THE RELATIONSHIP BETWEEN MATERNAL AND PATERNAL INTRUSIVENESS AND TODDLER SELF REGULATION

By

Young-Eun Lee

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ABSTRACT

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The purposes of this study were to examine the associations between maternal and paternal intrusiveness and toddlers self regulation at approximately 24 months of age in the context of child gender in a sample of low-income families (N = 271). This study was a secondary analysis of data collected as part of the national Early Head Start Research and Evaluation (EHSRE) Project. Hierarchical multiple regression analysis was used to examine whether two-way interactions between parental intrusiveness and toddler gender were related to toddlers' self regulation at 24 months. Findings from this study suggested that boys and girls from low income families were differently susceptible to maternal and paternal intrusiveness in self regulation development. Boys may be more vulnerable to maternal or paternal intrusiveness.

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CHAPTER ONE

Introduction

The ability to cope successfully with challenging situations is one of the greatest developmental tasks during the early years. Self-regulation is the ability to manage attention, emotion, and behavior. It is necessary for successfully controlling emotional and cognitive states during stressful situations. Self regulation involves multiple processes, including the adjustment of affect and the capability to remember directives, as well as to monitor, inhibit, and direct their attention and behavior (Raikes, Robinson, Bradley, Raikes, & Ayoub, 2007).

The time between one and three years is a particularly significant stage for developing self-regulation skills because toddlers are anticipated to begin regulating their emotional states (e.g., recovering from distress or diminishing the intensity of expressed distress) with less assistance from parents while simultaneously encountering greater environmental demands (Raikes et al., 2007). The importance of this stage of life for later self-regulation has been well reported. Children managing stress effectively at the age of three years show more successful self-control at the age of six years (Gilliom, Shaw, Beck, Schonberg, & Lukon, 2002), as well as more optimal adjustment in preschool (Shields, Dickstein, Seifer, Giusti, Magee, & Spritz, 2001).

The development of self-regulation is also particularly crucial for children living in high-risk environments (Raikes et al., 2007). Low-income children are vulnerable to poor self regulatory skills and to the problems associated with low self regulation including behavior problems and less optimal academic outcomes (Brooks-Gunn & Duncan, 1997). Prior research has indicated that self-regulation is an essential element of resilience among youth growing up in poverty (Buckner, Mezzacappa, & Beardslee, 2003), and is specifically related to sociability in preschool classrooms (Mendez, Fantuzzo, & Cicchetti, 2002; Raver, Blackburn, Bancroft, & Torp, 1999). Indeed, the ability to self-regulate may be one of the key features differentiating early academic achievement between low-income and higher-income children (Howse, Lange, Farran, & Boyles, 2003).

During the first three years, several factors influence the development of self-regulation and contribute to individual differences in the self-regulation. Previous research hypothesized that mothers' sensitive responses promote the development of children's emotional regulation by supporting children in handling negative emotional states and distress, and, over time developing strategies to independently manage emotions and behaviors. Thus, the parent–child relationship promotes children's self-regulation through parenting behaviors (Gilliom et al., 2002; Thompson, 1990), the synchrony of interactions (Feldman, Greenbaum, & Yirmiya, 1999) and children's reactions toward negative parenting (Calkins, Smith, Gill, & Johnson, 1998; Garner & Spears, 2000; Thompson, 1994). Existing research also describes the development of self regulation as moving from an 'other controlled' process to a 'self controlled' process (Bronson, 2000; Schaffer, 1996). Parenting behaviors, in particular intrusiveness, may disrupt this developmental shift from other-controlled to self controlled process.

Prior research has tended to typically define parents' intrusiveness as a negative behavior. In the research, intrusiveness refers to behaviors that interrupt the synchrony interactions including parent control and the actions which the child wishes would stop. Parents' intrusiveness may impact self regulation in two ways—first, it may prevent opportunities for children to practice their self regulation skills during interactions with their parents. Second, parents' intrusiveness may trigger children's negative reactions and affect toward their parents. Some research has suggested that children reacting negatively to their mothers tend to have poor regulation (NICHD Early Child Care Research Network, 2004; Rothbart & Bates, 1998).

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Children's negative affect towards their mothers may also have important implications for the development of self-regulation (Rodriguez, Ayduk, Aber, Mischel, Sethi, & Shoda, 2005). Thus, negativity in interaction with mothers is an important factor to consider when examining the development of self-regulation. Other researchers also reported that children's proneness toward negativity contributes to behavior problems when parents provide unsympathetic parenting (Belsky, Hsieh, & Crnic, 1998; Rubin, Burgess, Dwyer, & Hastings, 2003).

In addition, child gender and self-regulation are related in early childhood. Boys tend to display fewer self regulatory skills in the early years as compared to girls, and these differences are apparent in infancy (Cameron Ponitz, MacClelland, Jewkes, Connor, Farris, & Morrison, 2008; Weinberg, Tronick, Cohn, & Olson, 1999). Boys are also less skilled at self-regulation during their toddler years (NICHD Early Child Care Research Network, 2004) and in preschool (Lawson & Ruff, 2004; MacCabe, Cunnington, & Brooks-Gunn, 2004). These results are consistent with the outcomes reported by Morris and colleagues (2002), who found that girls are typically better regulated than boys in the early years.

Gender differences in self regulation may come, in part, from the difference of parents' emotion socialization for children. Indeed, several researchers have found evidence for gendertypical socialization of emotional behaviors. For example, some studies have suggested that parents encourage displays of fear and sadness in girls and expressions of anger in boys (Block, 1983; Chaplin, Cole, & Zahn-Waxler, 2005; Cassano, Perry-Parrish, & Zeman, 2007; Eisenberg, Cumberland, & Spinrad, 1998; Fivush, Brotman, Buckner, & Goodman, 2000; Fuchs & Thelen, 1988; Klimes-Dougan, Brand, Zahn-Waxler, Usher, Hasting, Kendzior, & Garside, 2007). Parents tend to use relationship-oriented parenting styles including neglectful parenting, authoritarian parenting, permissive parenting, and authoritative parenting for girls' emotion regulation and more active and instrumental parenting styles including neglecting, teaching, modeling, and disciplining for boys' emotion regulation (Eisenberg et al., 1998; Hops, 1995; Nolen-Hoeksema & Girgus, 1995; Sheeber, Davis, & Hops, 2002). Parents also show more encouragement of distraction and problem-solving strategies for boys than for girls (Eisenberg et al. 1998). Thus, it is important to consider the implications that parents' responses which depends on parent gender, gender socialization and child gender in parent-child interaction influence the child self regulation.

Despite the importance of child self-regulation and the influences of the parent's responses in parent-child interactions, there is still relatively little empirical research regarding the effect of negative parent responses. Specifically few research show parental intrusiveness may interfere with more positive, less controlling and less critical interaction providing many opportunities to practice self regulation.

Furthermore, there is a lack of existing empirical data specifically regarding the roles of mothers' and fathers' intrusiveness functioning and the child gender effect in influencing self regulation. Given the potential importance of parental negative responses for low-income children's self regulation, more studies examining relationship between parental intrusiveness and child self-regulation in this population are needed. The purposes of this study are to examine the influence of maternal and paternal intrusiveness on children's self-regulation at 24 months and to determine whether the association between parent's intrusiveness and child self-regulation to child gender.

Statement of Problem

Despite the richness of previous research on parent-child interaction, several basic issues remain to be addressed. First, few studies explicitly have measured parents' intrusive interactions as they relate to young children's self regulation. Further, many studies related to parental control during parent-child interactions have involved preschool aged children or school aged children and their parents (e.g., Rubin, Burgess, & Hasting, 2002; Grolnick & Ryan, 1989) rather than focusing on toddlerhood when self regulation is developing rapidly. Many studies linked to intrusiveness have found mixed outcomes. Some have indicated intrusiveness is related to negative mother – child relationship outcomes such as the increase of toddlers' negativity and the decrease of their engagement with mothers (e.g., Ainsworth, Blehar, Waters, & Wall, 1978; Carlson & Harwood, 2003; Feldman, 2003; Holditch-Davis & Miles, 1997; Isabella & Belsky, 1991; Park, Belsky, Putnam, & Crnic, 1997; Pettit, Harrist, Bates, & Dodge, 1991; Whiteside-Mansell, Bradley, Owen, Randolph, & Cauce, 2003) but others have reported no such relationship (e.g., Eshel, Landau, Daniely, & Ben-Aaron, 2000). Moreover, Ispa and her colleagues found that the influence of parents' intrusiveness on child social outcome varies across cultures (Ispa, Fine, Halgunseth, Harper, Robinson, Boyce, Brooks-Gunn, & Brady-Smith, 2004).

Second, few studies have estimated the effects of both maternal and paternal behaviors on child outcomes. Most studies have focused on only mothers' parenting practices, or fathers' parenting practices. The research dealing with the both parents may provide new insights about the effect of parents' behaviors on children's self regulation. For instance, in cases where mothers and fathers are not married, fathers are more likely to be involved with child in the early childhood years than later on. Thus, it is important to examine how interactions with mothers and with fathers play a role in early self regulatory development. In addition, previous research has not indicated how different the effect of both parents' negative behaviors on child self regulation is according to child gender. Much research has been shown that child gender differences of

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parent's emotion socialization. Those just focused on how mother's and father's responses to child's emotion are different according to child gender.

Third, few researchers have observed parent-child interactions in diverse and naturalistic contexts. Most studies investigating the relationship between parenting and child self-regulation have examined self regulation under laboratory contexts (e.g., Cole, Martin, & Dennis, 2004). Laboratory studies have been able to distinguish emotion activation from regulatory effects or efforts. Controlled conditions also are not possible or even desirable to study a particular question (Cole et al., 2004). In contrary, home observations are be able to show varied aspects of natural parent-child interaction in their daily lives, such as play, free time, routines, meals, and thus provide richly textured measures of the relationship.

Fourth, few studies about parent's intrusiveness have utilized a large sample to examine its influence on child self-regulatory development in low-income families (Cabrera, Shannon, & Tamis-LeMonda, 2007).

Significance of the Present Study

The present study sought to address the gaps in the literature described above. This study focused parents' intrusive responses to child self regulation and child gender differences. It is important to consider the implications of child gender differences for children's self regulation in parent-child interaction since previous research has shown that links between parents' responses and child emotion display.

The current study is particularly important for low-income families, as toddlers are at elevated risk for emotional difficulties such as emotion expression and regulation (Cicchetti & Cohen, 2006) and toddlers' socialization affects later developmental outcomes (Thompson & Raikes, 2007). In addition, low-income families experience more life challenges (e.g., worries

about the lack of savings or other assets, uncomfortable home environments, poor nutrition) and have fewer educational and career opportunities (e.g., access to good school and job fair) than middle-income families. Given these multiple stressors, low-income parents may show more unsympathetic responses to their children than middle-income families, and these parent behaviors may have different effect for children's self regulation than they would for middleincome families.

Theoretical Framework

Two theories were used to frame the current study of the association between parental (maternal and paternal) intrusiveness and child self regulation: 1) Family Systems Theory (Bowen, 1966, 1978; Kerr & Bowen, 1988); 2) Dynamics of Paternal Influences on Children over the Life Course Model (Cabrera, Fitzgerald, Bradley, & Roggman, 2007). First, Family Systems Theory emphasizes the interactions between children, mothers, and fathers. The key tenet of Bowen's family systems theory is that families are systems of interconnected and interdependent individuals, who cannot be understood in isolation from one another. In Bowen's theory, a family is not only a system but also an emotional unit in which members are expected to respond to each other in a certain way according to their role, which is determined by relationship agreements. Within the boundaries of the system, patterns develop as certain family member's behavior is caused by and causes other family member's behaviors in predictable ways. During toddlerhood, the emergence of self-regulation requires that the toddlers' role and identity be allowed to shift as toddlers' begin to assert autonomy, often triggering reduced compliance, and to rely somewhat less on parents' assistance in self regulation. One of the tasks of toddlerhood is to gradually assume more responsibility in initiating and maintaining selfregulatory attempts. As toddlers' developmental needs change, parents, too, must shift their roles

in support of toddlers' need for autonomy. Difficulties in making these adjustments in roles may manifest themselves as parental intrusiveness during interactions with toddlers. As noted, intrusiveness may disrupt opportunities for toddlers to practice and acquire self regulatory skills. Similarly, systems theory suggests that maternal and paternal intrusiveness are likely influenced by each other, and provide a context in which self regulatory skills are developing.

Second, the current study was also guided by the Dynamics of Paternal Influences on Children over the Life Course Model to examine the interactions between children, mothers, and fathers. The model emphasizes the importance of father's engagement in child's life. Some dimensions of the model, particularly fathers' engagement, fathers' presence and fathers' responsibility, are considered central to what fathers contribute for child such as time, play and resources. Other dimensions have been traditionally shown as central to what mothers provide to promote child development such as maternal sensitive and responsive caregiving. How fathers and mothers maintain the balance of parenting within families can be estimated by above both kinds of dimensions. The balance can depend not only on the gender of each parent but also on the roles of each parent.

In addition, the Dynamics of Paternal Influences on Children over the Life Course Model focuses on fathers unlike the "other-parent" model in which father-child interaction has been viewed through the lens of what is known about mother-child interaction. Fathers may be engaged with children in ways that diverge from ways mothers are typically engaged. The model assumes that two parenting systems can coexist as interrelating systems. In other words, both mother-child and father-child relationships influence each other while they are each unique relationship in the system.

In the current study, the relationship between parental intrusiveness and child self

regulation was examined in the context of child gender. Not only the association between maternal intrusiveness and child self regulation but also the association including paternal intrusiveness was examined. See Figure 1 for the relationship between parental intrusiveness and child self regulation in context of child gender.

Hypotheses

The following hypotheses were addressed in the current study.

H₀₁: There is no relationship between maternal intrusiveness and child self regulation.

H_{a1}: Maternal intrusiveness would be related to less optimal child self regulation.

H₀₂: There is no relationship between paternal intrusiveness and child self regulation.

H_{a2}: Paternal intrusiveness would be related to less optimal child self regulation.

 H_{03} : Maternal intrusiveness does not have differential effects on self regulation as a function of child gender.

 H_{a3} : Maternal intrusiveness negatively influences girls' and boys' self regulation. The effect of maternal intrusiveness is more pronounced for girls' self regulation than for boys' self regulation.

 H_{04} : Paternal intrusiveness does not have differential effects on self regulation as a function of child gender.

 H_{a4} : Paternal intrusiveness negatively influences girls' and boys' self regulation. The effect of paternal intrusiveness is more pronounced for boys' self regulation than girls' self regulation.

 H_{05} : The interaction of maternal and paternal intrusiveness does not have more robust effects on toddler self regulation than would either maternal or paternal intrusiveness alone.

 H_{a5} : The interaction of maternal and paternal intrusiveness has more robust effects on toddler self regulation than would either maternal or paternal stress alone.

 H_{a51} : Toddler self regulation, for boys and girls, is most compromised when both mothers and fathers demonstrate higher intrusiveness.

 H_{a52} : Lower paternal intrusiveness buffers the effects of higher maternal intrusiveness on toddler self regulation for boys and girls.

Conceptual and Operational Definitions

Self regulation.

Self regulation, which is necessary during stressful situations, includes abilities to focus and sustain attention, the management of cognitive process to solve problems, the behavioral self-control in organized settings, and the emotional self-control that is entailed in sociability and cooperation (National Research Council and Institute of Medicine, 2000; Thompson et al., 2007). According to the Bayley Scales of Infant Development-Second Edition (Bayley, 1993), in the current study self-regulation was indicated by seven items: (1) adaptation to change in materials (e.g., the children's reaction when an interviewer takes one item from the child and exchanges it for another), (2) attention to tasks, (3) persistence in attempting to complete tasks, (4) cooperation with the interviewer, (5) activity level, (6) hypersensitivity to stimuli and (7) negative affection.

Parental intrusiveness.

Parental intrusiveness was measured by Three Bag Assessment based on the NICHD Study of Early Child Care *Mother-Child Interaction Rating Scales* for the Three Boxes Procedure (Owen, Norris, Houssan, Wetzel, Mason, & Ohba, 1993) and on the *Manual for Coding Freeplay - Parenting Styles* from the Newark Observational Study of the Teenage Parent Demonstration (TPD; Brooks-Gunn, Liaw, Michael, & Zamsky, 1992; Spiker, Ferguson, & Brooks-Gunn, 1993). In the scale, intrusiveness includes the parent controlling the play agenda, not allowing the child to influence the focus or pace of play, grabbing toys away from the child, not taking turns in play with the child and persisting with or even escalating an action that the child clearly wishes would stop (Tamis-LeMonda, Shannon, Cabrera, & Lamb, 2004).

Child gender.

Child gender indicates that whether the child is biologically male or female.

Maternal cumulative risks.

Risk variables, dichotomized and summed reflect: (1) being a teenage mother, (2) having less than a high school education, (3) receiving public assistance, (4) not being employed or in school or training, and (5) being a single mother (Love, Kisker, Ross, Schochet, Brooks-Gunn, Paulsell, Boller, Constantine, Vogel, Fuligni, & Brady-Smith, 2002).

Parental stress.

Parental Stress was measured by the Parental Distress (PD) subscale and the Parent-Child Dysfunctional Interaction (P-CDI) subscale of Parenting Stress Index/Short Form (PSI/SF) (Abidin, 1983). In the PD subscales, parental distress means the distress a parent experiences, as a function of individual personal characteristics, in the role as a parent. The P-CDI subscale examines the parent's perceptions that the child did not meet his or her expectations.

CHAPTER TWO

Literature Review

In the following literature review, the definition of parent's intrusiveness was addressed, followed by a review of the association between parent's intrusiveness and self regulation. Next, different patterns of child self regulation between boys and girls were addressed, as they related to maternal and paternal parenting styles. This literature review, in turn, concluded with issues surrounding parent's intrusiveness and child self regulation in context of child gender.

Parents' Intrusiveness

As seen in Family Systems Theory, children's socio-emotional development is affected by parents' behaviors. In particular, three types of parental socio-emotional behaviors have been related to children's self-regulation: intrusiveness, supportiveness, and warmth (Cabrera et al., 2007; Bocknek, Brophy-Herb, & Banerjee, 2009; Ispa et al., 2004). The current study focuses on parental intrusiveness as this behavior is the least understood among these three aspects of parenting in relation to self regulation. Studies on parents' intrusiveness have shown the particularly harmful effects of parent over control and interruptive behaviors (e.g., over-control, excessive use of rewards, non-synchrony) on child self regulation, while parent's supportiveness and warmth generally have been related to positive effect on child self regulation (Salonen, Lepola, & Vauras, 2007). Specifically, parents' intrusive behavior has also been shown to be related to a pattern of insecure attachment (Ainsworth et al., 1978; Swanson, Beckwith, & Howard, 2000) and low level of mutual regulation which is necessary for child to achieve self regulation (Reck, Hunt, Fuchs, Weiss, Noon, Moehler, Downing, Tronick, & Mundt, 2004).

Since Ainsworth and her colleagues (1978) considered the influence of the parent's

intrusiveness on child quality of attachment, many theorists identified intrusiveness as negative behavior to interfere with children's exploration and autonomy or a mismatched situation where the parent's intervention leads to the inhibition or disorganization of the children's original activity (Salonen et al., 2007; Swanson et al., 2000).

Parents' Intrusiveness and Children's Self Regulation

Much of the research regarding the negative impact of parent's intrusiveness has come from clinical studies such as Kashdan and his colleagues' (2004) study of depressed parents who have children with ADHD. They identified maternal intrusiveness as excessive level of parental control which has repeatedly been shown to exacerbate psychiatric symptoms and perceived stress in parent-child interaction. Morrell and Murray (2003) reported the link between parental intrusiveness in infancy and ADHD of their children at preschool. In the study, the context of observation was a session of mother-child free play without toys. Landau and his colleagues (2009) observed a subsample of mothers who demonstrated an intrusive parenting below two behaviors: (1) improving the child's sitting position when unnecessary or wiping the infant's nose to frequently; and (2) physical intrusion in his play. The study found mothers were physically intrusive with their children but fathers rebuilt their children's play significantly more frequently than mothers.

The association between parents' intrusiveness and child self regulation was found from observing nonclinical samples as well. Pursuant to conceptual models such as the Dynamics of Paternal Influences on Children over the Life Course Model, growing research has highlighted the father's role in child development. Cabrera and her colleagues (2007) found parents' intrusiveness was associated with children's less regulated behavior differentially depending on parents' gender and children's age. Maternal intrusiveness was negatively related to children's emotional regulation at 2 years and pre-K. However paternal intrusiveness was inversely related to emotional regulation at 2 years but unrelated to children's social and emotional outcomes at 3 years and pre-K. Maternal intrusiveness was link to paternal intrusiveness at 2 and 3 years but not at pre-K. Their findings suggested that older children accepted paternal intrusiveness as a more positive behavior than maternal intrusiveness. Shannon and his colleagues (2006) found that fathers interacted with infants in more positive ways and they were less intrusive as "rough and tumble but responsive and flexible" playmates. Results suggested that paternal intrusiveness may play a different role in its influence on development than does maternal intrusiveness.

Different Patterns of Child Emotion Regulation between Boys and Girls

Although emotional expression and behavior arousal and emotion have based on biology (Fox, 2004), the difference between boys and girls in emotional behaviors may also be affected by their environment, specifically parents (Chaplin, Casey, Sinha, & Mayes, 2010). Previous research has shown that differences in gender may exist because of parental socialization of emotion, such that girls receive greater supportive responses for their sadness, anxiety and fear and boys receive greater support for their anger (Chaplin et al., 2005; Klimes-Dougan et al., 2007; Morris, Silk, Steinberg, Myers, & Robinson, 2007; Cassano et al., 2007). Other studies have also reported gender differences in emotion regulation, with girls showing more adaptive emotion regulation than boys (Morris et al., 2002; Morris et al., 2007). In addition boys living in low-income family have shown more externalizing behaviors than do girls (Campbell, Shaw, & Gilliom, 2000).

Previous research also has shown that mothers and fathers have different play styles mothers are more didactic and fathers are more rough and tumble. For example, when interacting with their infants and toddlers, mothers tend to engage in more conversational and symbolic toy play, whereas fathers engage in non-object and more physically stimulating play (Tamis-LeMonda, 2004). Some research also has reported that mothers engage in cognitive object and pretend play more frequently with their daughters than fathers, whereas fathers engage primarily in vigorous physical play with their sons (Jacklin, DiPietro, & Maccoby, 1984; MacDonald & Parke,1986; Tamis-LeMonda & Bornstein, 1991).

Different play styles of parents may affect children's emotion regulation. According to Galyer and Evans (2001), pretend play with parents and peers was related to children's regulation. Howes and the colleagues (1989) suggested pretend play as the reason that girls had more opportunities to engage in emotion regulation than boys. They also mentioned that qualitative difference in the pretend play might cause different emotion regulation skills between girls and boys.

Therefore, girls may be more vulnerable to maternal intrusiveness in free-play because it interferes with the way that girls typically learn to regulation emotions. It may be that paternal intrusiveness is less problematic in play since fathers' style of play is not typically to engage the child in didactic play such as three bag task. However, boys may be vulnerable to paternal intrusiveness since fathers adopt a more directive style with children than mothers in both physical and pretend play, especially with their sons (Farver & Wimbarti, 1995; Kazura, 2000).

In addition, although most previous research has examined the role of mothers and father separately, researchers need to investigate fathers' and mothers' roles together. In this sense, father's parenting may buffer the effects of higher maternal intrusiveness. Previous research has suggested that father's rough and tumble play improve children's anger regulation and modulation of intense affect by providing children opportunities to perceive other's emotional cues (Carson, Burks, & Parke, 1993; Tamis-Lemonda, 2004). Fathers' emotional

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availability and responsiveness to child's needs also prevented children's negative socioemotional outcomes as well as develop self regulation and social competence (Cabrera, Tamis-LeMonda, Bradley, Hofferth, & Lamb, 1997; Silverstein, 2002). The reason may be that fathers' play promotes autonomy which is essential in development of self regulation (Cabrera et al., 2000; Power & Shanks, 1989). According to Yogman (1994), fathers' parenting may have an indirect and a direct effect on children's behaviors. Fathers indirectly provided emotional and physical support to mothers during stressful periods. Fathers also directly helped toddlers to develop exploration and autonomy during non-stressful period. Therefore father's behavior may be important for toddler's emotional development, specifically when mom's parenting was lacking.

Summary

The above literature review highlights that lack of research regarding the effect of maternal and paternal intrusiveness for boys' and girls' self regulation. Thus, the current study addressed key gaps by examining the association between parental intrusiveness and child self regulation in the 24 months of life and exploring different self regulation according to parent's gender and toddler's gender. Maternal cumulative risks, parental stress, child early self regulation, child emotionality and program status were included in the study because the factors related to the association between parenting behaviors and child outcomes in prior research (Appleyard, Egeland, Dulmen, & Alan Sroufe, 2005; Evans, 2004; Love, Kisker, Ross, Raikes, Constantine, Boller, Brooks-Gunn, Chazan-Cohen, Tarullo, Brady-Smith, Fuligni, Schochet, Paulsel, & Vogel, 2005).

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CHAPTER THREE

Method

This chapter consists of the following sections: 1) procedures, 2) measures, 3) missing data, 4) hypotheses, 5) data analysis plan.

Procedures

Main study procedures.

Participants in the current study are children, mothers and fathers who participated in Early Head Start Research and Evaluation (EHSRE) Project (see Boller, Bradley, Cabrera, Raikes, Pan, Shears, & Roggman, 2006; Love et al., 2005 and Love et al., 2002-the 2002 technical report—for full details of the main study procedures). For the EHSRE main study, participants were recruited from 17 community sites nationwide and were randomly assigned to an intent-to-treat Early Head Start program group (51%; n = 1,513) or to a comparison group (49%; n = 1,488). All families had to meet income eligibility for Early Head Start (incomes at or below the federal poverty level and use at least 10 % of available spaces provided to disabled children). They also had to agree to random assignment and be expecting a child or have a child under 12 months of age. Families in the Early Head Start program group were provided with home visits, child care comprehensive health and mental health services, parenting education, nutrition education, health care and referrals, and family support for enhancing development of children and support healthy family functioning. Comparison group families could not access Early Head Start Services, but they could receive other services in the community. Data were not available regarding the specifics of other resources comparison group families might have accessed.

The EHSRE sample contained 3,001 children who were enrolled in the study at birth and

scheduled to be assessed near the time of their 14, 24 and 36 months birthdays (Love et al., 2005). However, because of the high risk nature of the sample, not all children were assessed at all time points, and for the children who were assessed, the schedule was somewhat variable. At 24 months, 53.5 % children and parents completed the data collection-parent interviews, the Bayley assessments and the video assessments (Love et al., 2002). After home visits, data collectors gave \$20 and small gifts to mothers. The children's actual ages at the time of assessment ranged from two months earlier than the scheduled assessment to eight months later, with a standard deviation from the scheduled assessment of approximately 1.5 months. The children's mean age at the 24-month assessment was 25.14 months (SD = 1.52). The participants who completed assessments at all three time points were more likely to be enrolled in the Early Head Start program (vs. the comparison group members), and response rates were higher for mothers who were employed, who did not receive welfare and who were more educated. Because the children who had complete data were qualitatively different from those for whom some data were missing, and because the data analytic technique employed was able to estimate the means for the missing data, the present study uses all available cases in the analyses (Love et al., 2002).

Father sub-study procedures.

In order to collect father-child interaction data, 12 of the 17 research sites elected to participate in Father Involvement with Toddlers Study (FITS) (Boller et al., 2006). After interviewing mothers at the end of the 24- and 36-month, the interviewer explained the father study a sought permission to contact fathers. Approximately 800 fathers (n = 727) were interviewed in 12 research sites and videotaped observations of father-child interaction were collected in 7 research sites when the children were 24 (n = 318) and 36 (n = 340) months of age

(Boller et al., 2006; Raikes, Boller, vanKammen, Summers, Raikes, Laible, Wilcox, Ontai-Brzebik, & Christensen, 2002). In the current study, cases with mother-child interaction data and father-child interaction data at 24 months were selected (n = 271).

Sample Description

Among the current sample (N = 271 cases with both mother-child and father-child interaction data), 40.1% of families were enrolled in the EHS program group (n = 133), and 50.9% (n = 138) were enrolled in the comparison group. Families had a mean gross annual income of 11,079.74 (*SD* = 10,055.99; median = 9,735.50; min = 0; max = 68,401). All fathers (n = 250) were employed. Fifty-five percent of fathers (n = 149) had completed high school or less; 45% of fathers (n = 122) had completed some college and some education beyond college. Mothers were, on average, 23.01 years old (SD = 6.15, range = 15 - 41 years). Fathers were, on average, 29.19 years old (SD = 7.92, range = 17 - 56 years). 5.3% of fathers (n = 14) were teenage fathers. 59.9% respondents (n = 154) were married to child mother while 27.6% (n = 71) were never married. 2.7% (n = 7) were separated from child mother and 6.6% (n = 17) were married to another partner. 3.1% (n = 8) were separated from another partner. Most fathers (67.8%; n = 181) were resident biological fathers, 14.6% of fathers were nonresidential biological fathers (n = 39), fifteen percent of fathers (n = 40) were residential other father figures and 2.6% of fathers were nonresidential other father figures (n = 7). At the time of the 24-month interview, children were, on average, 24.92 months old (SD = 1.31, range = 22.73 - 32.62months). 53.5% of children (n = 145) were girls and 46.5% (n = 126) were boys. 61.2% of mothers (n = 164) were Caucasian; 25.4% of mothers (n = 68) were African American; 11.2% (n = 68)= 30) were Hispanic and 2.2% (n = 6) were other ethnic groups. Fifty-seven percent of fathers (n= 150) were Caucasian, 25.9% were African American (n = 68), 12.2% were Hispanic (n = 32)

and 4.9% (n = 13) were other ethnic groups (see Table 1 for the sample demographics).

Measures

Parent-child interaction measures.

Parents' intrusiveness. Parental intrusiveness was assessed by using scales adapted from the National Institute of Child Health and Human Development (NICHD) Study of Early Child Care's Three Box scales (Clarke-Stewart, Vandell, Burchinal, O'Brien, & MacCartney, 2002; NICHD Early Child Care Research Network, 2004). It is called Three Bag task in the EHS study. The videotaped sessions included a standardized parent-child free play task. During free play, trained examiners provided toys in three separate bags and instructed to play with their children by using them. Different set of toys were presented to each parent for being age appropriate and encouraging parents to engage in concrete and symbolic play. Mothers received a book in bag 1, a kitchen set in bag 2 and a large boat with animals in bag 3. Fathers received a book in bag 1, a pizza set and telephone in bag 2 and a farm with farm animals in bag 3. At all three ages, bag 1 contained a picture book. The tasks were conducted in Spanish or English according to parents' preference and were coded by data collectors' fluent language. Each parent was instructed to sit with his or her child in front of the camera, and to feel free and to do whatever. They also were prohibited to play all the toys from the three bags and asked to start with Bag 1, move on to Bag 2, and finish with Bag 3. They were able to divide the 10 minutes if they wanted. In addition, according to the instruction children were not able to be pacified by parents for the accurate assessment (Tamis-LeMonda et al., 2004).

Parental intrusiveness measured the degree to which the parent controlled the child's play instead of allowing for the child's preferences. In the current study, parent's intrusiveness at 24 months was used as a main predictor. This 7-point rating scale was ranged from 1 (very low) to 7 (very high), with a maternal intrusiveness mean score of 1.76 (SD = .93) and a paternal intrusiveness mean score of 1.83 (SD = .88). Higher scores on intrusiveness indicate that the parent controlled the play agenda without letting children shape the focus or pace of play, not allowing the child to influence the focus or pace of play, grabbing toys away from the child, taking charge of the activity and not taking turns in play with the child. All videotapes were coded by an independent team from the Center for Children and Families, Columbia University, Teachers College. One coding team was comprised of one trained team leader and five to six members. Video tapes were randomly selected and assessed weekly to examine inter-rater reliability. Coders had to reach a level of reliability ranged from 84% to 100% agreement (exact and within 1-point agreement), with an average of 93%. All coders were unaware of the children's score on the standardized tests (Bayley MDI and PPVT) (Tamis-LeMonda et al., 2004).

Child outcome measures.

Self regulation. Child self-regulation is measured by Bayley Behavioral Rating Scale (BBRS), which was selected for use in the national study from the Bayley Scales of Infant Development (BSID)-Second Edition (Bayley, 1993). It was administered during home visits at children's 14, 24, and 36 month birth-related assessments. The BBRS scale contained items regarding the ability of the child to successfully change tasks and test materials; negative affect; and frustration with tasks during the assessment (Love, et al., 2002). The seven items included on the self regulation subscale were as follows: (1) adaptation to change in materials (e.g., the children's reaction when an interviewer takes one item from the child and exchanges it for another), (2) attention to tasks, (3) persistence in attempting to complete tasks, (4) cooperation with the interviewer, (5) activity level, (6) hypersensitivity to stimuli and (7) negative affection. The interviewer assessed the children's behavior by scoring items on a scale from 1 to 5. In

current study, 24 month child self regulation was used as a dependent variable with a mean score of 3.70 (SD = .82; min = 1.14; max = 5.00). High score indicated more positive behavior (e.g., more attention to tasks and less negative affect). Items indicating low score (e.g., more hypersensitivity and less cooperation) were then reverse-coded. Scores are the mean of the items in the subscale. Cronbach's internal consistency reliability for the scale was .92.

Covariate measures.

The current study included several covariate variables known to predict parents' behavior and child outcome.

Program status. Program status indicates whether the child was included in the Early Head Start group or the comparison group. In the current sample, 40.1% received services from EHS as the program group. Previous research showed that the mothers in the comparison group were less supportive to their children (Bocknek et al., 2009; Love et al., 2005). However at 24 months of age, in the current sample of parents (n = 271), neither mothers nor fathers in the comparison and treatment groups did not differ on quality of parenting.

Maternal cumulative risks. Risk factors which the mother faced include (1) being an adolescent mother, (2) having no high school degree, (3) receiving welfare, (4) not being employed or in school or training, and (5) being a single mother. Responses for each of the 5 risks were dichotomous reflecting the presence or absence of the risks. Scores were summed to create a risk composite. In the current sample overall (N = 271), mothers had a mean of 2.22 (SD = 1.29; min = 0; max = 5.00), with 44.2% of the sample indicating three or more risks at study enrollment (n = 120).

Parenting stress. Parenting stress was assessed by two subscales from the Parenting Stress Index—Short Form (PSI-SF; Abidin, 1983). Parental Distress and Parent-Child

Dysfunctional Interaction were administered when children were 24-months age. Both subscales consisted of 12 items and each item is rated on a 5-point scale, with 1 as "strongly disagree" and 5 as "strongly agree." The Parental Distress subscale assessed the level of distress the parent is feeling in his or her role as a parent stemming from the child's challenging temperament, including a low sense of competence as a parent, stress because of perceived restrictions stemming from parenting, depression, and lack of social support. The parent responded whether he or she agrees or disagrees with statements such as, "You often have the feeling that you cannot handle things very well," and "You feel trapped by your responsibilities as a parent," and "You feel alone and without friends." Parent-Child Dysfunctional Interaction measures the parent's perception that the child does not meet the parent's expectations and interactions with the child are not reinforcing the parent. The parent may perceive that the child is abusing or rejecting the parent or that the parent feels disappointed in or alienated from the child. The parent responded whether he or she agrees or disagrees with statements such as, "Your child rarely does things for you that make you feel good," and "Most times you feel that your child does not like you and does not want to be close to you," and "Your child seems to smile less than most children." Internal consistency reliabilities were high with Cronbach alpha coefficients of .83 for Parental Distress, .80 for Mother-child Dysfunctional Interaction and .86 for the combined scales. In the current study, mothers had a total stress mean score of 24.36 (SD = 8.44; min = 12.00; max = 53.00). Fathers had a total stress mean score of 21.97 (SD = 7.53; $\min = 12.00; \max = 52.36$).

Child early self regulation. Child early self-regulation was also measured by Bayley Behavioral Rating Scale (BRS), when children were 14 months old. All items and scores of this scale were the same as the 24 months child self regulation, with a mean score of 3.75 (SD = .67;

 $\min = 1.14; \max = 5.00).$

Child temperament. Children's temperament was assessed by the Emotionality subscale of the EASI (Emotionality, Activity, Sociability, and Impulsivity) temperament scales (Buss & Plomin, 1984) when children were 14 months old. The instrument included 20 items in four behavioral categories: Emotionality, Activity, Sociability, and Impulsivity. A parent was presented with individual patterns of behaviors and responses to daily events and is asked to rate the child on a five-point scale. Emotionality subscale involved items regarding general emotionality, fear and anger. In the current sample, respondents had a mean score of 2.92 (*SD* = .92).

Child gender. In current study (N = 271), 53.5% (n = 145) were girls and 46.5% (n = 126) were boys. Coding categories of the child gender variable were girls = 1, boys = 0. At 24 months of age girls had higher mean scores than did boys on the measure of 24 month self regulation (F = 4.23, p = .04).

Missing Data

In current multivariate data set, missing values appeared on more than one variable. Current data set may be considered missing at random since the pattern of such absence is not related to a participant's true status on a given variable for which data is missing (Acock, 2005; Musil, Warner, Yobas, & Jones, 2002). Consistent with previous research (Acock, 2005), such conditional randomness occurred in demographic variables, including maternal cumulative risks.

Missing data were imputed prior to analyses in using PRELIS application of LISREL 8.8 because Listwise deletion tends to discard a large proportion of the data and may induce bias (du Toit & Mels, 2002). LISREL 8.7 implements *ad hoc* method which researchers frequently use (Schafer, 1997) and use the EM algorithm (Dempster, Laird, & Rubin, 1997; Schafer, 1997;

MacLachlan & Krishnan, 1997) and the Monte Carlo Markov chains (MCMC algorithm) (du Toit et al., 2002; Gilks, Richardson, & Spiegelhalter, 1995). In current study, the EM algorithm was chosen because there is no significant difference between EM algorithm and MCMC method in terms of accuracy for imputation (Lin, 2010).

The Expectation Maximization implements a two-step iterative approach to examine the parameters in the model. In the EM method maximum likelihood approach is implemented by repeating Expectation (E-step) and Maximization (M-step) steps in parametric models for imputing the missing values. An E-step finds the distribution for the missing values based on the known values from the observed data and an M-step substitutes the missing data with the expected values.

Hypotheses

The following hypotheses were addressed in the current study.

 H_{01} : There is no relationship between maternal intrusiveness and child self regulation.

H_{a1}: Maternal intrusiveness would be related to less optimal child self regulation.

H₀₂: There is no relationship between paternal intrusiveness and child self regulation.

 H_{a2} : Paternal intrusiveness would be related to less optimal child self regulation.

 H_{03} : Maternal intrusiveness does not have differential effects on self regulation as a function of child gender.

Ha3: Maternal intrusiveness negatively influences girls' and boys' self regulation. The effect of

maternal intrusiveness is more pronounced for girls' self regulation than for boys' self regulation.

H₀₄: Paternal intrusiveness does not have differential effects on self regulation as a function of child gender.

 H_{a4} : Paternal intrusiveness negatively influences girls' and boys' self regulation. The effect of paternal intrusiveness is more pronounced for boys' self regulation than girls' self regulation.

 H_{05} : The interaction of maternal and paternal intrusiveness does not have more robust effects on toddler self regulation than would either maternal or paternal intrusiveness alone. H_{a5} : The interaction of maternal and paternal intrusiveness has more robust effects on toddler self regulation than would either maternal or paternal stress alone.

 H_{a51} : Toddler self regulation, for boys and girls, is most compromised when both mothers and fathers demonstrate higher intrusiveness.

 H_{a52} : Lower paternal intrusiveness buffers the effects of higher maternal intrusiveness on toddler self regulation for boys and girls.

Data Analysis Plan

A series of hierarchical multiple regression models were performed to test study above hypotheses. The current study contained two main independent variables, maternal intrusiveness (MI) and paternal intrusiveness (PI), and one dependent variable, child's self regulation at 24 months. Child gender was treated as a moderating variable (boy = 0; girl = 1) and six covariates were included in the study: 1) program status, 2) maternal cumulative risks, 3) maternal stress at 24 months, 4) paternal stress at 24 months, 5) child temperament (emotionality) at 14 months, and, 6) child's early self regulation at 14 months. In addition two-way interaction terms (MI \times child gender; PI \times child gender; MI \times PI) and a three-way interaction term (MI \times PI \times child gender) were included in these models. Prior to conduct the regression analyses, maternal intrusiveness and paternal intrusiveness variables were centered by subtracting the sample mean from all sample scores on the variables. Multicollinearity between predictors and any interaction terms was reduced through the centering (Holmbeck, 2002). Each of variables was examined separately and followed similar models.

In the first step of each model, program status, maternal cumulative risks and maternal stress were entered followed by child temperament and child early self regulation at 14 months in step 2. These variables were entered into all five regression model to control for their effect on the child self regulation at 24 months. To address Hypothesis 1 Model 1 included maternal intrusiveness in step 3 as the primary predictor of child 24 months self regulation. To test Hypothesis 2 Model 2 included paternal variables instead of maternal variables, except for cumulative risks. Paternal cumulative risk variable was not computed due to insufficient data. Model 3 included an independent variable (maternal intrusiveness) and a moderator variable (child gender) at step 3 so a possible moderating effect could be examined at next step. Step 4 included a two-way interaction term (maternal intrusiveness × child gender) for Hypothesis 3, which predicted that child gender would moderate the relationship between maternal intrusiveness and child self regulation at 24 months. In the model 4, all maternal variables were replaced with paternal variables, except for cumulative risks to test Hypothesis 4. The Hypothesis was supported if a paternal intrusiveness \times child gender variable is significantly associated with child self regulation at 24 months and follow-up tests of main effects revealed

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that boy's were more negatively affected than were girls. In the model 5 was constructed with both maternal variables and paternal variables. Program status, maternal cumulative risks, maternal stress and paternal stress were entered at step 1 followed by child temperament, child early self regulation at 14 months and child gender at step 2. Step 3 included maternal intrusiveness and paternal intrusiveness and all two-way interaction terms (MI × child gender; PI × child gender; MI × PI) were entered at Step 4. Lastly a three-way interaction variable (MI × PI × child gender) was included at Step 5 to test Hypothesis 5₁ and Hypothesis 5₂.

If a significant interaction was obtained in these models, it was graphed according to established procedures (Aiken & West, 1991; Dawson & Richter, 2006). For ease of interpretation, results of the hierarchical multiple regression models provided the change in adjusted R^2 with each addition to the model. Measure of effect size in the regression was assessed via adjusted R^2 , and the size of β weights for each predictor.

CHAPTER FOUR

Study Results

This chapter reports results related to hypotheses developed in Chapter 1. Hierarchical multiple regression analyses were conducted with independent variables (maternal and paternal intrusiveness), a moderator variable (child gender) and a dependent variable (child's self regulation at 24 months old) to test five models (See Chapter 3). These analyses were used to determine if the parent's intrusiveness and child self regulation relationship were moderated by child gender. Variables included in the five models are displayed below.

Preliminary Analyses

In order to show means, standard deviation and range, descriptive statistics of measures used five models are presented were in Table 2 (See appendix). In order to compare the means of some variables by child gender and program status, One-way ANOVA analyses were used. The results of the analyses indicated that the EHS program group did not significantly differ from comparison group on study assessments: the 14-month birth-related assessment on child temperament, F = .83, p = .36; the 14-month birth-related assessment on child self regulation, F = .05, p = .82; the 14-month birth-related assessment on maternal cumulative risks, F = .22, p = .64; the 24-month birth-related assessment on maternal stress, F = .11, p = .74; the 24-month birth-related assessment on paternal stress, F = .36; the 24-month birth-related assessment on paternal intrusiveness, F = .53, p = .47; the 24-month birth-related assessment on child self regulation, F = .67, p = .41. Additionally, girls and boys did not significantly differ on all other assessments: the 14-month birth-related assessment on child temperament, F = .53, p = .47; the 14-month birth-related assessment on child temperament, F = .53, p = .47; the 14-month birth-related assessment on child temperament, F = .53, p = .47; the 14-month birth-related assessment on child temperament.

related assessment on maternal cumulative risk, F = .00, p = .97; the 24-month birth-related assessment on maternal stress, F = .03, p = .88; the 24-month birth-related assessment on paternal stress, F = .03, p = .87; the 24-month birth-related assessment on maternal intrusiveness, F = .31, p = .58; the 24-month birth-related assessment on paternal intrusiveness, F = .66, p = .42. However girls significantly differed from boys at the 24-month birth-related assessment on child self regulation, F = 4.23, p = .04.

As seen in Table 3, bivariate correlations were conducted to analyze the association among independent, dependent and control variables. Child self regulation at 14 months was negatively associated with child temperament (r = -.19, p = .001). Child self regulation at 24 months was positively correlated with child gender (r = .13, p = .032) and child self regulation at 14 months (r = .33, p < .001). Maternal cumulative risk variable was negatively associated with child self regulation at 14 months (r = -.23, p < .001) and child self regulation at 24 months (r = -.33, p < .001) and positively associated with child temperament (r = .13, p = .031). Maternal stress was positively correlated with child temperament (r = .14, p = .018), maternal cumulative risks (r = .15, p = .017) and negatively correlated with child self regulation at 14 months (r = .22, p < .001) and child self regulation at 24 months(r = -.13, p = .033). Maternal intrusiveness was negatively associated with child self regulation at 14 months (r = -.19, p = .001), child self regulation at 24 months (r = -.17, p = .004) and positively associated with (r = .19, p = .002). Paternal intrusiveness was positively correlated child temperament (r = .14, p = .020), maternal intrusiveness (r = .23, p < .001) and negatively correlated with child self regulation at 14 months (r = -.16, p = .008).

Additionally, the variance inflation factor (VIF) was used to estimate multicollinearity. VIF scores ranged between 2.96 and 1.04. VIF scores of less than 10 suggest that it will not affect the stability of the parameter estimates (Dielman, 1991).

Hierarchical Multiple Regression

The hypothesized results of five models will be separately presented below. Significant results indicated in hierarchical multiple regression analyses were shown in Table 4.1 and Table 4.2 (See appendix).

Model 1.

Hypothesis 1 for Model 1 postulated that higher maternal intrusiveness at 24 months would have a negative effect on child self regulation at 24 months. The regression included program status, maternal cumulative risks and maternal stress at Step 1. Child temperament and child early self regulation were added at Step 2 and maternal intrusiveness was added as a main predictor at Step3. Model 1 was statistically significant, *F* (6, 264) = 9.69, *p* < .001, and accounted for 16 % of variance in child self regulation at 24 months. Maternal cumulative risks ($\beta = -.24$, *p* < .001) was negatively predicted child self regulation at 24 months and child self regulation at 14 month was positively predicted the dependent variable ($\beta = .24$, *p* < .001). However, maternal intrusiveness ($\beta = -.10$, *p* = .10) was not significantly associated with the dependent variable (See Table 4.1). Thus, Hypothesis 1 was not supported.

Model 2.

The second regression model included child self regulation at 24 months as the dependent variable. Program status, maternal cumulative risks and paternal stress were included at Step 1. Child temperament and child self regulation at 14 months were added at Step 2. Paternal intrusiveness was included as a main predictor at Step3. Model 2 was statistically significant, *F* (6, 264) = 9.07, *p* < .001, and accounted for 15 % of variance in child self regulation at 24 months. Maternal cumulative risks (β = -.25, *p* < .001) was negatively related to

child self regulation at 24 months and child self regulation at 14 month was positively related to the dependent variable ($\beta = .26$, p < .001). Nonetheless, no significance was found for paternal intrusiveness ($\beta = .03$, p = .637) (See Table 4.1). Thus, Hypothesis 2 was not supported.

Model 3.

Third Regression analyses for Hypothesis 3 also included child self regulation at 24 months as the dependent variable. Program status, maternal cumulative risks and maternal stress were included at Step 1. Child temperament, child self regulation at 14 months and child gender were added at Step 2. Maternal intrusiveness was included at Step 3 and a two-way interaction between maternal intrusiveness and child gender was added at Step 4. Model 3 was statistically significant, *F* (8, 262) = 7.82, *p* < .001, and accounted for 17 % of variance in child self regulation at 24 months. Maternal cumulative risks ($\beta = -.23$, *p* < .001) was negatively associated with child self regulation at 24 months and child self regulation at 14 month was positively predicted the dependent variable ($\beta = .23$, *p* < .001). However, maternal intrusiveness ($\beta = -.12$, *p* = .149) and the two-way interaction (MI × child gender) ($\beta = .03$, *p* = .743) were not significantly associated with the dependent variable (See Table 4.1). Thus, Hypothesis 3 was not supported.

Model 4.

Fourth regression model estimated Hypothesis 4. The model included child self regulation at 24 months as the dependent variable. Program status, maternal cumulative risks and paternal stress were included at Step 1. Child temperament, child self regulation at 14 months and child gender were added at Step 2. Paternal intrusiveness was included at Step 3 and a twoway interaction between paternal intrusiveness and child gender was added at Step 4. Model 4 was statistically significant, F(8, 262) = 7.35, p < .001, and accounted for 16 % of variance in child self regulation at 24 months. Maternal cumulative risks ($\beta = -.25$, p < .001) was negatively predicted child self regulation at 24 months and child self regulation at 14 month was positively predicted the dependent variable ($\beta = .25$, p < .001). Nonetheless, paternal intrusiveness ($\beta = -.06$, p = .417) and the two-way interaction (PI × child gender) ($\beta = .06$, p = .431) were not related to the dependent variable (See Table 4.1). Thus, Hypothesis 4 was not supported.

Model 5.

Hypothesis 5 stated that child self regulation, for boys and girls, would be most compromised when children experienced both maternal and paternal intrusiveness. This model tested for Hypothesis 5 included child self regulation at 24 months as a dependent variable. Program status, maternal cumulative risks, maternal stress and paternal stress were included at Step 1. Child temperament, child self regulation at 14 months and child gender were added at Step 2. Maternal intrusiveness and paternal intrusiveness were included at Step 3. Step 4 was included three two-way interactions (MI \times child gender; PI \times child gender; MI \times PI) and Step 5 was included a three-way interaction (MI \times PI \times child gender). Model 5 was statistically significant, F(13, 257) = 5.93, p < .001, and accounted for 19-% of variance in child self regulation at 24 months. Maternal cumulative risks ($\beta = -.22$, p < .001), early self regulation (β = .21, p = .001) and child gender ($\beta = .16 p = .005$) significantly predicted child's self regulation at 24 months. Maternal intrusiveness ($\beta = -.21$, p = .016) also was statistically associated with the dependent variable but no significance was found for paternal intrusiveness ($\beta = -.10$, p = .192). A two-way interaction between maternal intrusiveness and child gender ($\beta = .10, p = .269$) and a two-way interaction between paternal intrusiveness and child gender ($\beta = .10$, p = .200) did not relate to the child's self regulation at 24 months. However, a two-way interaction between maternal intrusiveness and paternal intrusiveness were significantly ($\beta = .26$, p = .001) related to

the dependent variable, suggesting that negative effect of maternal intrusiveness on child self regulation was significantly stronger when paternal intrusiveness was low rather than high. Figure 2 graphically displays the relationship between maternal intrusiveness and paternal intrusiveness on the child self regulation at 24 months. In addition, the three-way interaction between maternal intrusiveness, paternal intrusiveness and child gender was significant (β = -.14, p = .04) (See Table 4.2). In order for an accurate interpretation of the three-way interaction effect, a test for slope difference was conducted (Dawson & Richter, 2006). There were significant differences between slope (2) and slope (4) (p = .034); between slope (3) and slope (4) (p = .024). The difference between slope (1) and slope (4) was also marginally significant (p = .055) (See Figure 3). This finding suggested that being a girl was associated with higher self regulation than being a boy when maternal intrusiveness was high or when maternal intrusiveness was low and paternal intrusiveness was high. Figure 3 graphically displays the relationship among maternal intrusiveness, paternal intrusiveness and child gender. Thus, Hypotheses 5 was partially supported (See Table 5).

CHAPTER FIVE

Discussion and Conclusion

Discussion

Parents' behavior in free play may affect their children's self regulation and self efficacy which may more improve positive relationship with their peers (Carson et al., 1993; Parke, MacDonald, Beitel, & Bhavnagri, 1988; Parke, MacDowell, Kim, Killian, Dennis, Flyr, & Wild, 2002; Paquette 2004; Pellegrini & Smith, 1998). In particular, parents' intrusiveness in free play has been identified by many researchers as an influential variable that impacts on the child development (Cabrera et al., 2007; Greenspan & Lieberman, 1989; Ispa et al., 2004). Prior research estimating parents' intrusiveness has extensively investigated the effects of maternal intrusiveness on children's outcomes. Little research has been conducted looking at relations between paternal intrusiveness and child development. Also few researchers have looked at a moderating effect of child gender in the relationship between parent's intrusiveness and the child development. Results from the current study found interesting results for future research on relationship among maternal intrusiveness, paternal intrusiveness and child self regulation. An expanded review of the study findings will be presented below as well as strength, limitations and implication for future research.

Overall, Hypothesis 1, 2, 3 and 4 were not supported in Models 1 to 4 (See Chapter 4). Regression analyses in Model 1 to Model 4 did not show any significance of the relationship between parent's intrusiveness and child self regulation, but a significant positive effect of early child self regulation at 14 months and a significant negative effect of maternal cumulative risks on child self regulation at 24 months were evident. Hypothesis 5, however, was partially supported in Model 5. Hypothesis 5 examined child gender as a moderator of relations between maternal and paternal intrusiveness and children's self regulation. This hypothesis was developed based on past studies emphasizing maternal or paternal intrusiveness predicted child socio emotional outcomes (Cabrera et al., 2007; Ispa et al., 2004).

Model 5 was statistically significant and accounted for 19% of the variance in child self regulation. Although Cohen (1988) suggested that values equaling .10 or less may indicate a "small" effect, values around .30 may indicate a "moderate" effect and values equaling .50 or more may indicate a "large" effect, his guidelines may be broad. Some researchers have recently suggested different guidelines addressed to different measures, target population and intervention (Hill, Bloom, Black & Lipsey, 2008). Other research exploring Early Head Start Program impacts reported that effect sizes ranged from .10 to .20 on measures of parenting behavior and child outcomes (Love et al., 2005). These should be considered.

In Model 5, significant and positive influences of child self regulation at 14 months and child gender on child self regulation at 24 months were evident. One-way ANOVA analyses also found the sample mean difference of toddler's self regulation in child gender. This is consistent with previous research suggesting boys self regulation is lower than girls self regulation (Morris et al., 2002; Morris et al., 2007). The analysis of Model 5 also showed the significantly negative effect of maternal cumulative risks and maternal intrusiveness but no effect of paternal intrusiveness on child self regulation at 24 months. This is partially consistent with prior studies. Some research reported that cumulative risk is a powerful influence on child outcomes (Sameroff & Fiese, 2000) and especially within economically at-risk populations (e.g., Bocknek et al., 2009; Raikes, Pan, Luze, Tamis-LeMonda, Brooks-Gunn, Constantine, Tarullo, Raikes, & Rodriguez, 2006). In addition Cabrera and her colleagues found that maternal intrusiveness and paternal intrusiveness are negatively related to child emotional regulation at 24 months (Cabrera

et al., 2007).

Results from Model 5 also indicated a significant two-way interaction between maternal intrusiveness and paternal intrusiveness and a significant three-way interaction between maternal intrusiveness, paternal intrusiveness and child gender. The three-way interaction will be main focus in this discussion but some potential process reflected in the two-way interaction will be discussed first as follows.

As noted in the previous chapter, the two-way interaction between maternal intrusiveness and paternal intrusiveness was significantly related to the child self regulation at 24 months; interestingly, neither a two-way interaction between maternal intrusiveness and child gender nor a two-way interaction between paternal intrusiveness and child gender had impact on the child's self regulation at 24 months. Unexpectedly, the significant effect of the two-way interaction between maternal intrusiveness and paternal intrusiveness on the child self regulation suggested that the negative effect of maternal intrusiveness on the child self regulation was significantly stronger when paternal intrusiveness was low rather than high. This result may be explained by fathers' "rough and tumble play (RTP)". Previous research found that fathers typically engaged in rough and tumble physical and social play (Roopnarine, Ahmeduzzaman, Hossain, & Riegraf, 1992). Studies regarding father-child interaction also indicated that fathers encouraged visual exploration and manipulation of activities during play with their children (Power, 1985). In current study, the fathers' rough and tumble play style could be measured as intrusive behavior in the three bag assessment. In other words, father's RTP may be one type of what might be interpreted as intrusiveness behavior. In fact, fathers' RTP can connote double meanings: 'I love you' (warmth) and 'I am stronger than you' (control) (Paquette et al., 2004). For example, one indicator of intrusiveness in the three bag assessment was poking the child

with toys, fingers, or other objects. This behavior may be usually found in fathers' rough and tumble play as a way to attract children's attention. Most studies on the topic deal with RTP revealed that RTP can contribute to the children's ability to regulation their emotion (Carson et al., 1993; Paquette, 2004; Paquette Carbonneau, Dubeau, Bigras, & Tremblay, 2003; Peterson & Flanders, 2005). These studies also suggested that fathers can teach their children self control to others through the play. Therefore, the negative effect of maternal intrusiveness on the child self regulation was significantly reduced when paternal intrusiveness was high.

In addition, a three-way interaction between maternal intrusiveness, paternal intrusiveness and child gender was significantly associated with child self regulation at 24 months. This interaction suggests that child gender moderates the relation between maternal intrusiveness, paternal intrusiveness and child self regulation. Specifically, girls showed the most optimal self regulation when both maternal intrusiveness was high and paternal intrusiveness was high while boys seemed to benefit most from low maternal and paternal intrusiveness (See Figure 3).

Boys seemed most vulnerable to any kind of intrusiveness. This finding is consistent with previous research (Osofsky & O'Connell, 1977; Weinberg et al., 1999). For instance, Weinberg et al. (1999) showed boys had greater difficulty than girls maintaining affective regulation when mothers showed lower levels of sensitivity. Furthermore, although mothers and sons tried to synchronize their behavior, boys had more difficulties than girls moving to joint states, and boys took longer repairing interactive errors (Weinberg et al., 1999). Such research could explain why parents' intrusiveness in the child's early life had a greater negative impact on boys than girls. The boys may be more vulnerable to any kind of intrusiveness because of greater difficulties with affective regulation.

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Girls seemed to benefit from maternal intrusiveness or paternal intrusive behaviors. Three potential explanations for this finding can be addressed. First, research has shown that, in general, mothers tend to engage their children, particularly their daughters, in more structured, didactic play (Bornstein, Selmi, Haynes, Painter, & Marx, 1996; Brown, Rickards, & Bortoli, 2001; Tamis-LeMonda & Bornstein, 1991, 1994; Vibbert & Bornstein, 1989) and girls, overall, tend to be engaged in this manner (Gmitrova, Podhajecka, & Gmitrov, 2009). Girls also tend to high more mature linguistic abilities which likely support their self regulation (Cournoyer, Solomon, & Trudel, 1998; Vallotton & Ayoub, 2011). Thus, parental intrusiveness may feel more familiar to girls in that it may mimic the structured interactions to which they are already accustomed, as compared to boys who are less likely to experience these types of interactions with their parents. Second, intrusiveness could be explained as a positive behavior in varying contexts. Previous research suggests that intrusiveness has different meaning in diverse cultural groups (Grusec, Rudy, & Martini, 1997; Ispa et al., 2004). For example, intrusiveness might represent neutral and positive feelings in collectivistic cultural groups such as African Americans and Hispanic Americans. Hence, cultural differences, untapped in the current study, may be contributing to the model such that intrusiveness, possibly in interaction with child gender and culture, may relate to self regulation. Lastly, this finding might be explained by fathers' different expectations and attention for boys' and girls' play. Fathers play in different ways with their sons and daughters (Jacklin et al., 1984; Snow, Jacklin, & Maccoby, 1983). Fathers may lead the play softly and more supportively when they play with daughters while fathers may control boys' play more strongly rather than girl's play (Lewis, 1997; Lovas, 2005). Thus, paternal intrusiveness may "look" differently during interactions with girls than with boys. Alternatively, fathers' more rough and tumble interactions (as compared to mothers) may carry a different meaning in

interactions with girls. Prior studies found that fathers succeed more easily to obtain sons' obedience through RTP (Lytton, 1979). Some research suggests that fathers might express rivalry toward their sons in a dominant-submissive relationship established through RTP (Paquette et al., 2004). Other studies found fathers can affect the ability to control aggressive behavior, particularly for boys (Herzog, 1992). In fact, MacDonald (1987) found that fathers of popular children engaged in more RTP with their sons than fathers of neglected children. Girls may particularly benefit from this type of interaction, particularly since they are less likely to experience this type of play interaction as compared to boys.

Strengths

Several strengths were evident in the current study. First, this study extended prior research by presenting findings related to how both maternal and paternal intrusiveness might differentially influence boys' and girls' outcomes. Few studies incorporated such the analyses. It filled the paucity of research on parent's intrusiveness and allowed for a comparison of results. Second, the maternal and paternal intrusiveness was also measured by not self report but observation in naturalistic contexts. Most studies related to the relationship between parenting and child self-regulation have examined under laboratory control (e.g., Cole et al., 2004). The home observations showed varied aspects of natural parent-child interaction in an ecologically valid environment. Lastly, the current study used a relatively large sample size with both motherchild and father-child interaction data. The national EHSRE data provided children and their parents from varying regions, EHS programs and ethnic groups across the United States, in both rural and urban areas.

Limitations & Implications

Although this study had significance related to early regulatory development, several

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limitations must be noted. Firstly, this study compared mother and child interactions with father and child interactions in a dyadic setting. That is, children with aged 24 months were separately videotaped with their mothers and fathers in order to measure the maternal and paternal intrusiveness. Examining triadic interactions between mothers, fathers, and toddlers would provide a rich insight into the role of parent-child interactions as a context for the development of self-regulation. Child self regulation also was measured with the Bayley Behavior Rating Scale as opposed to a battery of self regulation tasks and assessments. The current study only estimated the development of children from families who had an income at, or below the Federal poverty line. The current study cannot, therefore, be generalized to an economically diverse population. Although EHSRE is a longitudinal study, the design for this study is cross-sectional. Future research would also benefit from an understanding of pathways through which perceptions of parent's role may affect maternal and paternal intrusiveness or the mediators which can influence the relationship between parent's intrusiveness and child self regulation. Lastly, a paternal cumulative risks variable was not included in this study. Thus, the results of models in which paternal intrusiveness was used as a predictor may be slightly skewed. Future research could include other variables which may affect the results (e.g., a paternal cumulative risks and marital satisfaction) as covariates.

Findings from the current study emphasize the role of fathers in parenting, specifically during toddlerhood. Findings also suggested that fathers may engage with boys differently than they do with girls. According to Lovas (2005), sons of fathers who have less emotional availability may become like their father in the future. In order to prevent the potential risks and improve child self regulation associated with academic achievement and successful social relationship, holistic policy or program enhancing fathers' sense of their importance to the child

development would help father's actual parenting.

Conclusions

In recent years, father-child relationship is emphasized in a larger ecology including mother-father relationship, family human and financial resources (Lamb, 2004). Findings from this study suggested that boys and girls from low income families were differently susceptible to maternal and paternal intrusiveness in self regulation development. Boys may be more vulnerable to maternal or paternal intrusiveness than girls. Girls may benefit from maternal or paternal intrusiveness. APPENDIX

APPENDIX

Tables and Figures

Table 1

Description of Sample (N = 271)

		%	Ν
Program Status	Program Group	40.1	133
	Comparison Group	50.9	138
Paternal Employment	Employed	100.0	250
(n = 250)	Unemployed	0.0	0
Paternal Education	≤ High School	55.0	149
	≥ College	45.0	122
Paternal Marital Status	Married to Child Mother	59.9	154
(n = 257)	Separated from Child Mother	2.7	7
	Never Married	27.6	71
	Married to Another Partner	6.6	17
	Separated from Another Partner	3.1	8
Adolescent Father Status	\leq 19 Years Old	5.3	14
(n = 264)	\geq 20 Years Old	94.7	250
Father's Residence Status	Resident Biological Father	67.8	181
(n = 267)	Nonresident Biological Father	14.6	39
	Resident Other Father Figure	15.0	40
	Nonresident Other Father Figure	2.6	7
Paternal Race	European American	57.0	150
(n = 263)	African American	25.9	68
	Hispanic	12.2	32
	Other	4.9	13
Maternal Race	European American	61.2	164
(n = 268)	African American	25.4	68
	Hispanic	11.2	30
	Other	2.2	6
Child Gender	Girl	53.5	145
	Boy	46.5	126

Table 2

	M (SD)	Minimum	Maximum
14-Month Birth-Related Assessment			
Child Temperament	2.92 (.92)	1.00	5.00
Child Self Regulation	3.75 (.67)	1.14	5.00
24-Month Birth-Related Assessment			
Child Self Regulation	3.70 (.82)	1.14	5.00
Maternal Cumulative Risks	2.22 (1.29)	.00	5.00
Maternal Stress	24.36 (8.44)	12.00	53.00
Paternal Stress	21.97 (7.53)	12.00	52.36
Maternal Intrusiveness	1.76 (.93)	1.00	5.00
Paternal Intrusiveness	1.83 (.88)	1.00	5.00

Description of All Variables (N = 271)

Table 3

Correlations for Study Variables

Variable	1	2	3	4	5	6	7	8	9	10
1. Program Status	1.00									
2. Child Gender	04	1.00								
3. Child Temperament	.03	04	1.00							
4. Self Regulation at 14 Months	.00	.09	19**	1.00						
5. Self Regulation at 24 Months	06	.13*	10	.33***	1.00					
6. Maternal Cumulative Risks	03	.02	.13*	23***	33***	1.00				
7. Maternal Stress	.01	.02	.14	22***	13*	.15*	1.00			
8. Paternal Stress	03	01	.10	08	05	.11	.10	1.00		
9. Maternal Intrusiveness	04	.05	.08	19***	17*	.19**	.08	00	1.00	
10. Paternal Intrusiveness	04	.01	.14	16**	10	.10	.08	.09	.23***	1.00

* p < .05. ** p < .01. *** p < .001.

Table 4.1

Summary of Hierarchical Regression Analyses for Variables Predicting 24-Month Outcome (Model 1-Model 4)

		Mode	el 1		Mode	el 2		Mode	el 3		Mode	el 4	
		В	SEB	β	В	SEB	β	В	SEB	β	В	SEB	β
Step 1													
	Program	09	.09	06	09	.09	05	10	.09	06	08	.09	05
	Maternal Risk	15	.04	24	16	.04	25***	15	.04	24	16	.04	25
	Maternal Stress	00	.01	04				00	.01	04			
	Paternal Stress				.00	.01	.02				.00	.01	.03
Step 2													
	Temperament	.00	.05	.00	.00	.05	00	.00	.05	.00	.00	.05	.00
	Early Self Regulation	.30	.07	.24	.32	.07	.26	.28	.07	.23	.31	.07	.25
	Child Gender							.18	.09	.11	.17	.09	.11
Step 3													
	Maternal Intrusiveness (MI)	08	.05	10				11	.07	12			
	Paternal Intrusiveness (PI)				03	.05	03				06	.07	06
Step 4													
	$MI \times Child Gender$.03	.20	.03			
	$PI \times Child Gender$.09	.11	.06
	$\mathbf{MI}\times\mathbf{PI}$												
Step 5													
	$MI \times PI \times Child Gender$												
	R^2		.16			.15			.17			.16	
	F for Change in R^2		2.73			.22			.11			.62	
* <i>p</i> < .(p = ** p < .01. *** p < .001.												

Table 4.2

Summary of Hierarchical Regressio	n Analyses	for	Variables	Predicting	24-Month	Outcome	(Model3)
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		Model5	
-	В	SEB	β
			•
Program	08	.09	05
Maternal Risk	14	.04	22
Maternal Stress	00	.01	04
Paternal Stress	.01	.01	.03
Emotionality	.00	.05	.01
Early Self Regulation	.26	.07	.21
Child Gender	.27	.09	.16
Maternal Intrusiveness (MI)	20	.08	21*
Paternal Intrusiveness (PI)	10	.07	10
$MI \times Child Gender$.12	.11	.10
$PI \times Child Gender$.15	.11	.10
MI imes PI	.22	.06	.26**
$MI \times PI \times Child Gender$	24	.12	14*
R^2		.19	
F for Change in R^2		4.27*	
	ProgramMaternal RiskMaternal StressPaternal StressEmotionalityEarly Self RegulationChild GenderMaternal Intrusiveness (MI)Paternal Intrusiveness (PI)MI × Child GenderPI × Child GenderMI × PIMI × PIMI × PI × Child GenderR ² F for Change in R ²	BProgram08Maternal Risk14Maternal Stress00Paternal Stress01Emotionality.00Early Self Regulation.26Child Gender.27Maternal Intrusiveness (MI)20Paternal Intrusiveness (PI)10MI × Child Gender.12PI × Child Gender.15MI × PI.22MI × PI × Child Gender24 R^2 F for Change in R^2	B SEB Program 08 .09 Maternal Risk 14 .04 Maternal Stress 00 .01 Paternal Stress .01 .01 Emotionality .00 .05 Early Self Regulation .26 .07 Child Gender .27 .09 Maternal Intrusiveness (MI) 20 .08 Paternal Intrusiveness (PI) 10 .07 MI × Child Gender .12 .11 PI × Child Gender .12 .11 MI × PI .22 .06 MI × PI × Child Gender 24 .12 R ² .19 .19 F for Change in R ² 4.27 *

* p < .05 ** p < .01. *** p < .001.

Table 5

Summary of Hypothesis Testing

Hypotheses	Results	The effect of parental intrusiveness
1. Maternal intrusiveness would be related to less optimal child self regulation.	Supported	Maternal intrusiveness had negative effect on the child self regulation.
2. Paternal intrusiveness would be related to less optimal child self regulation.	Not supported	-
3. Maternal intrusiveness negatively influences girls' and boys' self regulation. The effect of maternal intrusiveness is more pronounced for girls' self regulation than for boys' self regulation.	Not supported	_
4. Paternal intrusiveness negatively influences girls' and boys' self regulation. The effect of paternal intrusiveness is more pronounced for boys' self regulation than girls' self regulation.	Not supported	_
5.1 Toddler self regulation, for boys and girls, is most compromised when both mothers and fathers demonstrate higher intrusiveness.	Partially supported	The effect of maternal intrusiveness on the child self regulation was significantly stronger when paternal intrusiveness was low rather than high.
5.2 Lower paternal intrusiveness buffers the effects of higher maternal intrusiveness on toddler self regulation for boys and girls.	Not supported	Being a girl was associated with higher self regulation than being a boy when maternal intrusiveness was high or when maternal intrusiveness was low and paternal intrusiveness was high.

Figure 1 Conceptual model





Figure 2 Relationship between Maternal Intrusiveness, Paternal Intrusiveness and Child's Self Regulation





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