THE EFFECT OF A HOME VISITATION PROGRAM ON MOTHER–INFANT INTERACTIONS

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THE EFFECT OF A HOME VISITATION PROGRAM ON MOTHER–INFANT INTERACTIONS

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DECLARATION OF ORIGINALITY

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ABSTRACT

The Effect of a Home Visitation Program on Mother–Infant Interactions

A large body of research reveals that warm, responsive, and stimulating parent-child interactions contribute in many ways to infants' emerging socio-emotional, cognitive, and language competencies and attachment relationship. However, caregivers are less likely to engage in developmentally supportive practices in high risk families. Thus, home visiting programs that target low-income families aim to strengthen the quality of caregiver-child relationship and positive parenting practices, improve maternal health and reduce child abuse as well as neglect. These improvements in return, are expected to contribute to infants' socio-emotional, cognitive, and physical development. The primary aim of this study is to assess the impact of a home visitation program on infants' development and on mothers' parenting practices, who received biweekly home visits from the prenatal period throughout the first 18 months of their infants' life. Target outcomes were assessed with direct behavioral observations of mother-infant-dyads in a research laboratory during a free play and a structured teaching task context. Lastly, this study also aims to explore whether different subgroups of mothers, such as highly depressed mothers, were affected differently by the program. Results of this study revealed that home-visited infants had higher language scores and home-visited mothers had higher respect for autonomy compared to the control group. Also, subgroup analysis demonstrated that the intervention improved the sensitivity, pointing, verbal responsiveness, and stimulation of highly depressed mothers. Implications were made based on those outcomes.

ÖZET

Ev Ziyaret Programının Anne–Bebek Etkileşimlerine Etkisi

Çok sayıda araştırma, sıcak, duyarlı ve teşvik edici ebeveyn-çocuk etkileşimlerinin bebeklerin yeni ortaya çıkan sosyo-duygusal, bilişsel ve dil yeterliliklerine ve bağlanma ilişkisine birçok şekilde katkıda bulunduğunu ortaya koymaktadır. Bununla birlikte, yüksek riskli aileler gelişimsel olarak destekleyici uygulamaları daha az olasılıkla uygularlar. Bu nedenle, düşük gelirli aileleri hedefleyen ev ziyareti programları, anne-çocuk ilişkisinin kalitesini ve olumlu ebeveynlik uygulamalarını güçlendirmeyi, anne sağlığını iyileştirmeyi ve ihmalin yanı sıra çocuk istismarını azaltmayı amaçlamaktadır. Karşılığında bu iyileştirmelerin bebeklerin sosyo-duygusal, bilişsel ve fiziksel gelişimine katkı sağlaması beklenmektedir. Bu çalışmanın temel amacı, ev ziyareti programının bebeklerin gelişimi ve doğum öncesi dönemden itibaren bebeklerinin ilk 18 ayı boyunca iki haftada bir ev ziyaretleri alan annelerin ebeveynlik uygulamaları üzerindeki etkisini değerlendirmektir. Hedef sonuçlar, serbest oyun ve yapılandırılmış öğretim görevi sırasında bir araştırma laboratuvarında anne-bebek çiftlerinin doğrudan davranışsal gözlemleriyle değerlendirildi. Son olarak, bu çalışma aynı zamanda yüksek depresyonlu anneler gibi farklı anne alt gruplarının programdan farklı şekilde etkilenip etkilenmediğini araştırmayı amaçlamaktadır. Bu çalışmanın sonuçları, evde ziyaret edilen bebeklerin daha yüksek dil skorlarına sahip olduğunu ve evde ziyaret edilen annelerin kontrol grubuna göre daha çok bebeklerin özerkliğine saygı duyduğunu ortaya koymuştur. Ayrıca, alt grup analizi, müdahalenin yüksek düzeyde depresif annelerin duyarlılığını, işaret etme, sözlü yanıt verme ve uyarılma özelliklerini geliştirdiğini göstermiştir. Bu sonuçlara göre çıkarımlar yapılmıştır.

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CHAPTER 1

INTRODUCTION

1.1 Early development and home visitation programs

There is growing evidence attesting to the importance of early development as a foundation for children's later development and future health as well as success in school and life (Shonkoff & Phillips, 2000). Thus, many prevention and intervention programs including home visiting programs aim to strengthen the developing competencies of young infants and their caregivers' parenting skills to produce long-term developmental benefits and to prevent negative developmental outcomes such as developmental delays and child abuse or neglect (Brooks-Gunn & Markman, 2005; Home Visiting Evidence of Effectiveness, 2019).

From birth to five years of age, rapid changes take place in all developmental domains. The rapid growth process is facilitated by the brain development that begins before birth and continues into adulthood. Researchers argue that the brain develops at an enormously fast rate and shows high neuroplasticity in the first three years of life (National Scientific Council on the Developing Child, 2007). Research indicates that genes and environment, particularly early experiences interactively play a role in developing the architecture of the brain in the first years of life (National Scientific Council on the Developing Child, 2007). A major part of this developmental process requires nurturing care that includes responsive interactions between the caregiver and infant, access to health care, adequate nutrition, and supportive learning environment (National Scientific Council on the Developing Child, 2007; Walker, Chang, Smith, & Baker-Henningham, 2018).

Finally, given the neuroscientific evidence that the brain is most open to environmental influences and can adapt itself to these environmental influences (i.e., neuroplasticity), the quality of infants' early experiences bear a critical role. Indeed, early intervention research suggests that it is easier to influence an infant's brain when its plasticity is high in the early years of life (National Scientific Council on the Developing Child, 2007). In this respect, chronic stress in early childhood due to major adversity, such as poverty, abuse, and neglect, acts to weaken the brain's development in particular and overall development in general (Shonkoff & Richmond, 2009). Many low-income families need support in nurturing their infants to reach their potential since they face more biological and psychosocial risks than high-income families do (Walker et al., 2018). Of particular relevance to the current study are caregivers' responsive and cognitively stimulating interactions. Infants as soon as they are born, begin to interact with their surroundings through babbling, facial gestures, and later through vocalizations (Shonkoff & Richmond, 2009). Growing evidence suggests that caregivers, who respond appropriately with vocalizing and gesturing back at their infants, contribute to the formation of new connections among the neurons and neural circuits of the developing brain to support cognitive, social, and emotional development (Shonkoff & Richmond, 2009). Given that infants' cognitive skills in general, and language skills in particular are important predictors of later school readiness, and academic success, the development of these skills should be supported as early as possible (Ayoub et al., 2009; Bradley, Corwyn, Burchinal, McAdoo, & García Coll, 2001; Chazan-Cohen et al., 2009; Hoff, 2003; Hoff, 2013; NICHD ECCRN, 2002). On the other hand, when prolonged stressful experiences, such as poverty, are experienced without sensitive parenting, stress becomes toxic and affects the developing brain. Toxic stress has

been shown to have an adverse impact on learning and children's general development (Shonkoff et al., 2012).

The primary goal of early prevention and intervention programs is to prevent such negative developmental outcomes (Shonkoff & Richmond, 2009). Especially, children in families with limited education and low income are at greater risk due to toxic stress. Early interventions for the most vulnerable children have been shown as the most effective strategy (National Scientific Council on the Developing Child, 2007). Interventions may include center-based early childhood education programs for parents that are child-focused or home visiting programs that are parenting-focused (Brooks-Gunn & Markman, 2005; Love et al., 2001; Nievar, Van Egeren, & Pollard, 2010).

One of the crucial goals of the intervention programs is to support disadvantaged children starting from the earliest years to make a difference. Towards this goal, home visiting programs begin as early as in the prenatal period to take advantage of the brain's high plasticity during the first five years of life. Moreover, home visiting programs for disadvantaged families aim to enrich infants' home environment with learning materials and toys as well as home visitors illustrate to mothers developmentally stimulating and responsive parenting practices in the home environment (Brooks-Gunn & Markman, 2005; Olds, 2006; Sweet & Appelbaum, 2004).

To this date, home visiting programs generally have targeted children at risk for poor developmental outcomes because of poverty. Olds and Kitzman (1993) illustrated that home visiting programs were particularly effective in improving the caregiver behaviors of low-income, unmarried teenage, at-risk mothers and their infants' development. Similarly, Sweet and Appelbaum's (2004) meta-analysis on

the effectiveness of home visiting programs has shown that programs targeting low-income families had higher parenting behavior effect sizes than programs not targeting low-income families.

1.2 Effects of home visitation on infants' cognitive and socio-emotional development

Home visiting programs often attempt to improve the family environment, the quality of the relationship between the caregivers and the infant, as well as caregivers' perceived social support and parenting self-efficacy. These changes are then expected to lead to an improvement in the children's cognitive and socio-emotional development (Love et al., 2001; Nievar et al., 2010).

1.2.1 Cognitive development in infancy

In the first years of life, infants communicate with others by using gestures, gaze, and vocalizations (Demir & Kuntay, 2017). Around 12 months of age, infants begin to understand and follow simple directions, recognize objects, copy gestures, start to use objects correctly like drinking from a cup, and manipulate objects around themselves. Over the first year, infants increasingly understand new words (Harris, Golinkoff, & Hirsh-Pasek, 2011; Hart & Risley, 1995). The development of expressive language is slow at first, but around 16-18 months of age, there is acceleration in the rate of word acquisition (Fenson et al., 1994). The expressive language achievements include first imitations, followed by first spontaneous words and the achievement of first meaningful words (Harris et al., 2011; Tamis-LeMonda, Bornstein, & Baumwell, 2001). Extensive research demonstrated that major cognitive development takes place between birth and three years of age; therefore,

this crucial developmental period has been supported by interventions and investigated by researchers (Ayoub et al., 2009; National Scientific Council on the Developing Child, 2007; Weisberg, Zosh, Hirsh-Pasek, & Golinkoff, 2013).

Family incomes as well as the quality of the home environment, such as the kind of social interactions and rich language exposure, are important environmental predictors of cognitive development (Brady, Warren & Sterling, 2009; Hart, & Risley, 1995; National Scientific Council on the Developing Child, 2007; NICHD Early Child Care Research Network, 2005). There is consistent evidence that children from low-income families are less likely to be exposed to verbal interactions with adults than children from higher socioeconomic backgrounds (Ayoub et al., 2009; Brooks-Gunn & Markman, 2005; Golinkoff, Hoff, Rowe, Tamis-LeMonda, & Hirsh-Pasek, 2019; Hart & Risley, 1995; Snow, Tabors, & Dickinson, 2001; Weizman & Snow, 2001). Research suggests that the language children hear in the first 3 years in the home environment is one of the most important predictors of later language development (Ayoub et al., 2009; Tamis-LeMonda & Bornstein, 2002).

Research also demonstrated a pathway from the cumulative social risk through maternal sensitivity and maternal language to infant developmental outcomes when infants were as young as 15 months of age (Burchinal, Vernon-Feagans, Cox, & Key Family Life Project Investigators, 2008). National Institute of Child Health and Human Development Early Child Care Research Network (NICHD ECCRN, 2005) found that children living in poverty had lower cognitive scores at 24 months than children from higher socioeconomic backgrounds. Thus, poverty is a risk factor for early cognitive skill development, developmental delays, and ultimately delayed school readiness (Ayoub et al., 2009; Shonkoff et al., 2012).

1.2.2 Socio-emotional development in infancy

Socio-emotional development also begins as early as birth. Building and maintaining relationships with parents, peers, and other adults that surround the infant are crucial developmental tasks in infancy (Hirsh-Pasek & Burchinal, 2006). Infants signal their needs through their emotions. They smile when they are comfortable or cry when they are hungry or in pain to communicate their needs to caregivers. Thus, emotion expression represents a non-verbal way of communication with caregivers and plays an important role in infancy as a way to establish relationships (Thompson, Easterbrooks, & Padilla-Walker, 2012).

Besides emotion expression, the ability to regulate emotion is another hallmark of socio-emotional development. Emotion regulation refers to the child's ability to regulate the intensity and duration of emotional reactions in order to reach a certain goal (Gross, 2015; Thompson et al., 2012). The development of emotion-regulation in the first three years of life arises from physiological maturation (e.g., prefrontal cortex maturation), cognitive development (e.g., attention efficiency, language skills), growth in children's understanding of emotion and self, temperamental individuality, and parenting practices (Thompson et al., 2012). In the first year of life, although 6-month infants begin to soothe themselves, such as by distracting themselves, comfort-seeking or redirecting their attention (Thompson et al., 2012), infants generally rely on their caregivers to regulate their distress. There is considerable research that emotion regulation competence is related to the development of social competence, behavioral self-control, and later conscience development (Kochanska & Aksan, 2006); thus, emotion regulation is seen as a central developmental task of infancy and early childhood (Thompson et al., 2012). Poverty also plays a crucial role in the development of emotion regulation abilities

(Li-Grining, 2007). According to research, poverty might affect emotion regulation through the quality of home environment and learning materials in the home (Lengua, Honorada, & Bush, 2007).

1.2.3 Mother-infant interaction during play and infant development

Play is critical in the development of children's cognitive and socio-emotional development (Golinkoff, Hirsh-Pasek, & Singer, 2006; Weisberg et al., 2013). Both the quality and quantity of interactions between mother and infant during play have been demonstrated to influence children's social, cognitive, and language development (Brady et al., 2009; Golinkoff et al., 2006; Landry, Smith, Swank, Assel, & Vellet, 2001; Landry, Smith, & Swank, 2006).

For instance, play has a language function in children's development by providing children opportunities to communicate verbally and nonverbally with their parents. Parents, who also initiate conversations with their children, have ample opportunities to stimulate their children's cognitive development during play (Bornstein, 2005). Furthermore, caregivers' sensitive responses to infant's cues, interests, and initiatives and emotional support (Ayoub et al., 2009; Brady et al., 2009; Harris et al., 2011; Hirsh-Pasek & Burchinal, 2006; Landry et al., 2006; Tamis-LeMonda et al., 2001; Tamis-LeMonda & Bornstein, 2002), and/or caregivers' cognitively stimulating interactions with their children during play (Chazan-Cohen et al., 2009; Hirsh-Pasek & Burchinal, 2006; Mermelshtine, 2017; Vallotton, Mastergeorge, Decker, & Ayoub, 2017) have been shown to contribute to young children's both socio-emotional skills such as infants' emotion regulation and cognitive development.

1.2.4 Home visitation impact on infants' cognitive and socio-emotional development

Previous meta-analyses and reviews of home visiting programs suggest that parents and children participating in home visiting programs had overall more positive outcomes compared to control group parents and children. The Home Visiting Evidence of Effectiveness (HomVEE) review (2019) has reported 21 home visiting models that had positive impacts on child development and school readiness. However, mixed and modest results are also available depending on the programs and outcomes investigated (Filene, Kaminski, Valle, & Cachat, 2013; Nievar et al., 2010; Sweet & Appelbaum, 2004). Table A1 (Appendix A) describes key information on various home visiting program models that will be mentioned in this study.

The meta-analyses reported that cognitive and socio-emotional outcomes were higher for home-visited children than for control group children (Filene et al., 2013; Gomby 2005; Sweet & Appelbaum, 2004). However, the effect sizes were small. Indeed, direct effects on children were not robust (Filene et al., 2013; Raikes et al., 2006) since home visiting programs often initially target parents to make changes in children's outcomes and the program effect on children's outcomes is expected somewhat later (Sweet & Appelbaum, 2004).

Specifically, results from Early Head Start (EHS) program, a home visitation program for low-income pregnant women or mothers with children, reported home-visited children were significantly better at engaging their parents during play activities and had greater cognitive and language outcomes when compared to control group children (Ayoub et al., 2009; Love et al., 2002). A review of EHS programs stated that child-focused activities during the home visits were related to

child language and cognitive development (Raikes et al., 2006); therefore, this review explains why some home visiting programs have demonstrated child language and cognitive effects but others have not. Besides, some direct effects on children have also been found as summarized below.

1.2.5 Effects of home visitation on language development

The effectiveness of home visiting programs on infants' language development was investigated in a number of studies. This body of research has mainly assessed infants' rate of vocalization and word use, or children's language development scores as an index of developmental inventories (Landry et al., 2001; Landry et al., 2006; Landry, Smith, Swank, & Guttentag, 2008; Love at al., 2005). For instance, the Nurse-Family Partnership (NFP) home visiting program investigated the language development of children when they were 21-month old. Nurse-visited children born to women with poor psychological resources (e.g., low IQ, poor mental health, low self-efficacy) were less likely to exhibit language delays, assessed by using Preschool Language Scale-3 (Zimmerman, Steiner, & Pond, 1992) compared to their control group counterparts (Olds et al., 2002). A different home visiting program, Playing and Learning Strategies (PALS) Infant, designed to improve responsive/sensitive parenting behaviors and to stimulate children's language, cognitive, and social development, has shown that home-visited infants demonstrated significantly greater increases in their use of words than control infants (Landry et al., 2006). In these studies, programs had a moderate effect sizes on language development (Landry et al., 2006; Olds et al., 2002)

1.2.6 Effects of home visitation on general cognitive development as indexed by Bayley

In the literature, the effectiveness of home visitation on children's cognitive development has been also investigated by using the Mental Development Index (MDI) from the Bayley Scales of Infant Development-II (BSID-II; NICHD ECCRN, 2000). BSID includes standardized scales which are composed of items covering motor, perceptual, cognitive, and social abilities, language comprehension and expression.

Research has shown that 2- to 3-year-old children, who participated in the Early Head Start-Home-Based Option (EHS-HBO) program, had higher cognitive and language scores on the MDI of Bayley scales than control children (Love at al., 2002; Love et al., 2005). The Healthy Families San Diego clinical trial similarly has shown that home visited infants had higher MDI scores when they were 12 months old than their control counterparts (Landsverk et al., 2002). Similarly, the Healthy Families Alaska program has shown that home-visited children were significantly more likely to score within the normal range on the Bayley MDI than control children after 18 months of intervention (Caldera et al., 2007).

Similarly, the Reach up Early Childhood Parenting Program has impacted children's cognitive outcomes favorably (Grantham-McGregor et al., 1991; Walker et al., 2018). An adaptation of Reach Up program in Brazil, in which mothers were taught to make toys and engage in activities with their children, has demonstrated that 18-month-old infants from low socioeconomic background had higher BSID mental and motor scores than control infants (Eickmann, Guerra, Lima, Huttly, & Worth, 2003).

Based on the NFP results, at 24 months, nurse-visited infants exhibited superior mental development on MDI scores than their control group counterparts (Olds et al., 2002). In conclusion, home visiting programs, which aimed to facilitate maternal cognitive stimulation, have shown a positive impact on infants' cognitive abilities.

1.2.7 Effects of home visitation on socio-emotional development

The EHS-HBO program also had positive impacts on 2- to 3-year-old children's socio-emotional development (Love at al., 2002; Love et al., 2005). EHS children were rated by their parents as having lower levels of aggressive behavior than were control children on the 19-item aggressive behavior subscale of the Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2000). EHS children also had higher engagement of parents measured as the extent to which the child interacts with the parent and communicates positive regard or affect during the Three Box semi-structured play task (Love et al., 2002; Love et al., 2005). A different study about the effectiveness of EHS-HBO investigated attachment security of 18-month-old infants by using Attachment Q-Set (AQS; Waters, 1987). They have found that the EHS program had a significant impact on infants' attachment security scores (Roggman, Boyce, & Cook, 2009). Similarly, the Healthy Families Alaska program has concluded that home-visited children at 18 months were significantly more likely to score in the normal range on the CBCL externalizing and internalizing scales compared to control children (Achenbach & Rescorla, 2000; Caldera et al., 2007). The PALS home visiting program also investigated 12-month-old infants' interactions with the examiner such as the frequency of infants' display of irritation. The study has found that home-visited infants displayed lower levels of negative

affect while interacting with the examiner compared to control children (Landry et al., 2006).

1.3 Effects of home visitation on caregiver-infant interaction

Maternal responsiveness/respect for autonomy and cognitive stimulation are the major aspects of parenting in the early years of life that have been shown to contribute to the cognitive, social, and emotional development of children (Brady et al., 2009; Hirsh-Pasek & Burchinal, 2006; NICHD ECCRN, 1999). These positive parenting practices have been targeted by various home visiting programs to improve child developmental outcomes (Daro & Harding, 1999; Landry et al., 2006; Love et al., 2002; Home Visiting Evidence of Effectiveness, 2019).

1.3.1 Maternal responsiveness/respect for autonomy

Sensitivity to infant's cues is a central part of the quality of caregiving. Sensitivity refers not only to mother's awareness of the infants' emotions and needs but also her warm, prompt, appropriate, and contingent responses to these affective, vocal, and gestural cues (Ainsworth, Blehar, Waters, & Wall, 1978; Bornstein & Tamis-LeMonda, 1989; Sroufe, Fox, & Pancake, 1983). Sensitivity has three main elements: caregivers' awareness of infants' signals; an accurate interpretation of them; an appropriate and prompt response to them (Ainsworth et al., 1978). In other words, sensitivity/responsivity has multiple aspects, such as following the child's lead, being contingent, and providing language input (Landry et al., 2006)

Maternal sensitivity is important for many reasons. First of all, research has consistently shown that sensitive, responsive caregiving contributes to the development of sense of trust and secure attachment of the infants (Ainsworth et al.,

1978; de Wolff & van IJzendoorn, 1997; Sümer, Selcuk, Gunaydın, Salman, & Harma, 2008), especially for most vulnerable parents and infants (Bakermans-Kranenburg, van IJzendoorn, & Juffer, 2003). An attachment can be described as a close emotional bond between two people across time and context and the attachment relationships between infants and caregivers is one of the hallmarks of early socio-emotional development (Ainsworth et al., 1978; Bowlby, 1982). Several longitudinal researches have investigated the influence of early attachment on later socio-emotional competence of children (Sroufe, Egeland, Carlson, & Collins, 2005). Infants who are securely attached to their primary caregivers are more likely to have better peer interactions (Sroufe, 2005), better problem-solving skills (Raikes & Thompson, 2008), better emotion regulation competence (Schore, 2001), and even more stable secure intimate adult relationships later in life (Simpson, 1990).

Sensitivity and responsivity also act to contribute to infants' language and cognitive development (Brady et al., 2009; Feldman, Eidelman, & Rotenberg, 2004; Landry et al., 2001; Tamis-LeMonda et al., 2001). Research suggests that a child's initiatives and interests must be responded in a sensitive manner (Brady et al., 2009; Tamis-LeMonda et al., 2001). Responsive mothers monitor their infants' attention and activity and respond contingently thereby enhancing the match between infants' and caregivers' joint attention on objects or activities (Dunham & Dunham, 1995; Feldman et al., 2004). In this way, infants are more likely to learn the labels of these objects or activities (Brady et al., 2009; Tomasello & Farrar, 1986). A longitudinal study has shown that maternal responsiveness towards 4-month-old infants' non-distress vocalizations, facial expressions, and movements predicted 4-year-olds' cognitive competencies (Tamis-LeMonda et al., 2001). Murray et al. (1996) have found that insensitivity and remoteness of 2-month-old infants' mothers predicted a

poorer cognitive outcome when they were 18-month -olds, as assessed by the BSID. Baumwell and colleagues (1997) also have found that 9-month maternal sensitivity, but not intrusiveness, predicted 13-month infant language comprehension. Maternal sensitivity was especially predictive of language comprehension of infants, who were initially lower in language comprehension. NICHD Study of Early Child Care and Youth Development (SECCYD) has demonstrated that increased maternal sensitivity in early childhood resulted in better cognitive and language outcomes for children from 6 months to 6 years (Hirsh-Pasek & Burchinal, 2006).

A study with a representative sample from Turkey has also found that maternal warmth and responsiveness supported the vocabulary competence of 3-year-old children from a low socioeconomic background only when maternal depressive symptoms were low (Baydar et al., 2014). In the same study, findings also revealed that support from the extended family and neighbors were protective factors for children's vocabulary competence when caregivers suffered both from maternal depression and economic distress.

Respect for autonomy is also a component of maternal sensitivity. It means that mothers not only are sensitive to their infants' emotions but also following their focus of interests or asking their choices (Golinkoff et al., 2006; Mermelshtine, 2017; Vallotton et al., 2017; Wood, Bruner, & Ross, 1976). Respect for autonomy provides encouragement to a child's agency (Leerkes Blankson, O'Brien, Calkins, & Marcovitch, 2011; Mermelshtine, 2017). For instance, caregivers respond to their infants' vocalizations by expanding them and when they do this sensitively and by following their children's leads, caregivers' complex speech predicts children's language development (Vallotton et al., 2017). Also, teaching new words must be scaffolded by caregivers' contingent responses to children's attention or interests by

labeling an object that is in tune with the child's attention (Vallotton et al., 2017). On the other hand, without caregivers' sensitivity and children's attention on the object, labeling by itself would not be as effective as the combination of sensitivity and respect for autonomy.

1.3.1.1 The role of home visitation on sensitive parenting

One of the goals of home visiting programs is to increase the sensitivity and nurturing behaviors of caregivers (Brooks-Gunn & Markman, 2005; Love et al., 2005; Home Visiting Evidence of Effectiveness, 2019). Families at risk, such as low-income families or children at risk of developmental delays, especially take advantage of enhancement of sensitivity (Bakermans-Kranenburg et al., 2003; Landry et al., 2006). There are attachment-based home visitation interventions that particularly aim to improve caregiver sensitivity and ultimately enhance caregiver-infant attachment security. A meta-analysis of attachment-based prevention programs has shown that these interventions were effective in enhancing sensitivity and were also effective in enhancing attachment security (Bakermans-Kranenburg et al., 2003).

Besides attachment-based interventions, home visiting programs also targeted the sensitivity of caregivers. The meta-analyses suggest that home visiting programs are an effective way of improving positive parenting practices (Filene et al., 2013; Gomby 2005; Sweet & Appelbaum, 2004). The reviews and meta-analyses have found a modest effect on parenting and parent outcomes (Daro & Harding, 1999; Harding, Galano, Martin, Huntington, & Schellenbach, 2007; Home Visiting Evidence of Effectiveness, 2019; Nievar et al., 2010; Sweet & Appelbaum, 2004). Effects on parents include increased sensitivity in parent-infant interactions (Love et al., 2002; Love et al., 2005; Olds et al., 2002; Olds, 2006), greater maternal

responsiveness (Landry et al., 2006); and less child maltreatment (Daro & Harding, 1999).

Turning to individual programs, EHS research and evaluation study investigated under what conditions home visiting programs achieved desirable children and parent outcomes (Raikes et al., 2006). They found that the proportion of time during the visit devoted to child-focused activities predicted children's language and cognitive development and parent support for language and learning when children were 36 months of age.

The effectiveness study of EHS-HBO has reported higher sensitivity among home-visited mothers (Love et al., 2001; Love et al., 2002). Maternal sensitivity has been observed and coded during a semi-structured play task in the laboratory. The play task was a 10-minute session in which the mother-child dyad was invited to play with three bags of toys in a specific order. Its measurement has been adapted from the Three Box coding scales used in the NICHD Study of Early Child Care (NICHD ECCRN, 1997). EHS program effectiveness evaluation has shown that home-visited mothers' supportiveness that is parental sensitivity, cognitive stimulation, and positive regard during parent-child semi-structured play had favorable results compared to control mothers (Love et al., 2002).

Secondly, Healthy Families America (HFA), which targets families with risks for child maltreatment, especially Hawaii's Healthy Start, Healthy Families Florida, Virginia, and Connecticut, had the most success at improving parent-child interactions (Daro & Harding, 1999; Duggan et al., 1999; Harding et al., 2007). HFA families outperformed control or comparison families in observed mother-infant interactions by using a standardized scale of Nursing Child Assessment Satellite Training (NCAST) in a number of studies (Daro & Harding, 1999; Harding et al.,

2007; Sumner & Spietz, 1994). For instance, Healthy Families Florida program has compared pre- and post-program results and have found significantly higher maternal responsiveness during teaching and feeding tasks measured by Nursing Child Assessment Feeding Scales (NCAFS, Sumner & Spietz, 1994) from 2 months to 10 months of age and Nursing Child Assessment Teaching Scales (NCATS, Oxford & Findlay, 2012) from 6 months to 15 months of age (Daro & Harding, 1999).

Finally, in the PALS home visiting program, Landry, Smith, and Swank (2006) compared the 15-min naturalistic living room situation of PALS intervention group with control group pre- and post-intervention to determine whether learning responsive parenting behaviors would improve infant development in various domains. Mothers in the PALS condition showed significantly higher contingent responsiveness, emotional-affective support, and quality of language input when compared with mothers in the control condition. Moreover, intrusive behaviors and harsh voice tone levels of mothers in the control condition were higher.

Increased maternal responsiveness, as a result of the PALS home visiting program, facilitated greater growth in infants' social, emotional, language, and cognitive abilities; thus, the causal role of sensitivity on infant development is supported in this home visiting program (Landry et al., 2006). However, the relationship between increased responsiveness due to a home visiting program and infants' cognitive skills has not been investigated mostly for many home visiting programs. Researchers have studied these concepts separately many times, without looking at the mediating role of sensitive parenting. Later, a meta-analysis that included 24 home visiting programs' studies into analysis investigated the relationship between sensitive parenting and child cognitive outcomes and found that

children with responsive and sensitive parenting practices had better cognitive outcomes (Filene et al., 2013).

1.3.2 Maternal cognitive stimulation

Positive parenting also involves enhancing children's learning through cognitively stimulating interactions and conversations (Ayoub et al., 2009). Cognitive stimulation includes caregivers' teaching efforts (Vallotton et al., 2017). Specifically, caregivers' cognitive stimulation involves explicitly talking with them, labeling objects, people, concepts, or activities, singing, engaging in shared book reading, telling a story, providing stimulating toys, activities, and plays, and encouraging exploration of the environments (Bradley et al., 2001; Vallotton et al., 2017).

Research shows that the language input of mothers, both the quantity and quality of maternal language input is an important predictor of children's later language and cognitive development (Brady et al., 2009; Tomasello & Farrar, 1986; Weizman & Snow, 2001). The variety of spoken words is important when the focus is on the quality of maternal language input. Moreover, asking questions or mothers' responses to infants' vocalization, either by repeating infants' vocalizations or expanding on them are ways of verbal cognitive stimulation (Tamis-LeMonda et al., 2001). Moreover, research suggests that infants' vocabulary improve more if caregivers label objects once they engage in joint attention with their infants (Tomasello & Farrar, 1986).

Prior reviews and research have consistently demonstrated that mother-infant interactions related to positive cognitive and language development of children (Ayoub et al., 2009; Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000; Dodici, Draper, & Peterson, 2003; Filene et al., 2013; Hart & Risley, 1995; Weizman

& Snow, 2001), and these interactions have elements of cognitive stimulation and the amount and quality of maternal language input. NICHD Study of Early Child Care has reported that the quality of child care, such as cognitive stimulation and language stimulation, was a predictor of children's cognitive and language outcomes (NICHD ECCRN, 2000). Furthermore, there is evidence that cognitive stimulation was related to children's language development regardless of a family risk status such as maternal depression and socioeconomic status (SES) (Baydar et al., 2014) and affected later language competence and academic success in school (Bradley et al., 2001). One study found that the density of maternal input was the best predictor of vocabulary growth of middle class children from 14 to 26 months of age (Huttenlocher, Haight, Bryk, Seltzer, & Lyons, 1991).

Tamis-LeMonda and colleagues (2001) have investigated certain responses of mothers at certain developmental periods, at 9 months and 13 months, predicted certain language milestones. As a result, at 9 months, mothers' affirmations of children's actions, labeling objects that children focused on as responses predicted language milestones. At 13 months, mothers' vocal imitations and expansions as responses to children's vocalizations predicted achievement of language milestones.

Finally, when the effects of both sensitivity and stimulation on early language development were investigated, sensitivity had a stronger effect on infant language development than did stimulation at 14 months of age (Vallotton et al., 2017). The sensitivity effect on language development then dropped at 24 months of age and became stable. Meantime, the stimulation effect on language development constantly increased from 14 months. Therefore, both sensitivity and stimulation are effective in infants' cognitive development, but the timing of them is important. More sensitive

caregivers tend to be more stimulating, thus these behaviors generally overlap with each other (Vallotton et al., 2017).

1.3.2.1 The role of home visitation on cognitively stimulating parenting

In previous research, caregivers' cognitive stimulation has been generally measured with the Home Observation for Measurement of the Environment (HOME) Inventory when evaluating home visiting programs (Brooks-Gunn & Markman, 2005; Daro & Harding, 1999). The HOME inventory is an observation and interview measure that measures stimulating parenting behavior, the safety of the home environment, and the availability of age-appropriate toys in the home environment (HOME; Caldwell & Bradley, 1984). HOME Inventory includes six different subscales: responsivity, acceptance, organization, learning materials, involvement, and variety. The responsivity subscale is defined as the extent to which the parent responds to the child's behaviors and offers verbal or emotional encouragement (Caldwell & Bradley, 1984). The involvement subscale defines the extent to which the parent is actively involved in the child's learning and provides stimulation (Caldwell & Bradley, 1984); thus it also has items that measure maternal praise and cognitive stimulation.

The Healthy Families Connecticut home visiting program has compared pre- and post-program results by using the HOME Inventory (Daro & Harding, 1999). Total HOME, HOME Responsivity, HOME Learning Materials, and HOME Involvement scores were significantly different between pre- and post-program. An experimental study that includes 6 Healthy Families Alaska programs concluded that the largest program impact was on the quality of the home environment for learning and maternal sensitivity which were measured by subscales of the HOME Inventory

and the NCAST Feeding and Teaching Scales, respectively (Caldera et al., 2007). A review of the different HFA sites stated that parenting outcomes were positive, and the largest program impact was on the home environment, including parent-child interactions measured by the subscales of the HOME Inventory (Harding et al., 2007).

The home visiting programs' effects on maternal cognitive stimulation have been investigated many times (Ayoub et al., 2009; Landry et al., 2006; Love et al., 2002). A meta-analysis on this subject has reported that overall home visiting programs have impacted the cognitive outcomes of children; however, effect sizes were small (Sweet & Appelbaum, 2004). Seven experimental or cognitive stimulation intervention studies assessed the effect of cognitive stimulation on young children from developing countries, including children living in poverty, orphans, and children at biomedical risk, such as low birth weight infants (Walker et al., 2007). Four of those interventions included home visitation in their programs (Eickmann et al., 2003; Gardner, Walker, Powell, & Grantham-McGregor, 2003; Grantham-McGregor et al., 1991; Magwaza & Edwards, 1991). All those studies have supported the importance of early cognitive stimulation on improving children's cognitive skills (Walker et al., 2007). Review of stimulation interventions were reported that interventions were effective overall in producing cognitive and language development with a medium effect size (mean effect size for cognitive outcomes was $d = 0.420$; for language outcomes, $d = 0.468$) (Aboud & Yousafzai, 2015).

Again, turning to individual programs, the PALS home visiting program has increased labeling, verbal scaffolding, and verbal encouragement behavior of mothers in a home environment (Landry et al., 2006). They have also investigated

the mediating role of caregivers' labeling behavior on infants' use of words. The results of this study suggested that caregivers' labeling has partially mediated the impact of the home visiting intervention on infants' word use (Landry et al., 2006).

Similarly, the effectiveness studies of EHS-HBO for both 2-year-old and 3-year-old children have reported higher language and learning stimulation and more reading time to their children among home-visited mothers compared to control mothers (Love et al., 2002; Love et al., 2005; NICHD ECCRN, 1997). One study has found that the effects of the EHS program on cognitive outcomes were partially mediated through cognitive and language stimulation in the home (Ayoub et al., 2009).

1.3.3 The role of home visitation on subgroup of mothers

Growing research investigates whether the home visiting programs are differentially effective for different subgroups of mothers. In this respect, the differential susceptibility model provides a conceptual framework to address what works for whom (Juffer, Bakermans-Kranenburg, & van IJzendoorn, 2017; van IJzendoorn & Bakermans-Kranenburg, 2012). Differential susceptibility hypothesis offers that vulnerable children may outperform their peers in a positive environment (Bakermans-Kranenburg & van IJzendoorn, 2015). This suggests that families at highest risk might be the ones who might benefit the most from the home visitation interventions.

To date, the differential susceptibility hypothesis has been supported by many studies (van IJzendoorn & Bakermans-Kranenbur, 2012). There is also supportive evidence emerging from intervention studies for the differential susceptibility hypothesis (Bakermans-Kranenburg & van IJzendoorn, 2015). A number of studies

have shown that interventions were more effective in some subgroups when participants' characteristics were examined as moderators of program impact (Bakermans-Kranenburg & van IJzendoorn, 2015; Klein Velderman, Bakermans-Kranenburg, Juffer, & van IJzendoorn, 2006). For instance, an attachment-based intervention was most effective for highly reactive children and their mothers (Klein Velderman et al., 2006; van IJzendoorn & Bakermans-Kranenburg, 2012). The differential susceptibility hypothesis demonstrated that highly reactive infants were more susceptible to the intervention than less reactive infants (van IJzendoorn & Bakermans-Kranenbur, 2012). In this study, maternal depression was taken as a risk factor, and it was expected that depressed mothers and their infants would benefit from the program more. Maternal depression represents a high-risk status because depressed mothers are more likely to act in irritable and hostile ways or show less engagement with their infants, and exhibit less warmth and playful interactions with their infants (Goodman, 2007; Lovejoy, Graczyk, O'Hare, & Neuman, 2000); especially low-income depressed mothers were less sensitive and affectionate and more rigid toward their children (Albright & Tamis-LeMonda, 2002). Depressed mothers also differ in their verbal input. Specifically, they are less likely to talk and offer explanations, while they are more likely to show negative affect (Field, 2010). Therefore, inadequate parenting in turn negatively affects children's development (Goodman, 2007).

The impact of maternal depression on home visiting programs has recently been considered (Ammerman, Putnam, Bosse, Teeters, & Van Ginkel, 2011). There is a high prevalence of maternal depression among the participating mothers of home visiting programs, with a prevalence rate of ranging from 28.5% to 61% (Ammerman et al., 2011). Thus, the treatment of maternal depression during the home visiting

process is highly recommended (Ammerman et al., 2011). In the literature, the national randomized trial of 17 EHS programs has reported that the intervention impact on mother-infant interaction was greater when mothers had initially higher depression. Specifically, socio-emotional behavior of children of depressed mothers was more positively impacted by the program. Also, depressed mothers were more supportive and less detached with their children than their less depressed counterparts (Love et al., 2002).

Thus, there is evidence suggesting that highly depressed mothers are a group that appears to benefit more from home visitation programs. In light of this research, highly depressed mothers were chosen as a risk group in the present study because of its adverse effects on mother-infant interaction and infant development, and because of its high prevalence in Turkey. In Turkey, postpartum depression is a common problem and has been detrimental both for mother and infant, and its prevalence was found to be high (23.8%), and the prevalence in developed cities was 21.2% (Ozcan, Boyacioglu, & Dinc, 2017). In the present study, 27% of mothers exceeded clinical cutoff; the percentages of the intervention and control mothers who exceeded the clinical threshold were 25.6% (N = 10) and 28.6% (N = 10), respectively.

1.4 The home visiting program of the present study

The home visiting program of the present study was part of Istanbul95 program, which aimed to improve the urban life for very young children to provide better learning, play, and recreational opportunities. The global Urban95 was launched in 2018 with the technical and financial support of Bernard van Leer Foundation, a philanthropy supporting early childhood development. This project was also implemented in Istanbul with multiple partners including Boğaziçi University, Kadir

Has University, Turkish Economic and Social Studies Foundation (TESEV), Columbia University's Graduate School of Architecture, Planning And Preservation urban laboratory Studio-X Istanbul, an international architecture practice Superpool, and the four local district municipalities of İstanbul: Beyoğlu, Maltepe, Sarıyer and Sultanbeyli municipalities. Istanbul95 partners designed neighborhood maps to facilitate data-driven decision making processes, improved public places (e.g., playgrounds, pavements) for families with very young children, and developed a home visitation program for parent coaching.

Of particular interest to the present study is the home visiting program. There were three components of the home visitation program. This home visiting program of Istanbul95 has been developed by an academic team at Boğaziçi University. The program was implemented through the district municipalities in Sultanbeyli, Sarıyer, Maltepe, and Beyoğlu. Home visitors from each district were trained at Boğaziçi University prior to the program in a 60-hour pre-service training. These home visitors implemented the program from prenatal through 18 months. In the first six months of the program, mothers were also taught methods of coping with depression along with parent coaching.

The home visitation program that is evaluated in the present study consists of three components: (1) an adaptation of the Jamaica Home Visit/Reach Up Early Childhood Parenting Program (Walker et al., 2018), (2) an adaptation of a psychosocial program (Thinking Healthy) that addresses maternal depression, and (3) nutrition key messages delivered by handouts. The home visitation program had a structured curriculum with developmentally appropriate activities for young children ages 0-3 years and Thinking Healthy modules in the first six months following childbirth.

In a typical visit, the home visitor engaged the mother and infant in a play session. The visitor introduced new activities in each visit. Home visitors were keen to observe what the infants could do with new play materials, and demonstrated the activity to the mother and her child, helped the infant with the activity, and then encouraged mother and infant to practice. One crucial task of the home visitor was to give positive feedback and praise both the mother and infant. Specifically, home visitors modeled desired behaviors for mothers and encouraged mothers to apply these behaviors while interacting with their infants. For instance, they have modeled how to respond to infant's vocalization, talk, point, and label objects such as their shapes or colors, as well as praise infant's achievements both nonverbally by clapping hands for the child's efforts and success and verbally by describing the child's efforts in games. Activities and play materials were specifically designed for the intervention, and they included blocks, dolls, puzzles, sorting and matching activities, and books. Toys were designed with affordable materials, such as plastic bottles.

In the first six months of the program, home visitors also presented Thinking Healthy cards and discussed new ways of thinking and finding strategies to enhance social support, strengthen emotional bonds to the baby and promote self-care practices. Towards this end, home visitors used a series of colored cardboard depicting scenarios to facilitate the conversation around these topics.

Available research of the Reach Up Early Childhood Parenting Program has illustrated that stunted infants, aged 9-24 months, whose mothers were taught cognitive stimulation techniques, had increased development quotient (DQ) assessed by Griffiths Mental Development Test compared to control infants (Grantham-McGregor, Powell, Walker, & Himes, 1991; Grantham-McGregor & Smith, 2016;

Walker et al., 2018). Even twenty years after the intervention was conducted, the earnings of the home-visited group were 25% higher than those of the control group. This finding suggested that the home visitation intervention designed to develop child cognitive, language, and psychosocial skills also had a substantial effect on labor market outcomes (Gertler et al., 2014).

The Present Study

The present study was designed as an in-depth evaluation of the home visitation program with the intervention and control group mothers and their infants from Sarıyer district only. This evaluation was conducted when infants were 12-13 month olds and focused on direct behavioral observations of mother-infant interactions in the laboratory context. The goal was to assess mothers and infants not only during unstructured play interactions but also during a structured teaching task.

Hypotheses

Hypothesis 1: It was expected that home-visited infants would have higher scores in their general developmental outcomes by maternal ratings and observational ratings during free play and a teaching task.

Hypothesis 2: It was also expected that intervention mothers would have a higher quality of mother-infant interactions than control mothers who did not receive the home visiting program. Specifically, it was expected that intervention mothers would show higher levels of sensitivity, respect for autonomy, and cognitive stimulation compared to control mothers.

Hypothesis 3: In light of research that home visiting programs are more beneficial for high-risk subgroups (Bakermans-Kranenburg & van IJzendoorn, 2015), it was

expected that the home visitation program would have a larger impact on mother and child outcomes for mothers who are highly depressed compared to their less depressed counterparts.

CHAPTER 2

METHOD

2.1 Participants

A total of 39 intervention and 35 control families from Sarıyer district were invited for an in-depth evaluation. Mean age of infants was 12.96 months (*SD* = 0.21, range 12 to 14 months). Mean age of mothers was 32.85 years (*SD* = 4.98). 20.31% of mothers educated up to 5th grade at most; 29.8% educated up to 8th grade at most; 51.5% educated between 8th grade and high school; and 28.4% educated above high school. 77% of mothers were unemployed; 98.6% were married. The demographic information of infants and mothers is presented in Table 1. Based on the pretest measures taken prior to the implementation of the home visiting program, intervention and control families were from similar socioeconomic backgrounds. Families did not differ with respect to other demographic variables such as infant age, mother age, maternal education and occupation (see Table 1).

Intervention and control families were recruited from the neighborhoods of similar socioeconomic status using the maps developed by Turkish Economic and Social Studies Foundation (TESEV) (Erginli, 2018). Kadir Has University Istanbul Studies Center in collaboration with TESEV have offered maps that show neighborhood sociodemographic features based on income indicators such as apartment rental rates. Thus, these maps provided information for the neighborhoods where low income families with the youngest children live. Recruitment efforts were concentrated in these neighborhoods by distributing posters and flyers and by collaborating with local health clinics, clergy and headman.

Table 1. Descriptive Statistics of Demographic Variables

	Control	Intervention	
Demographics	Mean (SD)	Mean (SD)	F / Chi square
Child gender (boys)	40%	41%	0.01
Infant age (months)	12.97 (.03)	12.94 (.04)	0.11
Mother's age (years)	32.46(.78)	33.21 (.83)	0.60
Mother's education level (% at least high school degree)	42.8%	48.8%	0.25
Mother's occupation (% unemployed)	68.6%	84.6%	2.68
Mother's marital status (% married)	97.1%	100%	1.13
Mother's depression (% depressed)	28.6%	25.6%	0.49

Note. $*p < .05$. $**p < .01$

2.2 Procedure

The present program evaluation study had a quasi-experimental design; participants were not randomly assigned to intervention and control groups. Yet, all participants were recruited from neighborhoods of similar socioeconomic status using the maps developed by Turkish Economic and Social Studies Foundation before the home

visiting program was administered. As shown in Table 1, intervention and control families from Sarıyer district did not differ with respect to socio-demographic variables prior to program implementation.

Pretest questionnaire measures have been administered prior to the program implementation and at the mid-evaluation when infants were 9 months old. Maternal depression was measured at this time. When infants were 12- to13-month old, mothers and infants were invited to the research laboratory at Boğaziçi University. Mother-infant dyads were videotaped during several dyadic tasks after mothers' consent was taken (Appendix B and C). The current study used behavioral observations from an 8-minute free play and a 3-minute structured teaching task. Instructions were given to the mothers before videotaping and they were requested to interact with their infants as they would normally do. The complete laboratory visit procedure is provided in Appendix D.

During free play, mothers were provided with a developmentally appropriate collection of toys. It was a mother's choice to select which and how many toys they might play with. Each mother-infant dyad was provided with the same collection of toys. The toys included two toy cars, one doll, one soft book, one farm animal's book, one jigsaw puzzle of animal figures, some blocks, one vocal duck, two soft chicks, one soft crab, and one soft rabbit, one pull-along toy, and one ball fitting toy. For the structured teaching task, mothers were provided with a stacking rings toy. Mothers were asked to teach their infants how to play with this new toy.

Observations of maternal behavior were assessed through video-recorded during the mother-infant free play and structured teaching task interactions. Raters were blind to the purpose of the study and to the information regarding whether

mothers receive home visitation or not. After the observation procedure was done, the World Health Organization's (WHO) indicators of Infant and Young Child Development (IYCD) instrument was completed by mothers via interview to obtain a developmental screening of infants at the time of their laboratory visit.

2.3 Measures

2.3.1 Infant developmental measures

The Purdue Home Stimulation Inventory (PHSI; Wachs, 1984) was used for the measurement of infants' verbalization. Each infant vocalization that was separated by 3 seconds was coded as a specific instance of infant vocalization (Appendix E).

In addition, the World Health Organization's (WHO) indicators of Infant and Young Child Development (IYCD) instrument was used to obtain a developmental screening of infants. This instrument screens motor (fine and gross), cognitive and language, socio-emotional, and general adaptation milestones of infants. The reliability and validity of the IYCD instrument have been reported in previous studies (World Health Organization, 2010). During 13 month screening, the IYCD instrument items of 13-18 months age range were administered.

2.3.2 Global coding of mothers' responsiveness: maternal supportive presence and respect for autonomy

The Supportive Presence and Mother's Respect for Child's Autonomy categories from the Erickson rating scales were used to code those maternal behaviors during

the 8-minute free play episode (Erickson, Sroufe, & Egeland, 1985). These coding categories have 7-point rating scales. Supportive Presence reflects the extent to which the mother expressed emotional support and positive regard. Mothers who were rated high on this scale were sensitive to the child's needs and cues for support, assistance, reassurance, and encouragement, especially when the child experienced more difficulty during the task. A mother scoring low on this scale failed to respond to the child's cues, she might be passive, hostile, aloof, and unavailable to the child.

Mother's Respect for Child's Autonomy reflected the extent to which the mother acted in a way that respected the validity of the child's individuality. Mothers who were rated high on this scale negotiated with the child, reflected the child's intentions and ideas, and modeled their own individuality to the child. Mothers who were rated low on this scale would be intrusive, forceful, and give the child no chance to do anything on his or her own.

In the literature, the Erickson rating scales were used many times while rating maternal behaviors (Deynoot-Schaub & Riksen-Walraven, 2008; Jaffari-Bimmel, Juffer, van IJzendoorn, Bakermans-Kranenburg, & Mooijaart, 2006; Yates, Obradovic, & Egeland, 2010). According to studies that used the Erickson rating scales, satisfactory reliability and validity of this scale was established (Erickson et al., 1985; Jaffari-Bimmel et al., 2006). The inter-rater reliability was found to be above .85 for all of the scales (Deynoot-Schaub & Riksen-Walraven, 2008).

2.3.3 Event coding of mother responses

First, for both free play and a structured teaching task, a coding scheme was designed by the graduate student to code the frequency of the mothers' specific behaviors

(Appendix F). The behavior codes of mothers consisted of three specific behaviors that included praising, labeling, and pointing. These specific behaviors were chosen to code in this study since during the home visiting program home visitors gave importance to praise, labeling, and pointing behaviors, and intervention mothers practiced these behaviors with their infants under the supervision of home visitors. Praising referred to mother's positive non-verbal and verbal remarks toward an infant such as clapping of hands and verbal praises such as "Good job" or "Well done!" Labeling referred to mother's naming of the objects, toys, people, and their features, such as colors, sizes, sounds. Pointing referred to a mother's pointing behavior while showing something to an infant. The presence or absence of each of these behavior codes were rated in each 5-sec interval during the first 5-minute of 8-minute free play and the whole 3-minute teaching task. Next, a proportion score was obtained by dividing the frequency of intervals in which the mothers displayed a given behavior by the total number of intervals.

In addition, the Purdue Home Stimulation Inventory (PHSI; Wachs, 1984) was also used for the measurement of mothers' responses toward infants' vocalizations. Three coding categories were used from the PHSI. These included maternal verbal response to vocalization, maternal non-verbal response to vocalization, and maternal overall responses (the sum of verbal and nonverbal responses) which referred to verbal and nonverbal responses within 3 seconds of the infant vocalization. Mother's immediate responses to the infant's vocalizations would be considered a contingent response by the mother. When mothers gave many responses within 3 seconds, this was considered as a single maternal verbal responsiveness. When mothers missed responding to infants' vocalization within 3 seconds, this behavior was coded as a no response (Appendix E). Because level of

parental responsiveness is dependent on the number of infant vocalizations, a proportion score was calculated. Proportion of verbal and nonverbal responses were calculated by dividing the number of maternal verbal or nonverbal responses by the total number of parental nonresponses, verbal responses, and nonverbal responses to child vocalization (Corapci, 2008). The overall maternal responsiveness, which is the sum of verbal and nonverbal responses, was used in the analysis.

In the literature, the PHSI was used to measure both infant vocalization and maternal responses to them multiple times (Corapci & Wachs, 2002; Wachs, 1984). Satisfactory reliability and validity of this scale was established. Median interobserver reliability of the PHSI was reported as 85% (Wachs, 1984).

2.3.4 Maternal depression

Maternal depression was measured by the 10-item Center for the Epidemiological Studies of Depression Short Form (CES-D-10) when infants were 9 months old (Appendix G and H). CES-D is a self-report measure of depression (Björgvinsson, Kertz, Bigda-Peyton, McCoy, & Aderka, 2013). Items include depressed mood, feelings of guilt, worthlessness and helplessness, psychomotor retardation, loss of appetite and sleep difficulties. Responses are based on the frequency of occurrence during the past week. It has a 4-point Likert scale: rarely or none of the time (less than 1 day), some or a little of the time (1-2 days), occasionally or a moderate amount of the time (3-4 days), most or all of the time (5-7 days). A cutoff score of 11 is indicative of “significant” or “mild” depressive symptomatology. It must be stressed that for Turkish population there is no validated cutoff for the CES-D short form. Therefore, the original cutoff score of 11 was used in this study. Concurrent

and construct validity, high internal consistency (α's .85 to .90) and test-retest reliability (ICC = .85 in 2- to 8-week intervals) have been reported (Andersen, Malmgren, Carter, & Patrick, 1994).

2.3.5 Interrater reliability

Interrater reliability of the independent coders was calculated with randomly selected ten videotapes for maternal behavior codes, which are maternal praise, labeling, and pointing. All coding was done by trained bachelors and graduate students, and they were trained by the thesis advisor. Cohen's kappa (κ) interrater reliability for the coders was found to be adequate to high and ranged from .744 ($p < .001$), 95% CI (.637, .835) to .784 ($p < .001$), 95% CI (.643, .871) for all coded maternal behaviors. During the coding procedure, ongoing interrater reliability of the coders was also calculated with randomly selected additional six videotapes. The ongoing Cohen's kappa (κ) interrater reliability coefficients was found to be adequate to high and ranged from .624 ($p < .001$), 95% CI (.554, .845) to .903 ($p < .001$), 95 CI (.875, .966).

In addition, intraclass correlation coefficient (ICC) was used to measure interrater agreement of maternal verbal response, infant vocalization, maternal nonverbal response, and overall responsiveness based on randomly selected five videotapes for the free play and teaching task. For free play, the ICC was adequate to high and ranged from .728 ($p < .001$), 95% CI (-.205, .968) to .998 ($p < .001$), 95% CI (.976, 1.000) for all possible coder pairs. During the coding procedure, the ongoing interrater reliability of the coders was also calculated with randomly selected

additional four videotapes. The ongoing interrater reliability was also adequate to high and ranged from .966 to 1.000.

Maternal supportive presence and respect for autonomy scores were coded by the thesis advisor and trained graduate students. ICC was used to measure interrater reliability of the independent coders with randomly selected ten videotapes. As a result, the ICC was found to be adequate to high and range from .826 (p = .001), 95% CI (.447, .954) to .954 (p < .001), 95% CI (.828, .988) for all possible coder pairs.

CHAPTER 3

RESULTS

First, descriptive statistics for mother and infant behaviors were computed both for free play and the teaching task. Intercorrelations of mother and infant behavior ratings within and across tasks were computed. Aggregated scores for maternal codes were developed. The relation of demographic variables and maternal depression were examined with mother and infant ratings. Next, study hypotheses were evaluated by examining the group differences between the intervention and control families on infant development and maternal ratings followed by mothers' observational measures. Finally, moderation analysis was computed to evaluate whether the program was more beneficial for highly depressed mothers.

3.1 Descriptive statistics

Initially, the data were checked for assumptions of normality and homogeneity of variance, and missing values. For free play, there were four missing values in maternal verbal, nonverbal, and overall responsiveness because infants did not vocalize during the free play session. Thus, a maternal responsiveness score could not be computed for these families. Similarly, for the teaching task, two infants (one of them was from the intervention group) did not vocalize during the session and their mothers' verbal responsiveness score could not be computed.

In the case of mothers' specific behavior codes, nonverbal and verbal praise in the free play were positively skewed. Therefore, log transformations were applied and values were normalized. In the teaching task, pointing and infant vocalization

were normally distributed. Yet, log transformation was applied to normalize the following variables: nonverbal and verbal praise, and labeling. The means, standard deviation, skewness, and kurtosis scores of all study variables were presented in Table 2.

3.2 Correlations among maternal responses in free play

Correlations among maternal responses in free play were presented in Table 3. Verbal praise was positively and significantly correlated with nonverbal praise. Labeling was positively and significantly correlated with pointing and verbal responsiveness. Pointing was also positively and significantly correlated with verbal responsiveness.

The global rating of supportive presence was significantly and positively correlated with infant vocalization, maternal nonverbal and verbal praise and verbal responsiveness, pointing as well as labeling. The global rating of respect for autonomy was also significantly and positively correlated with infant vocalization and labeling. Lastly, supportive presence and respect for autonomy were significantly and positively correlated with each other.

3.2.1 Correlations among maternal responses in the teaching task

Correlations among maternal responses in the teaching task were presented in Table 4. Nonverbal praise was significantly and positively correlated with verbal praise. Verbal praise was significantly and positively correlated with pointing and overall verbal responsiveness.

Table 2. Descriptive Statistics of Maternal Responses during Free Play and Teaching Task

Variables	N	Mean (SD)	Skew	Skew. / Std. Error of Skew	Kurt	Kurt. / Std. Error of Kurt
Infant Vocalization (FP)	70	10.21 (0.90)	0.66	2.36	-0.30	0.54
Infant Vocalization (TT)	74	7.82 (0.57)	0.41	1.46	-0.44	0.80
WHO IYCD	68	55.03 (9.86)	0.01	0.04	-0.51	0.90
Nonverbal Praise (FP)	74	1.42 (0.33)	3.17	11.32	11.97	21.38
Nonverbal Praise (TT)	74	4.96 (0.84)	1.90	6.79	3.71	6.75
Verbal Praise (FP)	74	3.65 (0.62)	2.17	7.75	5.00	8.93
Verbal Praise (TT)	74	10.40 (1.15)	1.02	3.64	0.56	1.02
Labeling (FP)	74	25.05 (1.83)	0.87	3.11	0.92	1.64
Labeling (TT)	74	23.21 (2.30)	1.04	3.71	0.43	0.78
Point (FP)	74	10.45 (1.03)	0.80	2.86	-0.20	0.38
Point (TT)	74	22.41 (1.55)	0.58	2.07	-0.11	0.20
Verbal Responsiveness (FP)	70	85.97 (2.08)	-1.21	4.03	0.99	1.71
Verbal Responsiveness (TT)	69	90.07 (1.64)	-1.50	5.17	1.60	2.81
Supportive Presence (FP)	74	4.38 (0.15)	-0.26	0.93	-0.45	0.82
Respect for Autonomy (FP)	74	4.20 (0.14)	0.12	0.43	-0.12	0.22
Maternal Depression	74	6.96 (5.31)	0.85	3.04	0.43	0.78

Note. FP = Free Play; TT = Teaching Task. WHO IYCD = World Health Organization Indicators of Infant and Young Child Development.

Table 3. Correlations among Maternal Responses in Free Play

Measures	1	2	3	4	5	6	7
1.Nonverbal Praise	_						
2. Verbal Praise	0.74**	–					
3. Labeling	-0.01	0.04	_				
4. Pointing	0.10	0.13	0.39**	_			
5. Verbal Responsiveness	0.03	0.23	0.37**	0.24*	_		
6.Supportive Presence	0.26*	0.38**	0.33**	0.34**	0.34**	_	
7.Respect for Autonomy	0.13	0.16	0.36**	0.23	0.23	0.80**	_

Note. *$p < .05$. **$p < .01$.

3.2.2 Correlations between maternal responses and infant vocalization across free play and the teaching task

Table 5 shows the correlations between maternal responses across free play and teaching task contexts. Four behavioral ratings (i.e., nonverbal and verbal praise, labeling, and overall verbal responsiveness) were significantly and positively correlated across these two contexts. Furthermore, teaching task labeling and free play responsiveness were positively correlated. Given the significant correlations of nonverbal and verbal praise, their average scores were calculated as aggregated ratings. Since praise and labeling ratings across free play and the teaching task were

Table 4. Correlations among Maternal Responses for the Teaching Task

Measures	1	2	3	4	5
1.Nonverbal Praise	_				
2. Verbal Praise	0.64**	–			
3. Labeling	0.05	0.10	_		
4. Pointing	0.08	0.24*	0.13	_	
5.Verbal Responsiveness	0.04	0.29*	0.08	0.14	_

Note. *$p < .05$. **$p < .01$.

significantly and positively correlated, $r = 0.27$, $p < .05$ and $r = 0.42$, $p < .001$, respectively, their averaged scores were calculated as aggregated praise and aggregated label. These aggregated ratings were used in data analysis. Furthermore, given that overall verbal responsiveness ($r = 0.34$, $p < .001$) across free play and teaching task were also significantly and positively correlated, an averaged score was calculated as the aggregated responsiveness scores to use in data analysis.

Finally, given the significant correlation of infant vocalization ratings across free play and the teaching task ($r = 0.40$, $p < .001$), an average score was calculated as an aggregated vocalization rating, and this aggregated rating was used in data analyses.

Table 5. Correlations among Maternal Responses for Free Play and the Teaching Task

Measures	1	2	3	4	5
1.Nonverbal Praise	0.27*				
2. Verbal Praise	0.21	0.29*			
3. Labeling	0.12	0.18	0.42**		
4. Pointing	0.02	0.05	0.17	0.14	
5. Verbal Responsiveness	-0.03	0.09	0.27*	-0.02	0.34**

Note. $*p < .05$. $**p < .01$. *Lines = free play; columns = teaching task.*

3.2.3 Correlations of mother and infant ratings with demographic variables, and maternal depression

Correlations between mother and infant ratings and demographic variables, which are child age, sex, maternal education and occupation are shown in Table 6. Maternal education was rated on a 10-point scale, ranging from no education (1) to higher than college education (10). Maternal occupation was rated as employed or unemployed. In Table 7, correlations between mother and infant ratings and demographic variables, maternal depression and WHO IYCD were shown.

As shown in Tables 6 and 7, child age and WHO IYCD were positively correlated and maternal education and supportive presence were also positively

correlated. Maternal depression and WHO IYCD were negatively correlated. Both total praise and supportive presence were positively correlated with WHO IYCD.

Table 6. Correlations between Demographic Variables and Maternal and Child Variables for Free Play and the Teaching task

	Child Age	Child Sex	Education of Mother	Occupation of Mother
Infant Vocalization	.07	.14	.04	.13
WHO IYCD	.24*	.04	.04	.03
Total Praise	.15	-.08	.11	-.10
Labeling	-.01	.09	.01	.17
Pointing	-.03	.09	-.08	-.18
Verbal Responsiveness	-.15	.05	.05	.09
Supportive Presence (FP)	-.04	.13	.28*	.05
Autonomy for Respect (FP)	-.07	.12	.16	.12

Note. $*p < .05$. $**p < .01$. *WHO IYCD = World Health Organization Indicators of Infant and Young Child Development, FP denotes that the variable coded only in free play.*

3.3 Test of group differences

3.3.1 Intervention and control group differences in infant outcomes

The first hypothesis of this study was that infants in the intervention group would have higher infant vocalization and WHO IYCD scores than infants in the control group. One-way multivariate analysis of variance (MANOVA) was conducted using

Wilks's statistic. There was a significant effect of intervention, $\Lambda = 0.91$, $F(2, 65) = 0.33$, $p = .045$, $\eta^2 = 0.09$. Separate univariate ANOVAs on the outcome variables revealed a non-significant effect on WHO IYCD, $F(1, 66) = 0.59$, $p > .05$. However, the intervention effect on infant vocalization was significant, $F(1, 66) = 6.41$, $p < .05$. Intervention group infants (M = 20.59, SD = 11.52) had significantly higher vocalization ratings than control group infants (M = 14.77, SD = 8.38) (see Figure 1).

Table 7. Correlations between Demographic Variables and Maternal and Child Variables for Free Play and the Teaching Task

	Maternal Depression	WHO IYCD
Infant Vocalization	.07	.15
WHO ICYD	-.26*	_
Total Praise	-.14	.55**
Labeling	-.19	.14
Pointing	.05	.12
Verbal Responsiveness	.02	.07
Supportive Presence (FP)	-.08	.34**
Autonomy for Respect (FP)	-.15	.22

Note. *$p < .05$. **$p < .01$. *WHO = World Health Organization Indicators of Infant and Young Child Development, FP denotes that the variable coded only in free play.*

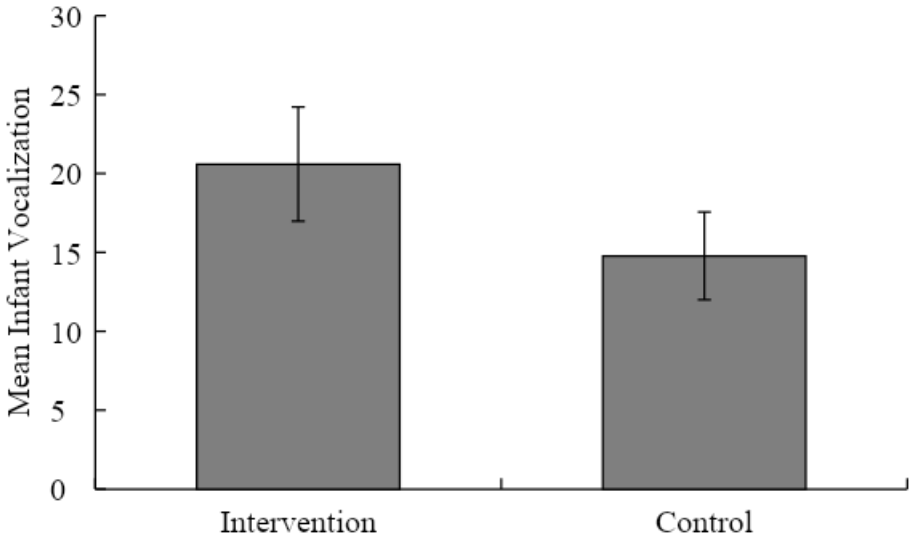

Figure 1. Mean infant vocalization by type of group

3.3.1.1 Subgroup analysis on infant development

The third hypothesis of the study was whether highly depressed mothers' infants would be more likely to benefit from the intervention compared to less depressed mothers' infants. Maternal depression scores were categorized as high and low based on clinical cut off scores. This variable was taken as a moderator variable and PROCESS statistical modeling tool (Hayes, 2013) was used to test the role of moderation on the relation between intervention effect and infant development scores.

The moderating role of maternal depression on the relation between intervention status and WHO IYCD scores was not significant (B = -3.95, SE = 5.40, $p > .05$). On the other hand, there was a significant interaction between the intervention status and maternal depression on infant vocalization (B = -9.15, SE = 5.29, $p = .09$). When maternal depression was high, infant vocalization ratings were significantly higher among intervention infants compared to control infants (B = -

12.50, SE = 4.51, $p < .05$). However, when maternal depression was low, infant vocalization ratings did not differ between intervention and control infants (B = -3.35, SE = 2.75, $p > .05$). This result suggested that group differences between intervention and control groups in infant vocalization emerged only among highly depressed mothers (see Figure 2).

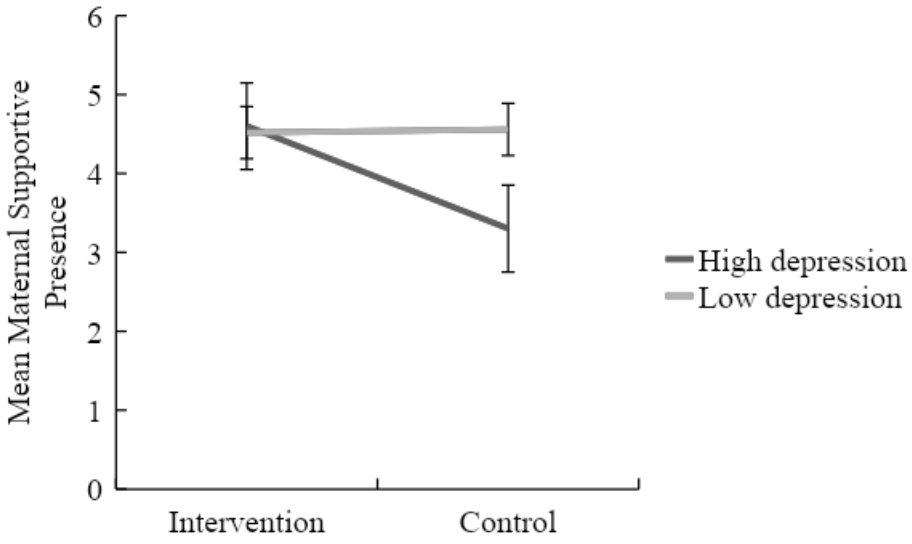

Figure 2. Maternal depression as a moderator between the intervention effect and average of infant vocalization

3.3.2 Group differences for maternal responses

3.3.2.1 Group differences in global coding during free play

The second hypothesis of this study was that intervention group mothers would have higher maternal supportive presence and respect for autonomy compared to control group mothers. To test this, One-way MANOVA was conducted using Wilks's statistic. Results revealed that there was not a significant effect of intervention, $\Lambda = 0.92$, $F(2, 71) = 2.96$, $p = .058$. Separate univariate ANOVAs on the outcome

variables revealed non-significant intervention effect on supportive presence, $F(1, 72) = 1.32$, $p > .05$. However, the intervention effect on respect for autonomy was significant, $F(1, 72) = 5.15$, $p < .05$. Intervention group mothers (M = 4.49, SD = 0.18) had significantly higher respect for autonomy than control group mothers (M = 3.87, SD = 0.19).

3.3.2.2 Subgroup analysis on maternal global ratings

The third hypothesis of the study was whether highly depressed mothers would be more likely to benefit from the intervention compared to less depressed mothers. Maternal depression variable was taken as a moderator and PROCESS statistical modeling tool (Hayes, 2013) was used.

There was a significant interaction between the intervention status and maternal depression on supportive presence (B = -1.34, SE = .64, $p < .05$). When maternal depression was high, supportive presence ratings were significantly higher among intervention mothers compared to control mothers (B = -1.30, SE = .55, $p < .05$). However, when maternal depression was low, maternal supportive presence ratings did not differ between intervention and control mothers (B = 0.04, SE = 0.33, $p > .05$). This result suggested that group differences between intervention and control mothers in supportive presence emerged only among highly depressed mothers (see Figure 3). The moderating role of maternal depression on the relation between intervention status and autonomy granting was not significant (B = -0.29, SE = 0.60, $p > .05$).

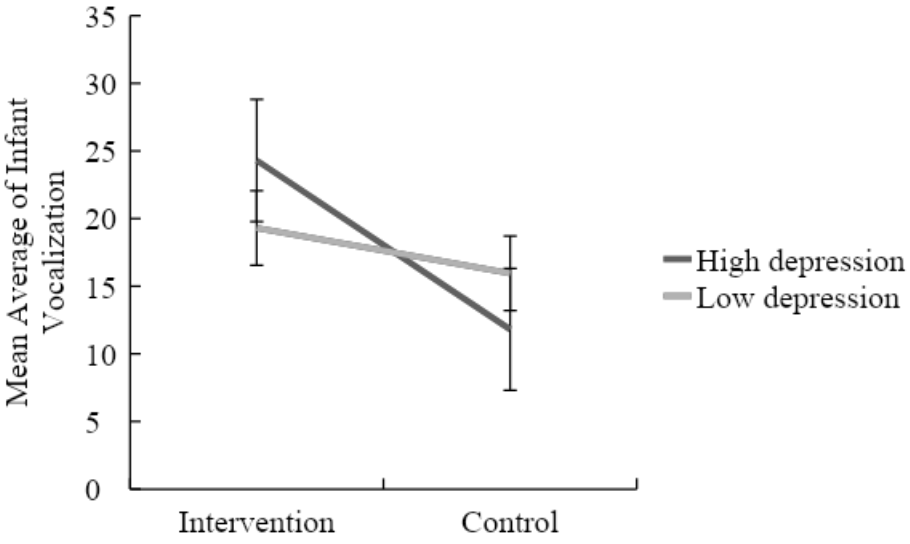

Figure 3. Maternal depression as a moderator between the intervention effect and maternal supportive presence

3.3.2.3 Group differences in event coding

The other hypothesis of this study was that maternal event codings (i.e., praise, labeling, pointing, verbal responsiveness) would be significantly higher in intervention mothers compared to the control group.

One-way MANOVA analysis was conducted using Wilks's statistic. Results revealed that there was not a significant effect of intervention on praise, labeling, pointing, and verbal responsiveness, $\Lambda = 0.94$, $F(4, 67) = 1.02$, $p > .05$. Separate univariate ANOVAs on the outcome variables also revealed non-significant intervention effects on praise, $F(1, 72) = 1.26$, $p > .05$, on labeling, $F(1, 72) = 1.24$, $p > .05$, on pointing, $F(1, 72) = 1.67$, $p > .05$, and on verbal responsiveness, $F(1, 72) = 0.12$, $p > .05$.

3.3.2.4 Subgroup analysis on maternal event codings

There was not a significant interaction between the intervention status and maternal depression on praise (B = -.07, SE = .17, $p > .05$). The moderating role of maternal depression on the relation between intervention status and labeling also was not significant (B = -6.60, SE = 3.92, $p = .10$). However, the moderating role of maternal depression on the relation between intervention status and pointing was significant (B = -9.59, SE = 4.27, $p < .05$). When maternal depression was high, pointing ratings were significantly higher among intervention mothers compared to control mothers (B = -9.28, SE = 3.64, $p < .05$). However, when maternal depression was low, pointing ratings did not differ between intervention and control mothers (B = 0.32, SE = 2.22, $p > .05$). This result suggested that group differences between intervention and control mothers in pointing emerged only among highly depressed mothers (see Figure 4).

The moderating role of maternal depression on the relation between intervention status and verbal responsiveness was also significant (B = -0.29, SE = 0.60, $p > .05$). There was a significant interaction between the intervention status and maternal depression on verbal responsiveness (B = -22.77, SE = 8.83, $p < .05$). When maternal depression was high, verbal responsiveness was significantly higher among intervention mothers compared to control mothers (B = -14.95, SE = 7.50, $p < .05$). However, when maternal depression was low, verbal responsiveness did not differ between intervention and control mothers (B = 7.82, SE = 4.66, $p > .05$). This result suggested that group differences between intervention and control mothers in verbal responsiveness emerged only among highly depressed mothers (see Figure 5).

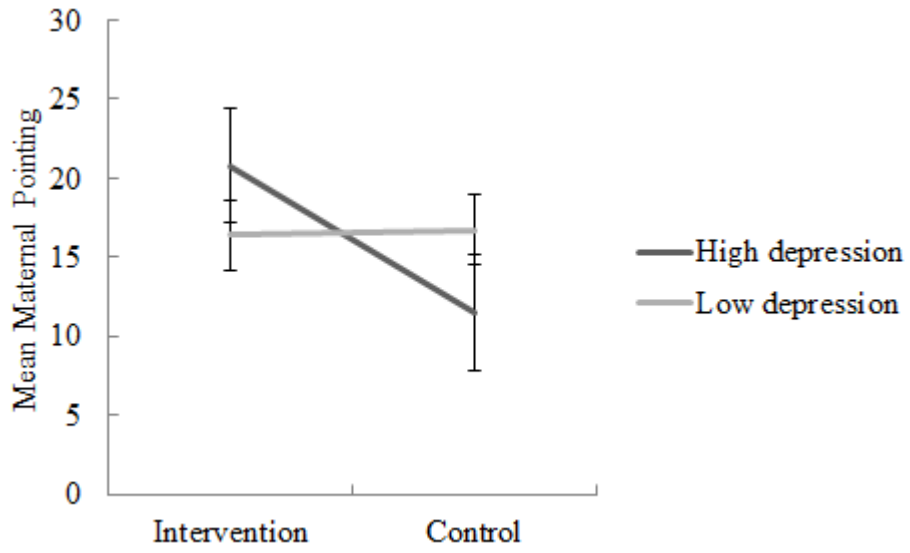

Figure 4. Maternal depression as a moderator between the intervention effect and maternal pointing

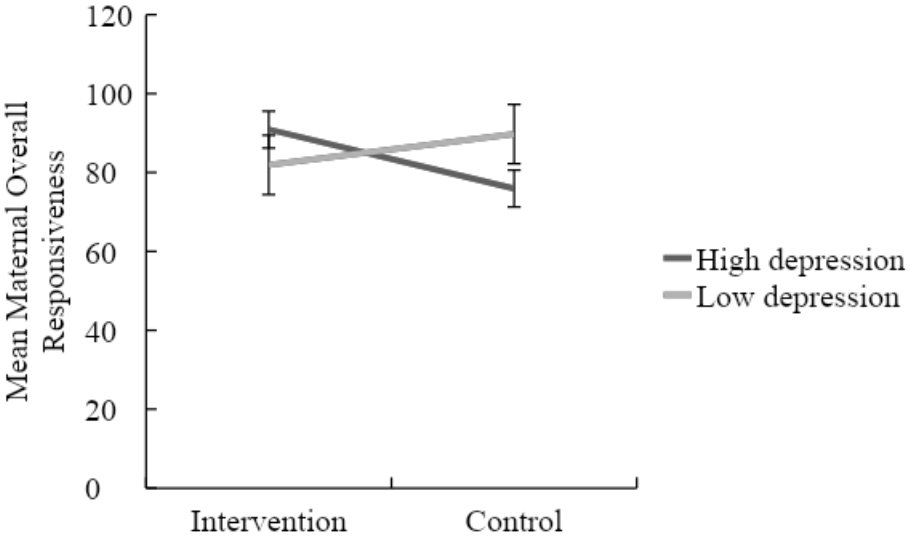

Figure 5. Maternal depression as a moderator between the intervention effect and maternal verbal responsiveness

After that, since combined labeling and pointing were significantly correlated ($r = 0.26$, $p < .05$), these variables were averaged to obtain a composite *stimulation* score. Then, subgroup analysis was done with the PROCESS statistical modeling tool (Hayes, 2013). The moderating role of maternal depression on the relation between

intervention status and a composite stimulation score was significant (B = -8.10, SE = 3.17, $p < .05$). When maternal depression was high, stimulation score was significantly higher among intervention mothers compared to control mothers (B = -8.01, SE = 2.70, $p < .05$). However, when maternal depression was low, stimulation score did not differ between intervention and control mothers (B = 0.09, SE = 1.65, $p > .05$). This result suggested that group differences between intervention and control mothers in stimulation emerged only among highly depressed mothers (see Figure 6).

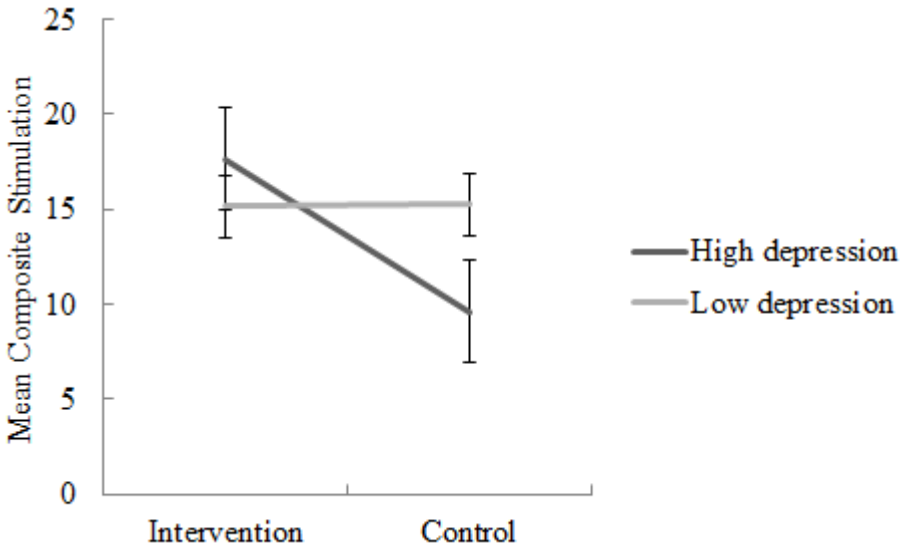

Figure 6. Maternal depression as a moderator between the intervention effect and a composite stimulation score

CHAPTER 4

DISCUSSION

The main purpose of the present study was to evaluate the impact of a home visitation intervention with in-depth observational measures in a research laboratory setting during free play and teaching task episodes. The home visiting program that was evaluated was adapted from the Reach up Early Childhood Parenting Program, which aimed to improve maternal behavioral skills, infant physical, socio-emotional, and cognitive development, and mother-infant relationship quality of low-income families. The Reach Up program was not used as a stand-alone program, rather it was complemented with a 9-visit module that addressed maternal depression. Finally, a handout that included key messages for infant and mother nutrition was also provided to families in each visit. In this chapter, findings of this study, its strengths and limitations as well as future research directions are presented below.

4.1 Review of findings

For investigating the intervention and control group differences, a quasi-experimental design was used. Intervention and control group mothers were selected from similar SES backgrounds to control for baseline group differences. Pretest questionnaire measures were administered before the program implementation and at the mid-evaluation when infants were 9 months old. Maternal depression was measured with the 10 item CES-D, a commonly used depression screener (Björgvinsson, 2013). When infants were 13 months old, mothers and infants were invited to the laboratory

for observational evaluation, where infants' development was screened with a mother-report measure developed by WHO. Initial analysis have shown that intervention and control groups in Sarıyer districts were equivalent in terms of demographic variables such as infants' sex, age, mothers' age, marital status, education level, and occupation.

Interventions could be more beneficial to some subgroups of population than others (Juffer, Bakermans-Kranenburg, & van IJzendoorn, 2017; van IJzendoorn & Bakermans-Kranenburg, 2012). The hidden efficacy of interventions could be shown when characteristics of participants were examined as moderators of program effect. After the group difference analyses on both infant development and maternal responses, the subgroup analyses have been done to find the hidden efficacy of interventions with maternal depression that was examined as a moderator of program effect. Maternal depression was selected because it has high prevalence in Turkey, and the home visiting program addressed maternal depression during its initial months of implementation. It was expected that more risky families would benefit more from the program. The meta-analysis revealed that maternal behavior of at-risk and low-income families are improved by home visiting programs; at-risk families have more room for improvement than low-risk families (Nievar et al., 2010). In this study, whether highly depressed mothers and their infants would be more likely to benefit from the intervention compared to less depressed mothers and their infants was investigated. First, maternal depression was taken as a moderator between the intervention effect and infant development.

4.1.1 Group differences in infant development

The home visiting programs in general target infants' physical, socio-emotional, and cognitive skills to support their development (Filene et al., 2013; Love et al., 2002; Love et al., 2005; Olds, 2006). Responsive and nurturing relationships in the earlier years provide lifelong benefits for cognitive, socio-emotional development, and physical and mental health (Shonkoff et al., 2012). Research on the biology of stress in early years of life demonstrates how chronic stress is caused by poverty can weaken brain architecture (Shonkoff et al., 2012). Especially families from low socioeconomic backgrounds need this kind of support to minimize the negative effects of poverty on infant development. The first hypothesis of this study was that infants in the intervention group would have a higher global score that reflected their overall language, socio-emotion, cognitive, and general development by maternal ratings and also in observational ratings of infant vocalization during free play and a teaching task.

The first hypothesis was partially supported. Intervention and control group infants differed significantly based on direct observational measures on vocalization. Specifically, intervention infants vocalized significantly more than control infants. On the other hand, intervention and control group infants were not significantly different from each other in general developmental screening scores based on the mother ratings of the WHO IYCD instrument. The moderating role of maternal depression on the relation between intervention status and WHO IYCD scores was also not significant. It is important to note that the WHO IYCD does not provide domain specific screening scores, but it is generally used a developmental screener that evaluates the overall development of the infant (WHO, 2010). Therefore, it may not be sensitive enough to capture developmental differences between the groups.

Furthermore, although previous meta-analyses and reviews of home visiting programs suggest that intervention families had overall more positive outcomes compared to control families (Home Visiting Evidence of Effectiveness, 2019), the effect sizes were small and direct effects on children were not robust (Filene et al., 2013; Raikes et al., 2006). Home visiting programs often initially aim to improve the quality of parent-infant interactions, which later shows its effects on infant's development, generally at age 3 year or even later (Dodici et al., 2003; Love et al., 2002; Love et al., 2005; Sweet & Appelbaum, 2004). Therefore, it is possible that an intervention effect may emerge at a later measurement point. Given the small-to-moderate effect sizes, a larger sample size may be also needed to detect intervention effects.

On the other hand, the present study findings suggested that the home visiting program at a more specific level offered an advantage to intervention infants in terms of language skills, which was one of the main goals of the present home visiting program. The main group difference in infant vocalization was also qualified by an interaction effect. This language improvement in favor of intervention infants was similar to results of other home visiting programs (Landry et al., 2006; Olds et al., 2002). Specifically, infants of highly depressed intervention mothers vocalized more compared to their control counterparts. Yet, there was no intervention effect for infants of less depressed mothers. This finding provided support for the differential susceptibility hypothesis suggesting that the high-risk group of the intervention benefited more from the intervention. The NFP has also found similar results; after the intervention, home-visited children born to mothers with low psychological resources, which means they had limited intellectual functioning, mental health, and

sense of control over their life circumstances, had higher language and mental development scores compared to control group counterparts (Olds et al., 2002).

4.1.2 Group differences for maternal global responses

The second hypothesis of this study was that intervention mothers would have higher supportive presence and respect for autonomy while interacting with their infants during free play. Contrary to the expectations, intervention and control mothers did not differ significantly in supportive presence which means they were equally sensitive to their child's needs and cues for support and encouragement. Yet, there was a significant interaction between the intervention status and maternal depression such that highly depressed home visited mothers had higher supportive presence compared to highly depressed control mothers. On the other hand, in the case of low levels of maternal depression, the home visiting program did not reveal any group difference. Finally, the findings also revealed that intervention mothers were more likely to respect their infants' autonomy, negotiate with them, reflect their intentions and ideas, and follow their leads during free play, regardless of maternal depression level.

Our results were partially consistent with the results of previous home visiting programs (Love et al., 2005; HomVEE, 2019). In general, the average home visiting program effect represents a modest but significant enhancement in maternal behavior, particularly increased maternal sensitivity (Filene et al., 2013; HomVEE, 2019; Nievar et al., 2010; Sweet & Appelbaum, 2004). In the present study, maternal supportive presence and respect for autonomy were taken as components of maternal sensitivity. With regard to supportive presence, the intervention and control group

difference in the present study was not significantly different, but the groups differed significantly with respect to autonomy granting. This finding suggested that the intervention program has improved mothers' negotiation and reflection abilities with their infants. They followed their infants' lead during free play and respected their choices, ideas, and initiations more than control mothers. They were not intrusive, forceful, and did not interrupt the infants' play with their own agenda.

In the case of supportive presence, the program benefitted a subgroup of mothers rather than all intervention mothers. The program improved the sensitivity of highly depressed mothers more than their control counterparts. Among less depressed mothers, both groups did not differ. This result is consistent with our expectation that risky families can benefit from the home visiting intervention more (Bakermans-Kranenburg et al., 2003).

The positive impact of the home visiting program on sensitivity of highly depressed mothers is striking. In fact, maternal depression is a challenging problem for home visiting problems (Ammerman et al., 2011). Depression makes it harder for mothers to participate in the program and establish a working alliance with a home visitor (Ammerman et al., 2011; Duggan, Berlin, Cassidy, Burrell, & Tandon, 2009). Also, it has been reported that maternal depression adversely affects intervention outcomes (Ammerman et al., 2011). Thus, separate treatment for depression is recommended during home visiting programs (Duggan et al., 2009). The present home visiting program also had that kind of treatment for mothers. Indeed, it is proposed that there may be greater room for improvement for depressed mothers (Duggan et al., 2009). By improving the mental health of mothers, they become more sensitive to their infants' needs and cues and respond to them more promptly and appropriately compared to control group counterparts (Lovejoy et al., 2000). The

program buffered positive parenting practices of depressed mothers. Mothers would be less sensitive toward their infants without the program. However, it is open to question whether maternal depression was reduced by the program or not. Home visitors' social support during home visits might help depressed mothers since low-income mothers especially need this kind of support during raising a child. With this kind of support, they might become more available to infants' needs.

4.1.3 Group differences in event coding

Contrary to the hypothesis, intervention and control group differences did not emerge in maternal event codings (i.e., praise, labeling, pointing, verbal responsiveness), which were taken as components of maternal cognitive stimulation. Other home visiting programs have shown significant group differences in maternal cognitive stimulation (Caldera et al., 2007; Harding et al., 2007). These home visiting programs have measured cognitive stimulation by HOME Inventory and it was used to check whether the intervention has led to changes in parenting practices (Aboud & Yousafzai, 2015). The HOME Inventory is both interview and observation measure and it has many subscales that measure stimulating parenting behavior, the safety of the home environment, and the availability of age-appropriate toys in the home environment (Caldwell & Bradley, 1984). In this study, specific maternal stimulating behaviors were observed and coded. Therefore, the measurement method difference may explain the different outcomes regarding cognitive stimulation.

There are other variables that have been proposed to affect the effectiveness of home visitation programs such as the frequency, timing, duration of visitation, and the profession and characteristics of home visitors (Azzi-Lessing, 2011). An important predictor of the high effect sizes of home visiting programs was the

frequency of home visiting (Nievar et al., 2010). Programs with more frequent visitation had higher success rates. Intensive programs or programs with at least three visits per month were more effective than less intensive programs. The present home visiting program was less intensive with two visits per month. This may affect the outcomes in this study, and intensive programs may help more families in the future.

However, subgroup analyses have shown that highly depressed intervention mothers have improved some of these skills compared to their control counterparts. Highly depressed home visited mothers were more likely to show verbal responsiveness and pointing compared to their depressed control counterparts. Also, the composite stimulation score calculated by combining labeling and pointing scores showed an intervention effect for highly depressed mothers. Specifically, when maternal depression was high, cognitive stimulation scores were significantly higher among intervention mothers compared to control mothers, but when depression was low, cognitive stimulation did not differ between intervention and control mothers. It is possible that depressed mothers have particularly benefited from home visitors, who have been role models for pointing to the objects and labeling their names, and responding both verbally and nonverbally to infant vocalization during a home visit.

Other home visiting programs have also shown similar results when maternal depression was taken as a moderator. For instance, when mothers had initially higher depression, the intervention effect on mother-infant interaction was greater in the EHS program (Love et al., 2002). Also, the NFP results have shown that intervention programs were most successful when they served families at greater risk (Olds & Kitzman,1993). The meta-analysis on the effectiveness of home visiting programs has illustrated that programs targeting low-income families had higher improvement

in parenting behaviors than programs not targeting low-income families (Sweet & Appelbaum, 2004).

4.2 Strengths and limitations of the study

4.2.1 Strengths of the study

First of all, the present home visiting program was evaluated in this study with direct behavioral observations of mother-infant interaction. Both infants' and mothers' specific behaviors were observed and coded during various two tasks; free play and the teaching task. Hence, we had a chance to capture the group differences in more specific infant and maternal behaviors. Because of high correlations of infant and maternal behaviors across free play and the teaching task, their aggregated scores were calculated to create more reliable scores. The other strength of this study is that infant development was measured with both global and specific ratings to depict the accurate and the most informative developmental outcomes. Furthermore, subgroup analyses in this study have revealed that especially at risk families have benefited from the intervention program as expected. Home visited depressed mothers were better at supportive presence, pointing, verbal responsiveness, and stimulation compared to control depressed mothers. Finally, the present study employed professionals from the municipality as home visitors, who had educational background in psychology, sociology, or child development and who received intensive pre-service and periodic in-service training for home visitation.

4.2.2 Limitations of the study

There were a number of limitations of this study. First of all, the sample size in this study was relatively small compared to home visiting programs published previously (Daro & Harding, 1999; Love et al., 2002; Olds et al., 2002). Secondly, the present study had a quasi-experimental design. Thus, participants were not randomly assigned to the intervention and control groups. Yet, participants were recruited from neighborhoods of similar socioeconomic status, and both groups were from middle to low socioeconomic status. Still, a randomized controlled trial would be a stronger design to attribute group differences to the home visitation effect. Third, the improvement in children's cognitive development may be detected later than in infancy (Dodici et al., 2003; Sweet & Appelbaum, 2004). Intervention effects during the first two years of life are more commonly detected on parenting and parent-child relationship than on child development (Love et al., 2002). Fourth, longitudinal research is needed to evaluate whether the positive gains in infants' vocalization and maternal behaviors would persist or not. Fifth, maternal depression scores were measured 3 months prior to the lab observation. Thus, during the 3 month period, depression scores might change and affect the outcome. Also, there were a relatively small number of depressed mothers (20 out of 74 mothers) in this sample. Finally, the observations took place in a laboratory environment, and mothers were informed about the videotaping procedure beforehand, which might have affected mothers' attitudes toward their infants. Some of them might have acted more positively toward their infants, while others might have been stressed and could not concentrate on their infants' needs during the tasks.

4.3 Implications

The home-visited and control group differences were investigated in this study in order to strengthen the present home visiting program and produce better outcomes for the children and families in the future. Previous evaluations of programs provide important information about areas that should be further developed (Azzi-Lessing, 2011). Strong, scientific-based interventions can be produced based on outcomes of previous intervention programs (Shonkoff et al., 2012). For instance, based on the current outcomes, the present home visiting program should focus on maternal supportive presence in the future. Home visitors may need more education on sensitivity and target sensitive behaviors toward infants during home visits to be a role model for mothers. For instance, some mothers misread infants' signals or some of them are able to read them correctly but do not know how to respond to them appropriately. The mother-infant relationship may need to be observed closely by home visitors, and then the appropriate actions should be taken. In addition, in the curriculum of the present program, sensitivity subject can be covered more with examples from daily life.

Data on home visiting program effectiveness range from spectacular to disappointing (HomVEE, 2019). There are many variables that can affect the outcome of the home visiting program. In this study, we were not able to investigate these variables, such as the frequency of visits, the profession of home visitors, or the quality of alliance between mother and home visitor. Also, the sample size of this study is limited and specific to low-income families. Despite these drawbacks, this study focused on differences between intervention and control groups in infant development and maternal global and event responses toward their infants. There were significant group differences in regards to infant language skills and maternal

respect for autonomy. Similar to previous research, early intervention works and helps parents that in need (Shonkoff & Phillips, 2000).

Another implication is that the intervention is beneficial for some subgroups of mothers than others. Previous studies have shown that certain demographic groups appear to benefit more from intervention programs than do other groups (Nievar et al., 2010). Especially at risk families have benefited from the intervention program as expected. Maternal depression was taken as a risk factor in this study. When home-visited mothers had high depression, they were better at supportive presence, pointing, verbal responsiveness, and stimulation compared to those who had high depression in the control group. The home visiting programs to this date target depressed mothers to improve their mental states and their impact on their infants in order to minimize the possible risks that these infants face while they are growing up. This happens as an important challenge to home visiting programs and their successes (Ammerman et al., 2011; Duggan et al., 2009). In the future, depressed mothers can be recruited in the home visiting program more to improve their parenting behaviors. Finally, the present home visiting program was an adaptation of the Reach Up Early Childhood Parenting Program. To date, substantial evidence has shown that the program benefited children and their mothers (Walker et al., 2018). In this study, we have also found beneficial results both for infants and maternal behaviors with a sample of Turkish mothers and infants.

APPENDIX A

DESCRIPTIONS OF HOME VISITING PROGRAM MODELS

Program Model	Program Goals	Onset, Duration, and Frequency of Home Visits	Population Served and Participant Size	Background of Home Visitors
Early Head Start (EHS)	• Promote healthy prenatal outcomes for pregnant women • Enhance the development of infants • Promote healthy family functioning	Birth through age 3 Weekly home visits 90-minute home visits	Low-income pregnant women and families with infants and toddlers Intervention *N* = 1.513, Control *N* = 1.488	Bachelor degrees
Healthy Families America (HFA)	• Promote positive parenting • Prevent child abuse and neglect	Birth through age 3 between 5 Weekly, fading to quarterly	Single parenthood; low income; childhood history of abuse and other adverse child experiences; and current or previous substance abuse, mental health issues, and/or domestic violence An estimated 18.000 families were enrolled in home visiting program	Paraprofessionals and Bachelor degrees
The Nurse-Family Partnership (NFP)	• Improve pregnancy outcomes • Improve child health and development • Improve families' economic self-sufficiency and/or maternal life course development	Prenatal through age 2 Weekly fading to monthly	Low-income, first time mothers, all ethnicities *N* = 560	Public health nurses
Play and Learning Strategies (PALS) Infant	• Strengthen parent–child bonding • Stimulate children's early language, cognitive, and social development	5 to 18 months, 10 weekly sessions 90-minute home visits	At-risk families who are unlikely to have received effective parenting instruction Intervention *N* = 133 Control *N* = 131	Parent educators
The Reach Up Early Childhood Parenting Program	• Aims to build mothers' skills, self-esteem and enjoyment in helping her child play and learn • Enhance the development of infants	Began when children were 9-24 months old; ended 1 year later Weekly visits	Low-income, unemployed mothers Intervention *N* = 30, Control *N* = 33	Paraprofessionals

Source: [Gomby, 2005]

APPENDIX B

PARTICIPATION INFORMATION AND CONSENT FORM (TURKISH)

Araştırmayı destekleyen kurum: Boğaziçi Üniversitesi

Araştırmanın adı: Erken Çocukluk Döneminde Gelişimin Desteklenmesi

Proje Yürütücüsü: Prof. Dr. Feyza Çorapçı

E-mail adresi: feyza.corapci@boun.edu.tr

Telefonu: (212) 359 73 23

Araştırmacıların adı: 1. Zeynep Başar

2. Duygu Yıldız

3. Kıvılcım Değirmencioğlu

E-mail adresleri: zeynep.basar@boun.edu.tr; duygu.yildiz@boun.edu.tr; kivilcimde@gmail.com

Telefonları: 554 904 42 33; 538 607 71 41; 506 309 41 52

Sevgili Annemiz,

Boğaziçi Üniversitesi ve Sarıyer Belediyesi 0-3 yaş çocuğu olan ailelere yönelik "*Erken Çocukluk Döneminde Gelişimin Desteklenmesi*" projesini yürütmektedir. Bu çalışmada, 12 aylık bebeklerin gelişimi ve anneleriyle olan etkileşimlerini gözleme dayalı olarak incelemeyi amaçlamaktayız. Kararınızdan önce araştırma hakkında sizi bilgilendirmek istiyoruz. Bu bilgileri okuduktan sonra araştırmaya katılmak isterseniz lütfen bu formu imzalayıp bize veriniz.

Bu araştırmaya katılmayı kabul ettiğiniz takdirde, bir oyun odası olarak tasarlanmış ve dekore edilmiş Boğaziçi Üniversitesi Gelişim Psikolojisi Laboratuvarında bu yaştaki bebeklerin keyif aldıkları etkinliklere katılacaksınız. Bu etkinlikler serbest oyun, üst üste konan halkalar, müzik oyunu, Ce-E oyunu ve resimli bir kitaba birlikte bakmanızı içeren etkinlikler olacak. Ayrıca bu oyunlarda bebeğinizin yeni oyuncaklara gösterdiği tepkiyi ve odanın kurallarına nasıl uyduğunu da gözlemleme fırsatımız olacak. Tüm bu etkinliklerde, bebeğiniz ve siz odada birlikte bulunacaksınız. Ziyaretinizin sonuna doğru sizden yan odada 5 dakika sürecek bir anketi doldurmanızı rica edeceğiz; bu esnada bebeğiniz oyun odasında araştırma asistanımız ile kalacaktır. Siz anketi doldurduktan sonra, bebeğinizle birlikte bir yeme-içme zamanınız olacaktır. Son olarak, sizinle yaklaşık 25 dakika süren bir gelişim taraması görüşmesi yapacağız.

Ziyaretinizin yaklaşık 1,5 saat sürmesi beklenmektedir. Tüm bu etkinlikler video ile kaydedilecektir. Dileyen ailelere kaydın bir DVD kopyası hediye olarak vereceğiz.

Bu araştırma bilimsel bir amaçla yapılmaktadır ve katılımcı bilgilerinin gizliliği esastır. Sizin ve bebeğinizin bilgileri kimseyle paylaşılmayacaktır. Sizden toplanan veriler sadece araştırmacılar tarafından görülebilecek, ailelerin isimleri kendilerinden alınan verilerle eşleştirilmeyecek ve video kayıtlarında katılımcı ailenin ismi yerine bir numara kullanılacaktır.

Toplanan veriler bireysel olarak değil toplu olarak değerlendirilip yayımlanacaktır. Video kayıtları araştırma projemiz süresince kilitli bir dolapta muhafaza edilip araştırma sona erdiğinde silineceklerdir.

Ziyaretin sonunda, katılımınız ve zaman ayırdığınız için bebeğinize bir katılım sertifikası ve size de erişiminiz olan bir markette kullanabileceğiniz 50 TL değerinde bir hediye çeki verilecektir. Araştırma tamamlandıktan sonra da size bir bilgilendirme raporu yollanacaktır. Bebeğinizin gelişiminde olası bir risk tespit edilirse ihtiyacı olan desteği alması için yönlendirme yapılacaktır.

Bu araştırmaya katılmak tamamen isteğe bağlıdır. Katıldığınız takdirde çalışmanın herhangi bir aşamasında herhangi bir sebep göstermeden onayınızı çekmek hakkına da sahipsiniz. Eğer çalışmadan onayınızı çekerseniz o sürece kadar sizden alınan video kayıt görüntüleri silinecektir. Tez araştırması hakkında ek bilgi almak istediğiniz takdirde lütfen yukarıda iletişim bilgileri verilmiş olan proje yürütücüsü veya araştırmacılar ile temasa geçiniz. Ayrıca katılımcılar araştırma ile ilgili hakları konusunda Boğaziçi Üniversitesi Sosyal ve Beşeri Bilimler Yüksek Lisans ve Doktora Tezleri Etik İnceleme Komisyonu'na danışabilirler.

Eğer bu tez çalışmasına katılmasını kabul ediyorsanız, lütfen bu formu imzalayıp bize geri verin.

Ben, (annenin adı) ....., yukarıdaki metni okudum ve katılmam istenen çalışmanın kapsamını ve amacını, gönüllü olarak üzerime düşen sorumlulukları tamamen anladım. Çalışma hakkında soru sorma imkanı buldum. Bu çalışmayı istediğim zaman ve herhangi bir neden belirtmek zorunda kalmadan bırakabileceğimi ve bıraktığım takdirde herhangi bir olumsuzluk ile karşılaşmayacağımı anladım.

Bu koşullarda söz konusu araştırmaya kendi isteğimle, hiçbir baskı ve zorlama olmaksızın katılmayı kabul ediyorum.

Formun bir örneğini aldım / almak istemiyorum (bu durumda araştırmacı bu kopyayı saklar).

Annenin Adı-Soyadı:.....

İmzası:.....

Adresi (varsa Telefon No, Faks No):.....

Tarih (gün/ay/yıl):...../...../.....

APPENDIX C

PARTICIPATION INFORMATION AND CONSENT FORM

The research institution: Boğaziçi University

Title of the study: Supporting Development in Early Childhood

Project Manager: Prof. Dr. Feyza Çorapçı

E-mail address: feyza.corapci@boun.edu.tr

Phone number: (212) 359 73 23

Names of researchers: 1. Zeynep Başar

2. Duygu Yıldız

3. Kıvılcım Değirmencioğlu

E-mail addresses: zeynep.basar@boun.edu.tr; duygu.yildiz@boun.edu.tr; kivilcimde@gmail.com

Phone numbers: 554 904 42 33; 538 607 71 41; 506 309 41 52

Dear Mother,

Boğaziçi University and Sarıyer Municipality are carrying out the project "Supporting Development in Early Childhood" for families with 0-3 year old children. In this project, we aim to discuss the development of 12-month-old babies and their interactions with their mothers. We would like to inform you of your decision about the research first. Please sign this form after reading if you want to participate and give it to us.

In the Developmental Psychology Laboratory, you will participate in activities enjoyed by babies of this age. These events will include free play, overlapping rings, music game, Ce-E game and looking at a picture book together. We will also have the opportunity to observe your baby's reaction to new toys and how the room complies with the rules. In all these events, your baby and you will be together. We will ask you to complete a questionnaire that will take 5 minutes; In the meantime, your baby will stay with our game research and research assistant. After you fill in the questionnaire, you have time to eat and drink with your baby. Finally, we will have a 25-minute development screening interview with you.

Your visit is expected to take approximately 1.5 hours. All these events are recorded by video. We will give it as a gift on DVD.

This research is done in a scientific study and the confidentiality of the participant information is essential. The information of you and your baby will not be shared with anyone. In video recordings, the participant is for using a number in the video recordings instead of the name of the participating family.

The collected places will be evaluated and published collectively, not individually. The video recordings will be kept in a lockable closet that can be projected into research and will be deleted when the research ends.

At the end of the visit, your baby will be given a certificate of attendance for your participation and time and a gift card worth 50 TL that you can use at a grocery store you have access to. After the research is completed, an information report will be sent to you. If a potential risk is detected in your baby's development, guidance will be taken to get the support they need.

Participating in this research is entirely voluntary. If you participate, you also have the right to withdraw your consent at any stage of the study without giving any reason. If you withdraw your consent from the study, the video recording images taken from you will be deleted until that time. If you would like additional information about the thesis research, please contact the project manager or researchers whose contact information has been provided above. In addition, participants can consult the Boğaziçi University Social and Humanities Master's and Doctoral Theses Ethics Investigation Committee regarding their research-related rights.

If you agree to participate in this thesis, please sign this form and return it to us.

Me, (mother's name) ..... Click to read the text. I fully understood the responsibilities I had voluntarily. I had the opportunity to ask questions about the study. I realized that I could quit this study whenever I wanted and without having to give any reason, and I would not encounter any negativity.

In these circumstances, I agree to participate in this research voluntarily, without any pressure or coercion.

I received / do not want to get a copy of the form (in this case, the researcher will keep this copy).

Mother’s Name-
Surname:.....

Signature:.....
....

Address (Phone Number):.....

Date (day/month/year):...../...../.....

Researcher’s name-surname:.....

Signature:.....

APPENDIX D

12-14 MONTH LAB VISIT PROCEDURE

ACTIVITY 1. EXPLORING THE ROOM & MEETING THE STRANGER(5 + 2 min.) Assistant 1, Assistant 2, Mother & Child

After taking the mother's consent, Assistant 1 informs the mother that she and her child have 5 minutes to explore the playroom as they wish. They are free to explore every toy and drawer. We are expecting them to get comfortable in the playroom during the exploration.

Before leaving the room, Assistant 1 informs the mother that the other Assistant (Assistant 2) will come to the room and meet her child for the first time after 5 minute exploration time passes. The mother is requested to be silent when Assistant 2 comes to the room in order to observe the child's first reaction to a stranger. Assistant 1 leaves the room and sets the timekeeper to 5 min.

After 5 min, Assistant 2 as a stranger enters the room and meets the child. She speaks directly with the child without any emotion in her face:
"Ah, a very sweet baby" and gets one step closer to the child and waits 1 second. Then she says *"Hello [child's name], how are you?"* and again gets one step closer and waits 1 second. *"Now, I will come near to you."* and gets near to the child, and waits 1 second. *"Now, I will hold you."* She holds the child with the child's face pointing at the camera and at the same time the child is able to gaze at the mother. She holds the child 10 seconds with the same position. Then she puts the child down and says *"It is so nice to meet you, now I will go to the other room."* As she leaves the room, she informs the mother that she can take care of her child as she wishes now and sets the timekeeper to 2 min.

ACTIVITY 2. FREE PLAY (8 Min.)Assistant 1, Mother & Child

Assistant 1 provides three boxes of toys to the mother and toddler on the floor of the playroom. The boxes contain 10 different kinds of toys which are suitable for 13-month old toddlers developmentally. The toys include two toy cars, one doll, one soft book, one vocal farm animals book, one jigsaw puzzle of animal figures, one vocal duck, two soft chicks, one soft crab, and one soft rabbit, some blocks, one pull-along toy, and one ball fitting toy. The mother is requested to play with her toddler using these toys as they would normally play at home. The mother is free to select the toys that she prefers to play with and to spare as much time she wants for any toy. She may choose only one toy to play with and may ignore other toys at her given time for this task. This task takes 8 minutes.

ACTIVITY 3. TEACHING TASK #1: STACKING RINGS (3 Min.) Assistant 1, Mother & Child

Assistant 1 provides stacking rings to the mother and toddler. The mother is requested to teach stacking rings from large to small one by one. If the mother does not know the toy, Assistant 1 first teaches her the toy. The mother is informed that this toy may be difficult for 13-month old toddlers and her toddler does not have to learn how to play with this toy right now. The mother is free to help her toddler as she wishes but the toddler must stacke the rings as requested. This task takes 3 minutes.

ACTIVITY 4. TEACHING TASK #2: XYLOPHONE TOY (3 Min.) Assistant 1, Mother & Child

Assistant 1 provides a xylophone toy to the mother and toddler after removing stacking rings. The mother should teach the beating keys one by one to play xylophone. If the mother does not know the toy, Assistant 1 first teaches her the toy. The mother is informed that this toy may be difficult for 13-month old toddlers and her toddler does not have to learn how to play with this toy right now. The mother is free to help her toddler as she wishes but the toddler must beat the keys as requested. This task takes 3 minutes.

ACTIVITY 5. SEPARATION & REUNION WITH MOTHER (5 +3 Min.)

Assistant 1, Assistant 2, Mother & Child

Assistant 2 enters into the experiment room and invites the mother out of the room for a 5-min brief questionnaire. Before leaving the room, the mother is instructed to say to her baby, *"I have a little job outside, you wait a bit here with [Assistant 1's name], I'll come right away, okay?".*

Assistant 2 sets the timekeeper to 5 minutes as soon as they leave the room with the mother. Meanwhile, Assistant 1 stays in the room with the baby for 5 minutes. She sits on the couch and waits quietly without making eye contact with the baby. After the end of 5-min separation, the mother is told that she can return to the room and interact with her baby as she wishes. As the mother enters the room, Assistant 1 quietly exits from the room and starts the timekeeper to 3 min.

Notes:

If the mother is very anxious about separation, she is not urged to leave the room. The separation condition is terminated if the infant is too distressed and cries intensely for more than 30 seconds or if the mother wishes to enter the room before 5 minutes separation has completed.

ACTIVITY 6. PICTURE BOOK (3 Min.) Assistant 1, Mother & Child

The mother is asked to sit on the mat or couch with her baby. They are given a wordless picture book containing pictures of baby faces, each with different emotions. The mother is instructed to go through the book with her infant and to talk about each picture.

After explaining the task, Assistant 2 leaves the and sets the timekeeper to 3 min.

ACTIVITY 7. NOVEL TOY (4 Min.) Assistant 1, Mother & Child

Assistant 1 enters the room and shows a remote-controlled bee toy with light and motion. The mother is informed that babies' reaction to novel toys might vary. She is told that some children may be very interested in this toy while others don't.

Assistant 1 explains to the mother the aim of the procedure, to understand how her baby reacts when confronted with this toy. During the time Assistant 1 moves the toy, the mother is instructed to sit quietly on the couch in the background and not interact with her baby. Assistant 1 introduces the toy to the child and approaches it to the child using remote control. The toy comes close to the child and stops for 25 sec. Then, the toy moves away from the child for a few seconds. This sequence is repeated three times.

At the end of this experiment-controlling toy sequence, Assistant 1 leaves the turned-off toy on the floor of the room and signals to the mother that she can interact with her infant and explore the toy as she wishes for 3 min. The assistant sets the timekeeper to 3 min as soon as exiting from the room.

Notes:

During moving toy sequence, if the baby becomes too distressed or crying intensely for more than 30 second or if the mother tells her that she does not want to continue the activity because of the toy, the activity is terminated.

ACTIVITY 8. PEEK-A-BOO (2 Min.) Assistant 1, Mother & Child

Assistant 1 enters into the room and asks the mother to play a peek-a-boo game with her baby in the way that they play at home. Assistant 1 leaves the room and lets the mother and the baby be alone together for 2 min for this game.

ACTIVITY 9. FORBIDDEN TOY (4 Min.) Assistant 1, Mother & Child

Assistant 1 carrying a colorful, amusing toy enters into the room and explains to the mother that the aim of the present activity is to see how babies react when they are restrained from playing a fancy toy.

Assistant 1 starts to show this enjoyable toy to the baby. Once the baby's attention is captured by the toy, Assistant 1 moves the toy closer to the baby and says to the mother, "*I'm putting this new toy here for you. However, [baby's name] cannot play with this new toy now. He can play with this toy when I come back. Please don't let [baby's name] play with these toys or even touch it*".

Three minutes later, the Assistant enters the room and tells them that the mother and the baby can play with the forbidden toy as they wish. Assistant 1 gives them 1 min to explore this toy.

ACTIVITY 10. FEEDING (5 Min.) Assistant 1, Mother & Child

Assistant 1 enters into the room and says, "*After so many games, it's time for a snack. For your baby, [Assistant 2] will now bring the food you prepare at home from the fridge".* Baby feeding chair and a chair for the mother are placed in the

middle of the room facing the camera. When Assistant 2 brings the food, the mother is asked to seat the baby in the baby feeding chair and feed her baby if the baby is comfortable in there. Assistant 1 says to the mother, ``*You can feed your baby the way you are comfortable, just as you are at home".* This task takes 5 min.

Notes:

If the food is not put in the fridge, mother is asked to prepare the snack that she carries in her bag.

If the mother forgets to bring something for the baby to eat, the assistant says, "*There are some snacks here in our laboratory so that babies who come here can eat when they are hungry"*. If the child likes to eat any of them, it is given to the mother to feed the baby.

ACTIVITY 11. WHO Infant and Young Child Development Interview (15 Min.)

Assistant 1, Assistant 2, Mother & Child

Assistant 1 and Assistant 2 enter the room and Assistant 1 asks the mother what she can offer. While Assistant 1 prepares the refreshments, Assistant 2 says to the mother, "*I have some questions about your child's development and what he enjoys doing. While answering my questions, [baby's name] will stay here, and you can continue to take care of him as usual. During the interview, Assistant 1 is also in the room to take care of the baby and play with him*".

First, the main purpose and content of the interview is explained:

"*I will now ask you questions about what your baby is doing to better understand your baby's development. Individual differences in the development of infants during this period are very common. That's why your baby may be doing some of the things I'm asking, and not being able to do some of it. As I said, this is expected in terms of development. Our goal here is to get information about what your baby can do, what he likes to do*."

This interview takes 15 min to complete.

APPENDIX E

VOCALIZATION CODING MANUAL

Child Vocalization: When a child vocalizes, this is coded as child vocalization.

No response: When a mother does not respond to the child's vocalization within 3 seconds after the child attempted and completed his or her vocalization, this is coded as "no response."

Verbal Response: When a mother responds verbally to a child's vocalizations or verbalizations within 3 seconds after the child attempted and completed his or her vocalization, this is coded as "verbal response."

The parental response may be either a complete word or words or merely clearly differentiated sounds or exact repetition of child's vocalization, e.g., "ta-ta," "tsk-tsk," or "You talking to Mommy?" The key factor here is that the parent is responding to the child's vocalization, not ignoring it.

Nonverbal Response: When a mother responds nonverbally to child's vocalizations or verbalizations within 3 seconds after the child attempted and completed his or her vocalization, this is coded as "nonverbal response." Nonverbal response includes touching, hugging, kissing, or giving or showing a toy to a child.

Vocalization Coding Sheet

Coder: ID: start time: ending: free O sorting O

Number	child voc.	no response	nonverbal	verbal
1				
2				
3				
4				
5				

6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
Total				

APPENDIX F

COGNITIVE STIMULATION CODING MANUAL

CLAP:

Each clap of mother should be coded for the mother.

LABELING:

Label 1 (L1): When mother labels objects, toys, people or objects around the room, L1 should be coded (for example, toy = L1).

Label 2 (L2): When mother labels features of objects, toys, or people, L2 should be coded. For instance, its color, length, shape, texture, sound, count, or order.

PRAISE:

When moher praises the child, such as “good job”, “well done”, “yeah!”, “good”, “that’s it”, “you made it”, “bravo,” Praise should be coded.

While the mother is clapping the child, she may say “clap.” If this occurs, both applause for mother and praise should be coded.

POINT:

When mother points objects in the room, Point should be coded.

Cognitive Stimulation Coding Sheet

Coder: Family ID: Start time: Activity: Sorting O Free Play O

1 MIN	5	10	15	20	25	30	35	40	45	50	55	60	Total
Clap													
Praise													
Label 1													
Label 2													
Point													

2 MIN	5	10	15	20	25	30	35	40	45	50	55	60	Total
Clap													
Praise													
Label 1													
Label 2													
Point													

3 MIN	5	10	15	20	25	30	35	40	45	50	55	60	Total
Clap													
Praise													
Label 1													
Label 2													
Point													

4 MIN	5	10	15	20	25	30	35	40	45	50	55	60	Total
Clap													
Praise													
Label 1													
Label 2													
Point													

5 MIN	5	10	15	20	25	30	35	40	45	50	55	60	Total
Clap													
Praise													
Label 1													
Label 2													
Point													

APPENDIX G

10-ITEM CENTRE FOR EPIDEMIOLOGICAL STUDIES (CES-D) (TURKISH)

ANNENİN SON BİR HAFTA İÇİNDE KENDİNİ NASIL HİSSETTİĞİ

Şimdi size son 1 haftada kendinizi nasıl hissettiğinizle ilgili sorular soracağız.

Aşağıda duygu ve davranışlarınızla ilgili ifadeler yer almaktadır. Lütfen geçen hafta boyunca aşağıdakileri ne sıklıkla hissettiğinizi veya yaşadığınızı belirtin.

Hiç 1-2 gün 3-4 gün 5-7 gün

L1 Genelde canımı sıkmayan şeyler canımı sıktı. 1 2 3 4

L2 Yaptığım işlere dikkatimi vermekte zorlandım. 1 2 3 4

L3 Kendimi bunalmış, çökkün, depresyonda hissettim. 1 2 3 4

L4 Yaptığım her şey yük gibi geldi, zorlandım. 1 2 3 4

L5 Geleceğe dair umutlu hissettim. 1 2 3 4

L6 Korku dolu hissettim. 1 2 3 4

L7 Huzursuz uyudum. 1 2 3 4

L8 Mutluydum. 1 2 3 4

L9 Kendimi çok yalnız hissettim. 1 2 3 4

L10 Bir türlü işe koyulamadım. 1 2 3 4

APPENDIX H

10-ITEM CENTRE FOR EPIDEMIOLOGICAL STUDIES (CES-D)

HOW THE MOTHER FELT IN THE LAST WEEK

Below are statements about your feelings and behavior. Please indicate how often you have felt or experienced the following during the past week.

Now we will ask you questions about how you have felt in the last week.

None 1-2 days 3-4 days 5-7 days

L1 Usually things that don’t bother me bother me. 1 2 3 4

L2 I had a hard time paying attention to my work. 1 2 3 4

L3 I felt overwhelmed, depressed. 1 2 3 4

L4 Everything I did felt like a load, I was forced. 1 2 3 4

L5 I felt hopeful about the future. 1 2 3 4

L6 I felt fearful. 1 2 3 4

L7 I slept restlessly. 1 2 3 4

L8 I was happy. 1 2 3 4

L9 I felt so alone. 1 2 3 4

L10 I just couldn't get into work. 1 2 3 4

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