz, 2012), and then reviewed by two female, Latino bilingual members of the EHS community who provided feedback on the cultural relevance and appropriate translation of the forms. Wording adjustments were clarified prior to using the forms. Home visitors then informed their families of the study and presented informed consent documents (see Appendices C through F), with doctoral students available to answer parents' questions about the study. Home visitors then asked parents to complete the parent demographic form (see Appendices H and I), and doctoral student researchers asked home visitors to complete the home visitor demographic form (see Appendix G). This recruitment phase over the course of one to three weeks also served as a time when home visitors and families developed rapport, particularly when home visitors were newly assigned by the EHS program to that family (i.e., newborn children, home visitor switches made by the EHS program).

Researchers also provided home visitors with flyers to use in conjunction with the recruitment documents. Recruitment flyers and informed consent forms were created for the larger project. Flyers and consent documents were available in English and Spanish (see parent consents in Appendices C through F), and home visitors were instructed to provide the documentation in the parents' preferred language (English or Spanish).

Following the home visitor training and recruitment document distribution, home visitors introduced the study to their corresponding families. Doctoral student researchers were available to support home visitors throughout the recruitment phase with questions and check-ins (weekly to bi-weekly) at the EHS central offices.

Following the first round of family/parent recruitment, which lasted for 2 months, a second round of recruitment was conducted, during which home visitors had additional experience with the procedures. Feedback from home visitors from the first round of recruitment indicated that home visitors and families were initially concerned about the privacy of the video recordings. In response to this feedback, an additional document was developed in collaboration with EHS administrators, with a more clearly outlined visual presentation of the information from the informed consent about who would see the video tapes and what would happen to them following the research project. This additional flyer for the second round of recruitment was available in English and in Spanish. Prior to the second round of recruitment, doctoral student researchers provided individual booster trainings for home visitors, and provided them with the documentation for family recruitment. Doctoral students were again available to support home visitors throughout the recruitment phase with questions and check-ins (weekly to bi-weekly) at the EHS central offices.

Family recruitment took place over a 4-month period, from December 2013 to March 2014. Most families were recruited during the first round of recruitment ( $n = 41$ ), with the remainder recruited during the second round of recruitment ( $n = 2$ ). Data collected from the eight home visitors and their corresponding 43 recruited families (60.6% recruitment rate) at the baseline of the RCT of the Manz (2012) study were

examined for the present study, with the exception of the parent who was pregnant and the family that did not have fully completed measures.

**Home visitor training.** During the phase of initial recruitment and demographic information-gathering home visits, home visitors were trained in the assessment procedure. Doctoral student researchers collaborated with the EHS program to develop procedures to video record the home visit using a simple, minimally intrusive video camera and tripod to record the visit with the least possible disruption. Most (about 70%) of the home visitors preferred to independently bring the video recorder with them on home visits to reduce parent reactivity to the video recording procedure. To maintain partnership with the program, assessment administration and video recording procedures were presented to the home visitors. First, doctoral students trained in the assessment administration procedures trained the home visitors in two groups of four visitors each. Training consisted of direct teaching, discussion, and modeling the use of the camera and the administration of the video assessment. Assessment administration guidelines (see Appendices J and K) were provided to home visitors during the training and were included in assessment administration kits that home visitors each took with them to use during home visits: camera, tripod, assessment copies. Assessments were reviewed on a weekly basis by doctoral student researchers, and home visitors who made errors in administering the video assessments based on the administration guidelines were provided booster sessions (e.g., modeling, guided practice, discussions) on an as-needed basis during researcher weekly visits to the central EHS office. For home visitors who requested help in administering assessments, doctoral student researchers scheduled to come on home visits with the visitor, where the researcher set up the camera and

provided the rating scales. During the video recording, the doctoral student researcher brought other materials to work on independently to remain unobtrusive to the home visit.

**Assessment administration.** Home visitors and parents who consented to participate completed three assessments at the baseline of the larger evaluation study (Manz, 2012). Assessments took place during a home visit session between the home visitor and the family in the family's home. Home visitors offered the measures in English or Spanish to accommodate families' preferences. Demographic forms, which were translated into Spanish using procedures identical to those described above for the parent informed consent documents, were first provided to families by home visitors at the time of parent/family recruitment. The video recording for the HOVRS-A+ (Roggman et al., 2012) was completed during a 30-minute period of the home visit in which home visitors engaged the parent and child in meeting child development goals. This 30-minute child development activity was a weekly requirement for EHS home visiting. Child development activities were planned collaboratively by the home visitor and parent and were geared to meeting developmental goals, which were indicated in routine, standardized child assessments (Early Learning Assessment Profile; Hardin & Peisner-Feinberg, 2001).

In addition to recording 30 minutes of their typical weekly activity during the home visit, the home visitors asked the parents to complete the Maternal Self-Efficacy Scale (Teti & Gelfand, 1991) and the PIEL (Manz et al., 2014). Rating scales were provided in paper format and in an electronic format that home visitors could access on iPads that they used for EHS home visiting note-taking procedures. Home visitors and

families used either the paper or electronic versions of the measures based on their preferences during the home visit. Parents were not required to answer any items on the rating scales that they did not think applied to their family circumstances. The video and rating scales were completed on the same home visit for about half of the families (47.5%). If they were not completed on the same visit, they were completed within one month of each other, at the baseline of the larger study. A majority (70%) of the parents completed the measures within one week. Few parents (10%) completed the measures just over one month apart. Across this small number of families, assessment order varied. Following data collection, the paper versions of the two rating scales were entered into databases by a graduate student and merged with the electronically collected data. At least 20% of the paper versions for each measure were checked by a second graduate student, who corrected any entry errors.

Video recordings of home visit sessions were subsequently coded for home visitor-parent interaction quality. As a part of the larger study, the HOVRS-A+ (Roggman et al., 2012) was coded by a team of researchers blind to the purpose and hypotheses of the present study. HOVRS-A+ coders were trained and supervised by Dr. Lori Roggman, creator of the HOVRS-A+. Inter-rater agreement was determined for a randomly selected double-coded 20% ( $n = 8$ ) of the HOVRS-A+ videos (see Measures section for intra-class correlations for inter-rater agreement).

## **Design**

The design of the present study is a cross-sectional, correlational, nested design. Home visitor and parent variables were examined through observational and rating scale measures at one point in time. Parents' data were nested by home visitor (i.e., two to

eight families per home visitor, eight home visitors). The present study was a cross-sectional evaluation of home visitor-parent relationships, parent efficacy, and parent involvement in children's early learning, all measured at one time point. The cross-sectional nature of the examination of parenting self-efficacy in a mediation relationship is consistent with other examinations of parenting efficacy (Jones & Prinz, 2005).

### **Analysis**

Preliminary analyses were conducted to examine sample-specific factors that may impact the outcomes. Intra-class correlations were conducted to descriptively determine the impact of the nested model on the results. To examine demographic variables and the three primary variables of interest (home visiting quality, PSE, and parent involvement), Pearson product-moment correlations and analyses of variance were conducted. Family demographic and home visiting service variables that significantly correlated with PSE and parent involvement, both serving as dependent variables within the present mediation analyses, were considered as statistical controls in the primary analyses. Two key variables considered for control included the length of time that the home visitor had worked with the parent and the length of time that each family had been in the EHS program. Previous studies that have examined PSE as an outcome of home visiting have demonstrated that PSE is impacted following two years in the program (Caldera et al., 2007; Duggan et al., 1999). Assumptions for regression analysis were examined, including tests that examined the fit of the data to the regression model (i.e., outliers) and the possibility that this study's data can generalize to the population (i.e., linearity, multicollinearity, normality and homoscedasticity of regression residuals). Finally, due to

the nesting of families and family outcomes by home visitor groupings, this nesting will be measured and accounted for in the primary analyses to examine the research questions.

All research questions (RQs) were tested using ordinary least squares (OLS) multiple regression with a hierarchical approach. Assumptions of regression were first assessed, followed by a causal steps approach to examine mediation (Baron & Kenny, 1986). The two sets of mediation RQs for the present study were addressed by two mediation models that were examined in two ways: (a) stepwise regression relationships among the three primary variables (home visiting quality, PSE, and parent involvement; see Figures 1 and 2), and (b) OLS path analysis with direct and indirect effect estimation using PROCESS (Hayes, 2013) with bias-corrected bootstrapping.

Mediation Model 1 (Figure 3) examined the first set of RQs, which addressed the mediating role of PSE on the relationship between home visiting quality and parent involvement. RQ 1.1 examined the predictive relationship between home visiting quality and parent involvement in children's early learning activities. This first RQ was addressed by evaluating the total effects of the regression relationship between home visiting quality and parent involvement (Path *c*; Figure 3). RQ 1.2 examined the predictive relationship between home visiting quality and PSE. Path *a* in Mediation Model 1 addressed this RQ (Figure 3). RQ 1.3 examined the predictive relationship between PSE and parent involvement, and it was addressed by Path *b* in Mediation Model 1 (Figure 3). Finally, RQ 1.4 examined the mediating impact of PSE on the relationship between home visiting quality and parent involvement. Mediation was evaluated by comparing the strength of the regression weights for the total effects (Path *c*) to the strength of the regression weights for the direct effects when the mediator (PSE)



was included in Mediation Model 1 (Path  $c'$ ; Figure 3). If the direct effect of home visiting quality to parent involvement had a smaller regression weight than the total effect of home visiting quality to parent involvement, then mediation by PSE would be indicated (Baron & Kenny, 1986).

Mediation Model 2 (Figure 4) examined the second set of RQs, which addressed the mediating role of parent involvement on the relationship between quality home visiting and PSE. RQ 2.1 examined the predictive relationship between home visiting quality and PSE, which was addressed by examining the total effects of the regression relationship between home visiting quality and PSE (Path  $c$ ; Figure 4). RQ 2.2 examined the predictive relationship between home visiting quality and parent involvement and was addressed by Path  $a$  in Mediation Model 2 (Figure 4). RQ 2.3 examined the predictive relationship between parent involvement and PSE and was addressed by Path  $b$  in Mediation Model 2 (Figure 4). Finally, RQ 2.4 examined the mediating impact of parent involvement on the relationship between home visiting quality and PSE. Mediation was evaluated by comparing the strength of the regression weights for the direct effects when the mediator (parent involvement) was included in Mediation Model 2 (Path  $c'$ ; Figure 4). If the direct effect of home visiting quality to PSE had a smaller regression weight than the total effect of home visiting quality to PSE, then mediation by parent involvement was indicated (Baron & Kenny, 1986).

A second analysis was conducted for each mediation model to directly examine direct and indirect effects of the mediation relationships (Hayes, 2013; Preacher & Hayes, 2004), given limitations of the step-wise mediation analysis approach (Zhao, Lynch, & Chen, 2010). OLS path analysis procedures were implemented through PROCESS, which

uses bootstrapping, a nonparametric statistical procedure that does not make assumptions about distributions of the sample, to make many samples of the same size as the original sample, using replacement procedures (Hayes, 2013). With each sample, the indirect effect (Path *a* multiplied by Path *b*; Figures 1 and 2) was computed. A significant indirect effect (confidence intervals not overlapping zero) was necessary to determine an indirect effect from the independent variable (home visiting quality) to the mediating variable (PSE in Mediation Model 1, parent involvement in Mediation Model 2) to the dependent variable (parent involvement in Mediation Model 1, PSE in Mediation Model 2). Two key advantages to this approach include that the examination of indirect effects for the mediation does not require there to be a total effect from the independent variable (home visiting quality) to the dependent variable (parent involvement in Mediation Model 1, PSE in Mediation Model 2). In addition, this procedure requires fewer assumptions for normality and homoscedasticity of regression residuals, increasing the likelihood for greater accuracy and power when assessing mediation (Hayes, 2013; Fritz & MacKinnon, 2002; Yuan & MacKinnon, 2014).

To examine the effect sizes of the indirect effects, the completely standardized indirect effect was used, as this indicator was insensitive to the scales of the measures for the variables within the present study. To provide an indicator of the size of the indirect effect relative to its maximum possible value based on the total observed variability among the factors in the model, the kappa-squared index for effect size was also reported. The kappa-squared index, examined without covariates in the model, is a proportion of the maximum indirect effect possible, and ranges from 0 (no indirect effect) to 1 (indirect effect is as large as it could be; Preacher & Kelley, 2011).

To answer RQ3, which addressed the exploratory examination of the comparative strength of the two mediation models, the strength of coefficients for the indirect mediation effects of the regression models were compared qualitatively. If both Mediation Model 1 and Mediation Model 2 resulted in significant indirect effects, the potential for a transactional model would be discussed.

A *post-hoc* power analysis, for a sample of 41, an anticipated medium effect ( $f^2 = .15$ ), Type I error correction at  $\alpha = .05$  and three predictors indicates that the analyses were underpowered (Power = .48; Faul, Erdfelder, Buchner, & Lang, 2009). For OLS multiple linear regression analyses in which parent involvement was examined as an outcome variable, Type I error correction was reduced to  $\alpha = .01$ , minimizing power for these analyses (Power = .24). However, to detect a mediation with sufficient power (Power = .80) for *a* and *b* paths for even very small coefficients, the Baron and Kenny stepwise OLS regression tests require a larger sample size than the bias-correct bootstrap test within Hayes' (2013) PROCESS model. This is the most powerful test of mediation, requiring the lowest sample size for mediation (Fritz & MacKinnon, 2007). Therefore, the power to detect an effect may be slightly greater using Hayes' PROCESS model.

## Chapter IV: Results

Table 3 presents the means, standard deviations, and ranges for home visiting quality on the Home Visit Practice Scales (HVPS; Roggman et al., 2012), parenting self-efficacy (PSE) on the Maternal Efficacy Scale (Teti & Gelfand, 1991), and parent involvement on the Parent Involvement in Early Learning (PIEL; Manz et al., 2015) scale. Average ratings of home visiting quality indicate that the home visit quality was low to adequate. Descriptive comparison across the components of home visiting quality demonstrated that on average, the relationship between home visitors and parents was the strongest component of home visiting quality (in the “adequate to good” qualitative range on the HVPS) compared to the other three scales on the HVPS more solidly in the adequate range (Responsiveness, Facilitation of Parent-Child Interaction, and Collaboration). Parents’ self-ratings indicated that they perceived themselves to have high levels of parenting self-efficacy (PSE). Examination of parents’ ratings on the original separate language versions of the PIEL indicated that parents who completed the measure in English or in Spanish have descriptively similar moderate to high levels of parent involvement.

All 41 participants completed all three measures. Consistency across measures in parent report and language use was examined. For one participant, the father completed the demographic form, while the mother completed the assessments. This father’s parent-level data (e.g., parent age) were removed from parent demographic reports. For a second participant, the father and mother separately completed the two rating scales. This should not have been problematic, as the instructions on the PIEL had the parent rate the frequency with which they or another family member involved the child in activities

(Manz et al., 2015). All but one of the participants were consistent in using the same language across all three measures. English was the preferred language for parents across the paper measures (63.4% English, 36.6% Spanish) and the video assessment (58.5% English, 2.4% Bilingual, 39.0% Spanish). The one inconsistent participant spoke Spanish during the home visit video observation and took both written measures in English. This parent reported Spanish to be the parent's and child's native language and the primary language spoken at home; however, parents were given their preference of language measure and the home visitor was available to support the parent in reading measure items. None of the three participants with inconsistency in measure administration was statistically found to be an outlier (see below); therefore, all three participants were retained in the sample.

Preliminary analyses examined the univariate normality of the scores on the measures. Skewness and kurtosis, histograms, and probability plots were examined for all three measures. For the HVPS (Roggman et al., 2012), skewness and kurtosis were examined to be within the acceptable range of  $\pm 2$  (Lomax, 2001). The histogram of the HVPS followed the normal curve, and probability plots approximated a straight line (Stevens, 2009). Review of the distribution of the Maternal Self-Efficacy Scale (Teti & Gelfand, 1991) indicated that it had a negative skew and was leptokurtic, so it did not meet the criteria to be within  $\pm 2$  (skewness = -2.59, kurtosis = 8.43). Rank order transformation, following a square then cube transformation, was used to normalize the distribution of parents' PSE ratings (skewness = -.99, kurtosis = 1.48; DiLalla & Dollinger, 2006). Following the transformation, the histogram and probability plots for the Maternal Self-Efficacy Scale demonstrated better estimates of normality. Finally,

skewness on the PIEL met the acceptable criteria, but kurtosis did not (kurtosis = 2.11). The distribution was leptokurtic. Rank order transformations to normalize the distribution of the PIEL using a square root transformation (DiLalla & Dollinger, 2006) could not be completed due to negative values of PIEL scores resulting from the Rasch person ability metric. However, with OLS path analysis using PROCESS and bias-corrected bootstrapping to examine mediation, non-normality is the least problematic of linear regression assumptions (Hayes, 2013).

Preliminary examination of demographic factors on the outcome measures using analysis of variance indicated that the only factor to impact a potential dependent variable (Maternal Self-Efficacy Scale or PIEL) was the parent nesting within groups of home visitors. Parents' assignment to a home visitor impacted parents' self-ratings of involvement. One home visitor had families ( $n = 4$ ) who reported significantly greater involvement than the other home visitors. This difference in parent involvement based on the groups of home visitor assignments was an anticipated concern due to the nesting of parent participants ( $N = 41$ ) by home visitor ( $N = 8$ ). Because this sample was too small for multi-level modeling, intra-class correlations (ICCs) were conducted to descriptively examine the nesting.

ICCs examine the proportion of the total variability in the factors at Level 1 (i.e., parents) that is due to variability in Level 2 units (i.e., home visitors), and in doing so provide an indicator of the dependence of the data. When ICCs equal 0, they indicate no Level 2 variability; when ICCs equal 1, they indicate complete Level 2, between nested groups (i.e., home visitor) variability, and no Level 1 variance within any group (Niehaus, Campbell, & Inkelas, 2014). An unconditional model examined using restricted

maximum likelihood estimation indicated significant Level 2 variance with high ICCs on the HVPS ( $ICC = .723, \chi^2(7) = 93.75, p < .001$ ; Roggman et al., 2012) and moderate ICCs on the PIEL ( $ICC = .227, \chi^2(7) = 16.77, p = .019$ ; Raudenbush, Bryk, & Congdon, 2010; Manz et al., 2015). This suggests that a significant amount of the variance on home visiting quality (72.3%) and parent involvement (22.7%) was accounted for at the home visitor (Level 2) grouping. See Figures 5 and 6 for boxplots illustrating the ICCs by Level 2 home visitor grouping on the HVPS and PIEL measures. For the PIEL ICC, descriptive review of family demographic factors indicated no discernable demographic differences between the high home visitors' caseload and that of the other home visitors (e.g., children's ages spanned the range of sample ages). The Maternal Self-Efficacy Scale was not affected by the nested grouping ( $ICC = .0006, n.s.$ ). With only eight groups, and with few, variable observations per group ( $n = 2$  to  $8$ ), group level variance was likely underestimated (Maas & Hox, 2004); however, significant and large ICCs emerged. Given that the HVPS and PIEL varied by the nesting of the home visitor, the parents' home visitor assignment was statistically controlled in the present analyses.

Additional variables were examined for differences on the HVPS (Roggman et al., 2012), Maternal Self-Efficacy Scale (Teti & Gelfand, 1991), and PIEL (Manz et al., 2015) scores using analyses of variance and Pearson product moment bivariate correlations. Language of assessment administration, months of EHS services at the time of assessment, and months working with the home visitor at the time of the assessment did not differ on or correlate with any of the measured constructs. The length of the HVPS video observation was examined across these three measures using Pearson product moment bivariate correlation. The average length of the videos for the HVPS

observation ratings was close to the 30 minute expected length ( $M = 27.83$  minutes,  $SD = 5.61$ ). Video length did not correlate with any of the three variables, and there was no expectation that the video length related to the quality of services or parent beliefs and behaviors. Video length variation was due to audio equipment malfunction (i.e., dead batteries) or errors in recording. Therefore, the length of the HVPS video observation was not controlled for in the present analyses.

Demographic factors were examined using analysis of variance across the HVPS (Roggman et al., 2012), Maternal Self-Efficacy Scale (Teti & Gelfand, 1991), and PIEL (Manz et al., 2015), and one factor was found to differ only on the HVPS predictor. Parents who reported participating in other programs ( $M = 1.37$ ,  $SD = 1.20$ ) had significantly lower home visiting quality than parents not participating in other programs ( $M = 2.90$ ,  $SD = 1.29$ ;  $F(1, 39) = 7.37$ ,  $p = .010$ ,  $\eta^2 = .16$ ). Another factor that was descriptively different was that home visitors who had more Spanish-speaking parents had home visiting quality that appeared to be higher (see Figure 3). Home visitors 5 through 8 had a majority (57.1%) of families who reported speaking Spanish in the home, compared to visitors 1 through 4, who had fewer families who reported speaking Spanish at home (35.0%). To reduce the likelihood of overfitting the model and finding potentially spurious results, only the home visitor assignment variable, which was expected to impact the results *a priori*, was controlled for in the present analyses. Including three predictors in the model (i.e., control, independent variable, mediator) meets acceptable criteria for at least 10 observations per predictor to avoid overfitting the model with too many predictors (Babyak, 2004).



Results are presented below for the two primary mediation models that address the two sets of hypotheses. The first addresses PSE as a mediator of the relationship between home visiting quality and parent involvement. The second addresses parent involvement as a mediator of the relationship between home visiting quality and PSE.

### **Mediation Model 1**

**Regression assumptions.** Model fit was examined by studying the residual statistics and potential outliers. Examination of studentized residuals indicated that one of the 41 cases had a residual outside of the acceptable range from 2 to -2 (studentized residual = -2.07; Cohen, Cohen, West, & Aiken, 2003). That participant's unusual responses consisted of low ratings on the PSE measure (Maternal Self-Efficacy Scale; Teti & Gelfand, 1991) compared to participants in this sample (Maternal Self-Efficacy Scale score = 1.70; transformed Maternal Self-Efficacy Scale score = 4.91). Using Cook's D criterion to examine influential cases, all cases were within the expected range ( $<1$ ; Cook & Weisberg, 1982). Therefore, the model was expected to be stable across the sample and was not biased by any individual case, including the outlier identified. Thus, there would not be an unusually large effect on the regression estimates if that participant would be removed from the analyses, so that participant was retained.

To understand the generalizability of the sample to the larger population, linearity and normality of the model were evaluated. Bivariate Pearson product moment correlations indicated that home visit quality had a weak, non-significant relationship with both PSE and parent involvement (see Table 4). PSE and involvement had a moderate, positive significant relationship. Controlling for the home visitor nesting as an initial predictor in the regression model, the partial regression plots demonstrated a weak

linear trend between home visit quality and parent involvement and a linear trend between PSE and involvement. The outlier identified based on the residual statistics was visible in the partial regression plots, but based on the Cook's D statistic, that outlier did not have an undue influence on the regression model. As the variables were not highly correlated, collinearity statistics demonstrated no problem with multicollinearity for this regression model. No Variance Inflation Factor values were greater than 5, and no tolerance values were less than .20 (Studenmund & Cassidy, 2001).

Normality of the residuals was also assessed for this model. Controlling for nesting at the home visitor level as a predictor in the regression model, the histogram of standard residuals estimated a normal curve, and the normal probability plots approximated a straight line (see Figure 7 for the HVPS to PIEL probability plot), suggesting normality of the residuals<sup>1</sup>. The standardized residual plot between the standardized predictor (i.e., home visit quality) residuals did not indicate heteroscedasticity, but did suggest a random pattern that may indicate non-linearity (see Figure 8). With the current small sample size, it is difficult to identify whether the distribution of residuals was random or nonlinear. With OLS path analysis to examine indirect effects using PROCESS, failure to meet assumptions of heteroscedasticity are less problematic than with traditional regression, so the examination of direct and indirect effects should be considered a more appropriate and accurate assessment of relationships in which parent involvement was a dependent variable (Hayes, 2013; Yuan & MacKinnon, 2014).

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<sup>1</sup> The normal probability plot of the residuals of home visiting quality and parent involvement suggested a potential curvilinear relationship, but when the curvilinear term ( $X^2$ ) was examined, the curvilinear term was not significant, suggesting a linear relationship (Babyak, 2004).

Independence of the data could not be assumed, given the clustering of data by home visitor, which may underestimate standard error and inflate Type 1 error (Cohen et al., 2003; Hayes, 2013; Kenny & Judd 1986; Stevens, 2009). For this additional reason, the home visitor nesting variable was controlled for in the present model. In addition, when the parent involvement indicator was used as an outcome, a more stringent  $\alpha$  was used to reduce Type 1 error rates (Stevens, 2009). With an ICC of .226, 3 predictors, and about 10 participants per predictor, the estimated actual Type 1 error rate was .3 (Scariano & Davenport, 1987). This error rate was 6 times greater than the assumed significance level of  $\alpha = .05$ . When error rates are this high, it is recommended to test at  $\alpha = .01$  (Stevens, 2009). Therefore, when parent involvement was examined as an outcome variable using OLS multiple linear regression with a hierarchical approach, the significance was examined at  $\alpha = .01$ . However, using the PROCESS model can adjust the standard errors due to heteroscedasticity, so with adjusted heteroscedasticity-consistent standard error (HC3),  $\alpha = .05$  will be used for the OLS path analyses using PROCESS (Hayes, 2013).

**Stepwise regression.** Four conditions were evaluated to determine whether, after controlling for home visitor assignment, PSE mediated the relationship between home visiting quality and parent involvement (see Table 5 for regression results). First, to answer RQ1.2, home visiting quality (independent variable) was examined as a predictor of PSE (potential mediator; path  $a$ ). An OLS multiple regression with a hierarchical approach was used to examine the home visitor assignment in the first block of the analyses and home visit quality in the second block of analyses. Neither home visitor assignment nor home visitor assignment and home visiting quality together explained a

significant amount of variance in PSE. Adding home visiting quality to the model after controlling for home visitor assignment did not significantly increase the amount of variance explained for PSE. The coefficient for the confound of home visitor assignment decreased with the addition of the independent variable to the model; however, the coefficient for home visiting quality was not significant and only uniquely explained 2% of the variance in parent efficacy. Therefore, path *a* of the mediation model was not significant, suggesting that PSE did not mediate the relationship between home visit quality and parent involvement.

To answer the remaining components of the mediation research questions, a second set of regression analyses was conducted. To examine RQs 1.1 and 1.3, controlling for home visitor assignment, home visit quality (independent variable) was assessed as a predictor of parent involvement (dependent variable; path *c*). PSE (potential mediator) was also assessed as a predictor of parent involvement (path *b*). Finally, to answer RQ1.4, the predictive relationship of home visit quality (independent variable) to parent involvement (dependent variable) was expected to decrease as a result of adding PSE into the model (path *c'*). A second hierarchical linear regression was conducted to assess these three RQs, with home visitor assignment controlled in the first block of the analyses (see Table 5). Home visit assignment was not a significant predictor of parent involvement when using the more stringent  $\alpha = .01$  correction. When home visit quality was added to the model in the second block of analyses, the overall model was also not significant, and home visit quality did not significantly contribute to the added variance explained by the model. Home visiting quality was not a significant predictor of parent involvement, and the nature of the direction of the association was in the unexpected

direction ( $\beta = -.07$ ). The squared semi-partial correlation for home visit quality showed that it uniquely explained .4% of the variance in parent involvement. Therefore, the second condition for the mediation model (path  $c$ ) was also not met when using the more stringent Type 1 error correction.

When PSE was added to the model in the third block of analyses, the model explained a significant amount of variance (approximately 26%) in parent involvement, which also represented an increase in the percentage of variance explained over the second model that approached significance (14.5% increase; see Table 5). PSE was marginally significant as a unique predictor of parent involvement ( $\beta = .39, p = .011$ ). Holding assignment and home visiting quality constant, higher ratings of PSE predicted higher ratings of parent involvement, such that an increase in one unit of PSE resulted in a .39 increase in parent involvement. The squared semi-partial correlation for PSE showed that it uniquely explained 14% of the variance in parent involvement in this model. However, the addition of PSE in the model actually increased the non-significant regression coefficient for home visit quality ( $\beta = -.13$ ). Therefore, the third condition for the mediation model (path  $b$ ) approached significance, but the fourth condition for the mediation model (path  $c'$ ) was not met.

In sum, the stepwise approach to examining the first set of hypotheses found that PSE does not mediate the relationship between home visit quality and parent involvement. The first condition for mediation (path  $a$ ; home visiting quality predicting PSE) was not met. The second condition for mediation (path  $c$ ; home visiting quality predicting parent involvement) was not met. The third condition for mediation (path  $b$ ;

PSE predicting parent involvement) approached significance, but the fourth condition (path  $c'$ ; decrease in the regression slope in path  $c$ ) was not met.

**Path analysis of direct and indirect effects.** Flaws with the stepwise regression normal theory approaches to examining the indirect effect include the required assumptions for normality and homoscedasticity of the regression data, as well as the low power and low accuracy for this approach (Hayes, 2013; Yuan & MacKinnon, 2014). Therefore, examination of the mediation model for the first set of hypotheses was also conducted using bias corrected bootstrap confidence intervals as the inferential test to investigate indirect and direct effects (Hayes, 2013). This process also allows for examination of multiple effect size indicators (Preacher & Kelley, 2011).

When bootstrapping is conducted, it uses the original sample data to create thousands of random samples with replacement of data back into the original sample to allow for random selection of any of the original data points for each data point in the bootstrap samples. All bootstrap samples are of the same size as the original sample. This process empirically derives a representation of the sampling distribution, which does not require an assumption of a normal sampling distribution (Hayes, 2013). As a result, inferential statistics conducted with bootstrapping are more likely to be accurate and have higher power (Fritz & MacKinnon, 2002). A limitation to the present bootstrapping method is that in a sample that is very small, a couple of outliers may appear multiple times in the bootstrapping analysis, and thus distort the bootstrapping findings (Hayes, 2013). To reduce the likelihood of outliers distorting the sampling distribution derived from bootstrapping, a large number (50,000) of bootstrapping estimates were taken. With

the outliers identified in the present sample, the bootstrapping findings for the indirect effect must be interpreted with caution.

OLS path analysis was used to conduct a simple mediation analysis; results are presented in Table 6 (Heteroscedasticity-consistent standard error [HC3] estimators used for standard error estimates). Controlling for home visitor assignment, parents whose home visits were rated as higher quality were more likely to have higher PSE ( $a = 1.52$ ), and parents with higher PSE were more likely to have higher involvement ( $b = .03$ ). The path between efficacy and involvement was significant, as determined using a bias corrected bootstrap confidence interval and HC3 standard error estimates. Thus, PSE significantly predicted involvement, and path  $b$  of mediation was significant.

There was no evidence for the direct effect between home visiting quality and parent involvement ( $c' = -.114$ ). A bias corrected bootstrap confidence interval (95%) for the indirect effect (path  $ab$ ) based on 50,000 bootstrap samples included zero, indicating no significant indirect relationship (Coefficient =  $.05$ ,  $SE = .08$ , 95% CI =  $-.10$  to  $.22$ ). The effect size indicator, the completely standardized indirect effect of home visiting quality on parent involvement, indicated a very small, non-significant indirect effect, such that if a family's home visiting quality is one standard deviation higher than another family's, the first family is estimated to be  $.06$  standard deviations higher on involvement as a result of the effect of quality on PSE that then influences involvement (Coefficient =  $.06$ ,  $SE = .09$ , 95% CI =  $-.11$  to  $.24$ ). Kappa-squared (Preacher & Kelley, 2011), was also examined to understand the size of the indirect effect. The observed indirect effect of  $ab = .07$  (without the covariate in the model) was approximately 9% as large as the maximum possible indirect effect that could have occurred given the associations

between the variables in the present sample ( $\kappa^2 = .09$ ;  $SE = .06$ , 95% CI = .004 to .238). This kappa-squared effect size must be interpreted with caution, as this effect size indicator can only be calculated without covariates (i.e., home visitor assignment) in the model.

## **Mediation Model 2**

**Regression assumptions.** Examination of residual statistics for outliers suggests that based on criteria for studentized residuals (acceptable range from 2 to -2; Cohen et al., 2003), two participants did not meet the criteria (studentized residuals = -3.25, -2.13, 2.04) and had potentially unusual responses. Examination of these parents' responses revealed ratings at the high or low extremes on the PIEL (Manz et al., 2015) scale (PIEL scores = -.65, 3.85, 5.40). One of these parents (PIEL score = -.65) also reported receiving early intervention services for her child, who had speech and language delays. The high PIEL score was rated by a parent who had been in the program and with her home visitor the longest (almost 2 years) and who had the oldest child in the sample (age 33 months). Although these cases are outliers, based on Cook's D criterion to examine influential cases, all cases were within the expected range ( $<1$ ; Cook & Weisberg, 1982). Therefore, the model was expected to be stable across the sample and was not biased by any individual case, including the two outliers identified; therefore, the two outliers were kept in the analyses for this model.

To determine a linear relationship, bivariate Pearson product moment correlations were conducted. As noted in the previous model, home visit quality had a weak, non-significant relationship with PSE and parent involvement, and there was a moderate significant relationship between parent involvement and PSE (see Table 4). Further



assessment of linearity was based on review of the partial regression plots. Controlling for the home visitor nesting as an initial predictor in the regression model, the partial regression plots demonstrated a weak linear trend between the home visit quality and PSE and a linear trend between parent efficacy and parent involvement. The outliers identified based on the residual statistics were present in the partial regression plots, but based on the Cook's D statistic, those outliers did not have an undue influence on the regression model. As with the first mediation model, collinearity statistics indicated that there was not a problem with multicollinearity for this regression model. No Variance Inflation Factor values were greater than 5, and no tolerance values were less than .20 (Studenmund & Cassidy, 2001).

Assessment of the normality of residuals was important to understand whether the model could generalize to the population. Controlling for the home visitor level nesting as a predictor in the regression model, the histogram of standard residuals estimated a normal curve, but the normal probability plot deviated from a straight line, suggesting non-normality of the residuals (see Figure 7 for home visiting quality to parent involvement normality probability plot). However, Hayes (2013) suggests that unless the deviation from normality is severe, which it was not in this case, that some deviation from normality does not prevent regression testing. The standardized residual plot indicated no discernable pattern, suggesting homoscedasticity, or that the spread of residuals in the model was random. Finally, independence of observations was not assumed, given the clustering of data by home visitor, which may have underestimated standard error and inflated Type 1 error (Cohen et al., 2003; Hayes, 2013; Kenny & Judd

1986; Stevens, 2009). For this reason, the home visitor nesting variable was controlled for in the present model.

**Stepwise regression.** Four conditions were evaluated to determine whether, after controlling for home visitor assignment, parent involvement mediated the relationship between home visiting quality and PSE (see Table 7 for results). First, to answer RQ 2.2, home visiting quality (independent variable) was examined as a predictor of parent involvement (potential mediator; path *a*). An OLS multiple regression with a hierarchical regression approach was used to examine the home visitor assignment in the first block of the analyses and home visit quality in the second block of analyses. When using the more stringent  $\alpha = .01$  correction for when the PIEL scale was an outcome indicator, neither home visitor assignment nor home visitor assignment and home visiting quality together explained a significant amount of variance in parent involvement. Adding home visiting quality to the model after controlling for home visitor assignment did not significantly increase the amount of variance explained for parent involvement. The coefficient for the confound of home visitor assignment increased with the addition of the independent variable to the model. Home visit quality was not a significant predictor and only uniquely, inversely explained about .4% of the variance in parent involvement.

Therefore, path *a* of the mediation model was not significant.

To answer the remaining components of the stepwise mediation research questions, a second set of regression analyses was conducted. To examine RQs 2.1 and 2.3, controlling for home visitor assignment, home visit quality (independent variable) was examined as a predictor of PSE (dependent variable; path *c*). Parent involvement (potential mediator) was also examined as a predictor of PSE (dependent variable; path

b). Finally, to answer research question 2.4, the predictive relationship of home visit quality (independent variable) to PSE (dependent variable) was expected to decrease as a result of adding parent involvement into the model (path  $c'$ ). A second hierarchical linear regression was conducted to assess these three RQs, with home visitor assignment controlled in the first block of the analyses. Home visitor assignment was a not significant predictor of PSE. When home visit quality was added to the model in the second block of analyses, the overall model was also not significant, and home visit quality did not significantly contribute to the added variance explained by the model. Home visiting quality was a weak and non-significant predictor of PSE. The squared semi-partial correlation for home visit quality showed that it uniquely explained only about 3% of the variance in PSE. Therefore, the second condition for the mediation model (path  $c$ ) was also not met.

When parent involvement was added to the model in the third block of analyses, the model explained approximately 18% of the variance in parent involvement, or a 13% increase in variance explained over home visitor assignment and home visit quality combined. This was a significant increase in the amount of variance explained when PSE was added to the model ( $p = .022$ ). Parent involvement was a significant unique predictor of PSE. Holding home visitor assignment and home visiting quality constant, higher ratings of involvement predicted higher ratings of PSE, such that an increase in one unit of involvement resulted in a .38 increase in PSE. The squared semi-partial correlation for parent involvement demonstrated that it uniquely explained approximately 13% of the variance in PSE. However, the addition of parent involvement in the model actually increased the non-significant regression coefficient for home visit quality ( $\beta = .17$  to  $\beta =$

.20). Therefore, the third condition for the mediation model (path  $b$ ) was significant, but the fourth condition for the mediation model (path  $c'$ ) was not met.

In sum, the stepwise approach to examining the second set of hypotheses found that parent involvement does not mediate the relationship between home visit quality and PSE. The first condition for mediation (path  $a$ ; home visiting quality predicting parent involvement) was not met. The second condition for mediation (path  $c$ ; home visiting quality predicting PSE) was not met. The third condition for mediation (path  $b$ ; parent involvement predicting PSE) was significant, but the fourth condition (path  $c'$ ; decrease in the regression slope in path  $c$ ) was not met.

**Path analysis of direct and indirect effects.** OLS path analysis was used to conduct a simple mediation analysis. Controlling for home visitor assignment, parents whose home visits were rated as higher quality were more likely to have lower involvement ( $a = -.062$ ), but this path was not significant. However, parents with higher involvement were significantly more likely to have higher PSE ( $b = 4.75$ ; 95% CI = 1.168 to 8.330; see Table 8 for indirect effect results).

There was no evidence for the direct effect between home visiting quality and PSE (see Table 8). A bias corrected bootstrap 95% confidence interval for the indirect effect (path  $ab$ ) based on 50,000 bootstrap samples was not above zero, and was thus not significant (Coefficient =  $-.29$ ,  $SE = .70$ , 95% CI =  $-2.04$  to  $.79$ ). The effect size indicator of the completely standardized indirect effect of home visiting quality on parent involvement indicated a very small and non-significant indirect effect, such that if a family's home visiting quality is one standard deviation higher than another family's, the first family is estimated to be .03 standard deviations lower on PSE as a result of the

effect of quality on involvement that then influences PSE (Coefficient =  $-.03$ ,  $SE = .06$ , 95% CI =  $-.17$  to  $.08$ ). Kappa-squared (Preacher & Kelley, 2011) was also examined to understand the size of the indirect effect. The observed indirect effect of  $ab = .25$  (without the covariate in the model) was approximately 3% as large as the maximum possible indirect effect that could have occurred given the associations between the variables in the present sample ( $\kappa^2 = .03$ ,  $SE = .05$ , 95% CI =  $.00009$  to  $.09$ ). This kappa-squared effect size must be interpreted with caution, as this effect size indicator can only be calculated without covariates (i.e., home visitor assignment) in the model.

### **Comparison of Indirect Effects**

To examine RQ 3, whether there was a transactional relationship between involvement and PSE, a comparison of the strengths of the indirect effect coefficients in each mediation model were examined. Neither indirect effect had confidence intervals that did not cross zero, suggesting that there were no meaningful indirect effects indicative of mediation. Parent involvement and PSE were correlated (see Table 4) and each at least marginally predicted the other (see Tables 5 through 8). Thus, these constructs can be considered to be transactional; however, no assumptions can be made about their associations with home visiting quality.

### **Exploratory Examination of Home Visiting Quality Subscales**

The subscales of the HOVRS-A+ HVPS (Roggman et al., 2012) were examined in a *post hoc* analysis to understand the components of home visiting quality that may differentially affect PSE or parent involvement. The only HVPS subscale that significantly correlated with the Maternal Self-Efficacy Scale (Teti & Gelfand, 1991) or PIEL (Manz et al., 2015) outcomes was the Responsiveness scale, which had a

moderately positive correlation with Maternal Self-Efficacy Scale ( $r = .31, p = .05$ ; see Table 4). Given this correlation, the Responsiveness scale was examined in exploratory mediation analyses.

**Mediation by parent involvement.** Responsiveness was examined as a predictor of PSE, with an evaluation of whether parent involvement mediated the relationship between the Responsiveness subscale and PSE.

**Regression assumptions.** Examination of residual statistics for outliers suggested that based on criteria for studentized residuals (acceptable range from 2 to -2; Cohen et al., 2003), two participants did not meet the criteria (studentized residuals = -2.18, -2.24) and had potentially unusual responses. Examination of these parents' responses revealed ratings at the low end of the HOVRS-A+ HVPS (Roggman et al., 2012) scale (HVPS scores = -.33 and 1.0). Although these cases were outliers, based on Cook's D criterion to examine influential cases, all cases were within the expected range ( $<1$ ; Cook & Weisberg, 1982). Therefore, the model was expected to be stable across the sample and was not biased by any individual case, including the two outliers identified; therefore, both outliers were kept in the analyses for this model.

To determine a linear relationship, bivariate Pearson product moment correlations, as noted above, revealed a moderately positive significant correlation between home visitor Responsiveness and PSE (see Table 4). Further assessment of linearity was based on review of the partial regression plots. Controlling for the home visitor nesting as an initial predictor in the regression model, the partial regression plots demonstrated a weak linear trend between Responsiveness and PSE, and a linear trend between PSE and parent involvement. The outliers identified based on the residual

statistics were present in the partial regression plots, but based on the Cook's D statistic, those outliers did not have an undue influence on the regression model. As with the prior mediation models, collinearity statistics indicated that there was not a problem with multicollinearity for this regression model. No Variance Inflation Factor values were greater than 5, and no tolerance values were less than .20 (Studenmund & Cassidy, 2001).

Assessment of the normality of residuals was important to understand whether the model could generalize to the population. Controlling for the home visitor level nesting as a predictor in the regression model, the histogram of standard residuals estimated a normal curve, and the normal probability plots estimated a straight line, suggesting normality of the residuals. The standardized residual plot indicated no discernable pattern, suggesting homoscedasticity, or that the spread of residuals in the model was random. Finally, independence of observations was not assumed, given the clustering of data by home visitor, which may have underestimated standard error and inflated Type 1 error (Cohen et al., 2003; Hayes, 2013; Kenny & Judd 1986; Stevens, 2009). For this reason, the home visitor nesting variable was controlled for in the present model.

***Stepwise regression.*** Four conditions were evaluated to determine whether, after controlling for home visitor assignment, parent involvement mediated the relationship between home visitor Responsiveness and PSE (see Table 9 for regression results). First, home visitor Responsiveness (independent variable) was examined as a predictor of parent involvement (potential mediator; path *a*). An OLS multiple regression with a hierarchical regression approach was used to examine the home visitor assignment in the first block of the analyses and home visit quality in the second block of analyses. Using the more stringent  $\alpha = .01$  correction for when the PIEL (Manz et al., 2015) scale was an

outcome indicator, neither home visitor assignment nor home visitor assignment and home visitor Responsiveness together explained a significant amount of variance in parent involvement. Adding home visitor Responsiveness to the model after controlling for home visitor assignment did not significantly increase the amount of variance explained for parent involvement.

To examine the remaining components of the stepwise mediation model, a second set of regression analyses was conducted with PSE examined as the outcome (see Table 9). With home visitor assignment controlled in the first block of the analyses, home visitor Responsiveness was added to the model in the second block of analyses, and the overall model approached significance ( $p = .122$ ). Home visitor Responsiveness did contribute to a marginally significant amount of increase in the variance explained by the model beyond home visitor grouping alone. Responsiveness uniquely explained approximately 7% of the variance in parent involvement beyond home visitor grouping. Home visitor assignment and Responsiveness did not predict PSE in the first two blocks of hierarchical regression, indicating that path  $c$  of the mediation model was not significant. With the addition of parent involvement (the mediator) to the model, the overall model was significant ( $R^2 = .27, p = .008$ ). In this third block of analyses with all three predictors, Responsiveness emerged as a unique significant predictor of PSE, explaining 9% of the variance in PSE (path  $c'$ ). Parent involvement was also a significant predictor and uniquely explained approximately 17% of the variance in PSE (path  $b$ ).

In sum, the stepwise approach to examining Responsiveness to PSE mediated by parent involvement found that path  $a$  of the mediation model (Responsiveness to parent involvement) was not significant, and that path  $c$  strengthened and become significant



with the addition of the mediator to the model; therefore, parent involvement did not mediate the relationship between home visit quality and PSE. However, the total effect (path  $c'$ ) from Responsiveness to PSE was marginally significant in this underpowered study. The path from involvement to PSE (path  $b$ ) was significant.

***Path analysis of direct and indirect effects.*** OLS path analysis was used to conduct a simple mediation analysis. Controlling for home visitor assignment, parents whose home visits were rated as higher in home visitor Responsiveness were more likely to have lower involvement, but this path (path  $a$ ) was not significant (see Table 10 for mediation analysis results). However, parents with higher involvement were significantly more likely to have higher PSE (path  $b = 4.89, p = .007$ ). The direct effect of home visitor Responsiveness predicting PSE was also significant (path  $c' = 3.71, p = .04, 95\% \text{ CI} = .184 \text{ to } 7.23$ ).

A bias corrected bootstrap 95% confidence interval for the indirect effect ( $ab = -.39, SE = .88, 95\% \text{ CI} = -2.69 \text{ to } .92$ ) based on 50,000 bootstrap samples was not above zero, and thus was not significant. The completely standardized indirect effect of home visitor responsiveness on PSE indicated a very small and non-significant indirect effect, such that if a home visitor's Responsiveness with one family is one standard deviation higher than another's, the first family is estimated to be .032 standard deviations lower on PSE as a result of the effect of responsiveness on involvement that then influences efficacy (Coefficient =  $-.03, SE = .07, 95\% \text{ CI} = -.20 \text{ to } .08$ ). Kappa squared, without controlling for the covariate of home visitor assignment, was very small ( $\kappa^2 = .008, SE = .05, 95\% \text{ CI} = >.0000000 \text{ to } .02$ ), with a confidence interval that was just above zero. Overall, the examination of direct and indirect effects indicated that there was a direct

effect from home visitor Responsiveness to PSE, but that effect was not mediated by parent involvement.

**Mediation by parenting self-efficacy.** Given that a direct effect between an independent variable and a dependent variable are not needed to find mediation based on indirect effects (Hayes, 2013), the OLS path analysis approach to examining indirect effects was also explored with the Responsiveness component of quality as the predictor, PSE as the mediator, and parent involvement as the outcome.

**Regression assumptions.** Examination of residual statistics for outliers suggested that based on criteria for studentized residuals (acceptable range from 2 to -2; Cohen et al., 2003), one participant did not meet the criteria (studentized residual = 3.23) and had potentially unusual responses. Examination of this parent's responses revealed the highest PIEL (Manz et al., 2015) rating in this sample (PIEL = 5.40). As noted above, this participant had been in the home visiting program the longest and had the oldest child in the sample. Although this case was an outlier, all cases were within the expected range based on Cook's D criterion ( $<1$ ; Cook & Weisberg, 1982).

Responsiveness was not correlated with involvement, but a moderate, positive correlation was found between Responsiveness and PSE, as well as between PSE and involvement (see Table 4), suggesting linear relationships among the indirect paths of a mediation model. Further assessment of linearity was based on review of the partial regression plots. Controlling for the home visitor nesting as an initial predictor in the regression model, the partial regression plots demonstrated a weak linear trend between Responsiveness and parent involvement, and a linear trend between parent involvement and PSE. The outlier identified based on the residual statistics was present in the partial

regression plots, but based on the Cook's D statistic, it did not have an undue influence on the regression model. As with the prior mediation models, collinearity statistics indicate that there was not a problem with multicollinearity for this regression model (Variance Inflation Factor < 5, tolerance > .20; Studenmund & Cassidy, 2001).

Assessment of the residuals approximated normality, controlling for the home visitor level nesting as a predictor in the regression model. The histogram of standard residuals estimated a normal curve, and the normal probability plots estimated a straight line. The standardized residual plot indicated a random pattern that may indicate heteroscedasticity; however, the PROCESS model can adjust the standard errors due to heteroscedasticity. With adjusted heteroscedasticity-consistent standard error (HC3),  $\alpha = .05$  will be used for the OLS path analyses using PROCESS (Hayes, 2013). Finally, independence of observations was not assumed, given the clustering of data by home visitor, which may have underestimated standard error and inflated Type 1 error (Cohen et al., 2003; Hayes, 2013; Kenny & Judd 1986; Stevens, 2009). For this reason, the home visitor nesting variable was controlled for in the present model.

***Path analysis of direct and indirect effects.*** OLS path analysis was used to conduct a simple mediation analysis. Controlling for home visitor assignment, parents whose home visits were rated as higher in home visitor Responsiveness were more likely to have greater PSE, but this path (Path *a*) was not significant (see Table 11 for mediation analysis results, conducted with HC3 standard error estimation). However, parents with greater PSE were significantly more likely to have more involvement (Path *b* = .04,  $p = .005$ ). A bias corrected bootstrap 95% confidence interval for the indirect effect ( $ab = .12$ ,  $SE = .09$ , 95% CI = -.04 to .34) based on 50,000 bootstrap samples was not above zero,

and was thus not significant. The completely standardized indirect effect of home visitor responsiveness on PSE indicated a very small and non-significant indirect effect, such that if a home visitor's Responsiveness with one family is one standard deviation higher than another's, the first family is estimated to be .12 standard deviations higher on involvement as a result of the effect of Responsiveness on PSE that then influences involvement (Coefficient = .12,  $SE = .09$ , 95% CI = -.04 to .33). Kappa squared, without controlling for the covariate of home visitor assignment, was very small ( $\kappa^2 = .15$ ,  $SE = .08$ , 95% CI = .02 to .34), with a confidence interval that was just above zero. Overall, the examination of direct and indirect effects indicated that greater PSE predicted more parent involvement (path *b*), but no other mediation relationships were significant in this model. Therefore, in the present sample, PSE was not a mediator between home visitor Responsiveness and parent involvement.

## Chapter V: Discussion

The purposes of this study were to investigate home visiting quality as it influences parents' self-efficacy (PSE) and parent involvement in infants' and toddlers' early learning, and to examine the potential for reciprocating mediation roles of home visiting quality to PSE and parent involvement. Hypotheses addressed two mediation models, with home visiting quality to parent involvement mediated by PSE (Research Question [RQ] 1) and home visiting quality to PSE mediated by parent involvement (RQ 2). Questions and hypotheses that were similar across both mediation models will be addressed first. It was hypothesized that home visiting quality would significantly positively predict parent involvement in infants' and toddlers' early learning activities (RQs 1.1, 2.2). This hypothesis was not supported by the present study. Home visiting quality did not significantly predict parent involvement. It was also hypothesized that home visiting quality would significantly positively predict PSE (RQs 1.2, 2.1). This hypothesis was also not supported by data. Home visiting quality did not significantly predict PSE.

Two unique paths distinguished the two mediation model hypotheses. In the first mediation model, it was hypothesized that PSE would predict parent involvement (RQ 1.3). This hypothesis was marginally supported by the data, as the regression approached significance with a restricted alpha for Type I error correction due to potential heteroscedasticity of parent involvement measure (PIEL; Manz et al., 2015) residuals. Thus, path *b* of the first mediation model was marginally significant using the causal steps approach, and it was significant using the OLS path analysis with PROCESS. The positive moderate correlation and predictive relationship between PSE and parent

involvement is consistent with previous findings that focus on PSE and parent involvement in children's educational activities (Giallo, Treyvaud, Cooklin, & Wade, 2013; Green, Walker, Hoover-Dempsey, & Sandler, 2007; Waanders, Mendez, & Downer, 2007). These studies found PSE to be a significant, unique, weak positive predictor of home-based parent involvement in toddlers' and preschoolers' early learning. Theory also suggests that PSE impacts parent involvement, such that PSE, or parents' motivational beliefs, explain parents' home-based involvement in children's learning (Bandura, 1997; Walker et al., 2005).

A second unique path was defined in the second mediation model, in which it was predicted that parent involvement would mediate the relationship between home visiting quality and PSE. It was hypothesized that parent involvement would predict PSE (RQ 2.3). The data support this hypothesis. Path *b* of the second mediation model consisted of a significant, moderate positive correlation between parent involvement and PSE, and parent involvement was a significant unique predictor of PSE when examined using the causal steps approach and the OLS path analysis approach with PROCESS. Previous studies have identified the relationship between parent involvement and PSE (Giallo et al., 2013; Green et al., 2007; Waanders et al., 2007). However, there was limited empirical support in the literature to lead to the hypothesis that parent involvement would predict PSE. Theory suggested that opportunities for mastery experiences and successful active involvement with children can increase PSE for these activities (Bandura, 1997, 2012). Therefore, the present findings confirm the theory about parent involvement experiences impacting parents' perceptions of their capacity for caring for their children. In sum, only path *b* of each mediation model, the predictive relationships between PSE

and parent involvement, was significant. The overall mediation models were not significant when using the more traditional causal steps approach (Baron & Kenny, 1986) or the examination of direct and indirect effects using OLS path analysis with PROCESS (Hayes, 2013).

The final hypothesis in the present study was exploratory in nature, as there was little guidance in the literature to support the transactional nature of the mediation models with home visiting quality as the predictor. Hypotheses were not generated as to the strength of parent involvement or PSE as mediators on the other's relationship with home visiting quality. Because the two mediation models were not significant, the strength of the coefficients for the indirect effects of the mediation models could not be examined. However, the strength of the multiple regression coefficients were compared to find that the strength of PSE predicting parent involvement was nearly identical to the strength of parent involvement predicting PSE. A change in .4 of a standard deviation of parent involvement predicted a 1 standard deviation change in PSE, and vice versa. Therefore, PSE and parent involvement were found to transactionally predict one another.

The present study contributes to the emerging area of investigation into the multi-dimensional construct of home visiting quality. Home visiting quality as a multidimensional composite did not significantly relate to the parenting variables assessed in this study; therefore, to more closely examine the individual components of home visiting quality, each of the four domains of home visiting quality were studied as individual predictors of PSE and parent involvement in exploratory, *post hoc* analyses. The data supported a significant moderate correlation between the home visitor Responsiveness subscale and PSE. The remaining subscales, which included

Relationship, Facilitation of Parent-Child Interaction, and Collaboration/Non-Intrusiveness, were not correlated with PSE or parent involvement. Although Responsiveness was one of the psychometrically weaker subscales, its relationship with PSE was more closely examined.

The predictive relationship between responsiveness and PSE was marginally significant when using the causal steps approach. With the underpowered model in the present study, when responsiveness was added to the model of examining home visitor assignment on PSE, the overall model approached significance ( $p = .122$ ). Responsiveness uniquely explained approximately 7% of the variance in PSE. Therefore, perhaps a significant prediction of PSE by home visitor responsiveness would be found with a larger sample and greater power to detect the moderate effect.

Examination of the predictive relationship between responsiveness and PSE using the OLS path analysis with PROCESS found a direct effect between home visitor responsiveness and PSE. This suggests that with a newer, more refined approach to examining mediation, responsiveness significantly predicted PSE. The indirect effect from home visitor responsiveness to parent involvement to PSE was not significant, however.

Although mediation by parent involvement was not found in the present study, the relationship between responsive home visiting services and parent efficacy has been identified in previous examinations of home visiting. Qualitatively examining feedback from parents and home visitors in Early Head Start programs, Brookes and colleagues (2006) found that parents who otherwise had low support systems and did not feel efficacious in parenting their children developed stronger support systems with their



home visitors when home visitors were consistent in planning and providing services. Consistency in planning and developing agendas for home visiting that are based on parents' strengths, needs, and preferences related to child development is a major component of the responsiveness aspect of home visit quality (Roggman et al., 2012). Therefore, responsiveness to the parent may increase parents' efficacy by creating a home visit that builds on parenting strengths and is more directly supportive to parents' parenting needs.

Direct correlations between responsive services and PSE have also been identified within home visiting (Caldera et al., 2007; Nievar, Jacobson, Chen, Johnson, & Dier, 2011). Caldera and colleagues (2007) specifically examined parenting outcomes as a result of the Healthy Families Alaska home visiting program, through which home visitors are expected to support parent-child interaction, to reduce child maltreatment, and to base weekly activities on family-initiated goals (Duggan et al., 2007). Parents who participated in the program reported greater PSE than parents who did not (Caldera et al., 2007). For the Home Instruction of Parents of Preschool Youngsters (HIPPPY), which has comparable program goals for supporting parent involvement focused on school readiness, Nievar and colleagues (2011) also found that parents who participated in the program had greater PSE than parents who did not. The dual-generational (parent and child) approach, emphasis on parent-child interaction, and individualization of goals by families corresponds to the goals of EHS as evaluated in the present study (Love et al., 2005). In addition to home visiting programs, other programs that are tailored to parents' individualized needs related to parenting their young children result in increased PSE (Bloomfield & Kendall, 2012; Breitenstein et al., 2012). The findings of the current study

are consistent with the existing empirical support regarding improved PSE with the provision of services that are responsive to parents' needs. Expanding upon previous studies, the present findings are a preliminary and cautious extension of the responsiveness-PSE association to the EHS population.

Given the limitations in the stepwise approach to examining mediation (Zhao, Lynch, & Che, 2010), and because the process of examining indirect effects for mediation does not require a direct effect between the independent variable and the dependent variable (Hayes, 2013), the possibility of an indirect relationship from home visitor responsiveness to PSE to parent involvement was also examined in exploratory analyses. Within this examination of indirect effects, only the path in which PSE predicted parent involvement was significant. Parents who reported greater efficacy were slightly more likely to report more involvement behaviors. As noted above, this finding is consistent with empirical (Giallo et al., 2013; Green et al., 2007; Waanders et al., 2007) and theoretical (Bandura, 1997; Walker, Wilkins, Dallaire, Sandler, & Hoover-Dempsey, 2005) literature on PSE and parent involvement. Mediation of responsiveness to parent involvement by PSE was not indicated based on this examination of indirect effects.

### **Home Visiting Quality**

This study examined home visiting quality across eight home visitors. Observational ratings of quality varied significantly across the eight visitors. Because there was so much variation among home visitors in home visiting quality, multi-level modeling should have been used to examine the relationships between home visiting quality and parent factors (Chan, 2006; Krull & MacKinnon, 2001). Multilevel modeling allows one to account for changes that are consistent across higher-level variables, and to

examine changes within lower level variables that vary across the higher-level variables. Intra-class correlations indicated that a significant amount of the variance in home visiting quality (about 72%) could be accounted for at the home visitor level, or level 2. However, the total sample size and the number of participants within level 2 groupings precluded multi-level modeling with the present data. The smallest recommended group numbers and sizes for multi-level modeling are 10 groups with at least 5 participants per group, but even this small of a sample size will result in underestimation of standard errors within multilevel mediation modeling (Krull & MacKinnon, 2001). Because multi-level modeling could not be used with the present data, no assumptions were made in the analyses about specific home visitor likelihood to impact parent efficacy or involvement, nor were assumptions made about efficacy or involvement being impacted more or less by any given home visitor.

Instead of using multi-level modeling to evaluate this study's hypotheses, multiple regression models were used. Conducting multiple regression models to examine multi-level data resulted in the violation of independence assumption for multiple regression. Each home visitor provided home visiting services to more than one family (2 to 8 families); therefore, these families shared at least the home visitor's influence on home visit quality as a similar characteristic. An additional statistical limitation to the examination of home visiting quality was the potential nonlinear relationship with the present measure of parent involvement. Initial estimations of the relationship were curvilinear in nature; however, after controlling for each family's home visitor assignment (i.e., the level 2 home visitor variable), the relationship between home visiting quality and parent involvement estimated a more linear relationship. When

conducting an examination of the curvilinear term ( $x^2$ ) in the equation, the curvilinear term was not significant, suggesting that the relationship was not curvilinear (Babyak, 2004). Overall, multi-level modeling would have been more appropriate to examine home visiting quality and its impact on parent-level variables; however, due to sample size limitations, the level 2 variable, home visitor assignment, was statistically controlled in the first block of OLS multiple regression with a hierarchical approach, and the primary variables of interest, home visiting quality, PSE, and parent involvement, were examined in subsequent blocks of analysis. Using PROCESS, home visitor assignment was assigned as the covariate to be statistically controlled.

The range of home visiting quality ratings across the sample indicated that most of the home visits were rated low to adequate in quality; few home visits were rated good to excellent. Low to adequate ratings are indicative of home visitor practices that do not meet expectations (e.g., “persists with activity that does not meet parent’s or child’s interests or needs”) or just meet expectations (e.g., “occasionally follows parent and child lead in activities”), without fully meeting expectations (e.g., “frequently follows parent’s and child’s lead in activities, changing pace or activities to meet family interests or needs”) or going beyond expectations (e.g., “follows parent’s and child’s lead in activities and acknowledges these interests or needs;” Roggman et al., 2012). It may be that low to adequate ratings of quality resulted from reactivity among parents or home visitors. During the recruitment phase, home visitors commented to researchers that parents were hesitant to participate due to the assessment requiring the videotape of the home visit. Reluctance to fully participate in the home visiting interaction because of the video recording may have inhibited natural interactions between the home visitor and the

family. Because the results of the present study may be lower due to reactivity, the reactivity affected the external validity of the present findings. Home visiting quality may not be as low in other EHS home visiting programs.

Additional explanations for low quality ratings involve HVPS observation rating coders and extraneous home visitor expectations during data collection. First, one weak HVPS observation coder may have resulted in a restricted range of quality codes. Such restricted range in low to adequate quality may have reduced the likelihood that home visit quality would predict PSE or parent involvement in children's early learning. Second, at the time of data collection, home visitors were exposed to other trainings and assessments to administer as a part of the larger evaluation study (Manz, 2012). Therefore, the quality of the home visit at the time of baseline data collection may be atypically low, given the extra tasks home visitors were completing that may have detracted from the quality of the home visit.

Descriptive, exploratory examination of the mean ratings of the individual quality indicators suggested that the home visitors, on average, were better at engaging in relationships with the families they served than they were at being responsive, facilitating parent-child interaction, or collaborating with the parents. The mean relationship quality was one quality rating higher than the other three scales, on the distribution from one to seven. Higher ratings in the area of relationship compared to the other areas of quality were similar to Vogel and colleagues' (2011) examination of the multi-dimensional home visiting quality construct. Peterson and colleagues (2013) posit that home visitors place higher emphasis on building relationships with families to keep them engaged in the EHS programming when families experience a high degree of need and risk. A more in depth

investigation of home visitor training, particularly the training provided in the partnering EHS program, would provide insight into whether the home visitors are trained in quality home visiting practices, and if so, which practices are highlighted in training. In looking to have an effect on home visiting quality, home visiting programs should consider the content of their trainings and how that content is translated into home visitors' day-to-day practice.

Given that EHS home visiting employs a reflective model for practice (Parlakian, 2002), it conceptually follows that home visitors would have greater skill in developing good relationships with families. Reflective practice emphasizes listening, patience, respect, hearing parents' concerns, and supportiveness (Parlakian, 2002; Weatherston, 2013). These behaviors are very similar to the behaviors aligned with the relationship component of home visiting quality (see Figure 1; Roggman et al., 2012). Relationships may also be a preliminary foundation for home visitors to be able to effectively deliver home visiting services, allowing for responsive, facilitative, and collaborative work within the home visit. Although it may not be surprising that the relationship component of home visiting quality is higher based on reflective practice within EHS, it is interesting that relationship was descriptively higher than the other quality scales, yet responsiveness was a predictor of PSE in the post hoc evaluation. Both of these subscales of home visiting quality had questionable psychometrics in this study, particularly for reliability; thus, although it may conceptually make sense that relationship was descriptively higher than the other subscales, no definitive conclusions can be made from these results.

In the future, consideration of the other HOVRS-A+ (Roggman et al., 2012) scales that examine home visit engagement based on parent engagement, child

engagement, and parent-child interactions during the visit will further illuminate the quality of the home visit. The quality of the home visit is not entirely reliant on the home visitor; rather, it also depends on the family and the parent's likelihood to be receptive to the information and activities suggested by the home visitor and to the idea of interacting with the child with guidance from the home visitor. A better understanding of parent engagement in the visit itself can also shed light on the child-development focus of the home visit, which has been found to increase overall quality of the home visit (Peterson et al., 2007). With greater child-development focused parent engagement in the visit, the home visiting practices during the visit may be rated higher and may then influence parents' efficacy and involvement.

**Demographic differences in quality.** Differences in demographic factors on home visiting quality were examined. Parents who reported participating in other programs were found to have lower home visit quality than parents not participating in other programs. This difference in quality had a medium effect. Most parents participating in other programs received day care services. Only two received other specialized services, which included early intervention and visits from another child development professional. All of the parents in the sample who reported their children to have special needs were in this group of parents who reported participating in other programs. It is possible that parents who participate in programs due to children having additional needs or who require day care to help care for their children are more likely to experience barriers to engagement in home visiting. For example, fathers participating in EHS had significantly lower relationships with their home visitors when they had longer work hours (Roggman, Boyce, Cook, & Cook, 2002). The longer time that parents spend

in other activities, whether those activities take place outside of the home (e.g., work or family obligations that require day care) or within the home (e.g., additional early intervention or child development home visits), may prevent parents from engaging in high quality interactive processes with the home visitor, decreasing the overall quality of the home visit.

Another participant factor that descriptively differed on home visit quality was home language. Home visitors with a larger percentage families who spoke Spanish as a primary language in the home had higher quality ratings. Spanish-speaking families may have greater propensity toward higher quality home visiting, based on greater relationships and participation in the visit that allows for home visitor responsiveness, collaboration, and facilitation of the home visit activities. Previous studies suggest that Latino families who receive home visiting services experience greater benefits from home visiting than non-Latino families, particularly when families are immigrants (Astuto & Allen, 2009). A qualitative study of immigrant Latina mothers found that home visit interactions were uniquely helpful in providing support, parent advocacy, translation, and parent education (Paris, 2008). Among other factors, language barriers and English learning opportunities allowed for higher quality home visiting practices. Future quantitative examination of quality differences based on families' home language may illuminate moderating factors that influence the quality of home visiting services.

**Associations with parenting self-efficacy.** The present study did not find a relationship between the multifaceted assessment of home visiting quality and PSE. Even when home visitors and parents had worked together for at least a few weeks prior to the assessment, the relationship between overall quality and PSE was not found. The lack of



such a relationship is not consistent with previous literature. Several studies have demonstrated growth in PSE as a result of programs that address parenting practices (Bloomfield & Kendall, 2012; Breitenstien et al., 2012) and provision of information on child development and parenting (Conrad et al., 1992). Even other studies have demonstrated growth in PSE as a result of home visiting programs similar to EHS (Caldera et al., 2007; Nievar et al., 2011). Given that EHS maintains a family-centered, dual-generational approach with a focus on child development (Raikes et al., 2012; Zigler & Muenchow, 1992), it would be expected that high quality home visiting would provide parents with knowledge, skills, and practice opportunities to parent their young children. However, particularly for PSE, other studies of home visiting programs have demonstrated that effects are only evident after two years of home visiting services (Caldera et al., 2007; Duggan et al., 1999). The cross-sectional nature of the present study combined all levels of experience with home visiting and child ages together, which may have clouded the potential impact of home visiting quality on PSE over time.

A potential relationship between overall home visiting quality and PSE also may have been masked due to low power that resulted primarily from the low sample size and potential violation of regression assumptions. The relationship between home visiting quality and PSE was estimated to be linear and the residuals of the regression were considered homoscedastic, suggesting few violations of OLS multiple regression. Even when examining direct relationships between home visiting quality and PSE using the PROCESS program, which is much more forgiving of violation assumptions (Hayes, 2013), the direct relationship was still not present. The concern associated with low sample size will be remedied in the second analysis of the current data using a larger

sample, collected using the same procedures and measures from the second round of the larger study (Manz, 2012). The second round baseline data will be combined with the present data from the first round, which will be analyzed, presented to the EHS program, and used for publication as a requirement of the investigator's dissertation research grant (Eisenberg & Manz, 2013).

Through post hoc, exploratory analysis, the present findings did demonstrate that the individual quality component of home visitor responsiveness did have a significant positive, moderate correlation with PSE. Analysis using OLS path analysis with PROCESS also demonstrated a significant direct effect between home visitor responsiveness and PSE. Empirical examinations of home visiting quality to date primarily assess the relationship between the home visitor and the parent (e.g., Korfmacher et al., 2008; Paulsell et al., 2010; Raikes, Green et al., 2006). Home visitor responsiveness is an important, yet empirically understudied, component of home visiting quality. Conceptually, home visitor responsiveness consists of being flexible to families' strengths and needs (Roggman, Boyce et al., 2008). Responsiveness increases opportunities for parents to reciprocally engage with the home visitor during the visit and participate in planning (Woods, Kashinath, & Goldstein, 2004). Such opportunities for increased dialogue and participation in the visit makes the visit more meaningful for the parent, and allows for greater understanding and recognition of parents' strengths, as well as tailored focus in areas in which the parent perceives a need for support, thereby conceptually having greater likelihood to impact PSE. Greater social support and education in areas of need, building on areas of strength, are important factors in enhancing PSE (Bandura, 1997). As mentioned previously, however, given the

psychometric reliability limitations with the responsiveness scale, interpretations of data using the responsiveness scale are cautious. Additional statistical and methodological limitations are presented below.

**Associations with parent involvement.** No relationship was found in the present study between home visiting quality and parent involvement. Participation in the home visit activities and strong teaching activities within EHS home visiting have been demonstrated to have a positive effect on parent home-based involvement activities for infants and toddlers. For example, Vogel and colleagues (2013) found that EHS parents read daily, initiated teaching activities, supported children during play, and created routines at home following receipt of EHS home visiting. There are few strong measures of home-based involvement for broad, consistent parent involvement behaviors that take place outside of the context of home visiting, in the literature (Manz et al., 2015), making comparisons to previous examinations of overall parent involvement difficult.

Intra-class correlations indicated that a significant amount of the variance in parent involvement (about 23%) could be accounted for at the home visitor level, or level 2. Parent involvement ratings varied slightly across home visitor groupings, but one home visitor in particular had parents ( $n = 4$ ) who reported higher involvement than the remaining visitors' parents. There were too few home visitors (level 2 groups) in this study to understand whether the one home visitor's group was an outlier, or to examine the findings using multi-level modeling (fewer than 10 groups, some groups with fewer than 5 participants; Krull & MacKinnon, 2001). A descriptive review of the home visitors' participants did not find any specific differences among this home visitor's caseload compared to that of other home visitors (e.g., children's ages spanned the range

of ages for the sample). Because multi-level modeling could not be used with the present data, no assumptions were made in the analyses about specific home visitor likelihood to impact parent involvement.

One outlier was identified as having very high scores on the parent involvement measure. This high score did not have undue influence on the overall relationship between home visiting quality and parent engagement. The parent involvement measure scores were derived from Rasch modeling, which uses item response theory to determine appropriate scores for individuals on the measure based on two dimensions: item- and person-difficulty (Smith, Conrad, Chang, & Piazza, 2002). Closer examination of this individual's score demonstrated that this single mother with a part-time job was descriptively found to differ from the other participants only on the amount of time spent in the home visiting program and child age (33 months). This mother had been in the program and with her home visitor for almost two full years, which was longer than the amount of time that almost all of the other parents were in the program. The child was also older than the remaining child participants. The connections among child age, duration of home visiting services, and parent involvement are at the parent level, and thus cannot be generalized to the remainder of the sample or to the broader population.

The low to adequate home visit quality outcomes in this study may not have allowed for adequate teaching or facilitation of parent-child interaction during the home visits to provide the parent with practice opportunities for involving the child in learning activities. This may have reduced the likelihood that home visit quality would predict parent involvement in children's early learning. Further, power to detect a potential relationship between home visiting quality and parent involvement was very low with the

present sample size and with Type I error corrections due to potential violation of assumptions when examining parent involvement with the present data. The relationship between home visiting quality and parent involvement was not definitively linear, and the residuals of the regression were not homoscedastic; therefore, Type 1 error corrections were used. When conducting OLS path analysis with PROCESS, heteroscedasticity-consistent standard errors (HC3) were employed to correct for any assumption violations. With these additional constraints on the data, the power to detect a relationship between home visiting quality and parent involvement was even lower.

As noted above, the concern associated with low sample size will be remedied in a future analysis using the current sample with an additional group of home visitors and families, collected using the same procedures and measures, from the second round of data collection from the larger study (Manz, 2012). The second round data will be combined with the present data from the first round, which will be analyzed, presented to the EHS program, and used for publication as a requirement of the investigator's dissertation research grant (Eisenberg & Manz, 2013). The addition of another possible 40 participants from the second round of data collection will likely provide more variation in home visiting quality and parent involvement scores, and will likely make the spread of scores and regression residuals more interpretable. It will also meet the required sample size for adequate power (Power = .80) for a multiple regression with three predictors ( $N = 77$ ). However, as the home visiting quality scores in the present study are low, it is likely that the home visiting quality scores will increase with the addition of more participants due to regression to the mean; therefore, to the extent that the present

scores are true home visiting quality scores, the results of the future analysis should be interpreted with caution due to this potential threat to internal validity.

By engaging in high quality home visiting, with a focus on how home visitors can improve relationships, be responsive to families' needs, facilitate parent-child interactions, and collaborate with the family, home visitors should be able to support parents in developing at-home routines and consistent behaviors for supporting their children's development. Parent involvement behaviors at home are reliant on parents' consistent routines for involving their children in early learning activities (e.g., reading, counting, educational games; Fantuzzo et al., 2000; Manz et al., 2015). However, cultural perspectives and resource barriers may reduce the likelihood that low-income, ethnically diverse parents engage in early learning involvement behaviors at home. For example, Reese and Gallimore (2000) qualitatively examined the involvement beliefs and behaviors of Mexican and Mexican American parents. Recent immigrants or parents living in small Mexican towns believed that their young children below the age of 5 were not ready to learn from academically-focused activities, like reading. However, immigrant parents more familiar with traditional U.S. education systems better understood the benefits of involving young children in early learning activities.

Home visiting programs can be an effective means for addressing barriers to participation among low-income, ethnically and racially diverse families. Among families in a national EHS evaluation, Raikes, Pan, and colleagues (2006) found that although Latino and African American families were less likely to read daily than their Caucasian counterparts, over the course of 22 months of EHS home visiting, the percentage of parents overall who did not read with their children decreased from about

12% to about 6%. More recently, Vogel and colleagues (2015) found similar results within a national EHS evaluation, such that after home visiting, 10% of parents of toddlers reported infrequent reading with their toddlers, less than once per day. Supporting low-income, ethnically and racially diverse parents in ongoing home-based involvement routines through quality home visiting is an important goal for home visiting programs like EHS.

### **Parenting Self-Efficacy and Parent Involvement**

Data support a moderate, positive correlation and a transactional predictive relationship between PSE and parent involvement. Not only does greater PSE predict greater parent involvement; the reverse is also true. Previous meta-analyses of home visiting programs found that, despite inconsistencies across programs, EHS programs have demonstrated favorable impacts for parenting outcomes (Avellar, Paulsell, Sama-Miller, & Del Grosso, 2012; Office of Planning, Research, and Evaluation, 2014; U.S. DHHS, n.d., Vogel et al., 2015). The current study demonstrated moderate relationship between PSE and parent involvement, greater than the weaker predictive relationship demonstrated in previous studies of low-income parents with similar age or older children (Giallo et al., 2013; Green et al., 2007; Waanders et al., 2007). However, the stronger relationship may be an artifact of both measures' reliance on parent report or of high reports of parent efficacy among the participants in this sample.

Measuring two constructs in the same way (i.e., parent-report for PSE and parent involvement) may inflate the correlation between them (Podsakoff, MacKenzie, & Podsakoff, 2012). Correlations between the two measures are the result of shared variance due to method similarity and trait similarity. To eliminate potential method bias

in examining PSE and parent involvement, future examinations of these constructs may include multiple measurement methods as observed variables to represent the latent constructs. Latent constructs account for systematic variance among the observed, measured variables, and thus can offer more accurate reliability and validity estimates of the individual measures (Podsakoff et al., 2012). However, the small number of measures appropriate for low-income parents of infants and toddlers to assess parent involvement in particular (e.g., Manz et al., 2015) would make such a study difficult.

A significant predictive relationship was found between PSE and parent involvement in the present study despite the negatively skewed and leptokurtic distribution of participants on the PSE measure. Prior to examining the hypotheses, transformations were employed following a rank order of transformations to elongate the distribution of higher responses to estimate a normal curve (Cohen et al., 2003; DiLalla & Dollinger, 2006). However, such transformations often make it difficult to generalize findings to the broader population (DiLalla & Dollinger, 2006), so the reciprocal predictive relationship between PSE and parent involvement must be interpreted with caution when generalized to the broader population of EHS families.

Parents' scores on the efficacy measure and the parent involvement measure were high, indicating strong perceptions of PSE and involvement. Other studies of PSE have also reported high parent self-ratings of PSE using the Maternal Self-Efficacy Scale (Teti & Gelfand, 1991) among parents of infants (e.g., Elliott, 2007; Hess et al., 2004). The limited sample size in the current study may have restricted the range of responses in PSE ratings. Parents reported very high PSE, with the exception of two parents. These two mothers did not report having children with disabilities, receiving services from any other



program or day care, or having full time employment that would keep them from being home to care for their children. In addition, they reported being married, and their children were at least one year of age. One, but not both, of the parents was young for the sample (age 21) and had only been in the EHS program for 2 months prior to assessment. These two parents reported low efficacy for reasons that could not easily be explained by unique demographic inconsistencies with the rest of the sample. For these reasons, and because of the small sample size, these two parents cannot be considered highly discrepant from the EHS population at large or even the population of families served by the partnering EHS program. Restricted range among the current sample may have reduced the likelihood of capturing the full range of efficacy beliefs in the population. It is possible that the full range of efficacy beliefs among parents served by the present EHS program includes parents with lower PSE. A more normal distribution of PSE beliefs would have had increased variance in PSE scores that would be a more appropriate outcome indicator on which to examine small changes due to home visiting quality indicator.

One explanation for the high levels of positive responding for PSE may be that parents provided an ambitiously optimistic report of their efficacy for parenting their toddler. Home visitor comments suggested some parent reactivity with the video assessments, and such reactivity may also have resulted in parent bias in responding on self-report indicators of personal beliefs. Previous research suggests that positive psychological constructs measured using Likert scale response options are often affected by acquiescence bias (Friborg, Martinussen, & Rosenvinge, 2006). Examination of parents' efficacy scores at the second administration time point of the larger study (Manz,

2012) demonstrated scores that were still very high, but did not follow a negatively skewed distribution (Eisenberg & Manz, 2014). This suggests that while acquiescence bias may have still played a role in parents' responding on the efficacy measure, reactivity to the novelty of the self-report for PSE likely impacted the negatively skewed distribution of PSE scores in this study.

Variations in measurement methods may help to reduce the skewed outcomes and potential for restricted range in the self-report indicators of PSE. The difficulty with acquiescence bias due to reactivity with novel self-report contexts is that the effect of testing repeatedly over time may be the reason for observed changes PSE ratings. These circumstances threaten the internal validity of PSE measurement in methodology that includes repeated measures designs. To help reduce the acquiescence bias in Likert-based responding for parent psychological constructs, future assessments of PSE, particularly when used in repeated measures designs, may consider including negatively worded, reverse coded items on a Likert scale (Friborg, Martinussen, & Rosenvinge, 2006). Alternatively, different response options could be employed. Friborg and colleagues (2006) found that compared to a Likert response format, the semantic differential response format reduced acquiescence bias on a positive psychological construct (i.e., resilience). Other measurement options, including other raters or observational indicators, may be important to consider in future examinations of both PSE and parent involvement.

The high ratings on the PIEL measure (Manz et al., 2015) were consistent with the person- and item-difficulty maps from the Rasch modeling procedures to merge the English and Spanish versions of the measure. The average person mean on the scale was higher than the average item difficulty mean, which suggests that the parent involvement

items on the present measure were “easy” for the current sample. This would have resulted in more high ratings of parent involvement and thus may have restricted the range of parent involvement ratings. Such restricted range may have been more representative of the true involvement behaviors of the present sample. A less kurtotic distribution of parent-perceived involvement behaviors would have increased variance in involvement scores that would be a more appropriate outcome indicator on which to examine small changes in involvement based on home visiting quality. Future measure development is warranted to better assess parent involvement for parents of infants and toddlers by encompassing behaviors that represent greater propensity for involvement.

Both parent report measures were examined for cultural and age appropriateness for the present population. The PSE measure was selected for its brief examination of PSE and for its common use in the literature to examine PSE, including among low-income, Latino and African American parents of infants (Elliott, 2007; Hess et al., 2004; Le & Lambert, 2008), and toddlers of higher income parents (Caldera et al., 2007). The PIEL is a new measure of parent involvement to assess the construct of home-based involvement among parents with infants and toddlers (Manz et al., 2015). Previous examinations of this conceptualization of involvement have used variants of this measure intended for older populations in low-income, ethnic minority samples (Downer & Mendez, 2005; Ingram et al., 2007; Fantuzzo et al., 2000, 2004; Manz et al., 2004; Waanders et al., 2007). Further, parents and staff from the EHS program reported that the items on the PSE measure were appropriate for the EHS population. The translations of Spanish versions of both measures were backtranslated and examined for cultural and dialect appropriateness with the present population.

**Demographic correlates.** It is possible that moderation exists among variables that impact PSE but were not measured in the present study. PSE is correlated with the difficulty of infant temperament and parent mental health (Bloomfield & Kendall, 2012; Coleman et al., 2002; Elder, Eccles, Ardel, & Lord, 1995; Farkas & Valdes, 2010; Giallo et al., 2013; Jackson & Huang, 2000; Le & Lambert, 2008; Machida et al., 2002; Teti & Gelfand, 1991). Each of these may have a potential impact on PSE. Research indicates that parents report lower levels of PSE when toddlers' temperament is rated to be more difficult (Coleman et al., 2002; Giallo et al., 2013; Machida et al., 2002; Teti & Gelfand, 1991). Other literature suggests that parents who experience greater stress or depression have lower levels of PSE than parents who are not depressed (Bloomfield & Kendall, 2012; Elder et al., 1995; Farkas & Valdes, 2010; Giallo et al., 2013; Jackson & Huang, 2000; Machida et al., 2002; Le & Lambert, 2008; O'Neil et al., 2009; Teti & Gelfand, 1991, 1996). Some research provides evidence that home visiting can reduce parenting stress and mental health difficulties, with subsequent benefits to PSE (Duggan et al., 1999; Love et al., 2005; Raikes, Green et al., 2006; Thompson, 2014). Future research should consider child-level factors, as well as parents' stress and mental health, to more fully understand how specific aspects of home visiting quality may mediate demographic risk on PSE and parent involvement.

### **Limitations and Future Directions**

One of the limitations in the present study that reduced the power to find a statistically significant finding and model the data appropriately was the limited sample size. The small sample size, mixed with only moderate effect size and reduction in alpha to correct Type 1 error in some analyses, resulted in lower power to detect any findings.

Given the nesting of parents by home visitor, and the significant ICCs by home visitor for home visiting quality and parent involvement, multi-level modeling would have been more appropriate (Chan, 2006; Fritz & MacKinnon, 2007). With the present sample size, regression modeling was used.

The regression model, with three predictors in a mediation model, met the 10 observations per predictor recommendation (Babyak, 2004); however, the model was borderline overfitted with two mediation analyses conducted. As a part of the grant that is funding this dissertation project (Eisenberg & Manz, 2013), data from a second set of participants from the baseline of a second RCT will be added to the present sample, with an anticipated doubling of the present sample of parents, and an addition of nine new home visitors. Results will be evaluated with the larger sample for dissemination to the partnering EHS program and for dissemination in publications.

The sample size with the additional participants will still not be large enough for multi-level modeling. Non-independence of data based on clustering by groups is a primary reason for low power when examining nested designs (Kenny & Judd, 1986). Type I error corrections were conducted when parent involvement was examined as a dependent variable, because of the significant ICCs by home visitor grouping on parent involvement. Future examinations that address the multi-dimensional construct of home visiting quality should include enough home visitors (i.e., level 2 groups) and families per home visitor (i.e., level 1 groups) to test hypotheses using multi-level modeling that will appropriately account for shared variance and non-independence of measurement among level 1 observations that are nested by level 2 groups.

The way in which the nesting was accounted for in the present study was by controlling for the home visitor assignment variable in the first block of hierarchical multiple regression analyses or as the covariate in PROCESS. To reduce the number of variables in the model and prevent overfitting the model, the nesting factor was a single variable with eight levels. This ordinal variable corresponded with some trend in quality rating, even though the numbers assigned to the home visitors were arbitrary. In future analyses with a larger sample, the use of dummy variables would pose a lesser statistical limitation to the analyses.

Another major limitation of the present study was the potential violation of linearity assumptions underlying the regression model when examining parent involvement regressed on home visiting quality. Initial estimations of the relationship were curvilinear in nature; however, after controlling for level 2 nesting by home visitor grouping, the relationship between home visiting quality and parent involvement appeared more linear, and the curvilinear term was not significant when added to the equation. A nonsignificant curvilinear term suggests no curvilinear relationship (Babyak, 2004). However, this study's findings on home visiting quality and parent involvement should be interpreted with caution. In the present study, home visiting quality was rated to be low, and parent involvement was rated to be high and slightly leptokurtic. Future studies of home visiting quality and parent involvement with more participants (Eisenberg & Manz, 2013) will allow opportunity for a more normal distribution of scores on both measures. Although this may partially be a limitation to external validity due to regression to the mean, the additional participants will reduce the restricted range of observations that likely occurred in the present study.

Additional statistical limitations to the examination of home visiting quality relate to the psychometrics of the measure. First, the internal reliability of the overall home visiting quality scale is strong, suggesting that items across all four component scales were highly correlated. However, the internal reliability of the responsiveness scale in particular is questionable; therefore, findings from the responsiveness scale alone must be cautiously interpreted. Second, the inter-rater reliability for the home visiting quality measure was in the fair range prior to consensus scores. More frequent reliability checks may be helpful to ensure moderate to substantial inter-rater reliability. In addition, for future examination of home visiting quality, inter-rater reliability may be calculated for consensus scores, as well.

More broadly, methodological limitations to the present study may have resulted in increased reactivity when assessing the three constructs of interest. The potential reactivity during the video assessments threatened the external validity of the present findings. It would have been advantageous if in this study the home visitors used the video tape recording procedure during several home visits. A few of the video recordings could have been used for an acclimation period, and one of the later video recordings could have been used for home visiting quality observation ratings. With this proposed procedure, the home visitors and families would be more comfortable with the video recorder placed unobtrusively on the side of the room (Roggman, Boyce et al., 2008), and they would not know which video recording would be observed.

Limitations of measurement of the PSE and parent involvement constructs also influenced the present findings. Parent reports on the PSE measure were likely influenced by acquiescent and reactive responding. The measure used in this study was also

designed for parents of infants, not parents of older children. Previous studies have used this measure with toddlers 2 years of age (Caldera et al., 2007), and parents and staff from the partnering EHS program reported that the measure was culturally and age-appropriate for the sample. The Maternal Self-Efficacy Scale (Teti & Gelfand, 1991) was carefully selected for the present study based on multiple criteria: (a) acceptable length (i.e., brief) for the present population, (b) theoretical grounding in Bandura's domain-specific self-efficacy for parenting, (c) convergent validity with other measures of parenting competence, (d) adequate internal consistency, and (e) previous use with low-income, Latino and African American parents of infants (Elliott, 2007; Hess et al., 2004; Le & Lambert, 2008), as well as toddlers of higher income parents (Caldera et al., 2007). However, at least 20 other measures of PSE, with varying internal consistency, content validity, factor structures, convergent and discriminant validity, and populations of interest, have been used in the literature to examine PSE among parents of children. One of these measures was designed specifically for low-income Spanish speaking Mexican mothers (Dumka, Stoerzinger, Jackson, & Roosa, 1996). Future examinations of PSE may consider the use of an alternative measure of PSE that may result in less reactivity among parents and that may have more appropriate content for infants as well as toddlers.

The parent involvement measure used in the present study, the Parent Involvement in Early Learning (PIEL) scale (Manz et al., 2015) is conceptually strong, but requires additional development. Manz and colleagues (2015) reported slightly different item structures on English and Spanish versions of the measure. For the present study, a merged English and Spanish PIEL was derived using Rasch modeling, which was used for measured indicators of parents' involvement behaviors. However, further



measure development is necessary for a strong rating scale that applies to both English- and Spanish-speaking parents of infants and toddlers. Content validity and dimensionality will be important to consider in future measurement development for the PIEL. In this study, some of the parents who reviewed the PIEL for content appropriateness for infants reported some concerns with the wording of a couple of items. For example, creative activity play with children was not found to be highly applicable to infants for all of the parent or child development professional reviewers. Moving forward with the PIEL development, item content for not only parents of toddlers, but more specifically for infants as well, should be further considered.

To better understand the interrelationships among home visiting quality and parent-level variables in this study, additional correlates could have been examined (i.e., demographic factors, pre-test scores), and with a larger sample to have the power to examine the impact of these potential correlates on the mediation relationships between home visiting quality, PSE, and parent involvement. As noted above, child-level variables like child temperament and parent mental health variables like depressive symptoms and stress may affect PSE (Bloomfield & Kendall, 2012; Coleman et al., 2002; Elder et al., 1995; Farkas & Valdes, 2010; Giallo et al., 2013; Jackson & Huang, 2000; Machida et al., 2002; Le & Lambert, 2008; O’Neil et al., 2009; Teti & Gelfand, 1991, 1996). In addition to these correlates of PSE, parents’ familiarity with EHS service provision beyond the context of service provision for the current child was unknown in the present study. This limited the understanding of parents’ experience with EHS home visiting thus resulted in a maturation threat to internal validity. Parents in the present study may have had more experience with home visiting than was measured, affecting

home visiting quality, PSE, and parent involvement. Two means for measuring parent experience with EHS home visiting services would be parent report of previous EHS experience or EHS file review to examine whether parents received services for children's older siblings.

Finally, future studies of home visiting quality as it supports parents' involvement in children's early learning should consider the individual components of home visiting quality as independent predictors, to provide a fuller illustration of the individual components of home visiting quality on various home visiting outcomes. Additional attention is also warranted for implementation supports for home visitors to reinforce at-home involvement routines. EHS offers goals for parents to work on throughout the week; however, the structure for goal development and the effect that goal setting actually has on parents' at-home routines for involvement are unclear. Future research should more closely examine the implementation supports that home visiting programs offer for parents to develop and maintain consistent, at-home routines.

## **Conclusions**

Overall, this study presents one of the few research studies to examine a multi-dimensional construct of home visiting quality within EHS as it impacts parents' efficacy for and involvement in children's early learning. Further, unlike previous studies of parent involvement as an outcome of EHS home visiting (e.g., Love et al., 2005; Vogel et al., 2013, 2015), the present study examines a more comprehensive and psychometrically sound construct of parent involvement. Given the statistical limitations of the present findings, which were compounded by the small sample size, low power, and skewed participant reports on the PSE measure, the results of this study should be interpreted

with caution and cannot be generalized to the broader EHS population or the home visiting population as a whole. With that understanding, the lack of association between home visiting quality and PSE or parent involvement does not suggest that home visiting quality is not an important predictor for these parent-level variables. In fact, home visitor responsiveness may directly affect PSE. Therefore, home visitor responsiveness is one component of home visiting quality that may be an important factor for programs to consider to impact parents' perceptions of their ability to parent their young children.

Practical implications of the present findings may be useful for the partnering EHS program and other home visiting programs. This study found that PSE and parent involvement predicted each other. Home visitors who provide parent support to increase PSE indirectly affect parent involvement in children's early learning. Home visitors can then help parents enhance their involvement behaviors, which may further increase PSE. The transactional nature of the association between PSE and parent involvement offers various approaches for home visitors to employ and individually tailor to each family's unique needs. Further, given that PSE may increase with home visitor practices that are responsive to parents' and children's strengths, needs, and interests, home visitors may want to strengthen their responsive practices with families. Strengthening responsiveness may increase PSE, which in turn may increase parent involvement. Home visiting programs may consider these associations when determining home visitor trainings and supervision of home visitor practices with families.

Parents' sense of being able to parent their young children (PSE) predicted parent involvement in children's early learning, and parent involvement also predicted PSE. The current findings extend to EHS the relationships between PSE and parent involvement

(e.g., Waanders et al., 2007; Walker et al., 2005), and expand the understanding of the potential transactional relationship between PSE and parent involvement. As the Hoover-Dempsey and colleagues' model suggests, PSE and involvement are important precursors to children's school success and children's later efficacy for good achievement (Hoover-Dempsey & Sandler, 1995; Walker et al., 2005). The growing understanding of the relationship between PSE and parent involvement within EHS highlights practical directions for EHS programs to increase parent involvement behaviors that result in child development outcomes, which aligns with Head Start performance standards (2006) on quality home visiting for parent education that stimulates child development (45 C.F.R. 1306.33 [b]) and on parent involvement in child development and education (45 C.F.R. 1304.40 [e]). In addressing the Head Start performance standards, the present findings and extended examinations of the present data (Eisenberg & Manz, 2013) provide for the advancement of home visiting programming to meet the needs of low-income, ethnically diverse parents with young children.

Table 1

*Parent Demographic Frequencies*

	<i>n</i>	%
Gender <sup>a</sup>		
Male	2	4.9
Female	39	95.1
Native Language <sup>b</sup>		
English	15	37.5
Spanish	21	52.5
English and Spanish	4	10.0
Birth Country <sup>b</sup>		
United States Mainland	16	44.4
Dominican Republic	7	17.5
Puerto Rico	4	10.0
Mexico	4	10.0
Honduras	2	5.0
Nicaragua	2	5.0
Ecuador	1	2.5
Education Completed <sup>b</sup>		
Less than high school	10	25.0
High school graduate/GED	13	35.0
Some college	14	35.0
Four-year college	2	5.0
Marital Status <sup>a</sup>		
Married	15	36.6
Never married	18	43.9
Separated or divorced	7	17.1
Common law marriage	1	2.4
Primary Language in Home <sup>a</sup>		
English	18	43.9
Spanish	19	46.3
English and Spanish	3	7.3
English and Arabic	1	2.4

<sup>a</sup>*n* = 41. <sup>b</sup>*n* = 40.

Table 2

*Child Demographic Frequencies*

	<i>N</i>	%
	<i>(Total N = 41)</i>	
<b>Gender</b>		
Male	17	41.5
Female	24	58.5
<b>Native Language</b>		
English	18	43.9
Spanish	20	48.8
English and Spanish	2	4.9
English and Arabic	1	2.4
<b>Race/Ethnicity</b>		
Latino	35	85.4
African American	3	7.3
Caucasian	1	2.4
African American and Caucasian	1	2.4
Egyptian	1	2.4
<b>Other Program Participation</b>		
Yes	6	14.6
No	35	85.4
<b>Special Needs</b>		
Yes	4	9.8
No	37	90.2

Table 3

*Means, Standard Deviations, and Ranges of Home Visit and Parent Measures*

	Original Score			Adjusted Score		
	<i>M</i>	<i>SD</i>	Range	<i>M</i>	<i>SD</i>	Range
HVPS <sup>a</sup>	2.68	1.38	5.20	n/a	n/a	n/a
Responsiveness	2.75	1.18	5.00	n/a	n/a	n/a
Relationship	3.39	1.54	5.71	n/a	n/a	n/a
Facilitation	2.01	1.78	5.33	n/a	n/a	n/a
Collaboration	2.51	1.77	6.00	n/a	n/a	n/a
MSES <sup>b</sup>	3.41	0.55	2.90	42.21	13.95	62.67
PIEL	n/a	n/a	n/a	1.37	1.22	6.05
English (11 items) <sup>c</sup>	33.69	5.90	20.00	n/a	n/a	n/a
Spanish (14 items) <sup>d</sup>	45.93	4.79	17.00	n/a	n/a	n/a

*Note.* The adjusted score for the MSES is the transformation used to normalize the distribution of parents' scores. The adjusted score for the PIEL is the Rasch equated person ability metric. HVPS = Home Visit Practice Scale (home visit quality indicator); MSES = Maternal Self-Efficacy Scale; PIEL = Parent Involvement in Early Learning

<sup>a</sup>Possible original range = -1 to 7. <sup>b</sup>Possible original range = 1 to 4, <sup>c</sup>Possible original range = 11 to 44, <sup>d</sup>Possible original range = 14 to 56

Table 4

*Pearson Product Moment Bivariate Correlations Among Measures*

	HVPS	Resp.	Rel.	Facil.	Collab.	MSES	PIEL
HVPS	--						
Responsiveness	.88**	--					
Relationship	.87**	.67**	--				
Facilitation	.91**	.75**	.78**	--			
Collaboration	.86**	.75**	.59**	.64**	--		
MSES	.20	.31 <sup>†</sup>	.05	.13	.22	--	
PIEL	.06	.02	-.03	-.02	.21	.42*	--

*Note.* Collab. = Collaboration; Facil. = Facilitation; HVPS = Home Visit Practice Scale (home visit quality indicator); MSES = Maternal Self-Efficacy Scale; PIEL = Parent Involvement in Early Learning; Rel. = Relationship; Resp. = Responsiveness

\* $p < .05$ , \*\* $p < .001$ , <sup>†</sup> $p = .05$



Table 5

*Hierarchical Regression Analyses with Mediation by Parenting Self-Efficacy*

Variable	$R^2$	Adj. $R^2$	$\Delta R^2$	$F$	$df$	$B$	$SE B$	$\beta$	$sr$	$sr^2$
<i>Path a: MSES</i>										
<i>DV</i>										
Step 1	.03	.01	.32	1.31	1, 39					
Home visitor						1.21	1.06	.18	.18	.03
Step 2 ( <i>path a</i> )	.05	.00	.02	1.04	2, 38					
Home visitor						.84	1.14	.12	.12	.01
HVPS						1.52	1.72	.15	.14	.02
<i>Paths b, c, c':</i>										
<i>PIEL DV</i>										
Step 1	.11	.08	.11*	4.58*	1, 39					
Home visitor						.19	.09	.32*	.32	.10
Step 2 ( <i>path c</i> )	.12	.06	.00	2.33	2, 38					
Home visitor						.21	.10	.35*	.33	.11
HVPS						-.06	.15	-.07	-.06	.00
Step 3 ( <i>paths b, c'</i> )	.26	.19	.15**	4.22**	3, 37					
Home visitor						.18	.09	.30	.28	.08
HVPS						-.11	.14	-.13	-.12	.01
MSES						.03	.01	.39**	.38	.14

*Note.* HVPS = Home Visit Practice Scale (home visit quality indicator); MSES = Maternal Self-Efficacy Scale; PIEL = Parent Involvement in Early Learning

\* $p < .05$ , \*\* $p < .02$

Table 6

*Coefficients for Path Analysis of Direct and Indirect Effects with Mediation by Parenting Self-Efficacy*

Antecedent	Consequent							
	MSES (M)				PIEL (Y)			
	Coeff.	<i>SE</i>	<i>p</i>	95% CI	Coeff.	<i>SE</i>	<i>p</i>	95% CI
HV (control)	.84	.96	.39	-1.12 to 2.78	.18	.09	.07	-.01 to .37
HVPS (X)	<i>a</i> 1.52	2.40	.53	-3.34 to 6.39	<i>c'</i> -.11	.14	.42	-.40 to .17
MSES (M)	—	—	—	—	<i>b</i> .03*	.01	.01	.01 to .06
$R^2 = .05$				$R^2 = .25^*$				
$F(2, 38) = 1.18, p = .32$				$F(3, 37) = 4.08, p = .013$				

*Note.* HV = home visitor; HVPS = Home Visit Practice Scale (home visit quality indicator); MSES = Maternal Self-Efficacy Scale; PIEL = Parent Involvement in Early Learning; Heteroscedasticity-consistent standard error (HC3) estimators used for *SE* estimates  
\* $p < .05$

Table 7

*Hierarchical Regression Analyses with Mediation by Parent Involvement*

Variable	$R^2$	Adj. $R^2$	$\Delta R^2$	$F$	$df$	$B$	$SE$ $B$	$\beta$	$sr$	$sr^2$
<i>Path a: PIEL</i>										
<i>DV</i>										
Step 1	.11	.08	.11*	4.58*	1, 39					
Home visitor						.19	.09	.32*	.32	.10
Step 2 ( <i>path a</i> )	.11	.06	.00	2.33	2, 38					
Home visitor						.21	.10	.35*	.33	.11
HVPS						-.06	.15	-.07	-.06	.00
<i>Paths b, c, c':</i>										
<i>MSES DV</i>										
Step 1	.03	.00	.03	1.00	1, 39					
Home visitor						.23	.23	.16	.16	.03
Step 2 ( <i>path c</i> )	.05	.00	.03	1.00	2, 38					
Home visitor						.14	.25	.10	.09	.01
HVPS						.38	.38	.17	.16	.03
Step 3 ( <i>paths b, c'</i> )	.18	.11	.13*	2.27	3, 37					
Home visitor						-.06	.25	-.04	-.03	.00
HVPS						.44	.36	.20	.18	.03
PIEL						.95	.40	.38*	.36	.13

*Note.* HVPS = Home Visit Practice Scale (home visit quality indicator); MSES = Maternal Self-Efficacy Scale; PIEL = Parent Involvement in Early Learning

\* $p < .05$

Table 8

*Coefficients for Path Analysis of Direct and Indirect Effects with Mediation by Parent**Involvement*

Antecedent	Consequent							
	PIEL (M)				MSES (Y)			
	Coeff.	SE	<i>p</i>	95% CI	Coeff.	SE	<i>p</i>	95% CI
HV (control)	.21*	.10	.04	.01 to .40	-.14	1.12	.90	-2.42 to 2.13
HVPS (X)	<i>a</i> -.06	.15	.68	-.36 to .24	<i>c'</i> 1.81	1.60	.26	-1.43 to 5.06
PIEL (M)	—	—	—	—	<i>b</i> 4.75*	1.77	.01	1.17 to 8.33
$R^2 = .11$				$R^2 = .21^*$				
$F(2, 38) = 2.33, p = .11$				$F(3, 37) = 3.21, p = .034$				

*Note.* HVPS = Home Visit Practice Scale (home visit quality indicator); MSES = Maternal Self-Efficacy Scale; PIEL = Parent Involvement in Early Learning

\* $p < .05$

Table 9

*Hierarchical Linear Regression Analyses for Exploratory Examination of Mediation by Parent Involvement on Home Visitor Responsiveness to Parenting Self-Efficacy*

Variable	$R^2$	Adj. $R^2$	$\Delta R^2$	$F$	$df$	$B$	$SE B$	$\beta$	$sr$	$sr^2$
<i>Path a: PIEL DV</i>										
Step 1	.11	.08	.11	4.58*	1, 39					
Home visitor						.19	.09	.32*	.32	.10
Step 2 ( <i>path a</i> )	.11	.06	.01	2.36	2, 38					
Home visitor						.21	.09	.35*	.32	.10
Responsiveness						-.08	.17	-.08	-.07	.00
<i>Paths b, c, c':</i>										
<i>MSES DV</i>										
Step 1	.03	.01	.03	1.31	1, 39					
Home visitor						1.21	1.06	1.14	.18	.03
Step 2 ( <i>path c</i> )	.11	.06	.07	2.22	2, 38					
Home visitor						.70	1.07	.10	.09	.01
Responsiveness						3.32	1.89	.28 <sup>†</sup>	.27	.07
Step 3 ( <i>paths b, c'</i> )	.27	.21	.16*	4.54*	3, 37					
Home visitor						-.30	1.04	-.05	-.04	.00
Responsiveness						3.71	1.74	.31*	.30	.09
PIEL						4.90	1.70	.43*	.41	.17

*Note.* MSES = Maternal Self-Efficacy Scale; PIEL = Parent Involvement in Early Learning

\* $p < .05$ , <sup>†</sup> $p < .10$

Table 10

*Coefficients for Path Analysis of Direct and Indirect Effects for Exploratory Examination of Mediation by Parent Involvement on Home Visitor Responsiveness to Parenting Self-Efficacy*

Antecedent	Consequent							
	PIEL (M)				MSES (Y)			
	Coeff.	SE	<i>p</i>	95% CI	Coeff.	SE	<i>p</i>	95% CI
HV (control)	.21*	.10	.04	.01 to .39	-.30	1.04	.77	-2.42 to 1.81
Responsiveness (X)	<i>a</i> -.08	.17	.63	-.42 to .26	<i>c'</i> 3.71*	1.74	.04	.18 to 7.23
PIEL (M)	—	—	—	—	<i>b</i> 4.89*	1.70	.007	1.45 to 8.33
				$R^2 = .11$				$R^2 = .52^*$
				$F(2, 38) = 2.36, p = .11$				$F(3, 37) = 4.54, p = .008$

*Note.* MSES = Maternal Self-Efficacy Scale; PIEL = Parent Involvement in Early Learning.

\**p* < .05

Table 11

*Coefficients for Path Analysis of Direct and Indirect Effects for Exploratory Examination of Mediation by Parenting Self-Efficacy on Home Visitor Responsiveness to Parent Involvement*

Antecedent	Consequent								
	MSES (M)				PIEL (Y)				
	Coeff.	SE	p	95% CI		Coeff.	SE	p	95% CI
HV (control)	.70	.88	.43	-1.08 to 2.48		.18	.09	.06	-.01 to .37
Responsiveness (X)	<i>a</i> 3.32	2.70	.23	-2.15 to 8.79	<i>c'</i>	-.20	.18	.26	-.56 to .16
MSES (M)	—	—	—	—	<i>b</i>	.04*	.01	.005	.01 to .06
	$R^2 = .10$					$R^2 = .27^*$			
	$F(2, 38) = 1.41, p = .26$					$F(3, 37) = 4.28, p = .011$			

*Note.* MSES = Maternal Self-Efficacy Scale; PIEL = Parent Involvement in Early Learning; Heteroscedasticity-consistent standard error (HC3) estimators used for SE estimates

\* $p < .05$

<b>Construct</b>	<b>Definition</b>
Home visit quality	Home visit quality is defined by the home visitor and parent interactions that focus on child-centered activities in the home visit (Roggman et al., 2012).
Responsiveness	The home visitor uses parent input to plan for home visit activities and identifies family strengths to support child development (Roggman et al., 2012).
Relationship	The home visitor displays respect for the family members and interacts with them using warmth and positive emotions (Roggman et al., 2012).
Facilitation	The home visitor elicits positive, developmentally supportive parent-child interactions during the home visit (Roggman et al., 2012).
Collaboration	The home visitor supports the parent(s) in the teaching role during the home visit without interrupting the parent(s) (Roggman et al., 2012).
Parenting self-efficacy (PSE)	PSE is parent competence, or a parent's belief in one's ability to make a desirable impact on a child's learning and development (Bandura, 1997).
Parent involvement	Parent involvement is conceptualized as an outcome of home visiting, and includes parent behaviors that directly engage children in learning activities and provide for children's basic needs and resources necessary for educational achievement (Fantuzzo et al., 2000).

*Figure 1.* Glossary of terms to define central study constructs.



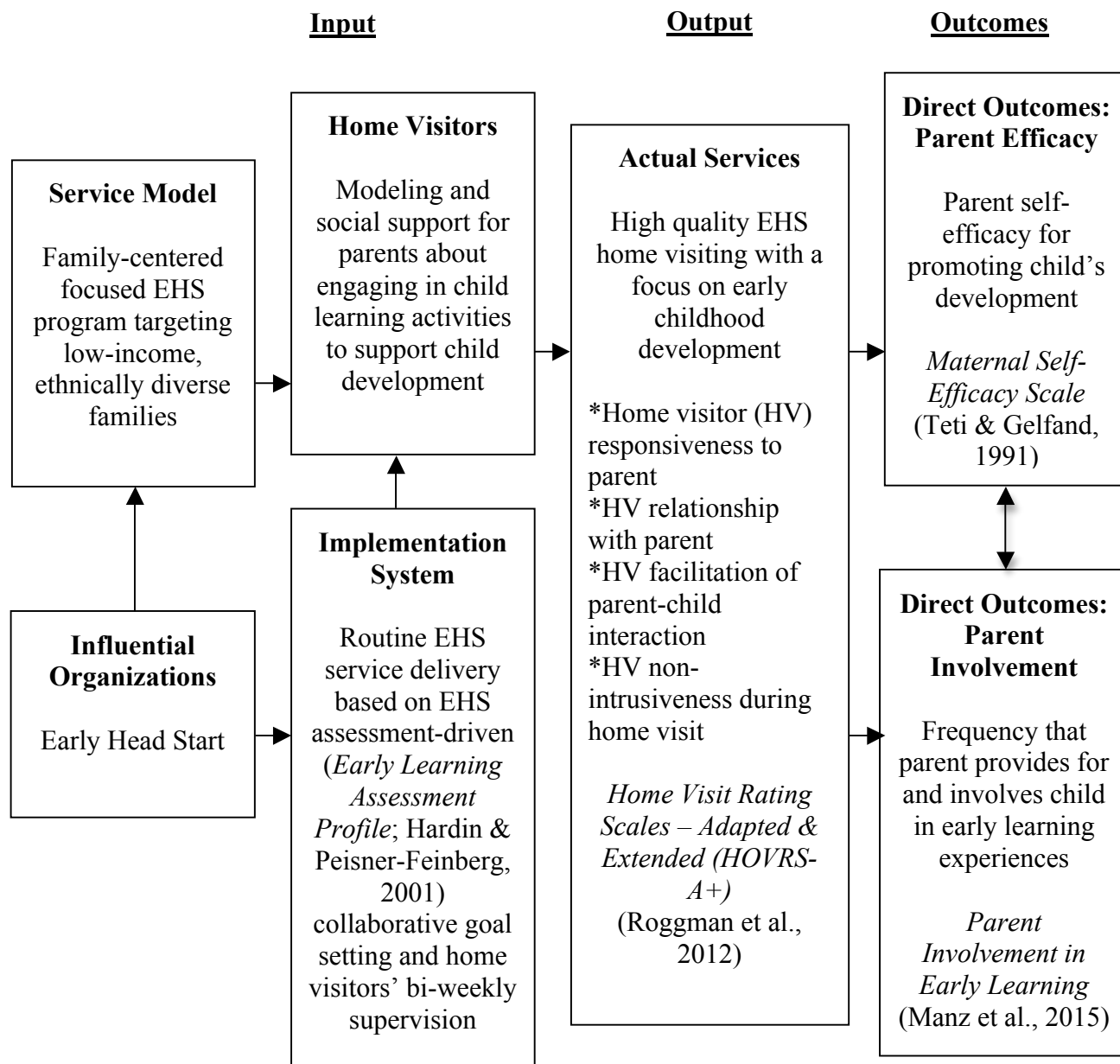
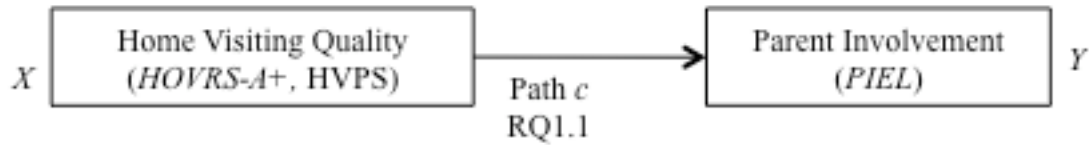


Figure 2. Home visiting quality logic model and interrelationships among variables. Logic model based on Duggan and Supplee (2012).

Research Question (RQ) 1.1: Total Effect from Home Visiting Quality to Parent Involvement



RQ1.2, RQ1.3, RQ1.4: Mediation by Parenting Self-Efficacy

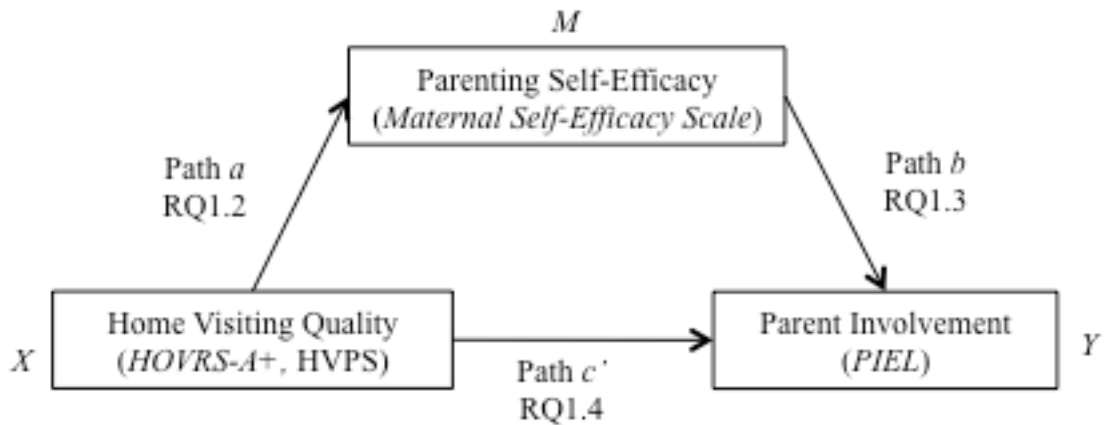


Figure 3. Mediation Model 1 diagram. Demonstrates examination of the total predictive relationship (Path *c*) and the direct effect (Path *c'*) between home visiting quality (Home Visit Rating Scales – Adapted and Extended [HOVRS-A+] Home Visit Practice Scales [HVPS] scale; Roggman et al., 2012) and parent involvement (Parent Involvement in Early Learning scale [PIEL]; Manz et al., 2015), with and without the mediator (parenting self-efficacy; Maternal Self-Efficacy Scale; Teti & Gelfand, 1991) included in the model. Each research question in the first set of research questions is aligned with a path in the model.

Research Question (RQ) 2.1: Total Effect from Home Visiting Quality to Parenting Self-Efficacy



RQ2.2, RQ2.3, RQ2.4: Mediation by Parent Involvement

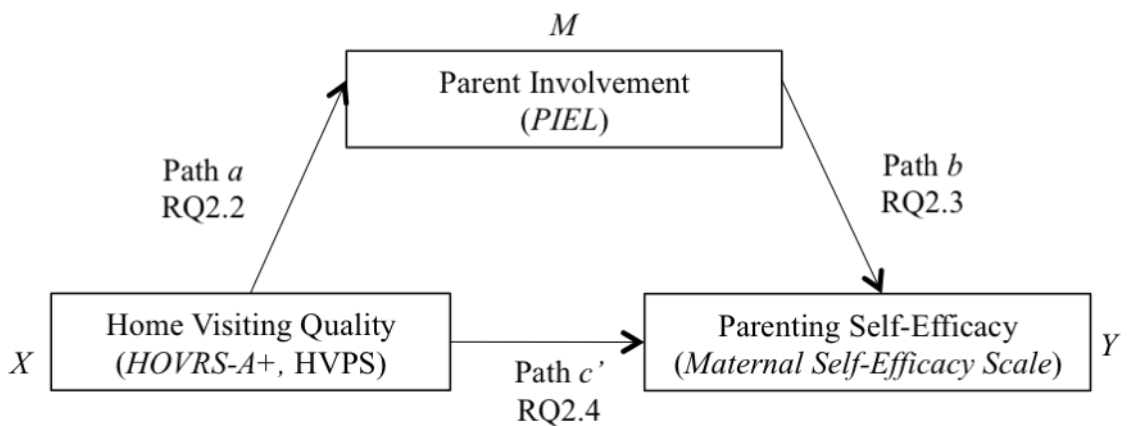


Figure 4. Mediation Model 2 diagram. Demonstrates examination of the total predictive relationship (Path  $c$ ) and the direct effect (Path  $c'$ ) between home visiting quality (Home Visit Rating Scales – Adapted and Extended [HOVRS-A+] Home Visit Practice Scales [HVPS] scale; Roggman et al., 2012) and parenting self-efficacy (Maternal Self-Efficacy Scale; Teti & Gelfand, 1991), with and without the mediator (parent involvement; Parent Involvement in Early Learning scale [PIEL]; Manz et al., 2015) included in the model. Each research question in the second set of research questions is aligned with a path in the model.

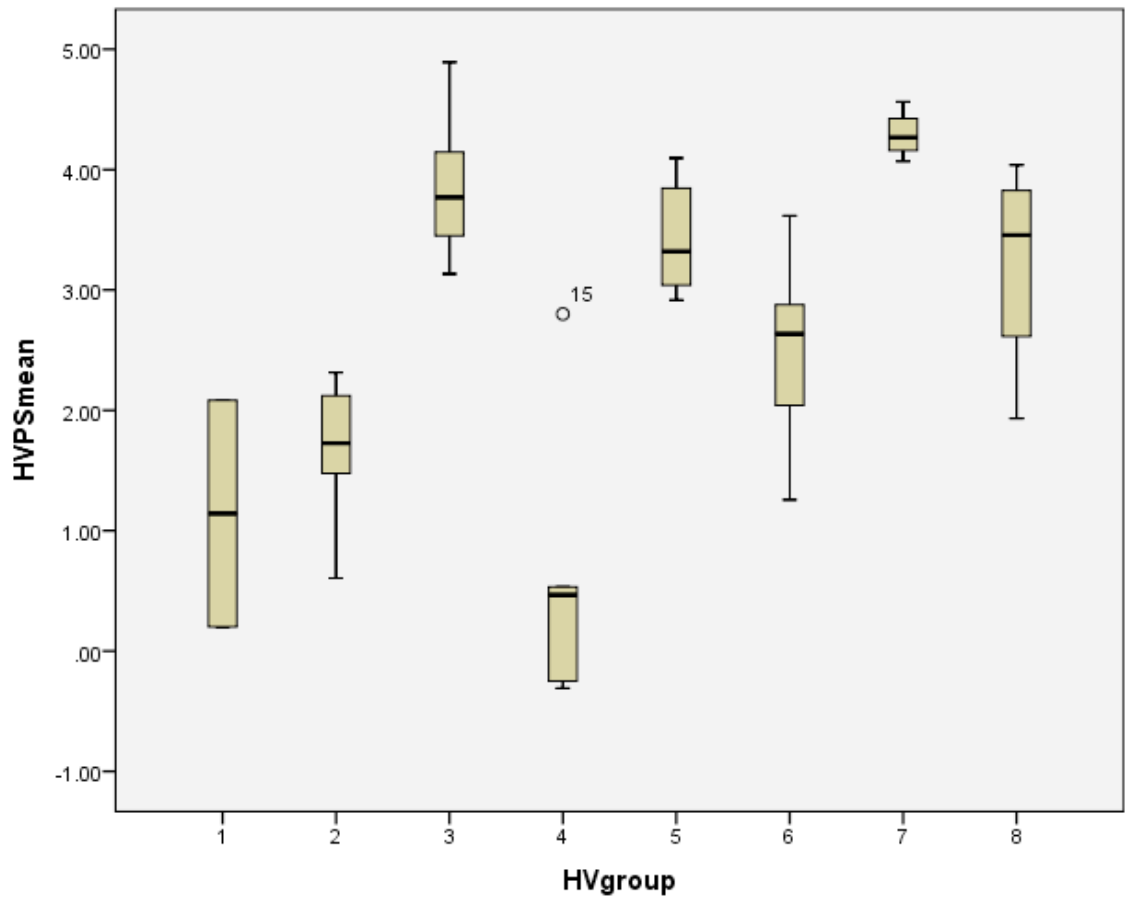
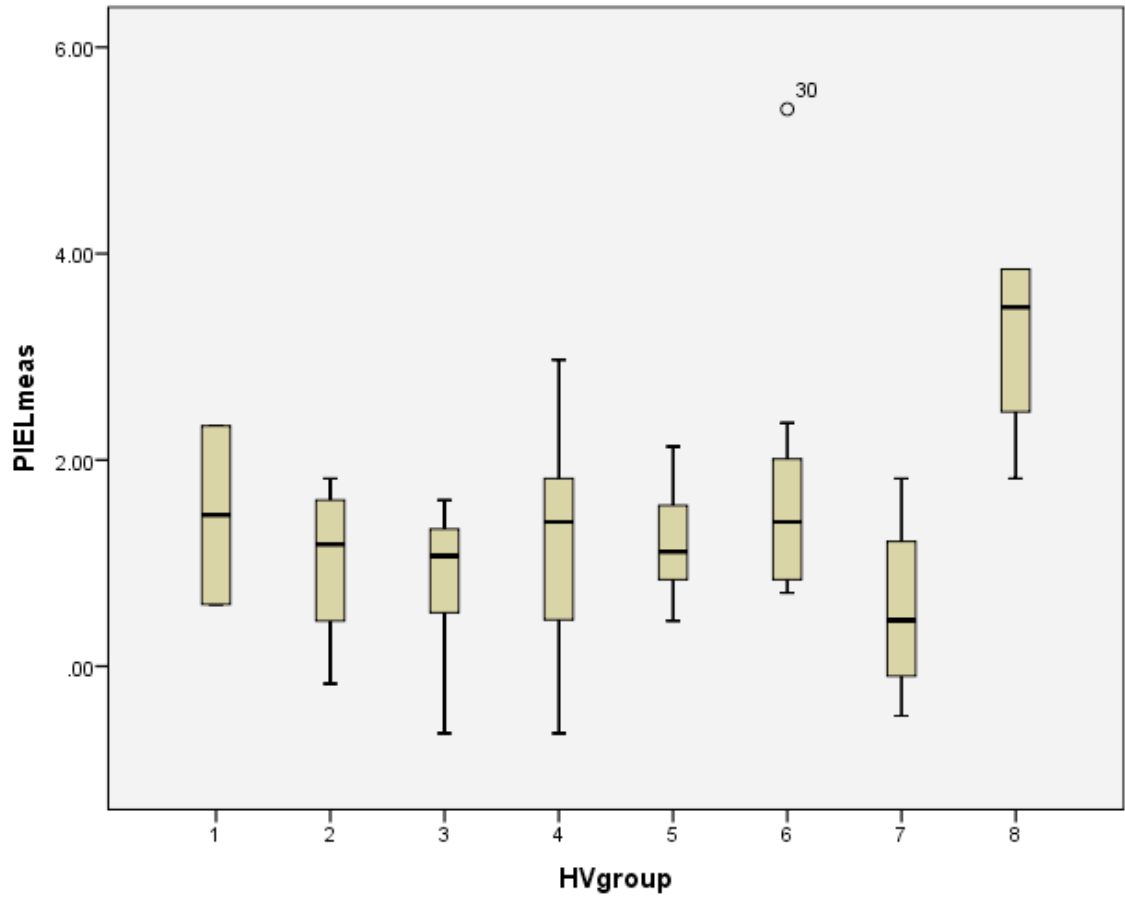
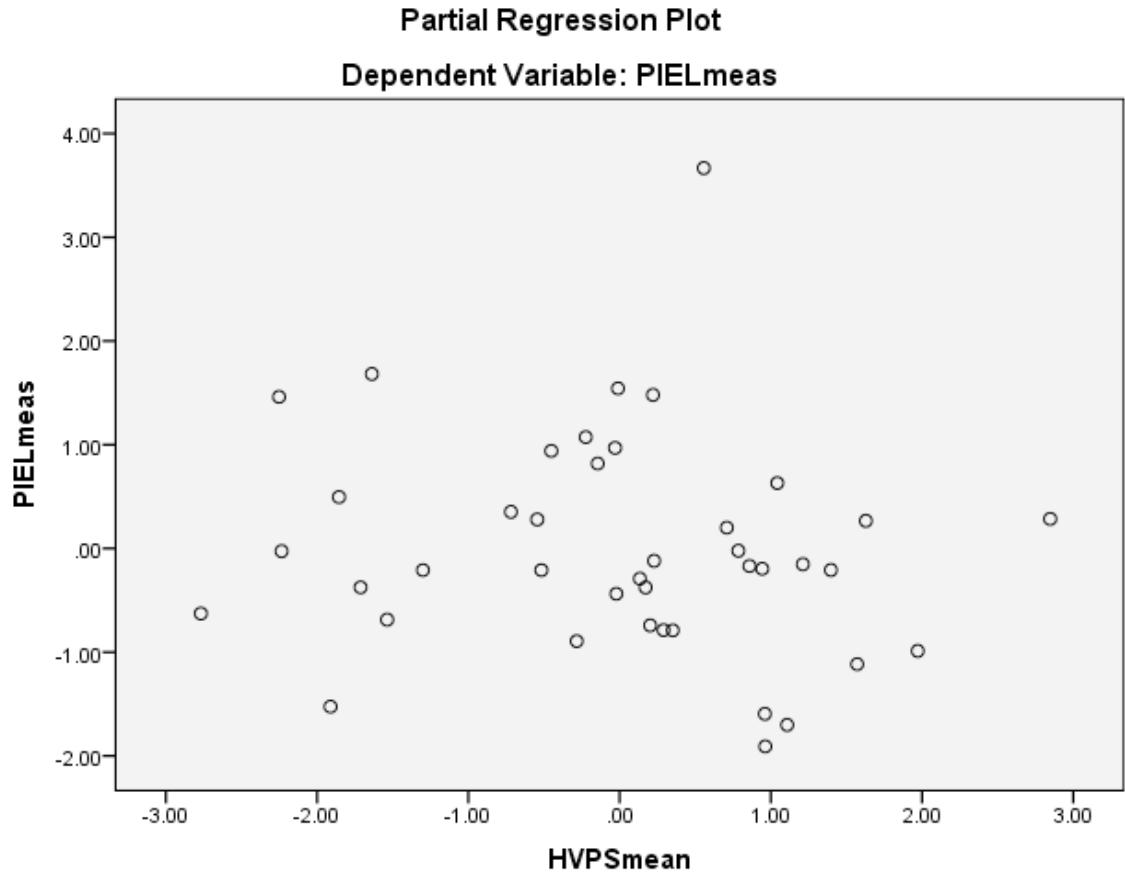


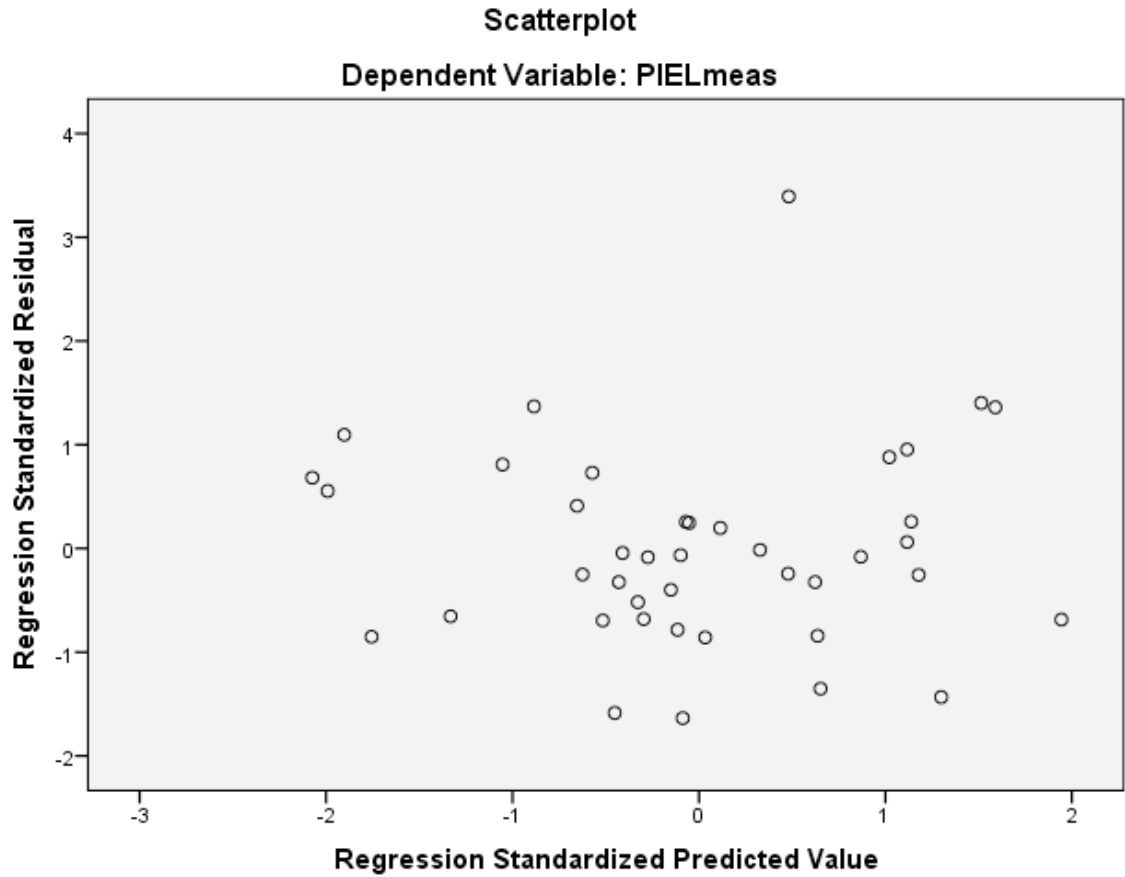
Figure 5. Intra-class correlation boxplots displaying the distribution of Home Visit Rating Scales – Adapted and Extended, Home Visit Practice Scales (HOVRS-A+, HVPS; Roggman et al., 2012) scores by home visitor assignment groupings.



*Figure 6.* Intra-class correlation boxplots displaying the distribution of Parent Involvement in Early Learning (PIEL; Manz et al., 2015) scale scores by home visitor assignment groupings.



*Figure 7.* Normal probability plot between Home Visit Rating Scales – Adapted and Extended, Home Visit Practice Scales (HOVRS-A+, HVPS; Roggman et al., 2012) scores and Parent Involvement in Early Learning (PIEL; Manz et al., 2015) scores.



*Figure 8.* Standardized residual plot between standardized predictor Home Visit Rating Scales – Adapted and Extended, Home Visit Practice Scales (HOVRS-A+, HVPS; Roggman et al., 2012) scores and Parent Involvement in Early Learning (PIEL; Manz et al., 2015) as an outcome variable.

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## Appendix A

### Home Visitor Consent (Group 1 of Larger Study)



## Little Talks

### ***Parents & children talking, reading, and having fun together!***

*A new program created in partnership with Community Services for Children, Inc., Early Head Start, Lehigh University, Children's Hospital of Philadelphia, and Utah State University*

October 2013

Dear Early Head Start Child Development Partner:

I am working with your Early Head Start program to enhance home visiting services. We will be looking at different ways to provide home visits to see how to best support Early Head Start families and their children. In this letter, I am asking you to assist us in seeing if a new component of the child-development focus of Early Head Start, referred to as Little Talks, is helpful for families and home visitors. Little Talks is a program that we will develop in collaboration with Dr. Lori Roggman from Utah State University and Dr. Tom Power from Children's Hospital of Philadelphia (CHOP).

Little Talks is a program to guide parents in sharing books and talking with their infants and toddlers. Little Talks is a 6-month program, during this time you will spend about 30 minutes of your regular home visit providing Little Talks lessons and support to families. We will be instructing and supervising you in this program. You will participate in about four hours of training before starting Little Talks with your families. Once started, a member of our Little Talks team will meet with you every other week during to provide ongoing training and support for you.

In addition to providing Little Talks to the families you serve, we are asking that you collect information so that we may see if the program is helping them and enhancing your home visiting experience. We are asking you to collect information about the children's communication and language skills, parent-child interaction, and parenting stress. The Little Talks team will provide you with training and materials. You will collect this information four times over the next six months. Here is how:

*Children's Communication and Language:* Videotape you and the child while playing together for 6 minutes. We will provide training for the specific ways in which you can play with the child to bring out his/her language skills. These videos will be watched by members of our team to note the child's communication skills through gesturing, babbling, and talking.

*Parent-Child Interaction:* To look at the ways in which parents teach and interact with their child, we would like you video tape the parent and child together for about 10 minutes during a home visit. These videos will be watched by members of our team who will note the different ways in which parents and children interact.

*Parenting perceptions:* You will ask parents to complete a brief questionnaire about how competent they feel about parenting their young child. You will also ask the parent to complete a questionnaire about how they generally feel. We are asking for this measure as when parents are sad or stressed it often can affect the way in which they interact with their child and their children's language development.

In addition, to collecting information from families, we would like to ask your participation in collecting information from home visits, with these assessments also taking place four times during the next six months.. We are asking you to video tape 30 minutes of your home visit, when you are discussing topics related to your child's growth and development. These videos will be watched by our team, and sometimes shared with you and your Early Head Start supervisor during supervision. The purpose of sharing the videos during supervision is to provide suggestions for enhancing home visiting services. We also will provide you with Little Talks checklists so that you can indicate your completion of major steps of the sessions. Lastly, we will periodically review your files on participating families to collect information on collaborative goal setting during home visits.

All of the information described above will be confidential, except as specified by law (e.g., report of harm to yourself or others). You will not put any identifying information on the forms and video tapes will be destroyed at the end of this program's evaluation. The video tapes and home visiting checklists will be used to enhance supervision. They may be shared with you and your supervisor, during supervision only. Otherwise, the video tapes will always be stored in a locked file cabinet at Lehigh University. Only members of the Little Talk team will have access to your information or the videos.

We do not anticipate that these assessments pose serious risks to you. Your participation is voluntary. If you wish, you can decline an assessment procedure or stop your participation at any time, without harming your relationship with Community Services for Children, Inc., or with Lehigh University.

If at any time, you have concerns or questions about the assessments you can talk to your home visitor or contact me at 610-758-5656 or [phm3@lehigh.edu](mailto:phm3@lehigh.edu). You may also contact Susan Disidore in the Office of Research at Lehigh University at 610-758- 3020.

To participate, please sign this form below. You will receive a copy of this letter.

Thank you for considering my invitation to participate in our evaluation of Early Head Start home visiting.

Sincerely,  
Patti Manz, Ph.D.  
Associate Professor & Director of School Psychology

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I would like to participate in the evaluation of Early Head Start. I understand that I will collect information from the parents to whom I provide home visiting. As part of the assessments, I will video tape four 30-minute portions of the home visits, when I am discussing child development topics with my families. I will also video four 10-minute segments when parents and children are interacting during the home visits. Lastly, I will video tape myself playing with the children for 6 minutes, four times during the program. I understand that the information and video tapes will be shared among the Little Talks Team, which includes Drs. Manz, Roggman and Power. I also understand that the video tapes and home visiting checklists may be used in my supervision. I feel that the activities of this study were fully explained to me and I had the opportunity to ask questions.

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Printed name

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Signature



## Appendix B

### Home Visitor Consent (Group 2 of Larger Study)



### *Building Children's Communication & Language Skills:*

### *A Partnership with the Little Talks Program of Lehigh University*

October 2013

Dear Early Head Start Child Development Partner:

I am working with your Early Head Start program to look at ways that home visitors can best support families and their children. Along with staff from Early Head Start, I will be introducing a new program called Little Talks, to Early Head Start families. I am asking you to participate in a program evaluation, before you begin Little Talks, so that we can see how it helps children grow in their language and communication. Please know that the Little Talks' team includes Dr. Tom Power from Children's Hospital of Philadelphia (CHOP) and Dr. Lori Roggman from Utah State University.

Your participation will involve the collection of information from the families you serve as well as providing your perspective of the home visiting experience. I am asking you to collect information about the children's communication and language skills, parent-child interaction, and parenting stress. The Little Talks team will provide you with training and materials. You will collect this information four times over the next six months. Here is how:

*Children's Communication and Language:* Videotape you and the child while playing together for 6 minutes. We will provide training for the specific ways in which you can play with the child to bring out his/her language skills. These videos will be watched by members of our team to note the child's communication skills through gesturing, babbling, and talking.

*Parent-Child Interaction:* To look at the ways in which parents teach and interact with their child, we would like you video tape the parent and child together for about 10 minutes during a home visit. These videos will be watched by members of our team who will note the different ways in which parents and children interact.

*Parenting perceptions:* You will ask parents to complete a brief questionnaire about how competent they feel about parenting their young child. You will also

ask the parent to complete a questionnaire about how she/he generally feels. We are asking for this measure as when parents are sad or stressed it often can affect the way in which they interact with their child and their children's language development.

In addition, to collecting information from families, we would like to ask your participation in collecting information from home visits, with these assessments also taking place four times during the next six months. We are asking you to video tape 30-minutes of your home visit, when you are discussing topics related to your child's growth and development. These videos will be watched by our team to see how home visitors and families interact together. Lastly, we will periodically review files on participating families to collect information on collaborative goal setting during home visits.

All of the information described above will be confidential, except as specified by law (e.g., report of harm to yourself or others). You will not put any identifying information on the forms and video tapes will be destroyed at the end of this program's evaluation. Only members of the Little Talks team will have access to your information or watch the video clips from the home visits. We will not share information about you as an individual with Early Head Start administration or staff.

We do not anticipate that these assessments pose serious risks to you. Your participation is voluntary. If you wish, you can decline an assessment procedure or stop your participation at any time, without harming your relationship with Community Services for Children, Inc., or with Lehigh University.

If at any time, you have concerns or questions about the assessments you can talk to your home visitor or contact me at 610-758-5656 or [p hm3@lehigh.edu](mailto:p hm3@lehigh.edu). You may also contact Susan Disidore in the Office of Research at Lehigh University at 610-758- 3020.

To participate, please sign this form below. You will receive a copy of this letter.

Thank you for considering my invitation to participate in our evaluation of Early Head Start home visiting.

Sincerely,  
Patti Manz, Ph.D.  
Associate Professor & Director of School Psychology

---

I would like to participate in the evaluation of Early Head Start. I understand that I will collect information from the parents to whom I provide home visiting services. As part of the assessments, I will video tape four 30-minute portions of the home visits, when I am discussing child development topics with my families. I will also video four 10-minute segments when parents and children are interacting during the home visits. Lastly, I'll video tape my play with the children for 6 minutes, 4 times during this program. I understand that the information and video tapes will be shared among the Little Talks

Team, which includes Drs. Manz, Roggman and Power. I feel that the activities of this study were fully explained to me and I had the opportunity to ask questions.

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Printed name

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Signature

## Appendix C

### Parent Consent (English, Group 1 of Larger Study)

# Little Talks



## ***Parents & children talking, reading, and having fun together!***

*A new program created in partnership with Community Services for Children, Inc., Early Head Start, Lehigh University, Children's Hospital of Philadelphia, and Utah State University*

Dear Early Head Start Parent/Guardian:

I am working with your Early Head Start program to provide a program which guides parents in sharing books and talking with their infants and toddlers. This program is called, *Little Talks*, and it is being developed with Dr. Lori Roggman from Utah State University, and Dr. Tom Power from Children's Hospital of Philadelphia (CHOP).

Members of the Little Talks team, who are supervised by me, will be teaching your home visitor about Little Talks, so that your home visitor can guide you in using Little Talks with your child. Your home visitor will receive training and supervision in providing Little Talks. Your home visitor will provide 30-minute Little Talks lessons during home visits for about six months.

The Early Head Start staff and I would like to see if including Little Talks in home visiting is beneficial for you and your child. We believe that Little Talks will give parents ideas for how to talk to and teach their infant and toddler. We also believe that children will gain strong language skills, which will help them learn to read and get ready for school. We expect that parents will experience greater confidence in parenting and that they will become more involved in learning activities with their children. We expect parents to have these benefits, even if they are experiencing sadness and stress.

We would like to see if Little Talks is helpful for you and your child. We are asking for your permission to assess your child, to video tape parts of home visits, and for you to complete questionnaires about parenting. We would do the assessments four times during the 6-month Little Talks program. Here is how we will do the assessments:

Your home visitor will play with your child in a way that encourages your child's communication skills, like talking, babbling, and pointing. She will video tape her play with your child. The Little Talks team will watch the tapes and note how your child communicates.

To look at the ways in which you teach and interact with your child, your home visitor will video tape you and your child together for about 10 minutes. These videos will be watched by members of the Little Talks team who will note the different ways in which you interact with and teach your child.

We will also ask you to complete a questionnaire about the ways in which you are involved in your child's learning activities at home. We will also ask you to complete questionnaires about how you generally feel and also how you feel about your parenting skills.

Your home visitor will also ask you about the books in your home and what you like or do not like about the books you read with your child. This will let us plan what books are most liked by families and children.

For each of the four assessments, we will provide \$30 to thank you for your time. During the 6-month Little Talks program, you could receive \$120 for completing all assessments.

We would also like to see if Little Talks improves Early Head Start home visiting services. Four times during the 6-month Little Talks program, your home visitor will video tape the Little Talks lesson. These videos will be watched by the Little Talks team, who will note the ways in which your home visitor teaches you Little Talks. In addition, portions of the videos may be used during our supervision with your home visitor to enhance home visiting services. The videotapes will always be stored in a locked file cabinet at Lehigh University. Lastly, we will review your home visitors' notes about the Little Talks and child development or parenting goals. We will note the number of home visits you have completed and how long your child has been enrolled in Early Head Start.

All of the information described above will be confidential, except as specified by law (e.g., report of harm to yourself or others). Any identifying information on the forms will be removed and video tapes will be destroyed at the end of this program's evaluation. Only members of the Little Talks team will have access to your information. We will not share your personal responses to the parenting questionnaires with the Early Head Start program. We will share information about your child's communication skills with the program staff to improve home visiting services. We will also share portions of the videos with your home visitor and her supervisor to improve home visiting services. We will write reports based on information collected for the whole program; you will not be personally identified.

Your participation in this study is voluntary. You may stop your participation at any time without jeopardizing your relationship with Community Services for Children, Inc. or Lehigh University. We don't feel that your participation in the assessments presents serious risks to you or your child.

If at any time, you have concerns or questions about the assessments you can talk to your home visitor or contact me at 610-758-5656 or [p hm3@lehigh.edu](mailto:p hm3@lehigh.edu). You may also contact Susan Disidore in the Office of Research at Lehigh University at 610-758- 3020.

To participate, please sign this form below. You will receive a copy of this letter.

Thank you for considering my invitation to participate in our evaluation of Little Talks.

Sincerely,

Patti Manz, Ph.D.

Associate Professor at Lehigh University and Director of Little Talks

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I would like to participate in the evaluation of Little Talks. I understand that I will complete four assessments during the 6-month program. As part of the assessments, my home visitor will video tape four Little Talks lessons, her play with my child, and times when I am together with my child. I understand that the information I provide on parenting questionnaires, my child's language assessments, and the video tapes will be shared among the Little Talks team, which includes Drs. Manz, Roggman, and Power. I also understand that my child's language assessments and video tapes may be shared with my home visitor during her supervision. I feel that the activities of this study were fully explained to me and I had the opportunity to ask questions.

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Printed name

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Signature

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Relationship to Early Head Start child

## Appendix D

### Parent Consent (Spanish, Group 1 of Larger Study)

# Pequeñas Conversaciones



## *¡Padres y niños hablando, leyendo y divirtiéndose juntos!*

*Un nuevo programa creado en colaboración con Community Services for Children, Inc., Early Head Start, Lehigh University, Children's Hospital of Philadelphia y Utah State University*

Querido Early Head Start Padre/Guardián:

Estoy trabajando con su programa de Early Head Start para ofrecer un programa que sirve de guía a los padres para compartir libros y hablando con sus bebés y niños pequeños. Este programa se llama Pequeñas Conversaciones y se está desarrollando con Dra. Lori Roggman de Utah State University y Dr. Tom Power del Children's Hospital of Philadelphia (CHOP).

Miembros del equipo de Pequeñas Conversaciones, que son supervisados por mí, estarán enseñando al visitante domiciliario sobre Pequeñas Conversaciones, para que su ella pueda guiarle en el uso de Pequeñas Conversaciones con su hijo. Su visitante domiciliario recibirá entrenamiento y supervisión para proporcionar de Pequeñas Conversaciones. Su visitante domiciliario proporcionará lecciones de 30 minutos de Pequeñas Conversaciones durante las visitas domiciliarias por unos seis meses.

Los empleados de Early Head Start y yo nos gustaría ver si incluyendo Pequeñas Conversaciones en visitas domiciliarias es beneficioso para usted y su niño. Creemos que Pequeñas Conversaciones darán ideas a los padres sobre cómo hablar y enseñar a sus bebés y niños pequeños. También creemos que niños ganarán fuertes habilidades de lenguaje, que les ayuden a aprender y prepararse para la escuela. Esperamos que los padres experimentaran más confianza en la crianza de sus hijos y que ellos participarán más en las actividades de aprendizaje de los mismos. Esperamos que los padres tengan estos beneficios, aun si están experimentando la tristeza y el estrés.

Nos gustaría ver si Pequeñas Conversaciones es útil para usted y su niño. Estamos pidiendo su permiso para evaluar a su niño, grabar en vídeo partes de las visitas a

domicilio y para que usted llene cuestionarios sobre la paternidad. Haremos las evaluaciones en cuatro ocasiones durante el programa de 6 meses de Pequeñas Conversaciones. Así es como vamos a realizar las evaluaciones:

Su visitante domiciliaria jugará con su hijo de una manera que aliente las habilidades de comunicación de su hijo como hablar, balbucear y señalar. Ella se grabará en vídeo jugando con su hijo. El equipo de Pequeñas Conversaciones mirará las cintas y observarán cómo se comunica su hijo.

Para mirar las maneras en que usted enseña y se relaciona con su hijo, su visitadora domiciliaria la grabará en vídeo con su hijo por unos 10 minutos. Estos vídeos serán vistos por miembros del equipo de Pequeñas Conversaciones, quiénes tomarán nota de las diferentes maneras en que usted interactúa y enseña a su hijo.

También le pediremos que usted llene el cuestionario sobre de las maneras en que usted está involucrado en las actividades de aprendizaje de su hijo en casa. También le pediremos que llene cuestionarios sobre cómo se siente en general y también de como se siente sobre sus habilidades como padre/madre.

Su visitadora domiciliaria también le preguntará sobre los libros en su casa y lo que le gusta o no le gusta de los libros que lee con su hijo. Esto nos permitirá planear que libros les gusta mas a las familias y los niños.

Para cada una de las cuatro evaluaciones, le proporcionaremos \$30 para darle las gracias por su tiempo. Durante el programa de 6 meses para Pequeñas Conversaciones, podría recibir \$120 para completar todas las evaluaciones.

También, nos gustaría ver si Pequeñas Conversaciones mejora los servicios de visitas domiciliarias de Early Head Start. Cuatro veces durante el programa de 6 meses de Pequeñas Conversaciones, su visitadora domiciliaria grabará vídeo de la lección de Pequeñas Conversaciones. El equipo de Pequeñas Conversaciones mirará estos vídeos teniendo en cuenta las maneras en que la visitadora domiciliaria le enseña Pequeñas Conversaciones. Además, partes de los vídeos se pueden usar durante nuestra supervisión con la visitadora domiciliaria para mejorar los servicios de visitas domiciliarias. Las cintas de vídeo siempre se guardan en un archivo bajo llave en Lehigh University. Por último, vamos a examinar las notas de sus visitadoras domiciliarias sobre Pequeñas Conversaciones y los objetivos de desarrollo o paternidad. Notaremos el número de visitas domiciliarias que haya completado y el tiempo que su hijo ha sido inscrito en Early Head Start.

Toda la información descrita anteriormente será confidencial, excepto según lo especificado por la ley (por ejemplo, el informe de daño a sí mismo o a otros). Cualquier



información de identificación en los formularios será eliminado y cintas de vídeo será destruido al final de la evaluación de este programa. Solo miembros del equipo de Pequeñas Conversaciones tendrán acceso a su información. No compartiremos sus respuestas personales a los cuestionarios de los padres con el programa de Early Head Start. Compartiremos información sobre las habilidades de comunicación del niño con el personal del programa para mejorar los servicios de visitas domiciliarias. También, compartiremos porciones de los vídeos con su visitadora domiciliaria y su supervisor para mejorar los servicios de visitas domiciliarias. Escribiremos informes basados en la información recogida durante todo el programa. Usted no será identificado personalmente.

Su participación en este estudio es voluntaria. Puede dejar de participar en cualquier momento y sin poner en peligro su relación con Community Services for Children, Inc. o Lehigh University. No creemos que su participación en las evaluaciones presente graves riesgos para usted o su niño.

Si en algún momento, usted tiene preocupaciones o preguntas sobre las evaluaciones, puede hablar con su visitadora domiciliaria o comunicándose conmigo al 610-758-5656 o [phm3@lehigh.edu](mailto:phm3@lehigh.edu). También puede comunicarse con Susan Disidore en la Oficina de Investigación de Lehigh University al 610-758- 3020.

Para participar, por favor firme este formulario. Usted recibirá una copia de esta carta.

Gracias por considerar mi invitación a participar en nuestra evaluación de Pequeñas Conversaciones. Thank you for considering my invitation to participate in our evaluation of Little Talks.

Sinceramente,

Patti Manz, Ph.D.

Profesor Asociado en Lehigh University y Director de Pequeñas Conversaciones

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Me gustaría participar en la evaluación de Pequeñas Conversaciones. Entiendo que completaré cuatro evaluaciones durante el programa de 6 meses. Como parte de las evaluaciones, mi visitadora domiciliaria grabará en video cuatro lecciones de Pequeñas Conversaciones, ella jugando con mi hijo, y momentos en los que estoy con mi hijo. Entiendo que la información que proporciono en cuestionarios para padres, evaluaciones de lenguaje de mi hijo y las Cintas de video será compartida entre el equipo Pequeñas Conversaciones, que incluye a los Dres. Manz, Roggman y Power. También entiendo que las evaluaciones de lenguaje de mi hijo y cintas de vídeo pueden ser compartidos con mi visitadora domiciliaria durante su supervisión. Siento que las actividades de este estudio se me fueron completamente explicadas y tuve la oportunidad de hacer preguntas.

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Nombre escrito

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Firma

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Relación con el niño de Early Head Start

## Appendix E

### Parent Consent (English, Group 2 of Larger Study)



### Building Children's Communication & Language Skills: A Partnership with the Little Talks Program of Lehigh University

November, 2013

Dear Early Head Start Parent/Guardian:

I am working with your Early Head Start program to look at ways that home visitors can best support families and their children. Early Head Start and I will also introduce a new program, called Little Talks, to Early Head Start families. I am asking you to participate in a program evaluation, before you begin Little Talks, so that we can see how it helps children grow in their language and communication. Please know that the Little Talks' team includes Dr. Tom Power from Children's Hospital of Philadelphia and Dr. Lori Roggman from Utah State University.

I am asking for your permission to assess your child, to video tape parts of home visits, and for you to complete questionnaires about parenting. The assessments will be done four times during the next six months. Here is how the assessments will be done:

Your home visitor will play with your child in a way that encourages your child's communication skills, like talking, babbling, and pointing. She will video tape her play with your child. The Little Talks team will watch the tapes and note how your child communicates.

To look at the ways in which you teach and interact with your child, your home visitor will video tape you and your child together for about 10 minutes. These videos will be watched by members of the Little Talks team who will note the different ways in which you interact with and teach your child.

We will also ask you to complete a questionnaire about the ways in which you are involved in your child's learning activities at home. We will also ask you to complete questionnaires about how you generally feel and also how you feel about your parenting skills.

Four times over the next six months, your home visitor will video tape a time when the two of you are talking about your child's development. These videos will be watched by the by the University team, who will note the ways in which your home visitor teaches you about children's development. The videotapes will always be stored in a locked file cabinet at Lehigh University. Lastly, we will review your home visitors' notes about the child development or parenting goals discussed in home visits. We will note the number of home visits you have completed and how long your child has been enrolled in Early Head Start.

For each of the four assessments, we will provide \$30 to thank you for your time. You could receive \$120 for completing all assessments over the next 6 months.

All of the information described above will be confidential, except as specified by law (e.g., report of harm to yourself or others). Any identifying information on the forms will be removed and video tapes will be destroyed at the end of this program's evaluation. Only members of the University team will have access to your information. We will not share your personal responses to the parenting questionnaires with the Early Head Start program. We may share information about your child's communication skills with the program staff to improve home visiting services. We may also share portions of the videos with your home visitor and her supervisor to improve home visiting services. We will write reports based on information collected for the whole program; you will not be personally identified.

Your participation in this study is voluntary. You may stop your participation at any time without jeopardizing your relationship with Community Services for Children, Inc. or Lehigh University. We don't feel that your participation in the assessments presents serious risks to you or your child.

If at any time, you have concerns or questions about the assessments you can talk to your home visitor or contact me at 610-758-5656 or phm3@lehigh.edu. You may also contact Susan Disidore in the Office of Research at Lehigh University at 610-758- 3020.

To participate, please sign this form below. You will receive a copy of this letter.

Thank you for considering my invitation to participate in our evaluation.

Sincerely,

Patti Manz, Ph.D.

Associate Professor at Lehigh University and Director of Little Talks

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I would like to participate in the evaluation. I understand that I will complete four assessments during the next six months. As part of the assessments, my home visitor

will video tape four child development lessons, her play with my child, and times when I am together with my child. I understand that the information I provide on parenting questionnaires, my child's language assessments, and the video tapes will be shared among the University team, which includes Drs. Manz, Roggman, and Power. I feel that the activities of this study were fully explained to me and I had the opportunity to ask questions.

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Printed name

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Signature

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Relationship to Early Head Start child

## Appendix F

### Parent Consent (Spanish, Group 2 of Larger Study)



### Construcción de las habilidades de comunicación y lenguaje de los niños: Una colaboración con el programa de Pequeñas Conversaciones de Lehigh University

Noviembre 2013

Querido Early Head Start Padre/Guardián:

Estoy trabajando con su programa de Early Head Start para buscar la manera de que las visitadoras domiciliarias pueden mejor apoyar a las familias y sus hijos. También Early Head Start y yo introduciremos un nuevo programa, llama de Pequeñas Conversaciones, a las familias de Early Head Start. Le pido su participación en una evaluación del programa, antes de empezar Pequeñas Conversaciones, para que podamos ver cómo se ayuda a los niños a crecer su lenguaje y la comunicación. Por favor, sepan que el equipo de Pequeñas Conversaciones incluye al Dr. Tom Power del Children's Hospital of Philadelphia (CHOP) y la Dra. Lori Roggman de Utah State University.

Estamos pidiendo su permiso para evaluar a su niño, grabar en vídeo partes de las visitas a domicilio y para que usted llenará cuestionarios sobre la paternidad. Haríamos las evaluaciones en cuatro ocasiones durante el programa de los próximos 6 meses. Aquí es cómo vamos hacer las evaluaciones:

Su visitante domiciliaria jugará con su hijo de una manera que alienta a las habilidades de comunicación de su hijo como hablar, balbuceando y señalando. Ella se grabará en vídeo su juego con su hijo. El equipo de Pequeñas Conversaciones mirará las cintas y observar cómo se comunica su hijo.

Para mirar las maneras en que usted enseña y relacionarse con su hijo, su visitadora domiciliaria grabará en vídeo que usted y su hijo juntos por unos 10 minutos. Estos vídeos serán mirados por miembros del equipo de Pequeñas Conversaciones, quién tomará nota las diferentes maneras en que usted interactúa y enseña a su hijo.

También le pediremos que usted llene el cuestionario sobre de las maneras en que usted está involucrado en actividades de aprendizaje de su hijo en casa.

También le pediremos que llene cuestionarios sobre cómo se siente en general y también como se siente sobre sus habilidades como padre.

Cuatro veces en los próximos seis meses, su visitadora domiciliaria grabará vídeo de un momento en que los dos están hablando sobre el desarrollo de su hijo. El equipo de la universidad mirará estos vídeos y se tenga en cuenta las maneras en que la visitadora domiciliaria le enseña del desarrollo de niños. Las cintas de vídeo siempre se guardan en un archivador bajo llave en Lehigh University. Por último, vamos a revisar las notas de sus visitadoras domiciliarias sobre los objetivos de desarrollo o paternidad discutidos en las visitas domiciliarias. Notaremos el número de visitas domiciliarias que haya completado y el tiempo que su hijo ha sido inscrito en Early Head Start.

Para cada una de las cuatro evaluaciones, le proporcionaremos \$30 para darle las gracias por su tiempo. Podría recibir \$120 para completar todas las evaluaciones en los próximos seis meses.

Toda la información descrita anteriormente será confidencial, excepto según lo especificado por la ley (por ejemplo, el informe de daño a sí mismo o a otros). Cualquier información de identificación en los formularios será eliminado y cintas de vídeo será destruido al final de la evaluación de este programa. Solo miembros del equipo de la universidad tendrán acceso a su información. No compartiremos sus respuestas personales a los cuestionarios de los padres con el programa de Early Head Start. Podemos compartir información sobre las habilidades de comunicación del niño con el personal del programa para mejorar los servicios de visitas domiciliarias. También, podemos compartir porciones de los vídeos con su visitadora domiciliaria y su supervisor para mejorar los servicios de visitas domiciliarias. Escribiremos informes basados en la información recogida durante todo el programa. Usted no será identificado personalmente.

Su participación en este estudio es voluntaria. Puede dejar de participar en cualquier momento y sin poner en peligro su relación con Community Services for Children, Inc. o Lehigh University. No creemos que su participación en las evaluaciones presente graves riesgos para usted o su niño.

Si en algún momento, usted tiene preocupaciones o preguntas sobre las evaluaciones, puede hablar con su visitadora domiciliaria o comuníquese conmigo al 610-758-5656 o [phm3@lehigh.edu](mailto:p hm3@lehigh.edu). También puede comunicarse con Susan Disidore en la Oficina de Investigación de Lehigh University en 610-758- 3020.

Para participar, por favor firme este formulario. Usted recibirá una copia de esta carta.

Gracias por considerar mi invitación a participar en nuestra evaluación de Pequeñas Conversaciones. Thank you for considering my invitation to participate in our evaluation of Little Talks.

Sinceramente,  
Patti Manz, Ph.D.  
Profesor Asociado en Lehigh University y Director de Pequeñas Conversaciones

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Me gustaría participar en la evaluación de Pequeñas Conversaciones. Entiendo que completaré cuatro evaluaciones en los próximos seis meses. Como parte de las evaluaciones, mi visitadora domiciliaria grabará en video cuatro lecciones de desarrollo de su hijo, su jugar con mi hijo, y momentos en los que estoy con mi hijo. Entiendo que la información que proporciono en cuestionarios para padres, evaluaciones de lenguaje de mi hijo y las Cintas de video será compartida entre el equipo Pequeñas Conversaciones, que incluye a los Dres. Manz, Roggman y Power. Siento que las actividades de este estudio fueron completamente explicadas a mí y tuce la oportunidad de hacer preguntas.

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Nombre escrito

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Firma

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Relación con el niño de Early Head Start





## Appendix H

### Parent Demographic Form (English)

Date: \_\_\_\_\_

Child Name \_\_\_\_\_

Parent Name \_\_\_\_\_

#### You and Your Child

Your relationship to child:  Mother  Father  Grandparent  Other relative

Foster parent

• Your gender  Male  Female

• Your birth date: \_\_\_ / \_\_\_ / \_\_\_

• Are you the child's primary caregiver?  Yes  No

• Do you live with the child?  Yes  No

• Number of years lived in the United States? \_\_\_\_\_

• If you were not born in the United States, in what country were you born? \_\_\_\_\_

• Your employment outside the home:  Full-time  Part time  Not employed

• Your marital status:  Married  Never married  Separated/Divorced

Widowed  Common law marriage

• Amount of schooling that you completed:  Less than 9<sup>th</sup> grade  Some high school, didn't finish  Received GED  High School Graduate  High school + some college or trade school  Four-year college degree  College +

• Your native language:  English  Spanish  Haitian-Creole  Russian  Arabic  Polish  Cambodian  Vietnamese  Laotian  Other \_\_\_\_\_

• Child's gender:  Male  Female

• Child's birth date: \_\_\_ / \_\_\_ / \_\_\_

• Child's ethnicity:  Spanish/Hispanic/Latino  Black/African-American  White

Asian  N. American Indian or Alaskan Native  Other: \_\_\_\_\_

*Next Page Please!*

- **If you identify as a certain nationality (e.g. Dominican, Haitian, etc.), please specify:**

\_\_\_\_\_

- **Child's native language:**  English  Spanish  Haitian-Creole  Russian  
 Arabic  Polish  Cambodian  Vietnamese  Laotian  Other \_\_\_\_\_
- **Does child participate in any other education or child care program?**  Yes  No
- **If yes, please list the name of the program:** \_\_\_\_\_
- **Has the child been diagnosed with special needs?**  Yes  No
- **If yes:**  Speech and language impairment  Developmental delay  Vision impairment  
 Hearing impairment  Chronic health impairment  Other \_\_\_\_\_
- **What language do you speak most often at the home?**  English  Spanish  
 Haitian-Creole  Russian  Arabic  Polish  Cambodian  
 Vietnamese  Laotian  Other \_\_\_\_\_

## Appendix I

### Parent Demographic Form (Spanish)

**Fecha:** \_\_\_\_\_

**Nombre del niño:** \_\_\_\_\_

**Nombre del padre:** \_\_\_\_\_

#### Usted y Su Niño

- **Su relación al niño**    Madre    Padre    Abuelo/Abuela    Otro pariente  
 Padre de crianza
- **Su sexo**    Masculino    Femenino
- **Su fecha de nacimiento:** \_\_\_\_ / \_\_\_\_ / \_\_\_\_
- **¿Ud. es el cuidador principal del niño?**    Sí    No
- **¿Ud. vive con el niño?**    Sí    No
- **¿Cuántos años Ud. vive en los Estados Unidos?** \_\_\_\_\_
- **Si usted no nació en los Estados Unidos, ¿en qué país nació?** \_\_\_\_\_
- **Su empleo fuera el hogar :**    De jornada completa    De media jornada    No empleado
- **Su estado civil:**    Casado    Nunca casado    Aparado/divorciado  
 Viudo    Unión de hecho
- **Cantidad de educación que Ud. completó:**    Menos de noveno grado    Algunos de secundaria, no terminé    Recibí Desarrollo Educativo General (El GED)    Graduado de escuela secundaria    Escuela secundaria + algunos de universidad o escuela vocacional  
 Título universitario de 4 años    Universidad +
- **Su lengua materna:**    Inglés    Español    Criollo-haitiano    Ruso  
 Árabe    Polaco    Camboyano    Vietnamita    Laosiano    Otra: \_\_\_\_\_
- **Sexo del niño:**    Masculino    Femenino
- **Fecha de nacimiento del niño:** \_\_\_\_ / \_\_\_\_ / \_\_\_\_

*¡La próxima pagina por favor!*

- **Raza del niño:**  Español/Hispano/Latino  Moreno/Afroamericano  Blanco  
 Asiático  Indo norteamericano o nativo de Alaska  Otra: \_\_\_\_\_
- **Si Ud. Se identifica como una determinada nacionalidad (por ejemplo, Dominicano, Haitiano, etc), por favor especifique:** \_\_\_\_\_
- **Lengua materna del niño:**  Inglés  Español  Criollo-haitiano  Ruso  
 Árabe  Polaco  Camboyano  Vietnamita  Laosiano  Otra: \_\_\_\_\_

❖ **¿El niño participa en cualquier otro programa de educación o programa de cuidado?**

- Sí  No

- **En caso afirmativo, indique el nombre del programa por favor:**

\_\_\_\_\_

❖ **¿El niño ha sido diagnosticado con necesidades especiales?**  Sí  No

- **En caso afirmativo:**  Impedimento del habla y lenguaje  
 Retraso en el desarrollo  La discapacidad visual  La discapacidad auditiva  
 Impedimento de la salud crónico  Otra \_\_\_\_\_

❖ **¿Qué lengua habla con más frecuencia en el hogar:**  Inglés  Español

- Criollo-haitiano  Ruso  Árabe  Polaco  Camboyano  
 Vietnamita  Laosiano  Otra: \_\_\_\_\_

## Appendix J

### Home Visit Rating Scales – Adapted and Extended (HOVRS-A+) Administration

#### Instructions

#### Video Assessment Guidelines

- The home visit video is a way for us to see how interactions happen during the home visit.

#### General instructions:

- Please complete the Video Tracking Sheet for each video.
- At the beginning of each video, please state the *child's ID number*.
- Keep recording for a few seconds past the time allotted. It can take a few seconds for the camera to start/stop when you push the record button.
- Sound: Make sure that the camera will pick up the voices of adults and the child.
  - Keep the camera at a close distance so that it will pick up the sound, but not so close that it is disruptive to the activity.
  - If possible, limit background noise, such as the TV or air conditioner, especially for the PICCOLO and ECI.
  - Encourage others to speak at a regular conversational volume.
- Visual: Make sure that the camera can see the adults and the child involved in each video measure.
  - Use the zoom on the camera as necessary to make sure you have a good view of faces (including the child) and of the surrounding area and activity space.
  - Align the camera so that faces will be pointed toward the camera. It is okay if only the sides of faces are visible, but the camera should not be pointed at the back of anyone's head.
  - Do not face the camera toward a light or sunny window.
- Siblings: If the child has a sibling who may be present at the time of a video assessment, you may want to bring another quiet activity that will engage that sibling. Contact the Little Talks team if you need any materials to provide to a sibling.

**Home visit video:**

Time: 30 minutes

Materials: video camera

Reminder:

- Please make sure that you, the parent, and the child are all able to be seen by the camera when possible.

Instructions:

- Record a 30-minute segment of the home visit that includes the child development part.
- You can pause the video if there are breaks in the home visit and resume recording once the visit continues.

## Appendix K

### Assessment Administration: Camera Instructions

#### Camera Directions

##### Operating the tripod:

- To open, pull legs out to appropriate height. Turn to the left to lock.
- To mount the camera on the tripod, find the small hole on the bottom of the camera (near the front). Line that up with the screw on the tripod platform. *The front of the camera should be in the direction of the arrow on the tripod platform.* Tighten using the knob underneath the platform.
- To adjust the camera on the tripod
- Up and down: Use the handle sticking out. Turn left to loosen, right to tighten.
- Left and right: Use the knob on the side. Turn left to loosen, right to tighten.
- To close the tripod, turn the legs to the right to unlock. As you push the legs back in, you might need to turn them a bit and use a little force.

##### Operating the camera:

- To turn on and off, open and close the LCD screen on the side.
- To open and close the lens cover, slide the switch next to the lens.
- To zoom in and out, use the switch on the top marked “W/T.” If you move toward the W, it zooms out. If you move toward the T, it zooms in. It focuses automatically.
- To start recording, push the red button on the back of the camera. Push it again to stop.




### **Charging the battery:**

- Open compartment marked DC on right side of camera. Connect power cord there to plug camera in.
- Battery is charging when red light is blinking. It is fully charged when the light goes out.

### **Switching the battery:**

- To remove, pull back the switch on the bottom of the camera marked “BATT.” Pull battery down.
- To replace, slide battery up until you hear click.
- *Note: If battery runs out, you can also plug camera in if you are close to a socket. Do not remove the battery while the camera is recording.*

### **Replacing the memory card:**

- Open compartment on bottom of camera marked .
- Push on memory card to release it.
- To replace, slide memory card into slot and close compartment.
- *Notes: Each 32 GB card should hold all three videos for five participating families.*

# RACHEL ARIANA EISENBERG

Lehigh University

rae209@lehigh.edu

## Education

### **Lehigh University, Bethlehem, PA—Ph.D. (Expected 2015)**

*School Psychology Program* (APA accredited - full, NASP approved - full)

*Specialization:* Pediatric School Psychology

*Dissertation:* Home Visiting Quality and Parent Involvement: Examining Mediation in Home Visiting

*Committee:* Patricia Manz, Ph.D. (chair), George DuPaul, Ph.D., Lori Roggman, Ph.D., & Brook Sawyer, Ph.D.

*GPA:* 4.0

### **Lehigh University, Bethlehem, PA—M.Ed. (September 2011)**

*Specialization:* Human Development

*Qualifying Research Project:* Shared Storybook Readings: Evaluating the Relationship Between Caregivers' Speech Acts and Toddlers' Language Outcomes

*Committee:* Patricia Manz, Ph.D., Ageliki Nicolopoulou, Ph.D., & Brenna Wood, Ph.D.

*GPA:* 4.0

### **Muhlenberg College, Allentown, PA—B.A., Summa Cum Laude (May 2008)**

*Major:* Psychology

*Minor:* Art

*Specialization:* Elementary Education (K-6) Teaching Certification

*GPA:* 3.98

## Honors, Scholarships, and Awards

National Psychologist Trainee Register Credentialing Scholarship (April 2014)

Lehigh University Fellowship for graduate studies (Fall 2009 – Summer 2010)

Salutatorian of Muhlenberg College graduating class (May 2008)

Phi Beta Kappa (Inducted: Fall 2007)

William M. French Award for Highest GPA in the Muhlenberg Education Department (April 2007)

Omicron Delta Kappa National Leadership Honor Society (Inducted: Fall 2007)

Psi Chi International Honor Society in Psychology (Inducted: Fall 2005; Secretary: 2006 – 2007)

Muhlenberg College Dean's List (Fall 2004 – Spring 2008)

Muhlenberg Presidential Merit Scholarship (Fall 2004 – Spring 2008)

Muhlenberg Art Talent Award (Fall 2004 – Spring 2008)

## Certifications

Pennsylvania School Psychology Certification K – 12 (September 2013)

Pennsylvania Instructional I Teaching Certification: Elementary K – 6 (June 2008)

## Clinical Experience

### Pre-Doctoral Internship

#### **Pre-Doctoral Intern: Central Bucks School District**

*July 2014 – June 2015*

*Lenape Middle and Cold Spring Elementary Schools, Doylestown, PA*

*Supervisors: Michele McIntyre, Psy.D., L.P., Julia Szarko, Ph.D.*

- Completed psychoeducational, functional behavioral, and curriculum based assessments and wrote integrated psychoeducational reports for children and adolescents from kindergarten through ninth grade with specific learning disabilities, intellectual disability, attention deficit hyperactivity disorder, autism, and oppositional defiance disorder
- Participated in multi-disciplinary child study team meetings to assess children's and adolescents' academic and behavior needs, examine system-wide needs, and develop interventions to address academic, behavior, health, and emotional needs
- Partnered with teachers, parents, and students to develop and implement individual and group interventions to address emotional, behavioral, social, and academic needs using evidence-based strategies including check-in check-out, cognitive behavioral therapy (CBT), and motivational interviewing
- Consulted with district administrators to initiate district-wide Positive Behavioral Interventions and Supports (PBIS) at the primary, secondary, and tertiary levels
- Developed and led district-wide and school-wide staff trainings, parent trainings, and classroom interventions to promote mental health
- Collaborated with administrators to lead meetings for data-based decision making and intervention planning through system-wide Response to Intervention and Instruction (RtII)
- Conducted progress monitoring assessments of academic skills and behavior to inform intervention

### Supervised Practicum Placements

#### **Psychology Trainee: Lehigh Valley Health Network**

*September 2012 – July 2013*

*Pediatric Pulmonology Specialty Center, Bethlehem, PA*

*Supervisors: Patricia Manz, Ph.D., Robert Miller, M.D.*

- Conducted ongoing consultation with families and the multi-disciplinary team of physicians, nurses, social worker, and school personnel to support children's and adolescents' academic, social, behavior, health, and emotional needs as they relate to pulmonary diseases, including asthma, cystic fibrosis, and obstructive sleep apnea, as well as pulmonary complications of physical disabilities
- Administered assessments and conducted interviews to inform the design of evidence-based interventions for parent training and child behavior management for ethnically and socioeconomically diverse families with children ages 3 to 21
- Implemented manualized interventions, including *Coping Cat* CBT program, during weekly sessions to address psychological concerns related to anxiety and depression
- Collaborated with families and schools to design, support the implementation of, and increase adherence to evidence-based positive behavior plans for use at home and at school to improve student health, behavior, and emotional well being
- Designed behavioral and academic interventions, as well as 504 plans for school accommodations, through direct consultation with schools, colleges, and residential treatment programs
- Accessed community resources and agencies to address client health needs and facilitated development of workplace accommodations for client physical disabilities

**Psychology Trainee: East Penn School District**

***September 2012 – June 2013***

*Shoemaker and Macungie Elementary Schools, Macungie, PA*

*Supervisors: Christine Novak, Ph.D., Mary Naunas, Ed.S.*

- Completed psychoeducational, functional behavioral, and curriculum based assessments, and wrote integrated psychoeducational reports, for children from pre-kindergarten through fifth grade with specific learning disabilities, attention deficit hyperactivity disorder, autism, oppositional defiance disorder, asthma, diabetes, and cerebral palsy
- Led girls' group to implement multiple interventions for children with chronic health conditions, including congenital heart disease and hearing impairment
- Designed evidence-based wellness recess program for health promotion in consultation with school administrators
- Consulted with classroom teachers and school staff regarding effective tiered instructional and behavioral strategies for class-wide interventions and individual students
- Collaborated with school team and district administrators to implement system-wide prevention programs, including school-wide PBIS and RtII, and participated in leading assessment-informed intervention planning
- Assisted with individual student crisis counseling

**Psychology Trainee: The Children's Hospital of Philadelphia**

***August 2011 – August 2012***

*Division of Oncology, Philadelphia, PA*

*Supervisor: Melissa Alderfer, Ph.D.*

- Conducted neurocognitive assessments of children and teenagers ages 4 to 19 experiencing late effects of cancer treatment using a variety of assessments and rating scales for intelligence, achievement, language, memory, motor skills, and executive functioning
- Engaged families in intake interviews to appropriately conceptualize batteries of assessments to examine clients' strengths and difficulties
- Integrated results of assessments and clinical interviews to interpret patterns in scores to develop clear conceptualizations of clients' strengths, difficulties, and needs, and wrote detailed neurocognitive reports and mental health progress notes to document results
- Tailored evidence-based recommendations to meet clients' needs at home and school
- Collaborated with teachers, administrators, and social workers to support the initiation of evidence-based behavioral, academic, cognitive, and social-emotional interventions at school
- Facilitated in-person feedback sessions with families to provide recommendations
- Created a resource provided to families that described the educational rights of children with disabilities based on Section 504 of the Rehabilitation Act and the Individuals with Disabilities Education Act
- Supported parents in accessing appropriate school accommodations through the college level for clients experiencing the late effects of cancer treatment

**Psychology Trainee: Allentown School District**

***September 2011 – June 2012***

*Washington Elementary School, Allentown, PA*

*Supervisors: Christine Novak, Ph.D., Cynthia Ilgenfritz, Ed.S.*

- Completed psychoeducational assessments of monolingual and bilingual children from kindergarten to fifth grade with specific learning disability, autism, attention deficit hyperactivity disorder, oppositional defiance disorder, conduct disorder, emotional-behavioral difficulties, speech/language deficits, cerebral palsy, limited vision, speech delays, and occupational and physical therapy needs
- Integrated assessment data from psychoeducational and functional behavioral assessments to determine students' needs and inform individualized behavior intervention plans

- Implemented behavioral consultation with school staff and culturally and linguistically diverse families on multidisciplinary teams to assess students' needs, determine interventions, and evaluate progress
- Designed, implemented, and progress-monitored individual and group academic and social-emotional interventions
- Conducted individual crisis counseling and participated in threat assessments

### **Course-Based Practica**

#### **Psychology Trainee: Behavioral Assessment**

***Spring 2011***

*Lehigh University, Bethlehem, PA*

*Instructor: Robin Hojnoski, Ph.D.*

- Conducted clinical assessment interviews with teachers, parent, and child to evaluate a kindergarten student's behavior concerns
- Developed and used appropriate observation systems and administered rating scales
- Designed interventions and collaborated with school and parent team to provide recommendations

#### **Psychology Trainee: Consultation Procedures**

***Fall 2010***

*Lehigh University, Bethlehem, PA*

*Instructor: Patricia Manz, Ph.D.*

- Implemented behavioral consultation and conjoint behavioral consultation
- Applied conjoint behavioral consultation procedures with a bilingual Latino family at Head Start to develop feasible and acceptable interventions to reduce a toddler's physical aggression
- Created data collection methods and integrity checks to monitor behavior and intervention progress

#### **Psychology Trainee: Assessment and Intervention in Educational Consultation**

***Fall 2010***

*Lehigh University, Bethlehem, PA*

*Instructor: Edward Shapiro, Ph.D.*

- Conducted interviews, observations, and direct assessments as part of a comprehensive assessment of a second grader's reading, writing, spelling, and math skills
- Designed, implemented, and progress-monitored evidence-based math interventions
- Led school team meetings to discuss assessment and intervention results and progress
- Evaluated and reported assessment results of a first grader using early literacy and numeracy measures

#### **Psychology Trainee: Assessment of Intelligence**

***Spring 2010***

*Lehigh University, Bethlehem, PA*

*Instructor: Kevin Kelly, Ph.D.*

- Implemented various intelligence and achievement assessments
- Evaluated ability and ability-achievement discrepancies and presented findings in written and oral reports

## **Supervision and Graduate Teaching Experience**

### **Home Visitor Supervisor**

#### **Project Little Talks**

*Fall 2012 – Fall 2014*

*Lehigh University, Bethlehem, PA*

*Title: Developing the Role of Early Head Start (EHS) Home Visitors to Provide Evidence-Based Intervention to Families*

*Supervisor: Patricia Manz, Ph.D.*

- Supervised Early Head Start home visitors working with low-income, primarily Latino families with children ages 0 to 3 using performance feedback and home visitors' reflections of concerns to improve quality home visiting
- Designed integrity monitoring procedures to support performance feedback during live supervision sessions with home visitors

### **Teaching Assistant**

#### **Consultation Procedures**

*Fall 2013*

*Lehigh University, Bethlehem, PA*

*Instructor: Patricia Manz, Ph.D.*

- Presented parent interviewing strategies and processes, intervention integrity monitoring, and performance feedback procedures to second-year school psychology graduate students
- Supported students in developing skills for conducting conjoint behavioral consultation with Head Start parents and teachers

### **Course-Based Peer Teacher**

#### **Health/Pediatric Psychology**

*Fall 2012*

*Lehigh University, Bethlehem, PA*

*Instructor: Stacy Martin, Ph.D.*

- Designed instructional material and taught doctoral student peers about seizure disorder treatment, psychosocial complications, and cognitive effects
- Collaborated with local community health professionals to generate course resources

#### **Comprehensive School Health Programs**

*Fall 2011*

*Lehigh University, Bethlehem, PA*

*Instructor: Edward Shapiro, Ph.D.*

- Created course material and instructed doctoral student peers about the need for physical activity promotion and about specific strategies and programs for increasing physical activity among youth to promote health
- Developed and distributed resource manual on evidence-based physical activity programs

## **Grants Awarded**

### **U.S. Department of Health and Human Services: Head Start Research Scholars Grant**

*Awarded September 2013, Recipient*

*Funder: U.S. Department of Health and Human Services, Washington, D.C.*

*Title:* Home Visiting Quality and Parent Engagement: Examining Mediation by Parenting Self-Efficacy

*Faculty Advisor:* Patricia Manz, Ph.D.

*Purpose for funding:* Dissertation

#### **Lehigh University Student Research Grant**

*Awarded October 2010, Recipient*

*Funder:* Lehigh University, Bethlehem, PA

*Title:* Shared Storybook Readings: Evaluating the Relationship Between Caregivers' Speech Acts and Toddlers' Language Outcomes

*Faculty Advisor:* Patricia Manz, Ph.D.

*Purpose for funding:* Qualifying research project

#### **Lehigh University Core Competency Grant**

*Awarded October 2010, Co-Recipient*

*Funder:* Lehigh University, Bethlehem, PA

*Title:* Cross-University Collaborative Mentoring Conference

*Faculty Advisor:* Patricia Manz, Ph.D.

*Purpose for funding:* Student-led conference coordination

## **Publications**

### **Publications in Refereed Journals**

Manz, P. H., Gernhart, A. L., Bracaliello, C. B., Pressimone, V. J., & **Eisenberg, R. A.** (2015). Preliminary development of the Parent Involvement in Early Learning scale for low-income families enrolled in a child development focused home visiting program. *Journal of Early Intervention*. Advance online publication. doi: 10.1177/1053815115573077

Manz, P. H., Bracaliello, C. B., Pressimone, V. J., **Eisenberg, R. A.**, Gernhart, A., Fu, Q., & Zuniga, C. (in press). Toddler's expressive vocabulary outcomes after one year of Parent-Child Home Program services. *Early Child Development and Care*.

### **Manuscript Submitted to Refereed Journals**

**Eisenberg, R. A.**, & Manz, P. H. (2015). *Storybook sharing with toddlers: Variations in low-income parents' speech behaviors*.

## **Referred Presentations (since 2010)**

**Eisenberg, R. A.**, Faison, J., Whitenack, J., Manz, P. H., Gernhart, A. L., Manzo, J. C., Spearot, L., & Ridgard, T. (2015, February). *Evidence-based decision making in practice: Performance feedback in practitioner supervision*. Paper presented at the annual convention of the National Association of School Psychologists, Orlando, FL.

**Eisenberg, R. A.**, & Manz, P. H. (2015, February). *Quality of relationships in early childhood services and parent engagement*. Poster presented at the annual convention of the National Association of School Psychologists, Orlando, FL.

Manzo, J. C., Ridgard, T., Manz, P. H., **Eisenberg, R. A.**, Gernhart, A. L., Faison, J., Whitenack, J., & Wallace, L. (2015, February). *Enhancing parent-child book sharing through home visiting*. Paper presented at the annual convention of the National Association of School Psychologists, Orlando, FL.

- Porter, T., Bromer, J., **Eisenberg, R. A.**, & Hawley, T. (2014, November). *Family provider relationships and provider practices to support family engagement in children's learning and school readiness*. Workshop presented at the annual meeting of the Child Care Policy Research Consortium, Washington, D.C.
- Eisenberg, R. A.**, & Manz, P. H. (2014, July). *The role of parenting self-efficacy for parents' engagement in early learning*. Poster presented at Head Start's 12<sup>th</sup> National Research Conference, Washington, D.C.
- Manzo, J. C., Manz, P. H., **Eisenberg, R. A.**, Gernhart, A. L., Faison, J., Ridgard, T., Whitenack, J., & Spearot, L. (2014, July). *Little Talks: A partnership with Early Head Start home visitors to enhance parent-child book sharing*. Poster presented at Head Start's 12<sup>th</sup> National Research Conference, Washington, D.C.
- Eisenberg, R. A.**, Cho, P., Manz, P. H., Manzo, J. C., Ridgard, T., Faison, J. D., Gernhart, A. L., & Whitenack, J. (2014, April). *Partnership processes in Early Head Start home visiting: Performance feedback for intervention implementation*. Poster presented at the Society for Research in Child Development Special Topic Meeting, Alexandria, VA.
- Manz, P. H., Cho, P., **Eisenberg, R. A.**, Manzo, J. C., Gernhart, A. L., Faison, J. D., & Ridgard, T. (2014, April). A collaborative inquiry process with Early Head Start to enrich child development focused home visiting: Developing Little Talks. In L. B. Sawyer (Chair), *A transactional relationship between practice and research: Developing family-educator interventions for Latino children*. Symposium presented at the Society for Research in Child Development Special Topic Meeting, Alexandria, VA.
- Eisenberg, R. A.**, Manzo, J. C., Pressimone, V. J., Manz, P. H., & Faison, J. (2014, February). *Home visiting for school readiness: Parent growth in storybook talk*. Poster presented at the annual convention of the National Association of School Psychologists, Washington, D.C.
- Manz, P. H., **Eisenberg, R. A.**, Manzo, J. C., Ridgard, T., Power, T., & Roggman, L. (2014, February). *Collaborative use of integrity monitoring and performance feedback in provider supervision*. Poster presented at the annual convention of the National Association of School Psychologists, Washington, D.C.
- Manzo, J. C., Manz, P. H., **Eisenberg, R. A.**, & Ridgard, T. (2014, February). *Development of a book sharing curriculum for early childhood home visiting*. Poster presented at the annual convention of the National Association of School Psychologists, Washington, D.C.
- Eisenberg, R. A.** (2013, June). *Home visiting relationship quality on parent engagement: Examining the mediating role of parenting self-efficacy*. Paper presented at the annual Cross-University Collaborative Mentoring Conference, New York, NY.
- Eisenberg, R. A.**, Gernhart, A. C., Manz, P. H., Faison, J., Laracy, S., & Pinho, T. (2013, February). *Culturally relevant book talk: Dialogic reading feasibility and acceptability*. Poster presented at the annual convention of the National Association of School Psychologists, Seattle, WA.
- Eisenberg, R. A.**, & Manz, P.H. (2013, February). A problem-solving based home visiting approach: Processes and outcomes. In P. H. Manz (Chair) & S. Sheridan (Discussant), *Responding to the Affordable Care Act: Advancing evidence-based home visiting*. Symposium presented at the annual convention of the National Association of School Psychologists, Seattle, WA.



- Eisenberg, R. A., & Manzo, J. C.** (2013, February). *Shared storybook reading: Naturally occurring styles and children's vocabulary outcomes*. Paper presented at the annual convention of the National Association of School Psychologists, Seattle, WA.
- Bracaliello, C. B., Pressimone, V. J., & **Eisenberg, R. A.** (2012, June). *Family involvement: Examining the extended impact of home visiting on caregivers*. Poster presented at Head Start's 11<sup>th</sup> National Research Conference, Washington, D.C.
- Eisenberg, R. A., & Manz, P. H.** (2012, June). *Caregiver speech and children's language development: Preliminary outcomes from shared storybook reading*. Paper presented at the annual Cross-University Collaborative Mentoring Conference, Bethlehem, PA.
- Eisenberg, R. A., & Manz, P. H.** (2012, June). *Shared storybook readings: Evaluating the relationship between caregivers' speech acts and toddlers' language outcomes*. Poster presented at Head Start's 11<sup>th</sup> National Research Conference, Washington, D.C.
- Manz, P. H., **Eisenberg, R. A., & Curry, A.** (2012, June). *Toward effective practices in dialogic reading with Hispanic Early Head Start caregivers and children*. Poster presented at Head Start's 11<sup>th</sup> National Research Conference, Washington, D.C.
- Bracaliello, C. B., Curry, A., Manz, P. H., **Eisenberg, R.**, Muser, K., & Pressimone, V. J. (2012, February). The Family Involvement Questionnaire – Toddler version: Partnering with home visiting program families and staff. In S. S. Leff (Chair), *Developing measures in urban settings through participatory action research*. A symposium presentation at the annual convention of the National Association of School Psychologists, Philadelphia, PA.
- Eisenberg, R. A., & Manz, P. H.** (2012, February). *Shared storybook reading: Promoting cultural sensitivity to natural reading behaviors*. Poster presented at the annual convention of the National Association of School Psychologists, Philadelphia, PA.
- Pressimone, V. J., & **Eisenberg, R. A.** (2012, February). *Latino caregivers' booksharing speech and accuracy of reported language*. Poster presented at the annual convention of the National Association of School Psychologists, Philadelphia, PA.
- Manz, P. H., Pressimone, V. J., **Eisenberg, R. A., & Bracaliello, C. B.** (2011, February). *Cultural influence in Latino caregiver-toddler reading: Practice and research implications*. Poster presented at the annual convention of the National Association of School Psychologists, San Francisco, CA.
- Bracaliello, C. B., Manz, P. H., Ash, A., Pressimone, V. J., & **Eisenberg, R. A.** (2010, June). *A look into the black box of home visiting: Investigating the mediating effects of family involvement on child oral language outcomes*. Poster presented at Head Start's Tenth National Research Conference, Washington, D.C.
- Eisenberg, R. A., & Manz, P. H.** (2010, June). *Relationship between caregiver storybook reading and children's language development*. Paper presented at the annual Cross-University Collaborative Mentoring Conference, Cambridge, MA.
- Manz, P. H., Bracaliello, C. B., Ash, A., Pressimone, V. J., **Eisenberg, R. A., Manzo, J. C., Zuniga, C., & Williams, P.** (2010, June). *Stylistic differences in book reading among English- and Spanish-reading Latino caregivers and their toddlers*. Poster presented at Head Start's Tenth National Research Conference, Washington, D.C.
- Manz, P. H., Bracaliello, C. B., Ash, A., Pressimone, V. J., **Eisenberg, R. A., Zuniga, C., & Williams, P.** (2010, March). *The Parent-Child Home Program: Examination of toddler*

*and caregiver benefits.* Poster presented at the annual convention of the National Association of School Psychologists, Chicago, IL.

## **Selected Research Experience**

### **Doctoral Dissertation**

***Spring 2013 – April 2015***

*Doctoral Student Investigator, Lehigh University, Bethlehem, PA*

*Title: Home Visiting Quality and Parent Involvement: Examining Mediation in Home Visiting*

*Dissertation Chair: Patricia Manz, Ph.D.*

- Conducted community-based research to examine parenting self-efficacy as a mechanism of change through which quality home visiting predicts parent involvement in educational activities with infants and toddlers
- Used awarded federal funding to support all project activities, including development of a partnership with Lehigh Valley Community Services for Children's Early Head Start (EHS) program that informs project conceptualization, data collection and analysis, and interpretation and dissemination of findings
- Evaluated the potential for a transactional relationship between parenting self-efficacy and parents' educational involvement
- Collected data at baseline of larger intervention implementation study (Project Little Talks), including videotaping and coding home visiting interactions and administering parent rating scales
- Disseminated results at local and national conferences and to local EHS program and national Head Start policymakers to inform quality home visiting at local and national levels

### **Project Little Talks**

***Fall 2012 – Fall 2014***

*Project Co-Coordinator, Lehigh University, Bethlehem, PA*

*Title: Developing the Role of Early Head Start (EHS) Home Visitors to Provide Evidence-Based Intervention to Families*

*Principal Investigator: Patricia Manz, Ph.D.*

- Partnered with EHS directors and supervisors at Community Services for Children of the Lehigh Valley, as well as faculty at The Children's Hospital of Philadelphia and Utah State University, to coordinate project activities and iteratively develop project procedures
- Contributed to the development of the Little Talks book-sharing curriculum
- Developed and led training sessions for EHS home visitors on the book-sharing curriculum, problem-solving consultation, and data collection procedures
- Supervised EHS home visitors working with low-income, primarily Latino families with children ages 0 to 3 using performance feedback and home visitors' reflections of concerns
- Designed integrity monitoring procedures to support performance feedback during home visitor supervision and to monitor fidelity of data collection for large scale evaluation of supervision process and Little Talks book-sharing curriculum
- Created manual with home visitor training, supervision, and integrity monitoring procedures

### **Project CARES (Children Able & Ready for Early Success) Extension**

***Fall 2011 – Fall 2012***

*Project Coordinator, Lehigh University, Bethlehem, PA*

*Title: Development of Dialogic Book Sharing for Caregivers and Toddlers*

*Principal Investigator: Patricia Manz, Ph.D.*

- Coordinated research activities, including home visit scheduling, data collection, and integrity monitoring, to facilitate community partnership with Lehigh Valley Early Head Start
- Conducted weekly home visits with low-income, primarily Latino, bilingual families to partner in evaluating and restructuring dialogic reading procedures and content for most effective and culturally sensitive implementation
- Modified dialogic reading practices based on facilitators and barriers reported by families during home visits
- Analyzed qualitative data to develop culturally sensitive reading intervention and problem solving procedures for ongoing book-sharing curriculum development

**Project CARES (Children Able & Ready for Early Success) *Fall 2009 – Fall 2012***

*Research Assistant, Lehigh University, Bethlehem, PA*

*Title: An Evaluation of the Parent Child Home Program (PCHP)*

*Principal Investigator: Patricia Manz, Ph.D.*

- Partnered with community school readiness and family involvement program, PCHP, in Philadelphia, PA, and national PCHP research administration to organize and distribute family assessments for low-income, primarily Latino, bilingual families
- Modified coding system for coding parent reading styles, and evaluated and coded transcriptions of parent-child book reading audios for patterns of parent reading behaviors
- Examined cultural relevance of vocabulary measures for project sample using Rasch modeling
- Co-coordinated data analysis, data management, and manuscript writing
- Conducted statistical analysis and disseminated findings of longitudinal data for toddlers' oral language outcomes, caregiver-child engagement, and storybook reading behaviors

**Qualifying Research Project *Fall 2009 – Fall 2012***

*Doctoral Student Investigator, Lehigh University, Bethlehem, PA*

*Title: Shared Storybook Readings: Evaluating the Relationship Between Caregivers' Speech Acts and Toddlers' Language Outcomes*

*Advisor: Patricia Manz, Ph.D.*

- Examined storybook sharing audio recordings of parents with toddlers to examine parents' telling, asking, and attention-directing behaviors during storybook reading and how clusters of parents' story sharing behaviors predicted children's expressive and receptive vocabulary
- Transcribed and coded storybook audios for parents' storybook sharing behaviors as an extension of Project CARES
- Analyzed data using cluster analysis and MANCOVA to determine profiles of parents' natural storybook sharing behaviors and their impact on children's vocabulary
- Acquired Lehigh University Student Research Grant to support Spanish translations of storybook audios
- Presented posters and papers at regional and national conferences

## **Leadership and Professional Activities**

### **National**

**Volunteer for the Society of Pediatric Psychology Annual Conference *March 2014***

- Managed conference activities for attendees, including organization of continuing education credits for licensed psychologists and distribution of materials

**Volunteer Peer Reviewer for the National Association of School Psychologists Annual Convention** *July 2011, July 2012*

- Reviewed and provided written comments on presentation proposals for National Association of School Psychologists 2012 and 2013 annual conventions

**Regional**

**Designated Doctoral Student Representative, Institutional Review Board** *July 2013 – July 2014*

*Lehigh University, Bethlehem, PA*

- Review research proposals submitted to the Institutional Review Board (IRB) to examine ethical practices for human subjects research
- Evaluate faculty and student research proposals independently and collaboratively at monthly IRB meetings

**Appointed Co-Chair, 11<sup>th</sup> Annual Cross-University Collaborative Mentoring Conference** *August 2010 – June 2011*

*Lehigh University, Bethlehem, PA*

- Led graduate student planning committee in planning, fundraising, and coordinating annual student-led conference for regional graduate students to gain mentoring on personal research from top faculty from nine leading universities

**Selected Doctoral Student Representative, Lehigh College of Education Statistics Professor Search Committee** *January 2011 – May 2011*

*Lehigh University, Bethlehem, PA*

- Reviewed applications, interviewed candidates, and collaborated in evaluative discussions with search committee leading to selection of a candidate for statistics professor for the College of Education
- Organized student meetings with applicants selected to visit the University

**Volunteer Student Interviewer, School Psychology Program** *Spring 2010 – 2011*

*Lehigh University, Bethlehem, PA*

- Interviewed applicants to Lehigh University's School Psychology Program and provided verbal and written feedback to program faculty

**Invited Alumna, Pre-Service Teacher Career Panel** *Spring 2011*

*Muhlenberg College, Allentown, PA*

- Served as panelist for pre-service teachers interested in attending graduate school and pursuing careers in the fields of education and school psychology

**Selected Professional Experience**

**Substitute Teacher** *September 2008 – June 2009*

*Abington, Lower Moreland, Upper Dublin, and Wissahickon School Districts, Montgomery County, PA*

- Grades K – 5
- Differentiated instruction to meet needs of students with learning disabilities, autism, and ADHD
- Collaborated with team teachers, school administrators, and parents to plan, implement, and enhance strategies to support students' academic and behavioral growth in a long-term substitute teaching position

## **Professional Affiliations**

American Psychological Association—Student Affiliate (2008 – Present)  
APA Division 16, School Psychology—Student Affiliate (2008 – Present)  
APA Division 54, Society of Pediatric Psychology—Student Affiliate (2013 – Present)  
Pennsylvania Psychological Association—Student Member (2013 – Present)  
National Association of School Psychologists—Student Member (2009 – Present)  
Association of School Psychologists of Pennsylvania—Student Member (2010 – Present)  
Society for Research in Child Development—Student Member (2010 – Present)  
International Reading Association—Member (2008 – Present)