

The Effects of Maternal Behaviors on Children's Cognitive Development

by

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ABSTRACT

This study examined the effects of maternal intrusiveness and detachment on children's cognitive outcomes when children were three and four years old. It also examined how maternal warmth moderated this relationship. It was proposed that intrusive parenting would negatively influence children's cognitive development because it interrupted children's exploratory behaviors, disrupted the synchrony between the mother and the child and coerced the child to fulfill parental demands instead of pursuing his or her own goals. The data were collected by qualitative (videotaped parent-child interactions) and quantitative methods (cognitive tests) from the participants (N=123) of the Study of Early Childhood Developmental Ecologies in Turkey (ECDET). The results indicated that (i) the effects of intrusiveness on cognitive outcomes were nonlinear; (ii) there were interactive effects of intrusiveness with maternal warmth. When warmth was high, high levels of intrusiveness affected children's inhibitory scores and math scores adversely; (iii) maternal detachment negatively influenced children's receptive language and inhibitory control scores; (iv) there were interactive effects of detachment with maternal warmth. When warmth was high, high levels of detachment affected working memory scores adversely. This study suggested that unlike commonly found by previous research the positive emotional climate might not buffer the negative effects of intrusive and detached parenting on children's cognitive outcomes. Instead, they might exacerbate their negative effects.

Keywords: Maternal intrusiveness, detachment, warmth, cognitive development

ÖZET

Bu çalışma, annenin müdahale eden ve ilgisiz davranışlarının çocuğun üç ve dört yaşlarındaki bilişsel gelişimine etkilerini araştırmaktadır. Ayrıca sıcaklığın bu ilişkiyi nasıl etkilediğini incelemektedir. Müdahaleci anne davranışlarının çocuğun bilişsel gelişimini olumsuz etkileyeceği öne sürülmektedir çünkü bu davranışlar çocuğun keşif niteliği taşıyan davranışlarını engellemekte, anne ve çocuk arasındaki senkroniyi bozmakta ve çocuğu ebeveynin isteklerini yerine getirmeye zorlayıp kendi hedeflerinden alıkoymaktadır. Çalışmanın verileri Türkiye Erken Çocukluk Gelişim Ekolojileri (TEÇGE) araştırmasının katılımcılarından (N= 123) niteliksel (anne-çocuk etkileşim gözlemleri) ve niceliksel (bilişsel gelişim testleri) yöntemlerle toplanmıştır. Çalışma bulgularına göre; (i) müdahaleci davranışların bilişsel gelişim üzerindeki etkileri doğrusal değildir; (ii) müdahaleci davranışların sıcaklıkla etkileşim ilişkisi vardır. Sıcaklık yüksekken, yüksek müdahaleci davranışlar çocuğun kısıtlayıcı kontrol ve matematik becerilerini olumsuz etkilemektedir; (iii) ilgisizlik çocuğun alıcı dil ve kısıtlayıcı kontrol skorlarını olumsuz etkilemektedir; (iv) ilgisizliğin sıcaklıkla etkileşim ilişkisi vardır. Sıcaklık yüksekken, yüksek ilgisizlik çocuğun işleyen bellek skorlarını olumsuz etkilemektedir. Bu çalışma, daha önceki bulguların aksine, sıcak duygusal ortamın çocuğu müdahaleci ve ilgisiz ebeveynliğin olumsuz etkilerinden korumayabileceğini göstermiştir. Aksine sıcak duygusal ortamlar bu davranışların olumsuz etkilerini arttırabilir.

Anahtar Kelimeler: Müdahaleci davranış, ilgisizlik, sıcaklık, bilişsel gelişim

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Chapter 1

INTRODUCTION

This thesis examines the influence of different levels of maternal control during play on children's cognitive development. Specifically, it focuses on the effects of intrusive control, responsiveness, and detachment when children are three years old on their cognitive outcomes at three and four years of age. It also examines how maternal warmth moderates this relationship.

It relies on the theories of attachment, synchrony, ecological systems and coercion in the process of investigating the association between intrusiveness and cognitive outcomes. Because it examines the effects of responsiveness, warmth and detachment alongside intrusiveness on cognitive outcomes, it focuses on the parent-child interaction on cognition. As a result, it examines the effects of parent-child relationship on the development of cognition beyond the direct stimulation of cognitive development by parents via teaching, providing novel experiences, and providing materials that support learning. This study is based on data from Turkey. Interaction with parents is likely to be the most important factor accounting for children's cognitive development during early childhood in societies where preschool enrollment is low and family is the setting where the child spends most of his/her time. Majority of the children started school late in Turkey and they do not get a chance to attend preschool. According to the Ministry of National Education of Turkey, the enrollment rates of children in preschool were 16 percent during 2006-2007 academic years. It was below the world average and close to the lowest rates in Sub-Saharan Africa (12 percent). This rate reached to 26 percent for the 3-5 age group and 38 percent for the 4-5 age group in 2009-2010 academic year but compared to the European Union standards, where 85 percent of the children have the opportunity to go to preschool, these numbers were still very low (UNICEF Turkey, n.d.).

The study Early Childhood Developmental Ecologies in Turkey (ECDET), based on data gathered from a nationally representative sample of 1052 children and their families when children were three and four years old, revealed that even at age four, the proportion of children who are benefiting from preschool education was below 5 percent (Baydar, Küntay, Gökşen, Yağmurlu & Cemalcılar, 2010). Therefore, it is appropriate to focus on family interactions in studying early childhood development in this context.

There is a considerable body of research that examines the effects of parental control on children's emotional, behavioral and cognitive outcomes. Intrusive control is consistently identified in this research as having negative effects on child development. However, there are multiple terms that are used to refer to intrusiveness. Negative control, harsh control, directiveness and restrictiveness, excessive control, domineering and over-control are some of the concepts that are used to define intrusiveness (Rubin, Burgess, Dwyer & Hastings, 2003; Grolnick, Price, Beiswenger & Sauck, 2007; Scaramella, Sohr-Preston, Mirabile, Robinson & Callahan, 2008; Landry, Smith & Swank, 2006; Neitzel & Stright, 2004; Donovan, Leavitt & Walsh, 2000). This thesis aims to unify these concepts under one name and to operationally define intrusiveness. It specifies an approach to measure maternal behaviors using observational data.

1.1 Theories that link maternal behaviors to cognitive development

According to Bronfenbrenner's ecological systems theory (1986), child development was influenced by several environmental systems. The child was in direct contact with the microsystem which included the child's immediate environment; family, peers, school and neighborhood. Among these, family was the context where the child spent most of his/her time in early years. Bronfenbrenner proposed that in order for children to develop emotionally, socially and intellectually, they needed to participate in complex reciprocal activities for an extended period of time with someone who cared for the child and with

whom the child developed a secure emotional attachment. This kind of a reciprocal interaction would enhance the child's responsiveness to his/her environment and would support his/her development via facilitating exploration and manipulation (Bronfenbrenner, 1986).

Attachment theory also proposed a link between the quality of mother-child interaction and child's cognitive development. According to this theory, the attachment system aimed to regulate infant's behaviors to maintain proximity to the caregiver and to explore the environment (Bretherton, 1985). The two functions of the attachment system; attachment function and exploration function supported each other. When attachment function was activated –when the child perceived threat- the child sought contact with the caregiver and deactivated the exploratory system. In contrast, when there was no threat, the child felt comfort and used the attachment figure as a secure base from which to explore the environment; thus, the exploration function was activated (O'Connor & McCartney, 2007). Exploration was important for cognitive development because it provided the child the motivation for environmental mastery. Environmental mastery required the child to attend to activities, engage in them and persist even when challenged. It involved solving problems, interacting with people and objects in the environment. This was how the child developed and practiced his/her cognitive skills. Empirical evidence suggested that those children who explored and persisted in their engagement with objects at 6 months had higher cognitive scores at 14 months (Banerjee & Tamis-LeMonda, 2007).

Attachment theory posited that the motivation for exploration would be highest in securely attached children who could confidently rely on the availability of their attachment figures when needed. During home observations Ainsworth found that mothers of securely attached children were more sensitive and responsive to their infants' cues compared to mothers of insecurely attached children (Ainsworth, 1979). On the other hand, mothers of

insecurely attached children (insecure/avoidant, insecure/ambivalent and insecure/anxious) were insensitive, intrusive and interfering, showed less warmth and support, more disapproval and they were less cognitively stimulating (de Ruiter & van IJzendoorn, 1993; O'Connor & McCartney, 2007; Cassidy & Berlin, 1994). As a result, insecurely attached children who were concerned about the availability of their caregivers, refrained from engaging in exploratory moves and constantly shifted their attention to their mothers (Jacobsen, Edelstein & Hofmann, 1994).

Thus, securely attached children were expected to have superior cognitive skills compared to insecurely attached children. O'Connor and McCartney (2007) found that children, who had unorganized, anomalous attachment to their caregivers, displayed low levels of task engagement, low-level communication and attention skills. Similarly, insecure/ambivalent children displayed lower level communication skills and less sustained attention than securely attached children. These outcomes were associated with lower levels of cognitive skills. In another study examining the links between the quality of mother-child interaction, Jacobsen et al. (1994) demonstrated that securely attached children performed better on Piagetian tasks designed to assess concrete and formal operational reasoning as well as in deductive reasoning tasks in middle childhood compared to insecurely attached children. Moss and St-Laurent (2001) supported the same conclusions by showing that secure children outperformed their insecure peers on communication, task engagement and mastery motivation. Spieker, Nelson, Petras, Jolly, and Barnard (2003) also found that attachment security predicted better cognitive outcomes. Secure children scored higher in Bayley Mental Development Index at 36 months compared to insecure children. Language skills were also influenced by attachment security (Spieker et al., 2003). Belsky and Fearon (2002) showed that securely attached children had better language comprehension skills at 3 years of age.

In addition to the quality of their attachment relationship, the dyadic nature of the interaction between the mother and the child was expected to influence children's cognitive development. In synchronous interactions, the mother and the child were in a dynamic, mutually regulated action (Harrist & Waugh, 2002). The experience of synchronous interactions helped the child develop important skills for his/her cognitive development via mutual engagement with the mother, contingency, and reciprocal verbal exchanges. They facilitated child's adaptation to the environment and learning processes.

During infancy, there were three components of dyadic synchrony (Harrist & Waugh, 2002). The first one was mutual attention. It referred to the mother and the infant tracking each other and engaging in joint attention. The second component was matching activity level and it was about how the mother and the infant coordinated their movements, facial expressions and vocalizations. The third component was contingency, and it referred to the occurrence of one event to be dependent on another. This was important for infant's adaptation to the environment and for infant's motivation. When the contingencies were violated consistently, the environment became unpredictable for the infant. The infant became passive as a result of lack of control over the environment and this negatively affected infant's learning. These three components of dyadic synchrony helped the infant experience multisensory processing, experience of effectance and secure attachment.

In synchronous interactions the mother's actions toward the infant were complementary, that is what the infant perceives with one of his/her senses goes together with the information coming from another sense. It could also refer to the unity of affective, motor and sensory processes. This not only elicited a predictable environment for the infant, but also provided a stepping stone for the understanding of the self (Harrist & Waugh, 2002). The experience of effectance referred to the experience of accomplishing what the infant had aimed for. In dyadic synchrony, the mother did not interfere with the infant's actions and the

infant was more likely to complete self-initiated activity as opposed to non-synchronous dyads. This provided the infant the opportunity to see the consequences of his/her own behavior, helped develop confidence and motivation for further action. Furthermore, mothers who were sensitive to their infant's cues and responded to them appropriately had children who were securely attached. On the other hand, mothers who engaged in non-synchronous behaviors such as intrusion, over-stimulation and inconsistent behaviors had children who were insecurely attached (Isabella & Belsky, 1991). These behaviors had adverse implications for cognitive development as previously posited in attachment literature (Jacobsen et al., 1994; Moss & St-Laurent, 2001; Belsky & Fearon, 2002; Spieker et al., 2003; O'Connor & McCartney, 2007).

During toddlerhood, the child was more active in interactions than in infancy and the toddler's willingness to participate also determined the course of interaction. However, the mother was still responsible for establishing and maintaining synchrony. The mother provided the child increased information and stimulation during the second and third year of life. Synchrony during this period referred to the mutual affiliation of the mother and child during task involvement and verbal interactions (Harrist & Waugh, 2002). Sustained joint attention and reciprocal verbal exchanges improved the child's communication skills by facilitating the processing of new information (Landry, Smith, Miller-Loncar, & Swank, 1997). Lindsey, Cromeens, Colwell and Caldera (2009) demonstrated that children from highly synchronous dyads performed better in verbal comprehension and expressive vocabulary. Synchrony also led to child compliance (Harrist & Waugh, 2002). In toddlerhood children learned to practice their skills while at the same time they learned to comply with parental requests. When the mother acted in synchrony with the child, for instance when the mother's request was about the child's current activity, the child was likely to comply (Harrist & Waugh, 2002).

During early childhood, the implications of synchronous interactions for cognitive development was said to be less clear (Harrist & Waugh, 2002). They argued that by the age of five, parenting lost its importance for cognitive development since there were plenty of other factors influencing child development such as attendance to preschool. However, as previously argued, preschool attendance was very low in Turkey and family was the context where children spent most of their time. For this reason, it was important to study maternal behaviors in relation to children's cognitive development. When the behaviors of the mother and the child were contingent upon one another but they were negatively toned, they were called coercive exchanges. According to the coercion theory, upon facing a conflict with the mother over the goals, the child acted aversively to parental request (Patterson, 1982). If the negative behavior of the child impeded further repetition of the request, the child's oppositional behavior was reinforced. In the long run the child became less cooperative and the mother got less attentive to the child. When the child no longer received positive reinforcement for appropriate behaviors, the child faced developmental challenges such as behavioral problems, social adjustment and aggression (Patterson, 1982).

The effects of coercive interactions on a child's behavioral development were well researched. However, research showing the effects of coercive interactions on maternal behavior and child cognitive development were lacking. Coercive exchanges could be triggered by the over-controlling or overindulgent parental behaviors and intrusion (Harrist & Waugh, 2002). They stated that, overly intrusive behaviors of the mother led to the constant disruption of the synchronous dyadic interaction. In this kind of interaction where the mother coerced the child to act in accordance with her requests, the child might respond negatively. However, when maternal intrusiveness persisted, the child gave up and became passive. The child no longer interacted with the environment. This lack of exploration led to lack of problem solving and eventually to lack of learning (Banerjee & Tamis-LeMonda, 2007).

When same interactions repeatedly occurred across situations, they emerged as stable patterns (Lewis, 2002). Therefore, the passivity of the child reinforced maternal intrusion and this might lead to more intrusive control in the future.

The synthesis of these four (ecological systems, attachment, synchrony and coercion) theoretical approaches indicated that children's cognitive development was facilitated when they explored their environments in a supportive and positive parental environment (Bronfenbrenner, 1986; Jacobsen et al., 1994). These environments were provided to children by parents who acted in synchrony with them. When mothers attended to their children's activity, engaged mutually and established reciprocal verbal exchanges with them, children were better adapted to their environments and their learning processes were facilitated (Harrist & Waugh, 2002).

On the other hand, in intrusive mother-child interactions, the dyad was constantly drawn to controlling episodes. In these interactions, mother interrupted the ongoing activity of the child without taking the child's need for exploration into account (Egeland, Pianta, & O'Brien, 1993). The mother controlled the activity even when the child was engaged in it by himself/herself. Such controlling episodes prevented the child from experiencing complete action cycles. As a result, the child was not able to see the consequences of his/her own actions and his/her cognitive development was compromised (Harrist & Waugh, 2002).

Apart from parenting behaviors, environmental factors such as economic status, maternal education levels, and poverty could affect child development through influencing resources available to parents or through parenting behaviors. These were the environmental constraints in which the mother-child dyad was situated and they strongly affected the dyadic interaction.

1.2 Conceptual Framework

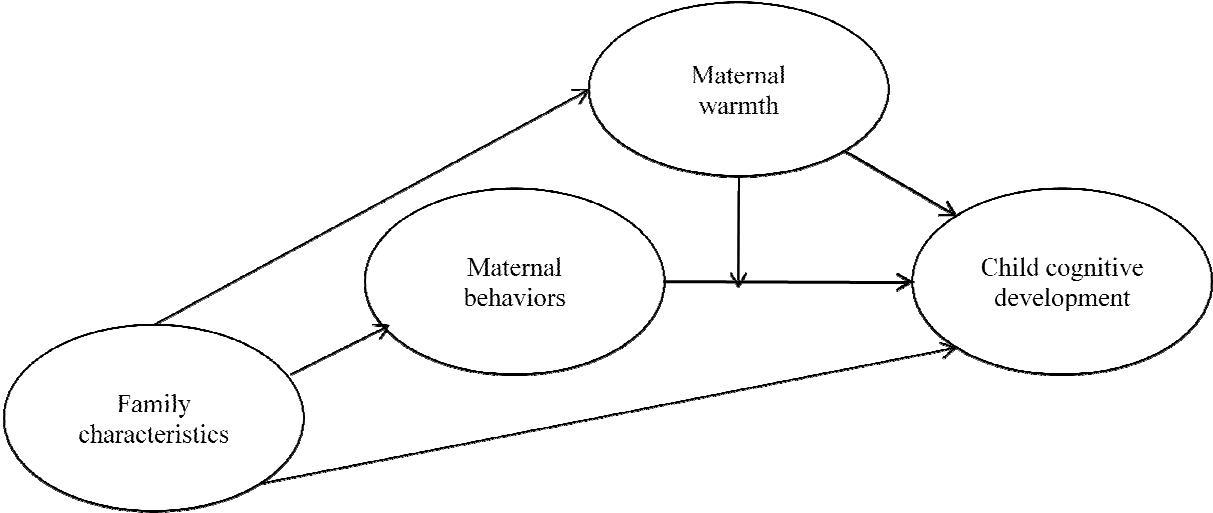


Figure 1.1 Conceptual Framework

Chapter 2

LITERATURE REVIEW

2.1 The influence of maternal behaviors on cognitive outcomes

Maternal behaviors were expected to be associated with child cognitive development as explained by, attachment, synchrony, coercion and ecological theories. This association was hypothesized to be moderated by maternal warmth which was also directly related to child cognitive outcomes. Additionally, family characteristics such as economic status and maternal education were expected to indirectly influence cognitive development through their effects on maternal behaviors. These family characteristics had independent effects on child cognitive outcomes.

In this section, first, the definitions of maternal behaviors and their association with child cognitive development were addressed. These behaviors are intrusive control, responsiveness and detachment. These behaviors were not mutually exclusive, different degrees of each behavior might be used in combination. For instance, a mother might be high in intrusiveness and low in responsiveness and detachment.

Next, the links between the maternal interaction style and warmth and family characteristics were examined respectively.

2.1.1 Intrusive control

In intrusive control mother interrupted the ongoing activity of the child, or stopped what the child was saying without taking the child's need for exploration into consideration. Interference could be physical (grabbing a toy, puzzle from the child, closing the child's mouth with hand, stopping the child's efforts while the child was engaging in an activity, pushing the child aside while the child was doing something or looking at something) or verbal (controlling the child's actions with repeated and unnecessary commands) (Egeland et al., 1993). When mother intruded, she started to direct the whole activity. In the directive

pattern, the mother prevented the child from engaging in any activity. She controlled the play and did not allow the child to influence the focus or pace of play. There were certain behaviors that the mother wanted to elicit from the child so she did not offer an opportunity to the child to lead the activity. Rather she gave direct commands (“Paint this picture blue”) or controlled the child’s activity nonverbally (takes a toy away from child) even though the child was willing to work on his/her own (Landry, Smith, Miller-Loncar, & Swank, 1997). In the most extreme case of intrusiveness, the mother took control of the problem that the child was focused on and solved it for the child (Culp, Hubbs-Tait, Culp, & Starost, 2000). There was no opportunity in the interaction for the child to explore or lead since the mother did too much for the child.

Intrusive control had negative consequences for children’s math and language learning because it hindered children’s exploration and interrupted joint attention and reciprocal verbal exchanges between the mother and the child. When mothers interfered with their children’s games instead of providing options, reasoning and questioning them about their strategic moves, they hindered the children’s explorative behaviors and their ability to formulate problem solving skills during math learning (Assel, Landry, Swank, Smith & Steelman, 2003). Similarly, when the mother deflected child’s attention from language learning to her own attentional focus with intrusive behaviors, child’s language learning was negatively influenced (Landry et al., 1997). In addition, the child became less motivated to learn new concepts since the child did not take an active role in learning.

Assel et al. (2003) investigated the influence of maternal directiveness on children’s visual-spatial skills and executive processes across 3 and 6 years and math skills at 8 years of age. Visual spatial skills are used when a child represented mathematical information in his/her mind, for instance when counting objects. Executive processes involved forming independent goals and self-regulation and cognitive flexibility to achieve those goals. Games

such as completing puzzles or constructing blocks required the child to develop independent goals and regulate his/her actions step by step to achieve those goals. As a result, Assel et al. (2003) found that greater maternal directiveness at 2 years of age predicted lower levels of visual-spatial skills and executive function at 3 years and there was an indirect effect of maternal directiveness on children's math ability at 8 years.

Language abilities which were strong predictors of subsequent academic outcomes were also negatively affected by intrusive parenting. Murray and Hornbaker (1997) found that there was a significant negative correlation between observed maternal intrusiveness at 12 months and children's receptive language scores at 24 months. Studying the parenting behaviors of teenage mothers, Keown, Woodward and Field (2001) found that the association between being a teenage mother and child language outcomes was best explained by the mediation of maternal behaviors such as intrusive control, verbal stimulation and involvement. Intrusive control had a negative association with the child's language comprehension and expression when children were three years old and was independent of the effects of other maternal characteristics (Keown et al., 2001).

Similar conclusions were reached when children were five years old. Connell and Prinz (2002) confirmed the association of high levels of intrusive control with decreases in receptive communication skills of children when they were five years old. In addition, Hubbs-Tait, Culp, Culp and Miller (2002) found that intrusive control explained unique variance in child's Peabody Picture Vocabulary Test score and McCarthy verbal and perceptual scores in kindergarten.

The negative effects of intrusive control were also demonstrated in an experimental study with third graders and their mothers (Grolnick, Gurland, DeCoursey & Jacob, 2002). In that study, mother-child dyads were assigned to work together on writing a poem (verbal) or giving directions on a map (nonverbal) tasks under conditions either of high or low pressure

to succeed. In high pressure condition, the mothers were told they had to ensure that their children performed well on a task in which the child would later be tested for her/his performance. In the low pressure condition, the mothers were told that their role was to help their children learn but that their child was not expected to perform at a particular level. Also the children completed a questionnaire assessing their parent's level of autonomy support and controlling behaviors. After the dyads worked together on the tasks, the children were asked to complete similar tasks by themselves (map or poem). The results showed that children's performance was affected by maternal control. Those who were exposed to high levels of control while learning performed poorly in writing a poem task when they were alone than the children whose mothers were autonomy supportive. These results supported the view that when mothers interfered with their children's thinking and doing (e.g., playing and did not let children explore on their own, their children could not assimilate the new information. As a result, they cannot apply this information to new phenomena when it occurred outside the context in which they received the information originally (Grolnick et al., 2002).

On the other hand, it is necessary to distinguish parental control from parental structure to avoid the confusion about its likely effects. Parental structure is an essential component of parenting since the parent is responsible for organizing, facilitating and scaffolding the child's actions, establishing rules and guidelines, and providing a supportive interaction. (Grolnick & Pomerantz, 2009). Parental structure not only provides the child with feedback about his/her actions but also informs him/her of the consequences of those actions. Therefore, it provides the child a predictable environment where he/she can adapt easily. On the other hand, parental control involves intruding, domineering and pressuring the child, coercing the child to fulfill parental demands without taking into account the child's perspective (Grolnick & Pomerantz, 2009).

2.1.2 Responsiveness

Maternal responsiveness was defined as the availability of the mother to the child by acknowledging the child's accomplishments and contributions to the task he/she was engaged in (Tamis LeMonda, Bornstein, & Baumwell, 2001). The mother allowed the child to lead the play and engaged in the play in synchrony with the child's lead. When mother engaged in verbal interaction with the child, she supported child's further engagement with the ongoing activity. This behavior offered the child a great deal of opportunity to explore and lead. Responsive behaviors included describing the activity to the child, encouraging child's engagement during play and praising ("Good job!", "That's right." or "Yes."); asking questions about an object or an activity ("What is this shape like?", "What color is this?", "Which one is larger?"), encouraging child's play by promoting exploratory behavior when the child was disengaged ("What can we do now? What's next?" or "Look here.") (Tamis LeMonda et al., 2001).

Maternal responsiveness supported children's cognitive development through three different pathways. First, maintaining child's focus of attention facilitated child's processing of new information (Landry et al., 2000). For instance, in the case of linguistic development, joint attention between the mother and the child facilitated the child's understanding of the linguistic symbols and their correct referents. Second, a responsive mother supported the child's persistence and exploration by encouraging, praising and elaboration on child's efforts. Children who persisted in engaging with the objects and exploring the environment expanded their knowledge and developed new skills by manipulating those (Banerjee & Tamis-LeMonda, 2007). Third, a mother who engaged in play in synchrony with the child's lead provided the child some degree of control in the game and this might increase the child's motivation to engage in the interaction. Having an active role in the interaction was more

likely to facilitate the child's learning and developing complex skills than being a passive observer (Landry et al., 1997).

There were several studies that indicated the positive effects of responsive parenting on children's language development. Tamis-LeMonda et al (2001) assessed longitudinally whether maternal responsiveness predicted children's achievement of language milestones such as the expression of first imitations, first words, achieving fifty words in expressive language, engaging in combinatorial speech and first time in using the language to talk about the past. They found that maternal responsiveness at 9 and 13 months predicted all five milestones independently from children's own activities. Tamis-LeMonda et al. (2001) also found that there are different types of maternal responsiveness that affected children's linguistic development in different developmental periods. After the first 6 months when children became mobile, mothers' responsiveness in terms of their support for children's exploratory moves, affirmations of their actions and following their foci of attention to label objects were especially relevant. By the end of first year, the children's vocalizations became more advanced. Thus, mothers' repetitions of children's vocalizations and expanding their words into complete sentences or stories were the effective responsiveness strategies. Maternal responsiveness was found to be positively associated with children's receptive and expressive language skills in various other studies (Murray & Hornbaker, 1997; Steelman, Assel, Swank, Smith & Landry, 2002; Beckwith & Rodning, 1996; Pungello, Iruka, Dotterer, Mills-Koonce & Reznick, 2009) done with one to three year old children.

Maternal responsiveness also predicted general cognitive abilities. Maternal teaching, which involved sensitively responding to child's bids, vocalizations, or play, at 6 months was found to predict cognitive performance assessed by Bayley Mental Development Inventory at 6 and 14 months of age (Banerjee & Tamis-LeMonda, 2007). Aside from the direct effect of maternal responsiveness on children's cognitive development, it had indirect effects on

cognitive development through influencing children's persistence. Maternal teaching, which was measured in terms of maternal responsiveness and fostering cognitive development, at 6 months was related to persistence which then affected child cognitive outcomes at both 6 and 14 months. In another study, mothers' high sensitivity during play at 20 months predicted children's IQ scores at 5 years of age (Kelly, Morisset, Barnard, Hammond & Booth, 1996).

Consistency in maternal responsiveness throughout early childhood was a stronger predictor of advanced cognitive development than inconsistent maternal responsiveness (Landry, Smith, Swank, Assel & Vellet, 2001). Those children whose mothers showed high levels of responsiveness only during infancy had slower growth rates compared to those whose mothers were consistently responsive in infancy and toddlerhood. Those who experienced consistent responsiveness had higher age 6 cognitive development as assessed by Stanford Binet Test than those who received responsive parenting only during infancy or at preschool years (Smith, Landry & Swank, 2006). However, it was still better to receive inconsistent responsiveness than no responsiveness. Those children whose mothers displayed low levels of responsiveness fared the worst.

Murray and Hornbaker (1997) found that there was a low negative correlation between directive and facilitative behaviors of mothers. In that study a mother who was high on directiveness controlled all of child's behaviors, physically intervened and persisted till she got the desired response from the child; and a facilitative mother followed the child's focus of attention, engaged in child's activity by commenting and asking questions and elaborating on child's play. Thus, these patterns of behavior were akin to what were defined as intrusiveness and responsiveness, respectively, in this study. The low correlation showed that intrusiveness and responsiveness were distinct dimensions and that they should be assessed separately. A mother who was not responsive was not necessarily intrusive; instead, she might be detached/disengaged. Furthermore, the mothers could be inconsistently responsive.

2.1.3 Detachment

In detached/disengaged parenting, the mother ignored the child both behaviorally and emotionally. She was uninterested in the child's activities, she did not make eye contact with the child and she did not respond to child's attempts to gain her attention (Pungello et al., 2009). She was detached from the child's needs. Instead, the mother was self-directed, following her own agenda. She might be engaged in an unrelated activity. There was a lack of joint attention between the mother and the child.

Detachment was one of the two types of non-synchrony besides intrusiveness that influenced cognitive development negatively (Rocissano, Slade & Lynch, 1987). In situations where the mother was detached from the child and/or the activity -when there was a lack of joint attention between the mother and the child-, the synchronous interaction was disrupted. When the mother missed the child's signals, cues, did not respond to child vocalizations or follow the focus of child's attention, the child eventually became passive and was at risk of developing poor cognitive skills.

Maternal detachment was found to be detrimental to general cognitive development of children. Mother-child and father-child interactions were observed during a free play situation and children's cognitive scores were assessed depending on the characteristics of parent-child interactions at 24 and 36 months (Tamis-LeMonda, Shannon, Cabrera and Lamb, 2004). It was demonstrated that maternal detachment predicted negative child outcomes more strongly than paternal detachment. Mothers' detachment 24 months was predictive of low Bayley Mental Development Index (MDI) scores at 36 months. Similarly, fathers' detachment at 24 months predicted children's MDI scores at 36 months. In another study, Chang, Park, Singh and Sung (2009) studied how parental involvement in Head Start parenting programs influenced parenting behaviors such as cognitive stimulation, supportiveness, detachment and intrusiveness and children's mental abilities when children are 14, 24 and 36 months. Child

cognitive development was measured with Bayley Mental Development Index. The analyses showed that detachment was negatively associated with Bayley scores of children at 36 months.

Studies involving the parenting behaviors of depressed mothers supported the claim that detachment/disengagement was detrimental to children's language development. Vocabulary knowledge which was a strong predictor of language skills and general cognitive abilities in later childhood and adolescence was influenced by the quantity and quality of the verbal interactions between mother and the child. Huttenlocher, Haight, Bryk, Seltzer, and Lyons (1991) found that there was a positive association between the amount of mother's speech and child's vocabulary acquisition at 16 months. This effect was independent of the child's dispositional characteristics. On the other hand, highly depressed mothers had children with delayed vocabulary development at 24 months (Albright & Tamis-LeMonda, 2002). This was due to the fact that depressed mothers did not provide joint attention. They were less sensitive, less engaged, less affectionate and more rigid compared to mothers with who scored low on depression scale. In addition, maternal depression led to decreases in mutual communication, reciprocity and enjoyment during mother-child interactions. Given the importance of maternal interaction with the child for child's vocabulary and cognitive development, such deficiencies resulted in reduced learning opportunities for the child (Albright & Tamis-LeMonda, 2002).

Another study showed that withdrawn depressed mothers who were less active and less contingent spent an estimated 80 percent of their time disengaged from their children (Jones, Field, Davalos, Malphurs, Carraway, Schanberg & Kuhn, 1997). Children of withdrawn mothers scored lower on Bayley Mental Scale compared to the children of intrusive mothers. These children were less oriented towards the mother, made less eye contact and engaged in physical activity less. The authors speculated that these differences

might be due either to the fact that withdrawn mothers were more severely depressed at 1 year than comparison mothers or that the children of withdrawn mothers received less stimulation during early interactions. If there was a low level of early stimulation, language development and general cognitive development of these children would be adversely affected.

2.1.4 Warmth

Maternal warmth involved the mother demonstrating contentment in interacting with the child. During the mother-child interaction, mother made eye contact with the child, used a warm tone of voice, and terms of endearment. She was physically affectionate and touched, cuddled the child in a warm manner and she often smiled to the child. (Pungello et al., 2009). These maternal behaviors that reflected warmth have a direct influence on children's cognitive outcomes and they might interact with other maternal behaviors such as intrusiveness, responsiveness and detachment on predicting child cognitive outcomes. The direct effects of warmth on child outcomes and the moderating effects are discussed respectively below.

There were three routes of influence through which warmth affected children's cognitive outcomes (Estrada, Arsenip, Hess & Holloway, 1987). First, in interactions where there was a high level of warmth, mothers involved the child in tasks in an engaging way by showing their interest. This interaction increased the flow of information between the mother and the child. Thus, the child had a better grasp of the task. Second, a warm interaction might first enhance children's social competence and then with increased social abilities children could become competent partners in their interactions with their mothers eliciting further interaction. When children communicated effectively and easily with their mothers, they cooperated and got assistance from their mothers about the tasks. Third, warmth between the mother and the child fostered a secure relationship. Like securely attached children, children in highly warm relationships were motivated to explore their environments and persisted even

in case of challenges. Mothers' warm availability motivated the child to engage in new tasks; thus expanded their experiences. As a result, all of these three routes provided the child with a foundation for effective learning.

The positive effects of maternal warmth on children's language development were demonstrated by various studies. Kelly et al. (1996) found that mother's positive affect (defined as positive facial and vocal displays) at 13 months was significantly and positively correlated with children's receptive language scores at 3 years. Similarly, Hann, Osofsky and Culp (1996) found that 13 and 20 months positive affect were significantly related to children's language scores assessed by PPVT at 44 months. These results were supported for toddler's language development as well. Pianta (1997) found that maternal positive affect and warmth were associated positively with four year old children's performance on a test assessing age appropriate knowledge of concepts. Hubbs-Tait et al. (2002) demonstrated that emotional support (defined as displays of positive affect, giving positive feedback and hugging) explained unique variance in children's verbal and perceptual scores at five years of age.

Similarly, general cognitive abilities were predicted by maternal warmth. Kirsh, Crnic and Greenberg (1995) found that maternal warmth at five years was significantly correlated with child cognitive status at five years. This contribution was significant even after ruling out the effects of the strongest predictors (maternal education and cognitive status at two years assessed by Bayley MDI) of cognitive outcomes of children. Estrada et al. (1987) examined the relation between affective mother-child interactions at 4 years and children's cognitive competence 5 (school readiness), 6 (IQ), and 12 (school achievement) years. They found that warmth at 4 years predicted all of the cognitive outcomes. The associations were significant even after controlling the effects of maternal IQ and SES on children's cognitive outcomes.

The moderation of warmth on the link between maternal behaviors and child outcomes was well documented for the effects of maternal control on children's behavioral outcomes especially in cultures where group loyalty and harmony was valued. Since both strong ties and obedience to parents were desirable and adaptive in these cultures, maternal control was often accompanied by warmth (Pomerantz & Wang, 2009). Thus, it was possible that the negative effects of maternal control on child behavioral outcomes were buffered by maternal warmth.

Ispa et al. (2004) found that intrusive parenting at 25 months was not associated with child negativity in African American families, if maternal warmth was high. In line with this finding, Zaslow et al. (2006) demonstrated that control and warmth had a positive correlation for their African American sample and control and harsh treatment were not correlated. Another study by Spieker, Larson, Lewis, Keller and Gilchrist (1999) found that the correlations between maternal negative control and child disruptive problem scores were consistently lower for black children than white children. They also found that black mothers carried out negative control in combination with maternal warmth (it was measured in terms of depression/anxiety symptoms; therefore, as lack of warmth, high irritability). Similar results were found in a study examining the effects of parental control on the externalizing behaviors of three year old children in Turkish culture (Akçınar, 2009). When high levels of behavioral and psychological control were displayed with high levels of maternal warmth, a decrease was found in children's externalizing behaviors. Thus, when employed together with warmth, maternal control had less detrimental effects for children's behavioral outcomes than when employed without warmth. The studies that examined the interaction effects of maternal warmth and maternal control on children's cognitive development were in line with the aforementioned findings for children's behavioral outcomes. However, there were not many studies conducted to analyze this interaction effect on cognitive outcomes. Hubbs-Tait et al. (2002) demonstrated that children who received the least amount of emotional support in

addition to the highest level of intrusive control performed the worst in terms of perceptual abilities. Pungello et al. (2009) found that negative intrusive parenting was not related to expressive language skills for African American children when used in combination with maternal warmth. And Zaslow et al. (2006) demonstrated that control was positively correlated with warmth and also with child reading achievement. The interaction of positive parenting with punishment on receptive vocabulary was found with three year old Turkish children (Yılmaz, 2012). However, according to this study, positive parenting did not act as a protective factor against high levels of punishment for receptive vocabulary. Positive parenting was only beneficial for receptive vocabulary if punishment was low.

2.1.5 Family Characteristics

Family characteristics such as maternal education and economic status of the family predicted child cognitive development through the resources the parents provided to the child and through their effects on maternal behaviors towards the child. The theoretical bases for the effects of family characteristics; investment model and family stress model, with supporting empirical evidence were addressed respectively.

According to the investment model, economic status and maternal education influence children's cognitive outcomes through their effects on the resources available to families (Guo & Harris, 2000). Low income was associated with insufficient nutrition, low quality neighborhoods and schools, few opportunities to reach high quality health and social services such as parks and child-related activities (Brooks-Gunn & Duncan, 1997). Resourceful and educated parents could provide their children with stimulating materials and educational experiences such as books, toys, computers and visits to museums by investing money in them (Gershoff, Aber, Raver & Lennon, 2007). These investments fostered children's cognitive development in terms of general cognitive abilities, language development and school readiness.

In terms of general cognitive abilities Landry et al. (1997) found that SES predicted children's cognitive scores at 18 months even when the effects of SES on maternal behaviors were controlled. Tamis-LeMonda et al. (2004) demonstrated that, mothers' education levels predicted children's two and three year old Bayley Mental Development Index (MDI) scores.

Language scores of the children of highly educated and high income families were positively influenced. Stipek and Ryan (1997) demonstrated that preschoolers whose families were economically better-off families performed better in word-recognition and verbal fluency tasks than those whose families were economically disadvantaged. Pungello et al. (2009) compared the expressive language skills of children from low and high SES families and showed that the increase in expressive language skills between 18 and 36 months were less for children in low SES families. This effect was significant even after controlling for parenting factors that were associated with SES.

There is empirical evidence supporting the effects of maternal education and economic status on children's school readiness too. Parker, Boak, Griffin, Ripple, and Peay (1999) assessed the effects of maternal education on children's school readiness outcomes when they were three and four years old. They found that children whose mothers had higher educational levels scored higher on language skills, numerical and sensory concept development than children of less educated mothers. Connell and Prinz (2002) found that there was a positive correlation between maternal education level and kindergarten children's school readiness which included auditory and visual discrimination, language and basic mathematical skills. In addition, Kiernan and Huerta (2008) stated that children from economically disadvantaged families performed worse on Bracken Basic Concepts Scale, which assessed school readiness skills, than children who came from economically advantaged families.

Family characteristics also influenced child's cognitive outcomes through their effects on parenting behaviors. Bronfenbrenner (1986) proposed in his ecological systems theory that

distal macro level factors exerted their influence on children's development through their influences on proximal micro level factors at home. In addition, according to the family stress model developed by Conger, Reuter and Conger (2000), the stress associated with low income, job loss and poverty influenced parental mental health and relationships between parents. These in turn influenced parenting behaviors; leading to less warmth and responsiveness, more intrusiveness and inconsistent parenting, and eventually the cognitive outcomes of their children (Conger et al., 2000). Neitzel and Stright (2004) found that highly educated mothers used more praise and effective strategies during problem-solving interactions with their children, they were less directive in their instructions, they were more autonomy supportive and they supported children's active engagement more than less educated mothers.

Empirical evidence supported that maternal behaviors mediated the link between family characteristics and children's general cognitive abilities and language development. Beckwith and Rodning (1996) found that mothers from higher SES were more responsive during play with their children and showed more positive affect than the mothers from low SES. These in turn predicted children's Bayley Mental Development Index scores at two years, language outcomes at three years and problem solving at five years. Raviv, Kessenich and Morrison (2004) found that the effects of maternal education and economic status on children's verbal comprehension abilities and Bracken Basic concepts knowledge at 36 months decreased, when maternal sensitivity was added to the model. Similarly, Kiernan and Huerta (2008) found that more than half of the total effect of income on children's cognitive performance at three years of age was mediated by parenting behaviors. Maternal sensitivity also mediated the relationship between psychosocial risk (low income and education) and children's Bayley Mental Development Index scores at 36 months (Lemelin, Tarabulsky & Provost, 2006). On the other hand, Lugo-Gil and Tamis-LeMonda (2008) found total

mediation. They stated that parental behaviors totally mediated the relationship between income and children's cognitive outcomes at 14, 24 and 36 months as assessed by Bayley Mental Development Index.

2.2 Hypotheses

Based on the theoretical background and empirical evidence provided above, the following hypotheses are proposed:

1. Intrusive control is expected to have a negative influence on child cognitive outcomes because it may interrupt children's exploratory behaviors, disrupt the synchrony between the mother and the child and lead the child to fulfill parental demands instead of pursuing his or her own goals.
2. Maternal responsiveness is expected to have a positive influence on child cognitive outcomes because it facilitates the child's processing of new information by reducing the cognitive load demanded by attentional shifts, it supports the child's persistence and exploration and it increases the child's engagement by modeling maternal engagement.
3. Mother's detachment during mother-child interaction is expected to have a negative influence on child cognitive outcomes because the child receives less stimulation since the mother misses the child's signals, does not respond to child vocalizations or follow the focus of child's attention.
4. Maternal warmth is expected to have positive influence on children's cognitive outcomes because it helps to increase the flow of information between the mother and the child, it fosters a secure relationship and encourages the child to explore the environment and through enhancing child's social competence it increases child's cooperation during the tasks.

5. Maternal warmth is expected to act as a protective factor when there is intrusive control because behaviors that constitute warmth are expected to moderate the negative effects of intrusive control as they may increase the child's motivation to persist in engaging in the activity.
6. Maternal warmth is expected to act as a protective factor when there is maternal detachment during mother-child interaction. Even if the mother is detached during most of the interaction, the positive affect, warm tone of voice, terms of endearment the mother uses when she is interacting with the child may increase child's motivation to continue the activity.
7. Maternal warmth is expected to increase the positive influence of maternal responsiveness on cognitive outcomes because when synchrony with child's engagement during play is coupled with positive affect, it will further increase the child's motivation to explore and persist even in the presence of challenges.
8. Maternal education and family income are expected to have positive influences on child cognitive outcomes because they are associated with sufficient nutrition, stimulating educational materials and experiences, and opportunities to reach high quality social and health services. They are also expected to have indirect positive effects through their influence on maternal behaviors towards the child because they may increase mother's mental and physical well being. These in turn facilitate responsive and warm maternal behaviors as well as less intrusion and detachment towards the child.

Chapter 3

METHOD

3.1 Participants

The Study of Early Childhood Developmental Ecologies in Turkey (ECDET) is a five year longitudinal study conducted to examine child development from early childhood to school age and to identify the ecological factors that influence this developmental trajectory. Participants constituted a nationally representative sample of 1,052 children and their primary caregivers when the children were 36-47 months old. They were selected with stratified cluster sampling from 24 communities in Turkey. The subsample of ECDET where mother-child interactions were videotaped constituted the sample of this thesis (N = 123). Participants of this subsample were randomly selected from 4 metropolitan areas of Turkey; İstanbul, İzmir, Ankara and Adana. Children were 36-47 months old when maternal behaviors are assessed from observational data and 48-59 months old when cognitive outcomes were measured.

3.2 Procedure

The data were collected by interviewers of ECDET who were trained by a team of researchers prior to data collection in the field. Interviewers visited the participants in their homes at prearranged times by the mothers. Qualitative data consisted of mother-child interactions during semi-structured play and quantitative data comprised of cognitive tests administered to the children. Home visits took approximately two hours and both the mothers and the children received gifts for their participation (Baydar, Cemalcılar, Gökşen, Küntay & Yağmurlu, 2008).

3.3 Measures

3.3.1 Observational Measures

Mother-child interaction data were collected during a 10 minute semi-structured observation. With the aim of observing the dyad's everyday interactions, the mother and the child were provided with three pictures of lego constructions that they were asked to work on together. Structured and semi-structured observations where the mother-child dyad is requested to play with toys together are commonly used for observing mother-child interactions. Parent-Child Interaction System (PARCHISY) developed by Deater-Deckard, Pylas and Petrill (1997) and Young Family Interactions Coding System (YFICS) developed by Paley, Cox and Kanoy (2001) involves a structured task where the mother and the child play with a given toy. The mothers' and children's behaviors are coded in order to assess the family interaction quality. Another commonly used behavioral observation system is Dyadic Parent-Child Interaction System (DPICS) (Robinson & Eyberg, 1981). It assesses the parent-child interaction quality by coding 23 parenting behaviors (ranging from commands to physically negative behaviors) and 8 child behaviors (ranging from cry/whine/yell to positive affect). The Turkish version of DPICS was adapted by the ECDET team (Baydar, Akçınar & Arslan, 2007) to code 10-minute semi-structured videotaped interactions collected as a part of ECDET project.

For cultural reasons some new parenting measures were added and some parenting and child measures were removed from the Turkish adaptation of DPICS (Arslan, 2009). The new parenting behaviors were physical and emotional threat, ignoring child's negative behavior and making a concession in response to the child's negative behavior. On the other hand, compliance and noncompliance child behavior measures and no opportunity for compliance and time out parenting measures were removed because Turkish mothers gave so many commands in a minute that it was not possible for coders to count children's compliance or noncompliance.

The maternal behaviors coded in the DPICS protocol were classified into three control and one warmth composite categories by Akçınar (2009) and these composites were conceptually associated with the maternal behaviors assessed in this thesis. The first composite behavior, behavioral control, was composed of four behaviors coded by the DPICS: direct and indirect commands, grandma's rules (positive or negative command that indicates a positive consequence for the child will occur if the child complies) and warnings. The second composite behavior, physical control, was composed of three behaviors coded by the DPICS: physically negative behaviors, threats and physical intrusion. Psychological control was composed of negative talk, emotional threats and parental ignore. Finally, parental warmth was composed of five behaviors coded by the DPICS: physically positive behaviors, positive affect, labeled and unlabeled praise, and acknowledgements.

In the observational protocol used for this thesis, the mothers were given the following instruction:

“We want to observe you and (name of child) while you are playing together. For this, we will give you some lego pieces. These can be fitted together and taken apart. Look, here is a construction made with these legos. I want (name of child) to build the shape shown by this picture using these legos. Naturally, I ask you to help (name of child)” (Baydar, Cemalcılar, Gökşen, Küntay & Yağmurlu, 2008).

When the mother and the child completed the configuration depicted in the first picture, they moved on to a second and a third for 10 minutes. If they completed all three tasks before the time was up, they proceeded to free play with the lego blocks. The interviewer thanked the dyad after the completion of each construction.

In order to code maternal behaviors observed in these videotaped interactions, 12 segments of 10 seconds were randomly selected from each video. Next, the maternal behaviors when interacting with the child –intrusiveness, responsiveness, detachment, and

maternal warmth- were rated using an observer impression rating scale ranging from 0 to 2 for each segment. Intrusiveness refers to interrupting the ongoing activity of the child (verbally or physically), or stopping what the child is saying without taking the child's need for exploration into consideration. Responsiveness refers to being available to the child without interrupting the child, being in synchrony with the child's lead during the interaction and supporting child's further engagement. Detachment refers to being uninvolved in child's activity and needs, following her own agenda and lacking joint attention between the mother and the child. Warmth refers to demonstrating delight in playing with the child, making eye contact, using a warm tone of voice and terms of endearment. Further information about the coding procedure, operational definitions of maternal behaviors, examples for each level of maternal behaviors and a sample coding sheet are provided in the coding manual in Appendix A.

A second rater coded 25% (360 segments from 30 randomly selected videos) of the videotapes independently to establish inter-rater reliability. Since the measurement scale was ordinal, a non-parametric correlation analyses was conducted. Kappa coefficients were .80 for intrusiveness, .86 for responsiveness, .82 for detachment and .81 for warmth.

3.3.2 Outcome Measures

To measure children's cognitive skills, CORSI Block Tapping Task (3 years), TIFALDI Receptive Language Test (3 and 4 years), Number Games, Sentence Repetition Test and Inhibitory Control Task were used.

3.3.2.1 CORSI Block Tapping Task

Corsi Block Tapping Task measures children's visuo-spatial working memory capacity (Corsi, 1972). The original test consists of nine wooden blocks attached to a wooden board. During the test, the experimenter taps on the wooden blocks and requires the participant to repeat the same sequence immediately after she/he completes that sequence.

This procedure is carried out until the participant is unable to repeat the sequence correctly. The Turkish version of the test was adapted by Baydar, Küntay, Gökşen, Yağmurlu and Cemalcılar (2008) and it was simplified for 3-year old children. There were five blocks instead of nine. In addition, the protocol was modified as a game. In this game, the wooden board was presented as a garden and the blocks were presented as rocks. A toy monkey sat on these rocks to rest in a sequence determined by the experimenter. The child was asked to reproduce the same sequence as did the experimenter so that the monkey could get a banana. There were 5 levels of the game and the game got more difficult in each consecutive level. At each level 3 different sequences were presented to the child. If the child did not get full points in any of these three sequences in a level, the game was terminated. Scoring ranged from 0 to 2. The participant got “0” if she/he did both the sequence and position incorrectly; she/he got “1” if she/he did the position correct and the sequence incorrect; and got “2” if she/he did both the sequence and position correct (Baydar et al., 2008). Convergent validity of Corsi-TR was calculated based on its correlation with similar measures. There was a significant correlation between Corsi-TR and the mother’s forward digit span task score ($r = .22, p < .05$), backward digit span score ($r = .26, p < .05$) and total digit span task score ($r = .27, p < .05$). (Baydar et al., 2008).

3.3.2.2 TIFALDI Receptive Vocabulary Test

TIFALDI-R measures children’s receptive vocabulary knowledge from 3 years through 6 years of age and it is developed by Berument (2000). It consists of 83 items including two practice questions. The child is expected to choose the correct representation of a given word among four pictures. There are nine items in the baseline level, 18 items in age three level, 15 items in age four level, 24 items in age five level and 15 items in age six level. The test ends when the child answers 2/3rd of the questions at an age level incorrectly. Item Response Theory (IRT) was applied to the 81 test items for the scoring of TIFALDI-R

(Baydar, 2009). IRT was used in order to comparably score the pattern of responses of the children even though children did not receive the same set of items of the test. Based on their performance during the test, the children may have been administered different sets of items and varying numbers of items. IRT allows the scoring of these responses regardless of the number of items or difficulty of items received by each respondent child. As a result, two scores for each child were calculated: latent scores and age standardized latent ability scores. Convergent validity of TIFALDI-R was calculated based on its correlations with similar measures. There was a significant correlation between TIFALDI-R and age standardized Corsi Block Tapping Task ($r = .36, p < .05$), mother's ACEP Vocabulary Test score ($r = .39, p < .05$), mother's education ($r = .31, p < .05$) and father's education ($r = .27, p < .05$).

3.3.2.3 Number Games

The original number games test measures the children's numerical and mathematical concept development (Dowker, 2008). The current study used an adaptation of the original test when the children were four years old. The ECDET Number Games test consisted of five different tasks. In the first task, the child's proficiency in counting was assessed. The child was asked to count five and twelve beans respectively. In the second task, the child's understanding of order-irrelevancy was measured. In this task, first the experimenter asked the child to count the beans and then asked the child to guess what would be the outcome if they counted in the reverse order. In the third task, the children's understanding of cardinal word principle was assessed. In this task, the child was asked to give the experimenter a number of beans and the child's answer was assessed based on his/her counting or giving the requested number of beans. Giving the correct number of beans demonstrated that the child had an abstract mental representation of counting. In the fourth and fifth tasks, the child's basic addition and subtraction abilities were measured respectively. First, the child was shown a set of five beans and then the experimenter added one more bean and asked the child to tell

how many beans there were after addition. This was repeated up to eight beans. In the subtraction task, the experimenter subtracted one bean at a time from the cluster and asked the child how many beans were left after each subtraction. Number games included 10 questions. The first two counting accuracy questions were scored as correct (1 points) or incorrect (0 points). The remaining eight questions were rated on a 4-point scale. The child got 1 point for indicating “wrong answer by counting”, 2 points for “wrong answer without counting”, 3 points for “correct answer by counting” and 4 points for “correct answer without counting”. Abstract mental representation of counting resulted in higher points than counting. The internal reliability score for this test was .94. There was a significant correlation between Number Games and age standardized Tifaldi scores ($r = .43, p < .01$), inhibitory control ($r = .49, p < .01$) and Sentence Repetition Test ($r = .52, p < .01$).

3.3.2.4 Sentence Repetition Test

The Sentence Repetition Test measures children’s grammar knowledge. It was developed by Koç, Taylan and Bekman (2002) to examine the grammar knowledge of low SES children. The assumption underlying the suitability of the test to measure grammatical knowledge is that the speakers who have internalized the structure of a language will be able to repeat a sentence word by word. The test consisted of 2 warm up questions and 18 test questions that took into account specific grammatical patterns in Turkish. In this protocol, the experimenter read the child sentences with increasing difficulty in semantics and asked him/her to repeat them. In order to control for the confounding effect of short term memory capacity, the number of words in each sentence were kept short. The sentences were comprised of 3 to 6 words. There was 1 three-word sentence, 4 four-word sentences, 9 five-word sentences and 4 six-word sentences. The test ended when the child could not get any points for three consecutive questions. The scoring was done based on the child’s correct repetition of the sentence. If the child did not repeat the sentence, she/he got 0 points and if

the child repeated the sentence correctly, she/he got 1 point. The correlations of the sentence scores to the total score changed between .45 and .71.

3.3.2.5 Inhibitory Control (Head-and-Toes Task)

Head-to-Toes Task, developed by McClelland (2007), measures children's behavioral regulation. It requires the application of three related skills which are inhibitory control, attention and working memory. In this task, the experimenter asked the child to do the opposite of what she said. When the experimenter instructed the child to touch his head (or toes), the child was supposed to do the opposite and touch his toes (or head). First, 4 warming up exercises were done with the child so that the child understood the protocol correctly. Later, the experimenter started the testing session with a total of 10 items in random order. Scoring ranged from 0 to 2 points depending on the hesitation level of the child. The child got 0 points if she/he incorrectly responded, got 1 point for self-correct (the child hesitated and stopped while moving towards the incorrect response and corrected herself/himself), and 2 points for a correct response without hesitation. The internal reliability of this task for ECDET sample was .95.

3.3.2.6 Family Characteristics

Economic status of the family is measured using four indicators of economic wellbeing: the material possessions of the family reported by the mother, monthly expenditures of each person in the family reported by the mother, the economic value of the house based on the actual or estimated monthly rent, and the quality of the physical conditions of the house assessed by the interviewer. The material possessions are categorized into two based on their economic value. The first level possessions included basic durable goods such as a refrigerator, TV, or a washing machine. The second level possessions included those items that indicated economic well being such as a credit card, computer, car or a dishwasher. The criteria for determining the physical conditions of the house were the existence of 10

square yards of space for each individual, the lighting of the interior, and safety of the building. In addition to these, monthly expenditure per person was measured by taking the minimum wage into consideration.

A family was considered as having low economic status if the family satisfied the following four conditions: owned at most the two of the basic material possession, owned none of the second level material possession that were indicative of economic well being, monthly expenditures per person was below approximately 160 TL and the physical environment had at least 2 of the unfavorable conditions. A family was considered as having middle economic status if the family satisfied the following three conditions: owned at most the three of the second level material possessions, monthly expenditures per person was between 160 TL and 320 TL and the physical environment had at most one of the unfavorable conditions. A family was considered as having high economic status if the family satisfied the following three conditions: owned all of the second level materials, monthly expenditures per person were above 320 TL and the physical environment had none of the unfavorable conditions.

Maternal education was measured as the number of years of completed schooling.

3.4 Variable Transformations

All of the observational maternal behaviors were prepared to be used as interval level measures. The preliminary analyses showed that intrusiveness and responsiveness were very highly and negatively correlated ($r = -.84, p < .01$). This revealed a conceptual problem. Intrusiveness and responsiveness were not different concepts; rather they were different ends of the same dimension in this sample. Since they were overlapping, responsiveness was dropped from further analyses.

The exploratory analyses showed that intrusiveness and warmth had non-linear associations with the dependent variables. Low levels of intrusiveness were well tolerated by

the children. They did not appear to have adverse consequences for children's cognitive development. However, high levels of intrusiveness were detrimental to the indicated cognitive skills. On the other hand, maternal warmth was generally high among the mothers. Low levels of warmth constituted a risk for children's cognitive development. For these reasons, intrusiveness and warmth were categorized into two levels, as low and high, and used as ordinal level measures in the analyses. For intrusiveness, the cutoff point was selected as the third quartile where intrusiveness showed a sudden drop in cognitive scores. For warmth, the cutoff point was between the first and second quartiles where mothers with low levels of warmth constituted a different category from mother with high levels of warmth.

Responsiveness was operationalized as a distinct dimension from intrusiveness. However, the correlation between intrusiveness and responsiveness was too strong. Therefore, responsiveness was dropped from further analyses.

Detachment had a skewness of 2.39. Most of the mothers scored low on detachment. The skewness was reduced by recording the top scorers (N=5) to the nearest boundary.

Chapter 4

RESULTS

The findings are presented in five sections. First, descriptive statistics for the full ECDET sample and the observational sample are presented. In the second section, exploratory analyses of maternal behaviors: nonlinear associations and transformations are presented. In the third section, the associations between maternal behaviors, child cognitive outcomes and family characteristics are presented. In the fourth section, regression analyses of additive and interaction effects of maternal behaviors on children's cognitive outcomes are presented. In the last section, mediation analyses are presented.

4.1 Descriptive statistics for the full and the observational ECDET sample

The characteristics of the study sample are presented in Table 4.1. The age of the children ranged between 36 and 49 months ($M= 41.59$, $SD= 3.64$) and mothers' age ranged between 18 and 49 years ($M= 29.54$, $SD= 5.67$). Forty-seven percent of the children were males. Fifty-eight percent of the mothers were graduates of elementary school or less (five years or less) and 42% had more than elementary school degree (five years and more). The majority of the mothers (79%) spent most of their lives in urban areas.

Comparison of the full ECDET sample with the observational sample showed that the two samples were largely similar. However, there were also differences between the samples in terms of economic status and the area where the mother spent most of her life (urban or rural). The mothers who were in the observational sample were economically better off ($M= 0.4$, $SD= 1.1$) compared to mothers in the full ECDET sample ($M= -0.1$, $SD= 0.9$) and more mothers in the observational sample had spent most of their lives in urban areas compared to the full ECDET sample. These differences were related to the selection of the observational sample. The subsample of 123 participants was selected from the four metropolitan areas in

Turkey. Therefore, higher economic status and urban residence were more common in the observational sample than the full ECDET sample.

Table 4. 1 Characteristics and comparison of the full ECDET and the observational sample in percentages, means and standard deviations

Characteristics	Full ECDET Sample (N=1052)	Observational Sample (N=123)
Child's age (in months)	41.5 (3.7)	41.6 (3.6)
Mother's age (in years)	30.1 (5.7)	29.5 (5.7)
Mother's education level		
Not completed elementary school (%)	15.6%	11.4 %
Graduated from elementary school (%)	53.2%	46.3 %
Not completed high school (%)	11.2%	15.4 %
Graduated from high school (%)	14.4%	19.5 %
Graduated from college or higher (%)	5.2%	7.3 %
Economic status *	-0.1 (0.9)	0.4 (1.1)

Note. The results of the chi-square and t-tests are indicated as * if $p < .05$.

Means are presented for mother's and child's age and for economic status on top and below are the standard deviations in parentheses.

4.2 Exploratory analyses of maternal behaviors: Nonlinear associations and transformations

The results of the preliminary exploratory analyses showed that intrusiveness had a nonlinear association with the dependent variables. When intrusiveness was divided into quartiles, it was found that low, medium-low, and medium-high levels of maternal intrusiveness did not differentiate between cognitive scores; however, high level of intrusiveness was associated with a sudden drop in scores (See Table 4.2). This effect was not seen in regression analysis when intrusiveness was analyzed as an interval level measure. Therefore, intrusiveness was categorized into two levels, as low and high intrusiveness. The

cutoff point was selected as the third quartile where intrusiveness showed a sudden drop in cognitive scores.

Table 4. 2 Means of children's cognitive outcomes for four levels of intrusiveness (Standard deviations for cognitive outcomes are given below in parantheses)

Means	Tifaldi	Number Games	Sentence Repetition	Inhibitory Control	Corsi
Low intrusiveness	.14	35.98	10.96	11.85	.16
Medium-low intrusiveness	.10	38.96	12.14	12.52	-.68
Medium-high intrusiveness	.15	35.17	10.41	10.07	-.34
High intrusiveness	.04	24.22	8.04	8.46	-1.64
Total	.11 (.97)	33.61 (26.70)	10.40 (6.98)	10.73 (7.74)	-.63 (3.52)

Warmth also had nonlinear associations with the dependent variables. The exploratory analyses showed that when divided into quartiles, it was low levels of warmth that constituted a risk for cognitive scores, not high levels (See table 4.3). And since this effect was not visible in regression analysis with the small sample size available for the current study, warmth was categorized into two levels. Cutoff point was selected in the middle of first and second quartiles so that mothers who scored low in warmth constituted a different category from mothers who scored high in warmth.

Table 4. 3 Means of children's cognitive outcomes for four levels of warmth

Means	Tifaldi	Number Games	Sentence Repetition	Inhibitory Control	Corsi
Low warmth	-.15	31.77	8.31	10.34	-.90
Medium-low warmth	.19	33.46	11.85	10.85	-.07
Medium-high warmth	.19	35.37	10.30	12.70	-1.05
High warmth	.20	34.13	11.11	9.66	-.62

4.3 Bivariate analyses

In this section, the associations between maternal behaviors and other observational parenting measures (composite parenting measures calculated from DPICS); the associations between maternal behaviors and child cognitive outcomes; and the associations of family characteristics with maternal behaviors and cognitive outcomes are presented.

4.3.1 Bivariate associations between maternal behaviors and other observational parenting measures

Because intrusiveness and warmth variables were categorical (for their non-linear associations with the dependent variables), their association were examined with Chi square test (Table 4.4). Results showed that the association between intrusiveness and warmth was ns ($\chi^2(1, 123) = 2.59, ns$).

Table 4. 4 Chi Square to examine the association between intrusiveness and warmth (N= 123)

Intrusiveness	Warmth		χ^2
	Low Warmth	High Warmth	
Low	27 (69.2%)	69 (82.1%)	2.59
High	12 (30.8%)	15 (17.9%)	

The association between intrusiveness and detachment; and between warmth and detachment were examined via F tests. Intrusiveness and detachment were not significantly associated ($F(1,121) = .13, ns$) (Table 4.5). Maternal behaviors that were detached from child's need and that were nonresponsive towards child initiations (e.g., questions, comments) were conceptually different from maternal behaviors that involved interrupting child's initiations. In this sense, intrusiveness included a response component but it was an overbearing and controlling response to a child's action.

Table 4. 5 Mean differences in detachment by intrusiveness

	Intrusiveness		F	df
	Low	High		
Detachment	0.09 (0.13)	0.10 (0.11)	0.13	1

Note: Standard deviations are reported in parentheses.

On the other hand, the association between warmth and detachment was significant ($F(1,121) = 33.45, p < .01$) (Table 4.6). Those mothers who showed low levels of warmth were more detached ($M = .17, SD = .16$) than those mothers who showed high levels of warmth ($M = .05, SD = .08$). The mothers who were disengaged from and nonresponsive to their children's initiations tended to show limited warm affect to their children. These mothers were probably engaged in or attending to an unrelated activity or affect, and absorbed in their own emotional state.

Table 4. 6 Mean differences in detachment by warmth

	Warmth		F	df
	Low	High		
Detachment	0.17 (0.16)	0.05 (0.08)	33.45	1

Note: Standard deviations are reported in parentheses.

Next, the associations between maternal behaviors and composite parenting measures calculated from Dyadic Parent-Child Interaction Coding System (DPICS) by Akcinar (2009) are presented.

The associations between intrusiveness and behavioral, physical and psychological control were presented in Table 4.7. Contrary to expectations, intrusiveness was not associated with behavioral control ($F(1,121) = .92, ns$). There were significant associations between intrusiveness and psychological ($F(1,121) = 4.40, p < .05$) and physical control composites ($F(1,121) = 14.95, p < .01$). Those mothers who showed high levels of intrusiveness were also psychologically and

physically controlling. This was expected since intrusiveness had both physical and psychological elements in it such as taking a block from child's hand (physical) and telling the child that his father will scold him for doing something (psychological).

Similar to warmth for this sample, warmth (DPICS) was not associated with intrusiveness either ($F(1,121) = 2.63, ns$).

Table 4. 7 Mean differences in composite DPICS parenting measures by intrusiveness

	Intrusiveness		F	df
	Low	High		
Behavioral control	14.27 (5.31)	15.39 (5.53)	0.92	1
Physical control	1.26 (1.02)	2.12 (1.05)	14.95**	1
Psychological control	2.66 (1.39)	3.32 (1.70)	4.40*	1
Warmth (DPICS)	5.11 (2.46)	4.17 (3.35)	2.63	1

Note: Standard deviations are reported in parentheses. * $p < .05$ ** $p < .01$

Just as intrusiveness and detachment were not associated as measured in the current study, detachment was not associated with any of the control composites either (Table 4.8). It is once more demonstrated that maternal control/intrusive control was distinct from detachment.

Table 4. 7 Correlations between detachment and composite DPICS parenting measures

	Behavioral control	Physical control	Psychological control	Warmth (DPICS)
Detachment	-.08	.14	.16	-.22

Warmth and warmth composite (DPICS) were conceptualized similarly but there were differences in the measurement strategies. The level of warmth was measured based on coder impression whereas warmth composite (DPICS) was measured with behavior count. Despite

this measurement difference, they were significantly associated ($F(1,121) = 28.76, p < .01$).

The associations between warmth and behavioral ($F(1,121) = 8.07, p < .01$) and physical control composites ($F(1,121) = 14.39, p < .01$) were also significant. Interestingly, those mothers who were high in warmth were also high in behavioral control. This meant that while mothers were giving commands to their children and warning them about the consequences of their actions, they were not withholding warmth (Table 4.9).

Table 4. 8 Mean differences in composite DPICS parenting measures by warmth

	Warmth		F	df
	Low	High		
Behavioral control	12.56 (5.53)	15.43 (5.05)	8.07**	1
Physical control	1.97 (1.11)	1.21 (0.99)	14.39**	1
Psychological control	3.02 (1.56)	2.70 (1.43)	1.28	1
Warmth (DPICS)	3.18 (2.03)	5.71 (2.59)	28.76**	1

Note: Standard deviations are reported in parentheses. * $p < .05$ ** $p < .01$

4.3.2 Associations between child cognitive outcomes and maternal behaviors

The correlations between children's cognitive outcomes are presented in Table 4.10. Two of the cognitive outcomes measured linguistic skills. Tifaldi measured children's receptive vocabulary knowledge and Sentence Repetition test measured children's grammar knowledge. Number Games test were used to measure children's numerical and mathematical concept development. Inhibitory control was measured by Head and Toes Task and children's visuo-spatial working memory capacity was measured by Corsi Block Tapping Task. All of these cognitive outcomes were positively correlated. The strength of the association between Corsi and the other four outcomes were smaller than the association among number games, sentence repetition, inhibitory control and Tifaldi. Inhibitory control was found to be highly

correlated with linguistic skills measured by Tifaldi ($r = .51, p < .01$) and Sentence Repetition ($r = .56, p < .01$); and math skills measured by Number Games ($r = .62, p < .01$). Inhibition requires the child to keep in mind a rule that leads to the correct response while inhibiting a prepotent response and it requires a good attention span. These are also necessary skills for math, while doing calculations and problem solving, as well as language learning. As expected, tests that measure language skills, Tifaldi and Sentence Repetition, were highly correlated ($r = .56, p < .01$).

Table 4. 9 Correlations between child cognitive outcomes

Variables	M	SD	1	2	3	4	5
1. Tifaldi	.11	.97	-				
2. Number Games	33.61	26.70	.49**	-			
3. Sentence Repetition	10.40	6.98	.56**	.51**	-		
4. Inhibitory Control	10.73	7.74	.51**	.62**	.56**	-	
5. Corsi	-.63	3.52	.34**	.32**	.38**	.36**	-

Note. ** $p < .01$.

Contrary to the expectations, the results of the F tests for assessing the associations of warmth (high levels of maternal positive affect, eye contact, and using terms of endearment) with cognitive outcomes showed that warmth was not significantly associated with any of the outcomes. Intrusiveness was related only to Number Games scores ($F(1,110) = 5.42, p < .05$). Those children whose mothers scored high in intrusiveness, tended to score low in numerical and mathematical concept development test (Table 4.11).

Table 4. 10 Mean differences in cognitive outcomes by intrusiveness

	Intrusiveness		F	df
	Low	High		
Tifaldi	0.14 (1.05)	0.01 (0.66)	0.37	1
Number Games	36.77 (26.53)	23.13 (24.98)	5.42*	1
Sentence Repetition	10.99 (7.07)	8.42 (6.39)	2.75	1
Inhibitory Control	11.48 (7.55)	8.19 (7.98)	3.71	1
Corsi	-0.37 (3.39)	-1.56 (3.88)	2.42	1

Note: Standard deviations are reported in parentheses. * $p < .05$

Detachment was negatively associated with Tifaldi scores and inhibitory control (Table 4.12). Children's receptive language scores and inhibition abilities were low, when their mothers were ignoring them both emotionally and behaviorally.

Table 4. 11 Correlations between detachment and child cognitive outcomes

	Tifaldi	Number Games	Sentence Repetition	Inhibitory Control	Corsi
Detachment	-.27**	-.18	-.17	-.21*	-.09

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

4.3.3 Bivariate analyses of family characteristics with maternal behaviors and cognitive outcomes

Maternal education and economic status of the family were highly and positively correlated ($r = .62, p < .01$). Mothers facing economic hardship were expected to have high levels of intrusiveness, less responsiveness and warmth towards their children (Beckwith & Rodning, 1996; Raviv, Kessenich, & Morrison, 2004). This association was not significant for intrusiveness ($F(1,116) = 2.50, ns$), detachment ($r = -.11, ns$) and warmth ($F(1,116) = 3.01, ns$). Other studies also indicated that high maternal education was related to low intrusiveness

and high responsiveness and warmth towards children (Neitzel & Stright, 2004). The results of the current analyses corroborated these findings for intrusiveness and warmth. Highly educated mothers displayed less intrusion ($F(1,121) = 5.01, p < .05$) and more warmth ($F(1,121) = 4.61, p < .05$) towards their children than less educated mothers (Tables 4.13 and 4.14). Detachment was not correlated with maternal education either ($r = -.15, ns$).

Table 4. 12 Mean differences in maternal education by intrusiveness

Intrusiveness				
	Low	High	F	df
Maternal education	7.31 (3.90)	5.52 (2.74)	5.01*	1

Note: Standard deviations are reported in parentheses. * $p < .05$

Table 4. 13 Mean differences in maternal education by warmth

Warmth				
	Low	High	F	df
Maternal education	5.87 (2.84)	7.40 (4.01)	4.61*	1

Note: Standard deviations are reported in parentheses. * $p < .05$

The correlations between family characteristics and children's cognitive outcomes were presented in Table 4.15. Economic status and mother's education were positively and moderately correlated with each of the cognitive outcomes. Children of economically better off and highly educated mothers scored higher in language, mathematics and working memory tests than the children of less wealthy and less educated mothers.

Table 4. 15 Correlations between family characteristics (economic status and mother's education) and children's cognitive outcomes

	Tifaldi	Number Games	Sentence Repetition	Inhibitory Control	Corsi
Economic status	.38**	.33**	.30**	.25**	.26**
Mother's education	.41**	.30**	.23**	.25**	.31**

Note. ** $p < .01$.

4.4 Direct and interaction effects of maternal behaviors on children's cognitive outcomes

Regression analyses were conducted to estimate the additive effects of maternal behaviors, the interaction of intrusiveness and detachment with maternal warmth and the effects of family characteristics on children's cognitive outcomes. Intrusiveness and warmth were coded as dummy variables and low levels of both were taken as reference categories as explained above.

The regression analyses were composed of three models. In the first model, the family characteristics -maternal education and economic status- were entered to the regression analyses and their effects on children's cognitive outcomes were analyzed. In the second model, maternal behaviors -intrusiveness, detachment, and warmth- were entered to the regression analysis. Thus the effects of maternal behaviors on cognitive outcomes were estimated while controlling for family characteristics. In the third model, the interaction effects were tested. It was expected that the effects of intrusiveness and detachment on children's cognitive outcomes would vary depending on maternal warmth. Therefore, the interaction of intrusiveness and warmth and the interaction of detachment and warmth were added to the models one by one to estimate their effects on children's cognitive outcomes.

4.4.1 Analyses of receptive vocabulary

In the first model, economic status and mother's education were entered into regression to predict children's receptive language with Tifaldi scores. Mother's education predicted Tifaldi scores. The children of highly educated mothers scored better in Tifaldi than the children of less educated mothers ($\beta = .30, p < .01$).

Next, maternal behaviors were entered into the second regression model controlling for family characteristics. Mother's education remained a significant predictor. ($\beta = .28, p < .01$). Maternal intrusiveness did not have an effect on children's Tifaldi scores. However, detachment predicted Tifaldi scores. When mothers were ignoring their children's comments,

questions and needs, their children's receptive language scores were negatively affected ($\beta = -.24, p < .01$). This was true independent of mothers' education level and economic status. On the other hand, maternal warmth did not predict children's Tifaldi scores.

In the third model, the interaction of intrusiveness and warmth and the interaction of detachment and warmth on Tifaldi scores were tested. The effects of intrusiveness and detachment on Tifaldi scores did not vary with warmth. Overall, the model explained 26% variance in children's Tifaldi scores. The results of this analysis are presented in Table 4.16.

Table 4. 14 Direct and indirect effects of family characteristics and maternal behaviors on children's Tifaldi scores

Variable	Model 1			Model 2			Model 3		
	B	SE B	β	B	SE B	β	B	SE B	β
Economic status	.19	.10	.20	.18	.10	.19	.18	.10	.20
Mother's education	.08**	.03	.30	.07**	.03	.28	.07**	.03	.28
High intrusiveness				.09	.20	.04	.25	.33	.10
Detachment				-1.86**	.75	-.24	-1.84**	.75	-.24
High warmth				-.06	.21	-.03	.01	.24	0
Interaction of intrusiveness and warmth							-.25	.42	-.09
Interaction of detachment and warmth							-1.01	1.60	-.07
R ²	.20			.25			.26		
F Change in R ²	13.37**			2.49			.36		

Note. B = Unstandardized coefficient, β = Standardized coefficient. ** $p < .01$.

4.4.2 Analyses of mathematical ability

The analysis plan for predicting mathematical ability with Number Games scores was similar to the analysis plan for predicting Tifaldi scores. Children's math scores did not vary with economic status and maternal education.

Among maternal behaviors, only high intrusiveness predicted math scores ($\beta = -.18, p < .05$). Children whose mothers were highly intrusive had lower development of numerical

and mathematical concepts than children of less intrusive mothers. The results of these analyses are provided in Table 4.17.

Table 4. 15 Direct and indirect effects of family characteristics and maternal behaviors on children's Number Games scores

Variable	Model 1			Model 2			Model 3		
	B	SE B	β	B	SE B	β	B	SE B	β
Economic status	5.51	2.85	.22	5.20	2.81	.20	5.43*	2.75	.21
Mother's education	1.37	.82	.19	1.06	.82	.14	1.01	.80	.14
High intrusiveness				-11.69*	5.85	-.18	5.73	9.21	.09
Detachment				-39.38	22.79	-.18	-.36.59	22.30	-.17
High warmth				-6.89	6.10	-.12	.76	6.75	.01
Interaction of intrusiveness and warmth							-28.07*	11.64	-.35
R ²	.13			.18			.23		
F Change in R ²	7.86**			2.27			5.81*		

Note. B = Unstandardized coefficient, β = Standardized coefficient. * $p < .05$ ** $p < .01$.

The interaction analyses of intrusiveness and warmth on Number Games scores showed that the effects of intrusiveness varied with maternal warmth ($\beta = -.35$, $p < .05$). When the level of warmth was low, high maternal intrusion did not negatively influence children's math scores. However, when warmth was high, high level of intrusion was negatively associated with children's math scores. This was probably because at low levels of warmth, intrusiveness was the only interaction between the mother and the child so the child was not affected negatively. But when there was already a warm relationship between the mother and the child, mothers' increasingly intrusive behaviors were disrupting child's efforts to accomplish his/her goals during play and this might have affected his/her math abilities adversely. The variability of the effects of intrusiveness with maternal warmth on children's mathematical ability is depicted in Figure 4.1.

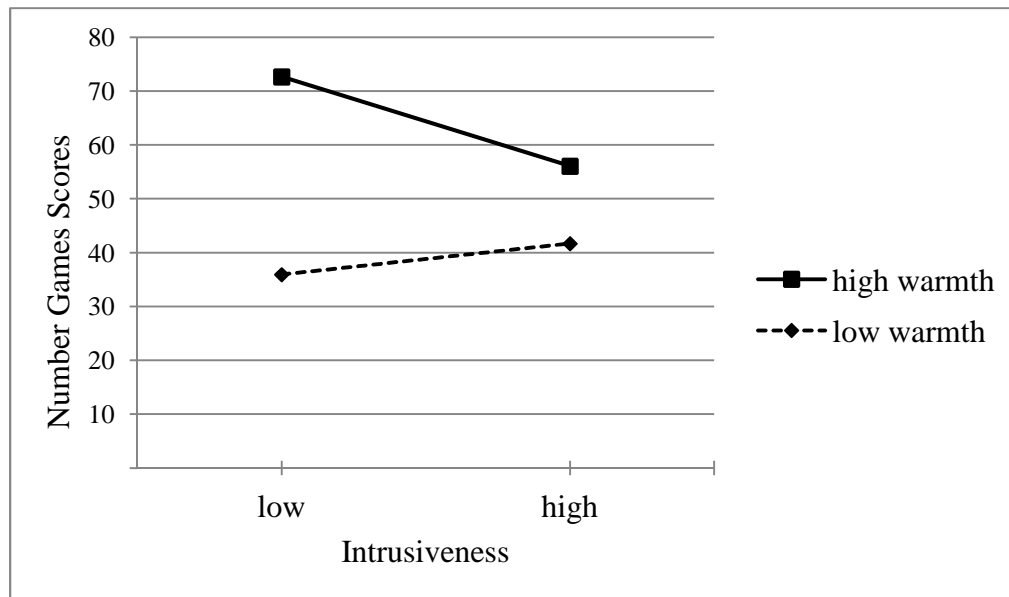


Figure 4. 1 Interaction effects of maternal intrusiveness and warmth predicting Number Games scores

4.4.3 Analyses of grammar knowledge scores

The analysis plan for predicting grammar knowledge with Sentence Repetition scores has a similar stepwise procedure as in predicting Tifaldi and Number Games scores. When family characteristics were entered in the first regression model predicting Sentence Repetition scores, economic status was found to predict it. Children whose mothers were economically better off had better grammatical knowledge compared to children whose mothers were at an economic disadvantage ($\beta = .23, p < .05$). However, children's Sentence Repetition scores did not vary with maternal education.

Maternal behaviors were added into the second regression model controlling for family characteristics. In this model economic status no longer predicted Sentence Repetition scores. In addition, none of the maternal behaviors were significant predictors of Sentence Repetition scores. Neither intrusive behaviors of the mothers, nor their emotional and behavioral disengagement nor their positive affect had any effects on children's level of grammar knowledge. The results of these analyses are provided in Table 4.18.

The interaction analyses of intrusiveness and detachment with warmth on Sentence Repetition scores did not improve the model. The effects of intrusiveness and detachment did not vary with maternal warmth. Therefore, results of the interaction analyses are not provided in Table 4.18.

Table 4. 16 Direct and indirect effects of family characteristics and maternal behaviors on children's Sentence Repetition scores

Variable	Model 1			Model 2		
	B	SE B	β	B	SE B	β
Economic status	1.54*	.76	.23	1.46	.76	.22
Mother's education	.21	.22	.11	.15	.22	.08
High intrusiveness				-1.85	1.58	-.11
Detachment				-7.25	5.76	-.13
High warmth				.23	1.61	.01
R ²	.10			.13		
F Change in R ²	5.66**			1.26		

Note. B = Unstandardized coefficient, β = Standardized coefficient. * $p < .05$
 ** $p < .01$.

4.4.4 Analyses of inhibitory control

A similar stepwise procedure for predicting inhibitory control scores were used as in predicting other cognitive outcomes. The family characteristics, economic status and mother's education did not predict children's inhibitory control scores. Among the maternal behaviors only detachment predicted inhibitory control scores ($\beta = -.27, p < .01$). Perhaps when mothers were not responsive to their children's behaviors and /or ignoring them emotionally, children did not receive enough guidance to learn to inhibit their dominant responses. The results of these analyses are presented in Table 4.19.

Table 4. 17 Direct and indirect effects of family characteristics and maternal behaviors on children's Inhibitory Control scores

Variable	Model 1			Model 2			Model 3		
	B	SE B	β	B	SE B	β	B	SE B	β
Economic status	1.20	.85	.16	1.14	.83	.15	1.20	.81	.16
Mother's education	.33	.25	.16	.26	.24	.12	.24	.24	.11
High intrusiveness				-2.81	1.73	-.15	1.98	2.73	.11
Detachment				-16.64**	6.28	-.27	-16.13**	6.17	-.27
High warmth				-3.32	1.76	-.20	-1.26	1.95	-.07
Interaction of intrusiveness and warmth							-7.71*	3.45	-.33
R ²	.08			.12			.15		
F Change in R ²	4.67**			3.22*			5.01*		

Note. B = Unstandardized coefficient, β = Standardized coefficient. * $p < .05$ ** $p < .01$.

Interaction analyses of intrusiveness and warmth on inhibitory control scores showed that the effects of intrusiveness varied with maternal warmth ($\beta = -.33, p < .05$). When warmth was low, high levels of intrusiveness were not harmful for children's inhibitory control scores but when warmth was high, high levels of intrusiveness influenced children's inhibitory scores adversely. The variability of the effects of intrusiveness with maternal warmth on children's inhibitory control scores is depicted in Figure 4.2. There was no interaction between detachment and warmth while predicting inhibitory control. Overall the model explained 15% variance in explaining inhibitory control scores.

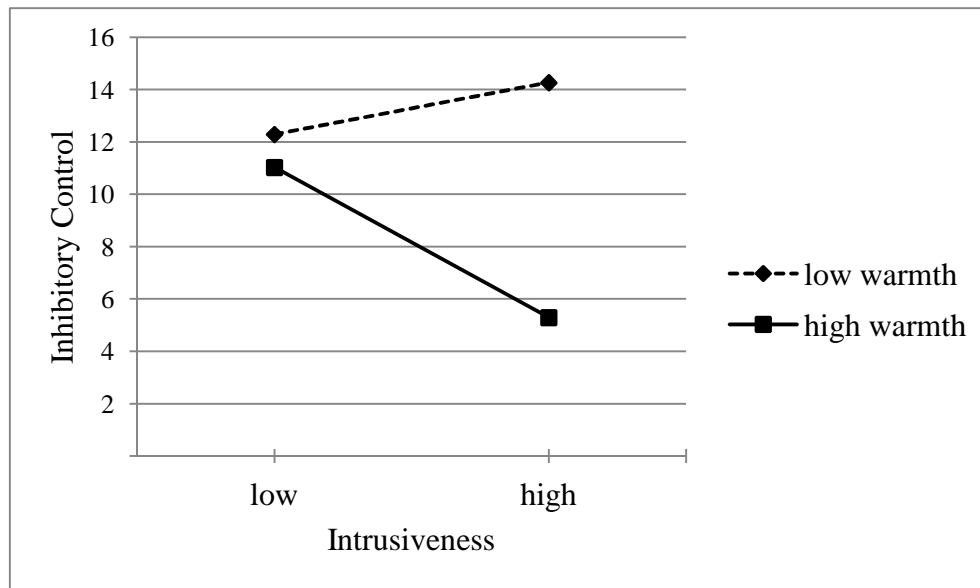


Figure 4. 2 Interaction effects of maternal intrusiveness and warmth predicting Inhibitory control scores.

4.4.5 Analyses of working memory

A similar stepwise procedure for predicting visuo-spatial working memory scores with Corsi Block Tapping Task were used as in predicting other cognitive outcomes. Among the family characteristics mother's education significantly predicted Corsi scores ($\beta = .24, p < .05$). The children of highly educated mothers scored higher in Corsi than children of less educated mothers. However, economic status did not significantly predict Corsi scores.

When maternal behaviors were included in the second model, the effect of maternal education remained significant ($\beta = .23, p < .05$). However, none of the maternal behaviors predicted Corsi. This could be because Corsi is a measure of cognitive skills that may have a strong physiological basis (Jonides, Smith, Koeppe, Awh & Minoshima, 1993; Scherf, Sweeney & Luna, 2006) and it could be less affected by maternal behaviors than the rest of the child outcomes measuring linguistic abilities, math abilities and inhibitory control. The results of the analyses are presented in Table 4.20.

Table 4.18 Direct and indirect effects of family characteristics and maternal behaviors on children's Corsi scores

Variable	Model 1			Model 2			Model 3		
	B	SE B	β	B	SE B	β	B	SE B	β
Economic status	.35	.37	.10	.34	.38	.10	.29	.37	.09
Mother's education	.23*	.11	.24	.22*	.11	.23	.26*	.11	.27
High intrusiveness				-.50	.78	-.06	-.43	.76	-.05
Detachment				-2.88	2.79	-.10	2.41	3.35	.09
High warmth				-.48	.77	-.06	-.48	.75	-.06
Interaction of detachment and warmth							-15.51**	5.76	-.30
R ²	.10			.11			.17		
F Change in R ²	6.56**			.48			7.25**		

Note. B = Unstandardized coefficient, β = Standardized coefficient. * $p < .05$ ** $p < .01$.

In the third model, the interaction analyses of intrusiveness and detachment with warmth on Corsi scores were conducted. The interaction of intrusiveness and warmth was not significant ($\beta = .14$, *ns*). The effects of intrusiveness did not vary across the levels of warmth. On the other hand, the effects of detachment varied with warmth ($\beta = -.30$, $p < .01$). When warmth was low, high levels of detachment did not make a difference in children's Corsi scores. However, when warmth was high, high levels of detachment were negatively associated with Corsi scores. This could be because when the mothers were warm towards their children but were not engaged in the children's activity, they might have been distracting the child. The combination of these two maternal behaviors might have acted like a kind of intrusion. Although the mother was not interested in the child's activity and did not follow the child's activity, she was perhaps talking to him/her in a warm tone, using terms of endearment or acting physically affectionate. These in turn could be stopping the child from completing his/her activity. The overall model explained 17% of variance in children's Corsi scores. The variability of the effects of detachment with maternal warmth on children's working memory scores is depicted in Figure 4.3.

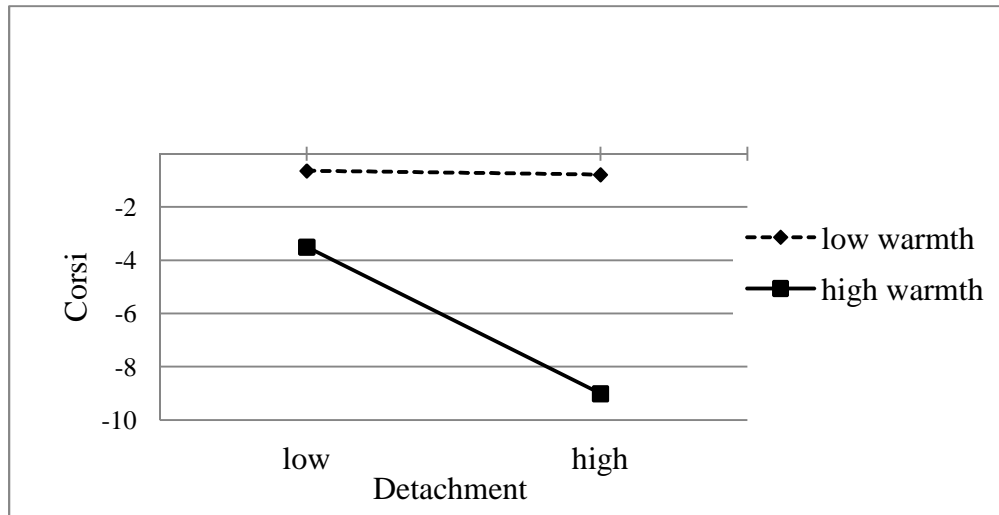


Figure 4. 3 Interaction effects of maternal intrusiveness and warmth predicting Corsi scores.

4.5 Mediation Analyses

Mothers' education and economic status were expected to have indirect effects on children's cognitive outcomes through their influence on maternal behaviors. However, mediation analyses could not be conducted because none of the models fulfilled the 4 necessary steps of establishing mediation (Baron and Kenny, 1986). Family characteristics influenced children's cognitive outcomes directly. They did not influence children's cognitive outcomes through their effects on maternal behaviors.

Chapter 5

DISCUSSION

5.1 The aim of the study and summary of results

The main purpose of this study was to investigate the influence of maternal intrusiveness when children were three years old on their cognitive development at three and four years of age, prospectively. In addition to intrusiveness, it examined the influence of other maternal behaviors such as responsiveness and detachment on cognitive development and how warmth moderated these associations. The expectation of the effects of intrusiveness on children's cognitive development was based on the theories of ecological systems, attachment, coercion and synchrony.

According to these theoretical approaches, the child's cognitive development was facilitated when the child engaged in reciprocal activity with someone who cared for the child and explored his/her environment in security (Bronfenbrenner, 1986; Jacobsen et al., 1994). In such synchronous interactions, the child was better adapted to environment and his/her learning processes were facilitated. On the other hand, when the mother was intrusive and interrupted the child's activity without taking the child's need for exploration into account (Egeland et al., 1993), the mother prevented the child from experiencing the consequences of his/her own actions. Thus, the child's cognitive development was compromised (Harrist & Waugh, 2002). Family characteristics such as economic status and maternal education were also expected to influence maternal behaviors and child cognitive outcomes.

The associations between family characteristics and maternal behaviors showed that intrusiveness and warmth was associated with mother's education; highly educated mothers displayed less intrusion and more warmth than less educated mothers. These results were in line with previous research demonstrating that maternal education influenced parenting behaviors. Mothers who were highly educated used more praise and effective strategies

during problem solving with their children and they were less directive than less educated mothers (Neitzel & Stright, 2004). On the other hand, none of the variables were associated with economic status. This was contrary to Conger et al.,'s (2000) family stress model which stated that stress associated with low income and poverty influenced parental mental health and these in turn led to less warmth and more intrusiveness. This might be because the maternal behaviors examined in this study were observed during a 10-minute interaction with the child. In this limited context, the mothers might not display the stress associated with low income, poverty or unemployment.

The associations between the maternal behaviors showed that intrusiveness and responsiveness were highly and negatively correlated. Contrary to previous research, which suggested that directive and facilitative behaviors of mothers should be assessed separately due to their low negative correlation (Murray & Hornbaker, 1997), intrusiveness and responsiveness as measured in this study were not distinct concepts. Rather they were the opposite ends of the same dimension. Those maternal behaviors which were examples of responsiveness were also nonintrusive behaviors. For this reason, responsiveness was dropped from further analyses.

It was expected that intrusiveness would influence cognitive outcomes adversely since it interrupted children's exploratory behaviors, disrupted the synchrony between the mother and the child and coerced the child to fulfill maternal demands instead of pursuing his or her own goals. And this influence was expected to be linear; the increase in intrusiveness would result in a linear decrease in cognitive scores. Contrary to expectations, the effects of intrusiveness on cognitive outcomes were not linear. Analyses revealed that low levels of intrusiveness were not associated with cognitive scores. It was the high levels of intrusiveness that were associated with low scores. This finding can be related to the behaviors that defined low and high levels of intrusiveness. Low levels of intrusive behaviors mainly consisted of

verbal intrusions such as commanding the child to do something or correcting the child after the child finished his activity. On the other hand, high levels of intrusive behaviors mainly consisted of physical intrusions, such as taking a block or picture from the child, controlling the child by holding the child's arm or physical attempts to get the child's attention when he/she was disengaged. It may be physical intrusion or highly frequent use of verbal intrusion that influenced cognitive development negatively while low or moderate levels of verbal intrusions were not detrimental. However, this interpretation requires further analysis because of the small number of individuals that constituted each cell in intrusiveness by warmth grouping. There are 27 mothers in low intrusive, low warmth; 69 mothers in low intrusive high warmth; 12 mothers in high intrusive low warmth and 15 mothers in high intrusive high warmth categories.

Intrusiveness and warmth did not have direct effects on children's cognitive development; rather, the negative effect of intrusiveness was only detected when it was coupled with high warmth. When intrusion was the predominant interaction between the mother and the child (in context of low warmth), it did not adversely influence cognitive development. The significant interaction effect of warmth and intrusiveness on math skills and inhibitory control shows that when there was a warm relationship, mothers' highly intrusive behaviors were detrimental to the child's cognitive development. These results contradict the previous findings by Hubbs-Tait et. al (2002) who found that children receiving the least amount of emotional support in addition to the highest level of intrusive control performed the worst in terms of perceptual abilities; and Pungello et al. (2009) who found that negative intrusive parenting was not related to expressive language skills when used in combination with maternal warmth for African American children. On the other hand, Aunola and Nurmi (2004) who researched the effects of psychological control (guilt inducing behaviors of the mother) on children's academic achievement found that psychological

control had a negative influence on children's math skills only when it was coupled with high levels of affection. Two of the possible explanations they suggest for this finding are also applicable for the current study. The first one is that, highly controlling and highly warm mothers are smothering their children. Their overbearing presence in the mother-child interactions leads to an enmeshment of the mother and the child. The child becomes unable to act autonomously; thus, his/her cognitive development is compromised. The second possible explanation is that mismatching behaviors and emotions give an inconsistent message to the child about the approval of the mother. While the mother seems to encourage child's exploration with a positively affectionate state, she interrupts the child's attempts at the same time. This kind of inconsistencies may leave the child anxious and divert his/her attention from learning to his/her mother's unanticipated behaviors (Aunola & Nurmi, 2004).

The interaction effect of detachment and warmth on cognitive outcomes of children was only applicable to visuo-spatial working memory scores and again contrary to expectations, warmth did not buffer the negative influence of detachment on children's cognitive development. When warmth is low, high levels of detachment do not predict low Corsi scores. It is possible that, although there is not a warm and attentive relationship, at least the child is autonomous and can pursue his/her own interests during the mother-child interaction. There is no one to interrupt the child's activity. However, when warmth is high and detachment is also high, children's visuo-spatial working memory scores are influenced negatively. This can be because the child experiences a high level of emotional expression as distracting when he/she is engaged in a task and the mother's approach is not supportive of the child's activity. The mother is warm at times of her own choosing without considering whether the child is focused on something else or not.

5.2. Contributions

This study unifies the disparate vocabulary that refers to intrusiveness and operationally defines it. It sets forth a new coding method and associated materials to endure replicability, by exemplifying high and low levels of observed intrusiveness and other maternal behaviors.

This study shows how early parenting may influence children's cognitive outcomes beyond direct stimulation of cognitive development. Besides engaging the child in cognitively stimulating, novel activities or directly teaching the child, parents can influence children's cognitive development through everyday interactions with their children. How maternal behaviors may influence cognitive development is explained by theories of ecological systems, attachment, synchrony and coercion at the beginning of this thesis. In addition to those, the results of the analyses based on this sample put forward a new way of looking at the effects of mother-child interactions on children's cognitive development.

There are no studies conducted in Turkey that examines the effects of observed maternal behaviors on children's cognitive outcomes. Using a nationally representative sample from Turkey, this study contributes to our knowledge of the maternal factors that influence children's cognitive development in Turkey.

Instead of just looking at the influence of different parenting styles on children's cognitive outcomes, this study focuses on parenting as a combination of behaviors and investigates how the effects of maternal behaviors on cognitive outcomes change with the overall emotional climate. This approach captures different dimensions of parenting and rates each mother on intrusiveness, detachment and warmth. It reveals that unlike commonly found in previous research both for behavioral and cognitive outcomes; the positive emotional climate does not buffer the negative effects of intrusive and detached parenting. On the contrary, it may exacerbate their negative effects.

5.3. Limitations

There are number of limitations of this study. First, although there are main effects of detachment and interaction effects of intrusiveness and warmth and detachment and warmth on cognitive outcomes of children, the effect sizes are small. The maternal behaviors measured by this study do not explain much variance in children's cognitive development. It is perhaps necessary to measure mother's cognitively stimulating behaviors during mother-child interactions. In terms of verbal exchanges, it may be necessary to examine maternal language (whether or not the mother uses a varied and complex language) used during these mother-child interactions. For instance asking questions to the child instead of telling or commanding the child are facilitative of his/her cognitive development as they provide opportunities for learning (Taylor, Donovan, Miles & Leavitt, 2009). The regression analyses controlling for HOME language stimulation and academic stimulation measures at three years of age did not alter the significant influence of maternal behaviors or their interactions on children's cognitive development. This result supports the further need to include cognitively stimulating maternal behaviors in addition to the maternal behaviors measured in this study for explaining more variance in cognitive development.

Second limitation is about the conceptualization of maternal responsiveness. Bivariate analyses show that responsiveness is not conceptualized well. It is the opposite of intrusiveness so it is dropped from further analyses. This results in the measurement of children's cognitive outcomes based on two maternal behaviors and maternal warmth.

Another limitation concerns generalization of findings based on a semi-structured observational task. A lego construction task requires the child to formulate strategies to achieve a goal and engage in problem solving and these skills are closely related to children's cognitive development (Assel et. al., 2003). However, observing the mother-child interaction during a semi-structured task like this is likely to lead the mother to act in a controlling and

directive way towards the child. During the instructions about the observational protocol interviewer tells the mother that the child is required to build blocks as shown in the pictures. She is also told that she can help the child and their interactions are going to be videotaped. These instructions may preoccupy the mother about the aim of the task. She may think it is important that the child finishes the tasks in time. Thus, she may intrude in the child's activity more than she naturally would.

In addition to this, it is also possible that the dyads are placed in a high interaction constraint by a lego construction task. Those mothers who do not often play with their children may not know how to interact during a structured task. Therefore, they may have overreacted and behave in a more intrusive and warm manner. On the other hand, those mothers who knew how to interact with their children were more flexible and they did fine. For these reasons, it is necessary to study intrusiveness with a number of different tasks to see whether the behaviors can be generalized.

5.4. Future studies

Future studies on the effects of intrusiveness on children's cognitive development may focus on distinguishing different types of intrusive control. Verbal and physical control may have different effects on children's cognitive development.

Longitudinal analyses are necessary to see how intrusive maternal behaviors change over time because it is possible that intrusive control decreases as the child gets older or parents use different types of intrusive control at different ages (i.e., more physical control in early ages than verbal control).

Future studies may also take children's behaviors into account while coding observational mother-child interactions. By this way, it is possible to see the interactional patterns that the dyads engage in and also how maternal behaviors are influenced by children's previous behaviors.

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APPENDIX

Anne-Çocuk Etkileşimi Sırasında Anne Davranış Özellikleri Kodlama Yönergesi

Prosedür:

Anne-çocuk etkileşimi sırasında anne davranış özelliklerini kodlamak için anne ve çocuğun birlikte lego yaptıkları 10 dakikalık (bazı videolar 10 dakikadan daha kısa veya daha uzun olabilir) videolar kullanılmaktadır.

Kodlamaya başlamadan önce her videoda kaç tane 10 saniyelik dilim olduğu hesaplanır (10 dakikalık bir videoda 60 tane 10 saniyelik dilim varken, 12.30 dakikalık bir videoda 75 tane 10 saniyelik dilim vardır). Bu hesap göz önünde bulundurularak her video için rastgele 12¹ sayı belirlenir. Daha sonra bu sayıların denk geldiği 10 saniyelik dilimler hesaplanır (Örneğin, 3. dilim 00.20–00.30 saniyeleri arasına ve 18. dilim 2.50–3.00 saniyeleri arasına denk gelmektedir).

Her 10 saniyelik dilim içerisinde bir veya birden fazla (en fazla altı) anne davranışı kodlanır.

Kodlama:

Anne-çocuk etkileşimlerinin içerisindeki anne davranışları özellikleri ve düzeylerine göre kodlanır. Etkileşim, anne veya çocuğun diğerine yönelik sözel veya fiziksel bir davranışını ve diğerinin bunu takiben verdiği tepkiyi içerir.

Anne davranışları kodlanırken anne-çocuk etkileşimi göz önünde bulundurulmalıdır. Bu sebeple, kodlanmasa da, çocuğun davranışları da dikkate alınır. Annenin davranış özelliği ve bu davranışın düzeyi çocuğun o anki davranışına göre değişebilir. Örneğin, annenin çocuk pasif bir şekilde otururken çocuğa verdiği bir komut, düşük düzey müdahale, düşük düzey duyarlı davranış olarak kodlanırken, çocuğun aktif bir şekilde oyuna katıldığı durumlarda yüksek düzey müdahale olarak kodlanır. Benzer şekilde, çocuğun ilgisi dağıldığında çocuğu oyuna katmak için “Aa bak burada ne güzel bir gemi varmış!” şeklinde bir teşvik duyarlılık olarak kodlanır.

Etkileşim içerisindeki anne davranışı, oyun veya durum hakkında nötr bir yorum, dokunma, itme veya sarılma gibi fiziksel bir temas veya kızgınlık, takdir, ilgisizlik ifade eden bir söz ve hareket olabilir. Anne davranışı çocuğun yaptığı veya söylediği bir şeye tepki olabileceği gibi çocuktan bağımsız bir ifade veya hareket de olabilir.

Farklı davranış birimlerini birbirinden ayırmak için sıra alma kuralı uygulanır. Buna göre annenin bir bütünlük gösteren her sözel (cümleler, soru ifade eden kelimeler, ünlemler vb.) veya fiziksel ifadesi bir davranış birimi olarak kodlanır. Eğer sözel veya fiziksel bir ifade karşı taraf tepki vermeden tekrarlanıyorsa bu tek bir davranış birimini gösterir. Bir davranış bir süre (bu 1-2 saniyelik uzun bir duraksama olabileceği gibi yarım saniyelik kısa bir duraksama da olabilir) için duraksayıp daha sonra devam ediyorsa, duraksamadan sonraki davranış yeni bir davranış birimi olarak kodlanır. 10 saniyelik dilimde annenin ilk sözel veya

¹ Yapılan analizlere göre videolardaki bütün dilimleri kodlamadan elde edilen sonuçlar ve rastgele seçilmiş 12 dilimi kodlamadan elde edilen sonuçlar arasındaki ilişki yüksektir ($r = .94$). Bu nedenle bütün video yerine rastgele seçilmiş 12 dilim kodlanmaktadır.

fiziksel ifadesi birinci davranış, son ifade de son davranış olarak kodlanır. Annenin davranışları 4 ayrı özellik boyutunda kodlanır. Bunlar;

- | | |
|---|------------|
| 1 | Müdahale |
| 2 | Duyarlılık |
| 3 | İlgisizlik |
| 4 | Sıcaklık |

Bu davranışların her biri detaylı bir şekilde örneklenerek takip eden bölümlerde anlatılmıştır.

Annenin her bir davranış özelliğinin düzeyi ise aşağıdaki şekilde belirlenir;

- | | |
|---|--|
| 0 | Hiç (davranış özelliğini gözlemlemediğinizi gösterir). |
| 1 | Düşük düzeyde gözlemlendi. |
| 2 | Yüksek düzeyde gözlemlendi. |

Bir zaman diliminde sadece bir anne davranışı da birden çok anne davranışı da görülebilir. Örneğin, bir anne yüksek düzeyde müdahale eden ve 0 düzeyinde duyarlı davranışta bulunabileceği gibi, düşük düzeyde müdahale eden ve yüksek düzeyde duyarlı bir davranış da sergileyebilir.

Belirtilen davranış özelliklerine uymayan durumlar konu dışı durumları gösterir ve eksik veri olarak kodlanır. Eksik veri olarak kodlanan durumlar ve bu durumlara verilecek rakamlar aşağıdaki gibidir:

- | | |
|---|---|
| 9 | Anketör konuşuyor, oyunu anlatıyor veya yönerge veriyor. |
| 8 | Anne belirtilen davranış özelliklerine uymayan bir şekilde konuşuyor veya hareket ediyor. |
| 7 | Kamera anne ve çocuğu çekmiyor. |

Konu dışı durumlarla karşılaşıldığında bütün kutucuklar duruma uygun olarak belirlenmiş rakamla doldurulur. Eğer herhangi bir 10 saniyelik dilimdeki bütün davranış özellikleri konu dışı olarak kodlanmışsa, o zaman o dilim yerine rastgele seçilmiş yeni bir dilim kodlanmalıdır. Sonuçta her video için eksik veri olmaksızın toplam 12 tane 10 saniyelik dilim bulunmalıdır.

Kodlamayı başlatırken belirtilen dilimin zaman aralığına kesin olarak uyulmalıdır.

Örneğin, 00.20–00.30 dilimi kodlanırken süre tam olarak 00.20'ye girildiği anda başlatılmalı ve 00.30'a girildiği anda durdurulmalıdır. Sadece yarım kalan ve anlaşılamayan cümleler için bir önceki veya bir sonraki dilimde bir saniyeyi geçmemek koşuluyla kodlama yapılabilir.

Anne-Çocuk Etkileşimi Sırasında Anne Davranış Özellikleri

1. Müdahale eden

Tanım

Müdahale eden anne, çocuğun araştırma ve keşfetme ihtiyacını göz ardı ederek, çocuğun süre giden faaliyetini devralır veya akışını değiştirir. Bu müdahale fiziksel (oyuncağı veya lego parçasını çocuğun elinden almak, çocuğun ağzını eliyle kapatmak, çocuk bir aktiviteyle uğraşırken çocuğun çabasını/teşebbüsünü kısıtlamak/durdurmak, çocuk bir aktivite yaparken veya bir şeye bakarken çocuğu kenara itmek) veya sözel (çocuğun hareketlerini tekrarlanan ve gereksiz komutlarla kontrol etmek) olabilir.

Müdahale düşük düzeyde olduğunda anne çocuğun aktivitesini çocuğun ihtiyacı olmadığı halde yönlendirir fakat çocuğa aktiviteyi kendi başına tamamlaması için ve aktivitenin sonuçlarını görmesi için de fırsat verir.

Müdahale aşırı olduğunda, anne bütün aktiviteyi yönetmeye başlar ve çocuğun aktiviteye katılımına engel olur. Oyunun kontrolü annededir ve anne çocuktan belli davranışlar beklediğini fiziksel ya da sözel olarak ifade etmektedir. Bu yüzden anne, çocuğun oyunda öncü olmasına, oyunun odağına veya temposuna etki etmesine izin vermez. Bunun yerine, çocuk kendi başına çalışma çabası gösterse bile anne aralıksız komut vererek (“Mavi parçayı buraya koy, daha ileri, yanına, koy hadi”) veya sözel olmayan şekillerde (çocuk bir legoya uzandığında yanlış diye legoyu almasına engel olmak) çocuğun aktivitesini kontrol eder. Müdahalenin en aşırı olduğu durumda, anne çocuğun üzerinde çalıştığı problemin kontrolünü devralır ve problemi çocuk için çözer. Anne çocuk için çok fazla şey yaptığından, etkileşimde çocuğun oyunu şekillendirmesi veya oyuna katkıda bulunması için hiçbir fırsat yoktur.

Örnekler

Düşük düzey (1) olarak kodlanan müdahale;

Çocuğun yönergeye ihtiyacı olmadığı halde çocuğa ne yapması gerektiğiyle ilgili komut vermek (Örnek: “Şimdi sarıyı tak.” demek).

Çocuk legoyu taktıktan sonra çıkartıp, değiştirmek/ “düzeltmek”.

Çocuğun yönergeye ihtiyacı olmadığı halde çocuğun eline doğru legoyu verip çocuğa takması gereken yeri göstermek.

Çocuğa karta, legolara bakmak için hiç zaman vermemek, arka arkaya legoları çocuğa vermek.

Çocuğun legoyu takması için yeterli bir süre beklemeden yardım ederek kendi takmak.

Çocuk resimdekinden farklı bir lego takmaya çalıştığında çocuğun kendi hatasını görmesine fırsat tanımadan veya bir gerekçe göstererek çocuğa engel olmak (Örnek: “Bence onu çıkartalım, bu büyük parçayı koyalım, çünkü üzerine kule yapacağız. Büyük kule yapacağız.” demek).

Çocuk belirli bir istekte bulunduğu anda çocuğu ısrarla başka bir aktiviteye yöneltmeye çalışmak.

Yüksek düzey (2) olarak kodlanan müdahale;

Çocuğun elinden legoyu, lego resmini almak.

Çocuk bir legoya uzandığında yanlış diye legoyu almasına engel olmak (Örnek: Çocuğun elini tutarak legoyu almasını engellemek, eline başka lego tutuşturmak, dikkatini kendi elindeki legoya çekmek “Bak, sarısını, sarısını alacaksın.” demek).

Çocuk elinde bir legoyla takmayı beklerken çocuğa başka bir lego verip elindeki bırakmasına neden olmak veya elindeki legoyu çocuktan almak.

Çocuk legoları yapmaya çalışırken aralıksız komut vermek (Örnek: “Yanına getir, daha yanaştır, koy oraya, oraya değil, yanına.” demek).

Çocuğun yaptığına olumsuz konuşmayla karşı çıkmak (Örnek: “Öyle değil, böyle yapacaksın.”, “Hayır, olmadı.”, “Dur, oraya değil.”, “Çekil, bırak onu.”, “Çıkart hemen.” demek).

Çocuk legoyu takarken fiziksel olarak karışıp düzeltmek.

Çocuğa komut verdikten sonra yapması için hiç zaman vermeyip kendi yapmak.

Çocuğun elini/kolunu eliyle tutarak kontrol etmek.

Çocuk olumsuz davrandığında, oyundan uzaklaştığında çocuğun davranışını durdurmak veya çocuğu oyuna geri döndürmek için için çocuğun kolunu, bacağına çekiştirmek.

Çocuğun duygu durumunu olumsuz yönde etkileyerek aktiviteyi bırakmasına neden olmak (Örnek: “Seninki çok çirkin oluyor.”, “Bunu yapmazsan sana küsüyorum, gidiyorum.” demek).

Berberer oynuyorlarmış gibi konuşurken, çocuk için legoları yapmak (Örnek: “Evet, şimdi kırmızıyı yapıyoruz.” derken kırmızı legoyu kendisi takmak ve çocuğa “Bastır/Koy.” demek).

Dikkat edilmesi gerekenler

Çocuk bir şey yapmadan bekliorsa ve anne “Şu legoyu şuraya tak” şeklinde doğrudan komut veriyorsa, müdahale eden davranışın düzeyi aşağıdakiler göz önüne alınarak kodlanır;

- Eğer anne çocuğa komutu uygulaması, oyuna devam etmesi için fırsat vermiyorsa² bu durum yüksek düzey müdahale etme/araya girme olarak kodlanır.
- Eğer anne çocuğa fırsat tanıyor fakat çocuk bu fırsatı kullanmıyorsa o zaman bu düşük düzey müdahale etme olarak kodlanır.

2. Duyarlı

² Fırsat vermeme: Komutu verdikten sonra çocuğa uygulama için yeterli zamanı vermemektir.

Örnekler:

Komutu çocuk cevap veremeden tekrarlamak veya yeni bir komut vermek.

Komutu verdikten sonra çocuğu hiç beklemeden kendisi uygulamak.

Tanım

Duyarlı anne çocuğun faaliyetine engel olmadan ve aralarındaki etkileşime hükmetmeden çocuğun yanında bulunur. Anne oyunu yönetmesi için çocuğa izin verir ve çocuğun rehberliğinde oyuna dâhil olur. Çocukla sözel etkileşimde bulunduğu, çocuğun süre giden faaliyetini destekler. Bu tip bir etkileşim araştırma/keşfetme ve yönetme konusunda çocuğa fırsat sağlar. Duyarlı davranışlar arasında aktiviteyi çocuğa anlatmak, oyun sırasında çocuğun katılımını teşvik etmek ve çocuğa övgüde bulunmak (“Aferin!”, “Güzel gidiyorsun.”, “Evet, doğru.”); bir obje veya aktiviteyle ilgili soru sormak (“Bu şekil neye benziyor?”, “Bu ne renk?”, “En büyük parça hangisi?”), çocuğun ilgisi dağıldığında araştırmayı teşvik edici davranışları desteklemek (“Şimdi ne yapalım? Sırada ne var?” veya “Bak burada ne varmış.”) sayılabilir.

Örnekler

Düşük düzey (1) olarak kodlanan duyarlılık;

Oyuna yeni başlarken çocuğun ilgisini çekmek ve dikkatini toplamak için oyuna yön vermek (Örnek: Tabanı koyup, ilk legoyu yerleştirmek).

Yeni bir oyuna başlarken çocuğun ilgisi dağıldığında çocuğu öneriler ve teşviklerle oyuna katmaya çalışmak (Örnek: Çocuk ilgisiz bir şekilde dururken “Aa bak burada ne varmış! Çok güzel bir ev varmış.”, “Gemiye gördün mü? Kocaman bir gemi varmış!” diyerek oyuna dâhil etmeye çalışmak).

Çocuk “yapamam/yapamıyorum” dediğinde çocuğu teşvik etmek (Örnek: “Yaparsın sen, beraber ne güzel yapıyorduk daha önce.” demek).

Çocuğun sorduğu sorulara, çocuğun ifadelerine/yorumlarına cevap vermek (Örnek: Çocuk “Bu yeşil” dediğinde “Evet, yeşil” demek, çocuk “Nereye takacağım?” diye sorduğunda “Buraya” diye göstermek)³.

Çocuğun oyun davetine başka bir öneri veya komutla cevap vermek (Örnek: Çocuk “Anne, şimdi sen tak.” diyip anneye oyunda bir rol verdiğinde “Sen tak.” demek).

Belirsiz bir nedenden dolayı çocuğa olumlu cevap vermek, çocuğu takdir etmek (Örnek: Çocuk bir şey yapmadığı halde “Aferin.” demek).Çocukla iletişimi kesmeden yan yana oturup farklı legolarla oynamak, çocuğa model olmak.

Yüksek düzey (2) olarak kodlanan duyarlılık;

En az 4 saniye boyunca çocuğun legoyu yapmasına izin vermek, çocuğa karışmadan beklemek.

³ Çocuğun sorusuna cevap vermek, cevap olumlu da olumsuz da olsa düşük düzey duyarlı davranış olarak kodlanır.

Buna karşılık, çocuğun aktiviteyle ilgili sözel bir ifadesine/yorumuna verilen olumlu cevap düşük düzey duyarlı davranış olarak kodlanırken, olumsuz cevap düşük düzey müdahale eden ve düşük düzey duyarlı davranış olarak kodlanmalıdır (Örnek: Çocuk “Aa, yatak yaptım ben!” dediğinde “I ıh, yatak değil ki o.” demek).

Çocuğa yaptığı aktiviteyi tanımlayan, anlatan yorumlarda bulunmak (Örnek: “Evet, şimdi bir gemi yaptın!” demek).

Çocuğa yaptığı aktiviteyle ilgili soru sormak (Örnek: “Taktın mı? Bitirdin mi? Oldu mu? Onu nereye takacaksın? Şimdi ne yapıyorsun? Hangisini alacağız?” diye sormak).Çocuğun kendi başına yaptığı bir aktiviteyi onaylamak, takdir etmek (Örnek: “Evet, aferin!”, “Hı hı”, “Güzel gidiyorsun.”, “Peki, tamam.” demek)⁴.

Çocuğu harekete geçirici ifadelerde bulunmak (Örnek: “Hı hı, sonra?”, “Hadi sen tak, sen yapmış ol.” demek).

Çocuk sıkıldığında, eğer oyuna yeniden dikkatini veremezse, çocuğun istediği bir şekilde oynaması için teşvik etmek (Örnek: “Sen ne yapmak istiyorsun? Hadi onu yap.” demek).

Oyunun yönetimini çocuğa bırakmak (Örnek: Çocuğun oyunda yaptığı değişiklikleri kabul etmek).

Çocuğun oyuna davetine cevap vermek (Örnek: Çocuk “Anne, şimdi sen tak.” diyip anneye oyunda bir rol verdiğinde bu rolü kabul etmek).

Dikkat edilmesi gerekenler

Söz ve davranış uyumlu olmadığında davranışa göre kodlama yapılmalıdır.

- Anne “Hadi sen yap.” derken eline sıradaki legoyu alıp kendi takıyorsa bu yüksek düzey müdahale olarak kodlanmalıdır.

Duyarlı davranış özelliği müdahale eden davranış özelliğinin zıttı değildir. Her iki özellik bir arada bulunabilir.

Düşük düzey duyarlı (1) ve düşük düzey müdahale eden (1) olarak kodlanan davranışlara örnekler:

- Çocuk bir şey yapmadan duruyor, oyundan kopmuş ve ilgisizken, “Al şunları tak.”, “Bastır ama hadi sen de, küçükleri koy sen de.” diye komut vermek,
- Çocuk karta göre yanlış yere taktığında düzeltmeyi soru sorarak yapmak veya çocuğa kartı göstererek yardımcı olmak (Örnek: "Oraya mı? Bir bak bakayım.", "Oldu mu sence?" diye sormak).
- Sadece oyuna başlarken çocuğun dikkatini oyuna çekmek için yönlendirmede bulunmak (Örnek: "Bak en alta bunu koy. Bunun aynısını yapacaksın, başka bir şey yapmayacaksın." demek).
- Çocuğa çevresini araştırma imkanı sağlayan komut vermek (Örnek: “Bana büyük maviyi verir misin?”, “Şimdi kulaklarını/bacasını/çatısını tak.” demek).
- Çocuk legoları takarken diğer taraftan bir parça eklemek.

⁴Çocuk annenin komutlarını takip ederek aktiviteyi tamamlıyorsa ve anne bunun sonunda onay veriyor/takdir ediyorsa, o zaman bu takdir düşük düzey duyarlı davranış olarak kodlanır. (Örnek: Takması için legoları arka arkaya çocuğa verdikten sonra “Aferin.” demek).

Düşük düzey duyarlı (1) ve yüksek düzey müdahale eden (2) olarak kodlanan davranışlara örnekler:

- Çocuğun oyuna katılımını engellemek ve bunun için gerekçe vermek (Örnek: “O değil!” diyerek çocuğun legoyu takmasına engel olurken “Onu sonra yapacağız. Bak buraya gelince onu takacağız.” diye açıklama yapmak).
- Çocuğun oyunla ilgili sorusuna cevap verirken çocuk için problemi çözmek (Örnek: Çocuk “Anne, bunu nereye takacağım?” diye sorduğunda takacağı yeri söyleyip legoyu kendi takmak).
- Çocuğa sürekli komut vererek oyunu yönetmek ve çocuğa “Çok güzel yapıyorsun.” demek.

Yüksek düzey duyarlı (2) ve düşük düzey müdahale eden (1) olarak kodlanan davranışlara örnekler:

- Çocuğa yaptığı aktiviteyle ilgili teşvik edici yorumlarda bulunurken aynı anda komut vermek (Örnek: “Aferin, çok güzel gidiyorsun, çok güzel bir ev yaptın. Hadi şimdi de Çatısını tak.” demek).

3. İlgisiz

Tanım

İlgisiz anne çocuğu hem duygusal hem de davranışsal açıdan göz ardı eder. Çocuğun aktivitesine karşı ilgisizdir, çocukla göz kontağı kurmaz ve çocuğun ilgi çekme çabalarına cevap vermez. Başka bir aktiviteyle ilgileniyor olabilir.

Örnekler

Düşük düzey (1) olarak kodlanan ilgisizlik;

Çocuğun sorduğu sorulara cevap vermemek.

Yüksek düzey (2) olarak kodlanan ilgisizlik;

Çocukla ilgisiz bir şekilde başka aktiviteyle ilgilenmek, başkasıyla konuşmak (Örnek: Anketörle veya odadaki başka biriyle konuşmak, çocukla ilgilenmeyip kardeşle ilgilenmek).

Çocuk ağlarken, kendi başına legoları yapmaya devam etmek.

Dikkat edilmesi gerekenler

İlgisizlik düşük düzeyde (1) olduğu zaman, diğer kategoriler (yüksek düzey duyarlılık dışında) 0, 1 veya 2 düzeylerinde olabilirler.

Düşük düzey ilgisiz (1) ve düşük düzey müdahale eden (1) olarak kodlanan davranışlara örnekler:

- Çocuğun ilgi çekme çabasına/sorularına cevap vermemek, yönergeye ihtiyacı olmadığı halde çocuğa neyi nereye takması gerektiğini söylemek.

Düşük düzey ilgisiz (1) ve yüksek düzey müdahale eden (2) olarak kodlanan davranışlara örnekler:

- Legolarla ilgili çocuğun tekrar eden sorularına cevap vermemek ve çocuğun istediğini takmasına engel olmak.
- Vücut diliyle başka bir yönelmek, çocuğa bakmamak ve oyunun kontrolünü eline alıp legoları takmak.
- Çocuk karta bakarken legoyu yapmak.

Düşük düzey ilgisiz (1) ve düşük düzey duyarlı (1) olarak kodlanan davranışlara örnekler:

Vücut diliyle başka bir yöne yönelmek, çocuğa bakmamak ama “Aferin” demek.

4. Sıcaklık

Tanım

Sıcaklık gösteren anne çocukla oynarken keyif aldığını belli eder. Anne-çocuk etkileşimi sırasında, çocukla göz kontağı kurar, yumuşak/sıcak bir ses tonu ve sevgi sözcükleri kullanır. Fiziksel olarak sevecen/şefkatlidir. Çocuğu kucaklar ve çocuğa gülümser.

Örnekler

Düşük düzey (1) olarak kodlanan sıcaklık;

Yumuşak bir ses tonuyla konuşmak.

Çocukla göz kontağı kurmak.

Yüksek düzey (2) olarak kodlanan sıcaklık;

Çocuğun sırtını sıvazlamak, okşamak; çocuğu öpmek; çocuğa sarılmak.

Çocukla sıcak bir ses tonuyla konuşurken aynı zamanda sevgi sözcükleri kullanmak (Örnek: “Bebeğim, aşkım, hayatım, tatlım, Xciğim” demek).

Çocuğa gülümsemek.

Çocuğu alkışlamak.

Dikkat edilmesi gerekenler

- Sevgi sözcükleri olumsuz bir tonlamayla söyleniyorsa sıcaklık olarak kodlanamaz. Burada önemli olan ifade edilen duygudur.
- Aktivite sırasında konuşma ve göz teması yoksa sıcaklık 0 olarak kodlanmalıdır.

Örnek Kodlama Kağıdı

ID:			intrusiveness	responsiveness	detachment	warmth	intrusiveness	responsiveness	detachment	warmth	intrusiveness	responsiveness	detachment	warmth	intrusiveness	responsiveness	detachment	warmth	intrusiveness	responsiveness	detachment	warmth	intrusiveness	responsiveness	detachment	warmth
	Segment	Time interval	E1	E1	E1	E1	E2	E2	E2	E2	E3	E3	E3	E3	E4	E4	E4	E4	E5	E5	E5	E5	E6	E6	E6	E6
1																										
2																										
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6																										
7																										
8																										
9																										
10																										
11																										
12																										

Rastgele seçilmiş
12 tane sayı bu
kutucuklara yazılır.

Rastgele seçilmiş 12 sayıya
denk gelen 10 saniyelik
dilimler bu kutucuklara yazılır.

E1: 10 saniyelik dilim
içerisindeki ilk davranış bu
kutucuklara kodlanır.

E2: 10 saniyelik dilim
içerisindeki ikinci davranış bu
kutucuklara kodlanır.

