

ABSTRACT

Title of Document: THE ASSOCIATION BETWEEN CHILD GENDER AND OBSERVED MATERNAL RESPONSIVENESS IN MOTHERS OF CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER

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The present study examined the relationship between child gender and observed maternal responsiveness in mothers of 6-10 year old children with ADHD. Fifty-seven mother-child dyads participated in a 25-minute observed parent-child interaction comprised of both structured and unstructured tasks. Observed interactions were coded for overall and dimensional categories of maternal responsiveness. Results indicated that mothers of boys and mothers of girls with ADHD did not differ on either overall levels of responsiveness or individual dimensions of responsiveness (e.g., control, affect, etc.). However, responsiveness did vary as a function of child age and maternal race/ethnicity, with mothers of younger children and Caucasian mothers displaying higher levels of responsiveness. Implications and future directions are discussed.

THE ASSOCIATION BETWEEN CHILD GENDER AND OBSERVED
MATERNAL RESPONSIVENESS IN MOTHERS OF CHILDREN WITH
ATTENTION-DEFICIT/HYPERACTIVITY DISORDER

By

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Dedication

This work is dedicated to my family and my husband, without whom, none of this would have been possible. To my parents, Lawrence and Donna Seymour, you have believed in my potential ever since I was a child even when I have doubted. Without your guidance, love and patience, I would not have achieved. Words can not express how grateful I am to both of you for all you have given me. To my loving husband Brian, you are my best friend and my true love. You allow me to thrive with your quiet understanding and undying support. Thank you for believing in me.

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Chapter 1: Introduction

Attention-Deficit/Hyperactivity Disorder (ADHD) is the most common mental health problem of childhood, affecting approximately 4-6% of the child population (American Psychiatric Association [APA], 2000). ADHD is marked by a persistent pattern of developmentally-inappropriate levels of inattention and/or hyperactivity-impulsivity present before the age of 7. Three subtypes of the disorder are present including: ADHD-Inattentive type (ADHD-IA), which includes problems with attention, ADHD-Hyperactive type (ADHD-HI), which includes problems with hyperactivity/impulsivity, and ADHD-Combined type (ADHD-CT), which includes problems with both attention and hyperactivity/impulsivity. Behaviors of children with ADHD often have a negative impact on their relationships with peers, teachers, and parents (APA, 1994); in fact, it is often the disruption in parent-child relationships that prompts parents to bring children for treatment (Johnston & Mash, 2001). Moreover, research has shown that one of the significant areas of impairment in children with ADHD lies in their interactions with their parents (for a review, see Johnston & Mash, 2001).

Studies of children with ADHD have found that more males than females meet criteria for ADHD (Costello, Mustillo, Erkanli, Keeler & Angold, 2003; Lahey, Miller, Gordan & Riley, 1999), with the sex ratio in clinically-referred samples ranging from 3:1 to 9:1 (APA, 1994; Goodyear & Hynd, 1992; Lahey et al., 1994), and in epidemiological samples averaging roughly 3:1 (Lewinsohn et al., 1993; McGee et al., 1990; Szatmari, 1992). Thus, in the ADHD prevalence literature, the ratio of boys to girls seems to be lower in community samples in comparison to clinic samples (Hartung & Widiger, 1998;

Rutter et. al., 2003). One explanation for these findings is that boys with ADHD more often are referred to specialty clinics due to comorbid behaviors problems (ODD, CD) (Barkley, 2003). However, in recent years, there has been an increasing interest in possible gender differences in the female manifestation and correlates of the disorder (Gaub & Carlson, 1997; Hinshaw, 2002). ADHD as a disorder is often underrecognized and underdiagnosed in girls (Biederman et al., 1999; Gaub & Carlson, 1997); therefore, females may need to have more severe symptoms or impairments to warrant recognition of the disorder. In fact, females have to deviate further from their same-sex peers than do boys to attain a “diagnostic” level of problems (McGee & Feehan, 1991).

Cross-sectional and longitudinal research on gender differences in children with ADHD has suggested that symptom presentation, domains of impairment and rates of comorbidity may differ between boys and girls with the disorder. Specifically in cross-sectional studies, girls with ADHD have been found to present with more inattention (Carlson et. al., 1999; Milich et al., 2000) and intellectual impairment, but less hyperactivity and comorbidity with externalizing behaviors, such as oppositional defiant disorder (ODD) and conduct disorder (CD) (Gaub & Carlson, 1997). Based on these studies, research has suggested that girls with ADHD are more likely to meet criteria for ADHD-Inattentive subtype, which is often less apparent to parents and teachers. Furthermore, Berry, Shaywitz and Shaywitz (1985) found that in comparison to boys with ADHD, girls with ADHD demonstrated more severe cognitive impairments, especially in the area of language function. Females were also found to be younger at referral and to come from more economically disadvantaged families. In terms of

impairment, Gaub and Carlson (1997) concluded that, among children with the inattentive subtype of ADHD, girls were more often rejected by their peers than boys.

Longitudinal research has also suggested different developmental trajectories for boys and girls with ADHD. In a follow-up study of clinically-referred children with ADHD, girls were 2.4 times more likely than boys to have a psychiatric admission in adulthood and were more likely to have a lifetime diagnosis of a mood disorder, substance use disorder or schizophrenia (Daldgaard, Motentsen, Frydenberg & Thomsen, 2002). The diagnosis of ADHD in girls has also been shown to predict meeting criteria for a range of mental disorders in later childhood (Lahey et al., in press). In this longitudinal study of the validity of ADHD diagnosis at 8-year follow-up, the authors concluded that while the course of ADHD may be similar for boys and girls with the disorder, girls with ADHD at time 1 exhibited more anxiety and depression symptoms during early adolescence than both control girls and boys with ADHD, signifying the elevated risk of developing comorbid internalizing disorders for females with ADHD.

While boys and girls with ADHD may differ in some aspects as presented above, research has also suggested a number of similarities between boys and girls with the disorder. For example, some cross-sectional research has suggested that boys and girls with ADHD may present similarly (Biederman, et al., 1999; Newcorn, et al., 2001, Hartung et al., 2002). Longitudinal research has also suggested that the developmental course of the disorder may be similar for boys and girls with ADHD (Lahey et al., in press). Lahey and colleagues (in press) found that a diagnosis of ADHD at ages 4-6 had predictive validity for both genders 8 years later. Specifically at follow-up, both boys and girls with ADHD at time 1 presented with greater levels of inattention, hyperactivity and

impairments (as rated by teachers, parents and interviewers) than children without ADHD at time 1. With regard to treatment outcome, the literature does not suggest gender differences between boys and girls with ADHD. For instance, in the Multimodal Treatment Study (MTA) study of children with ADHD, which compared behavioral treatment, medication, and the combination, child gender did not moderate treatment outcome (MTA Cooperative Group, 1999b). However, it should be noted that the MTA study only included children with ADHD-CT. Consequently this finding may not reflect a representative population of girls with ADHD, who may be more likely to present with ADHD-PI.

Therefore, results of existing cross-sectional and longitudinal studies of gender differences in ADHD are inconsistent and include some notable limitations. First, there is a paucity of research comparing adequate samples of males and females with the disorder. As Gaub and Carlson (1999) note in their meta-analysis, few studies have included sufficient numbers of females to warrant gender-based conclusions. Moreover, as Hinshaw (2002) points out, even those studies with adequate numbers of girls present issues of external validity. For example, the participants in the MTA study were exclusively ADHD-CT and followed a strict protocol of medication, behavior modification or both for a 14-month period, which is not representative of standard care. Meanwhile, Biederman and colleagues (1999) used a sample which was exclusively Caucasian, upper to middle class, and predominantly adolescent. Given the limitations and potential biases within these samples, interpretation of these findings should be cautioned.

Another concern with studying females with ADHD centers on the diagnostic criteria themselves. The DSM-IV symptoms of ADHD tend to be “boy focused,” as they are achievement- and task- oriented (e.g., “often loses things necessary for tasks”, “often does not follow through on instructions” and “fails to finish schoolwork”) all of which are values that are emphasized in boys’ play groups and perceived of as masculine (Martin, 1995; Holt & Ellis, 1998; Maccoby, 2002). Perhaps most importantly, the DSM-IV criteria which are used to diagnosis ADHD were developed during field trials which were based on boys with ADHD (Lahey et al, 1994). Therefore, these criteria were constructed based on male manifestations of the disorder and may not reflect female manifestations of the ADHD. Research has also suggested that mothers of children with ADHD view the current diagnostic criteria as more descriptive of boys than girls with ADHD (Ohan & Johnston, 2005). Since parent reports of ADHD symptoms provide the foundation for diagnosis, the current criteria may not fully capture ADHD in females; consequently, current studies of childhood ADHD which utilize the DSM-IV criteria may also be limited in their representation and understanding of ADHD in females.

Finally, even if the phenotypic expression of ADHD (i.e., symptoms of inattention, hyperactivity and impulsivity) are the same in boys and girls with ADHD (Biederman et al., 1999), impairment, comorbidity and treatment may differ. Therefore, a more precise understanding of the role of child gender in ADHD is of critical importance as gender differences have serious implications for the differential assessment and treatment of ADHD in boys and girls.

One area in which child gender may play a significant role for children with ADHD is in the domain of parent-child interactions. It has been hypothesized that

problems in parent-child interactions may exacerbate the manifestation of ADHD and/or contribute to the persistence of ADHD symptoms (Barkley, 1998; Biederman et al., 1996) and the development of co-occurring conduct problems (Chronis et al, in press), making the study of these interactions critical.

The extensive literature comparing parent-child interactions of non-disordered boys to boys with ADHD has shown that boys with ADHD are less compliant, more negative and more off-task than boys without the disorder. Additionally, mothers of ADHD boys have been found to be more critical and directive, provide fewer positive responses and initiate fewer social interactions with their sons than mothers of controls (Barkley, Karlsson & Pollard, 1985; Battle & Lacey, 1972; Cunningham & Barkley, 1979; DuPaul, McGoey, Eckert & VanBrakle, 2001; Mash & Johnston, 1982). These conflicted interactions have been observed for both boys and girls with ADHD (Barkley, 1989; Befera & Barkley, 1985); however, the majority of the research has focused almost exclusively on boys with ADHD (Hinshaw, 2002).

Additionally, in almost all studies of parent-child interactions conducted with ADHD samples, parenting practices have been studied as discrete behaviors (e.g., frequencies of commands issued, negative statements). More recently, the construct of maternal responsiveness has received increased attention in the developmental psychopathology literature. Responsiveness is defined as parents' prompt, contingent and appropriate behaviors that have identifiable and direct antecedents in child behavior (Bornstein & Tamis-LeMonda, 1997). As a construct, maternal responsiveness refers to the *quality* of a mother's interaction with her child and the affective quality, timing and response to her child's needs, rather than just the *quantity* of specific parenting behaviors.

To date, only a couple of studies have examined maternal responsiveness in parent child-interactions in children diagnosed with ADHD, and all of these are limited to samples comprised entirely of boys with the disorder (Johnston et al., 2002; Seipp & Johnston, 2005). However, no studies have examined maternal responsiveness in relation to girls with ADHD, a gap in the literature which the current study seeks to address.

Chapter 2: Background

Parenting in the Developmental Literature

The broader developmental literature provides an important context for understanding interactions within families of children with ADHD, and the potential relationship to child gender. Parenting practices continually develop and emerge throughout a child's development by virtue of the multiple parent-child exchanges which are bidirectional and occur on a daily basis. Bell (1968) and Bell and Harper (1977) were among the first to emphasize the key role of bidirectionality in parent-child dyads, in which both the parent and the child make significant contributions to the parenting process of socialization. For example, research on language development in mother-child dyads suggests that both children's vocabulary and mother's vocabulary (in speaking to the child) increase during interactions, signifying a bidirectional influence (Bornstein et al., 1999). While children are influenced by the language used by their mothers, mothers increase their use of language in response to children's verbalizations. Child-rearing practices are both cause and effect, such that parental practices (i.e., praise, corporal punishment and ignoring) contribute to some behaviors elicited by the child, but also occur in response to the child's behavior.

The developmental literature also provides convincing evidence that maternal parenting behaviors and mother-child interactions have a robust effect on child outcome and development. In fact, positive maternal parenting behaviors may serve as a compensatory factor to reduce children's risk of maladaptation, independent of the level of adversity the child faces (Gest, Neemann, Hubbard, Masten & Tellegen, 1993). A

developmental theory of parenting has suggested that parenting behaviors assist in the normal development of self-regulation and behavioral control in a step-by-step fashion. Initially, parents have a shielding or buffering influence on their children, but eventually they merely monitor their children's regulatory efforts (Sroufe, 1989).

Responsiveness

One of the most important aspects of maternal parenting and mother-child relationships is maternal responsiveness (Rothbaum & Weisz, 1994). In fact, Rothbaum and Weisz (1994) concluded in their meta-analysis that responsiveness-acceptance and restrictiveness were the two most important dimensions of maternal parenting examined in the literature. Responsiveness has been defined as a mother's prompt, contingent and appropriate behaviors that have identifiable and direct antecedents in child behavior (Bornstein & Tamis-LeMonda, 1997). Responsiveness refers to the quality, pacing, developmental sensitivity, and consistency of responding by the caregiver (Keenan & Shaw, 2003). Patterns of maternal parenting behaviors that are characteristic of responsiveness include a mother's: approval of the child, synchrony of communication, affection and non-coercive authoritative control. For example, the use of scaffolding, a non-directive style of assistance, exemplifies sensitivity to a child's developmental ability and allows the child to engage in joint problem-solving with the mother (Winsler, 1998). A responsive and involved mother may act as a conduit to her child's development of self-regulation through her availability when distress becomes unmanageable. Studies have suggested that this *quality* of parenting may protect against effects of adversity under high-risk conditions (Egeland, Carlson, & Sroufe, 1993; Wakschlag & Hans, 1999).

Some components of responsiveness involve perceiving the child's cues, interpreting the cues correctly, selecting an appropriate response, and responding in a prompt and appropriate manner (Ainsworth, Blehar, Waters & Wall, 1978). Therefore, it is the type, timing and intensity of the response that is most critical. However, it should be noted that it may be difficult for a mother to be sensitive to her child's needs. Research by Wood and Middleton (1975) examined the relationship between maternal sensitivity, a component of responsiveness, and children's skill level and feedback and found that sensitivity was only shown by half of mothers observed. These results suggest that even when child behavior is developmentally appropriate it may be challenging for a mother to be responsive.

Existing research has found maternal responsiveness to be moderately correlated with children's rates of social and cognitive development (Beckwith & Cohen, 1989; Bornstein, Tamis-LeMonda, & Haynes, 1999; Yoder & Warren, 1999). Additionally, a positive relationship between maternal responsiveness and later child cognitive (Bradley & Caldwell, 1980; Cohen & Beckwith, 1979) and social development (Martin, 1981; Waters, Wippman, & Sroufe, 1979) exists. The impact of maternal responsiveness on children's developmental functioning has been found to be at least mediated by its effects on children's engagement. When mothers interact responsively with their children, their children are more likely to engage in the types of activities thought to be necessary for developmental learning such as attention, persistence, interest, initiation, cooperation and affect (Kim & Mahoney, 2004).

Research examining maternal responsiveness in mothers of infants highlights the association between child temperament and parenting. Of particular interest is the

literature on the relationship between infant difficulty and maternal responsiveness.

Theoretically, a difficult infant (i.e., one who cries excessively and is irritable) has been perceived as aversive to his/her mother because of the discordant sound of the infant crying and the interruption to other maternal responsibilities that a difficult infant poses.

As a result, mothers with difficult infants are expected to develop negative feelings about their infants and respond less quickly and appropriately to their children's needs over time (Crockenberg & Leerkes, 2003). Research supporting this theory has demonstrated that infant difficulty has been related to negative mother-child relationships which include a lack of responsiveness (Campbell, 1979; Crockenberg & McCluskey, 1986; Spangler, 1990). Additionally, mothers with difficult infants have been found to be less involved and engaged in effective stimulation of their infants than mothers of less difficult infants even when the infant was in a positive affective state (van den Boom & Hoeksma, 1994). For example, to the extent that the child has a difficult temperament, the mother's willingness and patience to help guide the child in learning situations will be impacted, as shown in a longitudinal study by Maccoby, Snow & Jacklin (1984). Research also indicates that infant difficulty is negatively related to the consistency of maternal responsiveness (Peters-Martin & Wachs, 1984). Finally, infant difficulty has been shown to be predictive of later behavior problems including ADHD (Shaw, Keenan & Vondra, 1994). Consequently, maternal sensitivity to the child's needs and abilities is paramount to the concept of responsiveness and may be extremely important for mothers of difficult children, such as children with ADHD.

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Child Gender and Parenting

Gender is another child variable which may contribute to maternal parenting behaviors. Much of the developmental literature on differential treatment of boys and girls by their mothers focuses on infants (Hunter & Youniss, 1982; Lempers & Clark-Lempers, 1992; McFadyen-Ketchum, Bates, Dodge, & Pettit, 1996; Youniss & Smollar, 1985). Maccoby, Snow and Jacklin (1984) found that, by the second year of life, mothers responded differently to negative emotionality in males and females. Mothers of female infants who displayed angry expression reacted with negative responses, whereas anger in male infants was received with more empathic responses by mothers. Research has also shown that mothers tend to respond more often to 3- to 6-month-old sons with contingent matching expressions and to daughters with contingent, but non-matching expressions (Malatesta & Haviland, 1982), and that mothers are in coordinated or synchronized “states” with 6- to 9-month-old sons for a larger proportion of time than they are with daughters (Tronick & Cohn, 1989). Similar patterns are evident at 18- to 24- months when mothers more often match their sons’ affect than their daughters’ and daughters more often match their mothers’ affect than do sons (Robinson et al., 1993).

Differential treatment of boys and girls has also been shown in mothers of young children (ages 12 months - 5years). Huston’s (1983) review found that both mothers and fathers exhibited greater levels of both warmth and control with girls than they did with boys. Radke-Yarrow and Kochanska (1990) found that mothers attended to toddler boys’ anger, even yielded to boys’ anger, but ignored toddler girls’ anger. More recently, it has been suggested that mothers are more talkative with their daughters than their sons (Leaper, Anderson, & Saunder, 1998), and that sons receive more negative comments in

response to communication attempts than do daughters (Fagot & Hagan, 1991). Research has further demonstrated that whereas mothers talk more with their young daughters than with their sons, they tend to be less directive with their sons than with their daughters and use more supportive statements with daughters than with sons (Leaper, Anderson, & Saunder, 1998). Additionally, research suggests that mothers interrupt and use more simultaneous speech (i.e., talking at the same time) with their daughters than with their sons. The use of interruption and simultaneous speech may suggest to girls that what they have to say is less important than boys (Grief, 1980). When taken together, these findings may appear contradictory in that sometimes maternal behavior seems to favor sons and other times daughter; however, the variable of child behavior must be considered. For instance, research suggests that girls acquire languages skills prior to boys (for a review see, Gleason & Elys, 2002); therefore, early in development (12-24 months) mothers may initiate contact more with girls, but these maternal behaviors may change over time as boys' development approximates that of girls.

Gender role socialization

Research on gender role socialization also provides important information about the differential treatment of boys and girls by their caregivers. Gender role socialization refers to the process by which an individual learns and accepts what it means to be either a male or a female (Leaper, 2002) and research has suggested that parents are often involved in this process through modeling or shaping child behavior (Block, 1983; Huston, 1983; Maccoby & Jacklin, 1974). For example, one study conducted by Smetana (1989) found that little girls are explicitly told (by their mothers) more often than boys that their aggressive actions have harmful consequences for others. Also, mothers have been found to tolerate or encourage injury-risk behaviors by boys, but have instructed

girls to proceed cautiously or not at all in risk-taking activities (Morrongiello &, Dawber, 2000). Leaper and colleagues (1995) further observed mothers to be better at supporting gender-typical play rather than cross-gender play activity. Therefore, mothers may influence gender role socialization by encouraging or discouraging what they view as gender-appropriate or gender-inappropriate behavior.

The process of gender-role socialization has also been shown to be of importance in studies of parent-child interactions. Specifically, Kerig, Cowan & Cowan (1993) found that both mothers and fathers responded negatively or verbally countermanded girls more than did parents of sons, especially when daughters asserted themselves during parent-child interactions. The authors compared their results to those of Block (1983) and noted, "... the differential socialization of girls and boys and the potential consequences for the children's development of self-efficacy and agency" (p. 936). Lastly, in one of the few studies to bridge the gap between the developmental literature and the child psychopathology literature, Kim et al. (2005) examined the relationship of child gender to parenting in a sample of preschool children with internalizing or externalizing symptoms. Results confirmed their hypothesis that negative behaviors inconsistent with gender stereotypes would be related to overreactive parenting, while symptoms consistent with gender stereotypes would be related to lax parenting. Specifically, externalizing behaviors in girls were met with overreactive parenting while internalizing behaviors in girls were related to lax parenting. The opposite was found for boys, suggesting the importance of the relationship between child gender and gender role socialization and parenting, especially when child behavior is viewed as atypical for the child's gender as is the case for females with ADHD.

Interestingly, it seems that children may be aware of differential treatment by their caregivers. Research by Sorbring and colleagues (2003) found that both 8-year old boys and girls perceived that boys encountered stricter discipline methods in their upbringing than did girls. Boys believed that girls received lower use of authority while girls believed that their parents made greater use of reasoning/explanation and used lower levels of authority in transgression situations than boys believed.

While there is a strong body of literature that supports the differential treatment of boys and girls by their caregivers, some researchers have not found such differences. Namely, a review by Maccoby and Jacklin (1974) found that parents' child-rearing practices directed at each gender were similar, except that infant boys frequently received more physical stimulation and encouragement, were punished more frequently and received more praise than did infant girls. More recently, Lytton and Romney (1991) and Fagot (1995) found few differences in the treatment of boys and girls (ages 0-12) by caregivers in the amount of interaction, encouragement of achievement, warmth and responsiveness, encouragement of dependence and disciplinary strictness. Yet, both of these reviews evidenced some notable limitations. First, in the review done by Maccoby and Jackin (1974), there were no standard criteria used to determine whether a particular gender difference was sufficiently large as to conclude true gender differences (Block, 1976). Additionally, Maccoby and Jacklin, since they did not compare effect sizes (i.e. Cohen's *d*), did not take into account that each sex is not a homogeneous group (i.e. within gender groups children exhibit varying degrees of same- or opposite- sex behavior). This is problematic because standard deviations within the male and female

groups were ignored (i.e., perhaps one group was more internally varied than the other) (Hyde, 1990).

Gender and Child Behavior

Given the reciprocal interaction between mothers and their children previously discussed, it is important to consider the differences between boys and girls in terms of their behaviors and abilities, as these may impact their interactions with their mothers. The developmental literature has shown that infant boys and girls differ in their temperament and emotional expression. During infancy, males are less attentive to verbal and other auditory stimuli, make less eye contact, have more sleep problems, are more irritable, and are harder to soothe than females (Levy & Heller, 1992; Reinisch & Sanders, 1992). Weinberg et al. (1999) reported that 6-month-old sons have greater difficulty than daughters in regulating affective states with their mothers and consequently, sons need more time and assistance in establishing appropriate mother-child interactions.

Differences between the genders also emerge in early childhood and continue in school-age children. As early as age 2, girls are found to display more emotions (distress as well as caring interaction) than boys (Dunn et al., 1987; Golombok & Fivush, 1994). Similarly, Cervantes & Callanan (1998) have demonstrated that from ages 2 through 4, boys and girls differ in their use of emotional talk. In particular they found that boys' amounts of emotion talk increased with child age, whereas girls demonstrated a high frequency of emotional talk which was relatively stable across time. Moreover, individual differences in children's amount of talk about emotions have been shown to be related to mother's differences in talk about emotion. Feeny and colleagues (1996) examined the

feeling state terms used by 3–4 years olds and found that, when prompted, girls spoke more about emotions than boys. In school-age children, in comparison to girls, boys tend to be rated as having more externalizing type problems, such as aggression, overactivity, and unmanageability (Koot & Verhulst, 1991; Stallard, 1993). The differences in behavior between boys and girls, taken together with the literatures suggesting that there may be differences in the ways in which boys and girls are parented, provides strong support for examining the importance of child gender in mother’s interactions with their children with ADHD.

Parenting in children with ADHD

Responsive and sensitive parenting has been hypothesized to provide a foundation for the development of self-regulation skills in children, which is one of the core deficits among children with ADHD (Barkley, 1997a; Nigg, 2001, for reviews). Therefore, parental difficulties in “synchronizing” their actions with the needs of their children may be one mechanism that accounts for the development of disinhibited and poorly-regulated behavior in some children (Greenberg, Speltz, & DeKlyen, 1993; Kochanska, 1993; Olson, Bates & Bayles, 1990). While parenting practices do not account for the etiology of ADHD, parenting practices are of importance for children with ADHD because they may affect the severity, course, and persistence of the disorder (Barkley, 1998; Chamberlain & Patterson, 1995; Johnston & Mash, 2001). Child gender may be of particular importance to parenting in children with ADHD, as a number of important differences in symptom presentation and impairment exist between boys and girls with ADHD.

A bidirectional relationship between mothers and children is not only well-supported in the developmental literature, but also in the literature on children with behavioral disorders and ADHD (Barkley & Cunningham, 1979; Barkley, Karlsson, Pollard & Murphy, 1985; Bell, 1968; Bell & Harper, 1977; Patterson & Fisher, 2002). Children with ADHD display a host of challenging behaviors that also may influence their mothers' behavior. Research has shown that children with ADHD are less compliant and more negative in mother-child interactions in comparison to control children, especially in task or structured situations (Barkley et al., 1985; Battle & Lacey, 1972; Befera & Barkley, 1985; Campbell, 1973, 1975; Cunningham & Barkley, 1979; Mash & Johnston, 1982). These behaviors may promote or elicit negative parenting behaviors.

The literature on mother-child interactions in families of children with ADHD documents maladaptive behavior on the part of both mother and child. However, the majority of existing studies are correlational in design and therefore cannot speak to the direction of effect (i.e., Does mother influence child or vice versa?). Experimental designs, manipulating either mother or child behavior, and prospective longitudinal designs have been utilized to tease apart the unique effect of the child and the mother. In experimental studies conducted by Pelham and colleagues (1997), child behavior was manipulated through the use of child actors whereby mothers of normal children engaged in interactions with child actors who were instructed to behave normally or like children with ADHD. After interactions with the ADHD confederate, mothers reported greater levels of depression, anxiety, and hostility, drank more alcohol and experienced blood pressure and pulse rate increases. Mothers described interactions with deviant child confederates as more unpleasant and felt more unsuccessful and ineffective in the

parenting role. The results of this study suggest that child behaviors directly influence mother-child interactions as well as a mother's sense of efficacy in her parenting.

A second type of study looking at child behavior and the influences on maternal parenting of children with ADHD has involved the use of stimulant medication. Research has suggested that stimulant medication allows children with ADHD to increase their attention span, reduce their impulsivity, attend to instructions, stay on-task and display less activity and demandingness (Greenhill, 2001; MTA Cooperative Group, 1999b, Spencer et al., 2000; Wilens et al., 2003; Wolraich et al. 2001). A vast amount of research has supported the efficacy of psychostimulant medications in reducing negative behaviors by both mothers and their children with ADHD during interactions (Swanson, McBurnett, Christian, & Wigal, 1995; see Pelham, 1993, for a review). When medicated, children with ADHD were more compliant, more on-task and offered more praise to their mothers and less criticism (Barkley & Cunningham, 1979; Barkley, Karlsson, Pollard, & Murphy, 1985; Humphries, Kinsbourne & Swanson, 1978; Wells, Epstein, Hinshaw, Conners, Klaric, Abikoff, et al., 2000). In turn, mothers were found to give more praise and less criticism to their children, and issued fewer commands (Barkley et al., 1985). Given this research, it is clear that child behavior influences mother-child interactions as well as mothers' discrete parenting behaviors. Given that boys and girls with ADHD often present with different behaviors, it seems likely that there may be importance differences in the ways in which mothers parent boys with ADHD versus the way they parent girls with the disorder.

Empirical research also supports the importance of past mother-child interactions on maternal behaviors on future interactions (Johnston & Mash, 2001). A study

conducted by Barkley, Fisher, Edelbrock and Smallish (1990) compared mother-child interactions of hyperactive and control children at 8 year follow-up. Mothers of children diagnosed with ADHD/ODD used more putdowns and more complaining statements than mothers in the other groups (ADHD only, control). Moreover, in longitudinal analyses, mothers' level of commands 8-years prior predicted later use of commands and putdowns. Results of this study indicated that overall there is stability in mother-child behavior patterns over time such that greater conflict in childhood predicts greater conflict in adolescence. Therefore, research supports the consistency of troubled parent-child interactions over time, reaffirming the importance of research in this area.

While the individual influences of child behavior and maternal behavior on parent-child interactions have been established, most agree that bidirectional effects are involved in this dyad. In fact, this is the main tenet of Patterson's coercive theory (1982) which states that parents inadvertently reinforce negative child behaviors, generally in an attempt to control them, causing the behavior to occur more frequently and the parent to have an undesirable response. This cycle continues as the child's behavior escalates and eventually the parent withdraws because of conflict. Over time, the effects of this cycle may cause parents to develop maladaptive and counterproductive parenting strategies to deal with these problems that may serve to maintain or exacerbate existing behavioral difficulties (Patterson, DeBaryshe, & Ramsey, 1989).

ADHD, child gender and parenting

Given the differences presented in the behavior and impairments of boys and girls with ADHD, it follows that maternal parenting and response to boys and girls with ADHD may be different. Although conflicted parent-child interactions have been

observed for both boys and girls with ADHD (Barkley, 1989; Befera & Barkley, 1985), some differences have been found. Mothers of girls with ADHD, ODD or ADHD/ODD have been found to be twice as likely to praise and reward positive behavior than mothers of boys with the same disorders (Cunningham and Boyle, 2002). Also in this study, mothers of boys with ADHD were found to recommend more solutions to vignettes depicting common parenting difficulties in managing ADHD, ODD and CD behaviors (Johnston, Cunningham & Hardy, 1988) than mothers of normal boys and mothers of ADHD girls (Cunningham & Boyle, 2002). Therefore, mothers of ADHD boys were more adept at trying to trouble shoot their children's behaviors as opposed to mothers of ADHD girls, who may not have been equipped to deal with problems less common in the female population.

While the research presented suggests differences in the parenting behaviors of mothers of boys and girls with ADHD, other research has not supported these differences. In a review by Danforth, Bakley and Stokes (1991), the authors found few differences between ADHD boys and girls in parent-child interactions except that mothers appeared to provide more praise to hyperactive sons than to hyperactive daughters (Barkley, 1989; Befera & Barkley, 1985; Campbell, 1973, 1975; Tallmadge & Barkley, 1983). Mothers of hyperactive boys were also found to be more controlling during free play than mothers of hyperactive girls. The contrasting literature seems to suggest that while discrete parenting behaviors may not differ between mothers of boys and girls with ADHD, the quality of the interactions (i.e., maternal responsiveness) may vary.

Responsiveness and children with ADHD

Limited research has examined maternal responsiveness in mothers of children with ADHD which is surprising given the relationship between maternal responsiveness and children's development of self-regulation skills, an area of particular relevance in children with ADHD (Eisenberg, Cumberland, & Spinrad, 1998; Kochanska, 1997; Winsler, 1998). Despite the importance of the construct of maternal responsiveness in mother-child interactions, the majority of the current literature on mother-child interactions in mothers of children with ADHD has focused on the frequency of discrete parenting practices (e.g., commands, negative statements) (Battle & Lacey, 1972; Barkley, Karlsson & Pollard, 1985; Befera & Barkley, 1985; Cunningham & Barkley, 1979; Mash & Johnston, 1982).

To date only a handful of studies have examined the construct of maternal responsiveness in a diagnosed sample of children with ADHD. Lindhal (1998) examined responsiveness in mothers of boys with behavior problems consistent with ADHD, ODD or ADHD/ODD and in mothers of boys without behavior problems. Results suggested that mothers in all three behavior problem groups demonstrated more rejection-coercion and directiveness than mothers of control children. However, one notable limitation of this research was the absence of child diagnosis. Therefore, Johnston and colleagues (2002) examined the relationship between observed maternal responsiveness and ADHD and conduct problem symptoms in families of boys diagnosed with ADHD-CT. Results suggested that maternal responsiveness was negatively and uniquely related to child conduct problems, but not to the severity of ADHD symptoms. The issue most salient to the proposed study is that *no girls with ADHD* or boys with other subtypes of ADHD

(i.e., Inattentive Type or Hyperactive Type) were included; therefore, the sample was limited to a specific population of boys with ADHD-CT. In their most recent study, Seipp and Johnston (2005) compared maternal responsiveness and over-reactivity in mothers of boys with ADHD and ODD, ADHD alone or control children. The researchers found that mothers of sons with ADHD/ODD were less responsive and more over- reactive than mothers of control children. Mothers of sons with ADHD alone did not differ from either of the other groups. Given the developmental literature on the differential treatment of boys and girls by their caretakers, the study of maternal responsiveness in girls with ADHD is of utmost importance.

This study will be the first to examine the issue of maternal responsiveness in parent-child interactions *in boys and girls with ADHD*. To date, only a few studies have examined maternal responsiveness and ADHD, and only boys with the disorder were included. Additionally, the majority of previous research examining parent-child interactions in ADHD samples has focused on discrete parenting behaviors rather than maternal responsiveness; therefore, this study will be the first to look at maternal responsiveness in boys and girls with ADHD.

Chapter 3: Present Study

The current study seeks to address the gap in the research on females with ADHD by examining the association between observed maternal responsiveness and child gender. As the developmental literature has suggested differential treatment of boys and girls by their caregivers, it appears likely that mothers of girls with ADHD may respond to their children differently than mothers of boys with the disorder. Additional support for the current study is presented in the combination of literature suggesting the affect of child behavior on mother-child interaction and research suggesting different symptom presentations and behaviors in boys and girls with ADHD. Given the importance of parenting in the lives of children with ADHD, a more thorough and comprehensive understanding of the relationship between girls with ADHD and their mothers is imperative.

Primary Aim

The *primary aim* of the current study was to examine the association between overall maternal responsiveness and child gender in a sample of 57 6-10 year old children with ADHD and their mothers. Based on the developmental literature suggesting differential treatment of boys and girls by their caregivers and the fact that girls with ADHD exhibit behaviors that are conceptualized as less appropriate, it was hypothesized that mothers of boys with ADHD would demonstrate higher levels of overall responsiveness than mothers of girls with ADHD.

Secondary Aim

A *secondary aim* of the current study was to examine the relationship between the individual dimensions of responsiveness (i.e. authoritative control, sensitivity of control, affective tone, acceptance of the child, involvement and intrusiveness) and child gender. First, it was hypothesized that mothers of boys with ADHD would exhibit lower levels of authoritative control than mothers of girls with ADHD. Although all mothers of children with ADHD use more commands, spend more time trying to control and redirect child activity and use more negative statements than mothers of non-disordered children (Cunningham & Barkley, 1979; Mash & Johnston, 1982; Danforth, Barkley & Stokes, 1991), the developmental literature suggests that mothers of boys punish their children more and use physical punishment more than mothers of girls (Maccoby & Jacklin, 1974). Furthermore, according to child perceptions of parenting behavior, both boys and girls perceived that boys encountered stricter discipline methods in their upbringing than did girls (Sorbring, et. al., 2003).

It was further hypothesized that mothers of boys with ADHD would exhibit higher levels of responsiveness and involvement than mothers of girls with ADHD, as in the developmental literature mothers have been found to maintain a more consistent pattern of positive responding over time with infant sons than with infant daughters (Biringen, Emde, Brown, Lowe, Myers & Nelson, 1999). This point is further supported in the ADHD literature as Cunningham & Doyle (2002) suggest that mothers of boys with ADHD are better able to problem-solve child behavior (ADHD, ODD, CD) than mothers of girls with ADHD which may make mothers of boys more responsive and involved than mothers of girls with ADHD.

Next, it was hypothesized that mothers of boys with ADHD would demonstrate higher levels of sensitivity and acceptance than mothers of girls with ADHD. The developmental research demonstrates that when female infants display angry expressions, their mothers react with negative responses, whereas anger in male infants is received with more empathic responses by mothers which suggests that mothers of boys with ADHD may be more sensitive to the disruptive behaviors of their children than mothers of girls with the disorder. Also, gender role socialization appears to play a role in maternal acceptance, as Kim et al. (2005) found that externalizing behaviors in girls were met with overreactive parenting while internalizing behaviors in girls were related to lax parenting and the opposite was found for boys. As such, mothers of boys with ADHD may be more accepting of their child's behaviors than mothers of girls with ADHD.

With regards to affect, it was hypothesized that mothers of boys with ADHD would exhibit higher levels of positive affect than mothers of girls with ADHD. This hypothesis is rooted in both the developmental and ADHD parenting literatures, which suggest that boys receive more praise than girls in mother-child interactions (Maccoby & Jacklin, 1974; Barkley, 1989; Danforth, Barkley & Stokes, 1991).

Finally, it was hypothesized that mothers of boys with ADHD would exhibit higher levels of intrusiveness than mothers of girls with ADHD. While as a whole, mothers of boys with ADHD have been found to engage in more physical and verbal intrusion than mothers of boys without ADHD (Campbell, 1973; Mash & Johnston, 1982), the developmental literature states that sons receive more negative comments in response to communication attempts than do daughters (Fagot & Hagan, 1991) and well

as more physical punishment (Maccoby & Jacklin, 1974) which seem to indicate higher levels of intrusive behaviors by mothers of boys than mothers of girls.

Chapter 4: Method

Participants

Participants for the current study were drawn from a larger, NIMH-funded study (NIMH R03MH070666-1) at the University of Maryland which examined the relationship between maternal ADHD symptoms and parenting behaviors in mothers of children with ADHD (ages 6-10 years old). Participants were recruited for the larger study via mailings to advocacy groups, elementary schools, and health care providers in the Washington, DC-Baltimore metropolitan areas, as well as to University of Maryland employees.

For inclusion in the larger study, children had to: (1) meet full DSM-IV criteria for ADHD according to parent and teacher reports and diagnostic interviews; (2) have an estimated IQ above 70; (3) be between the ages of 6 and 10; and (4) live with their biological mothers. Children were excluded from the ongoing study if they met criteria for any Pervasive Development Disorder (PDD), in addition to ADHD.

Children were not excluded for the use of stimulant medication; however, they were asked to engage in all assessments and interactions while off stimulant medications for a 1-2 day wash out period, with their prescribing physicians' approval. It should be noted that child behavior of children who were typically medicated with stimulants was rated by parents and teachers while the child was off medication. If the child was currently taking Strattera, a non-stimulant medication indicated for the treatment of ADHD, s/he was allowed to participate in the study while medicated as the manufacturers of the medication do not encourage missing doses while using Strattera (Eli Lilly, 2005).

To be included in the study, mothers had to have a biological child with ADHD

between the ages of 6-10 years old who currently lived with them. Mothers were excluded if they were (1) currently taking stimulant medication for treatment of ADHD or (2) met *current* DSM-IV criteria for any Axis I disorder (with the exception of ADHD, minor depression or anxiety) due to the aims of the larger study.

The larger study included a final sample of 69 mother-child dyads; however, maternal responsiveness was only examined in subset of 57 mother-child dyads. One reason for this reduced sample size related to technical problems in the mother-child interaction. Eleven (13.6%) of the original 69 interactions could not be coded due to a variety of technical problems (e.g., poor sound quality, participants speaking a language other than English during the interaction, etc.). Demographic information was compared between participants who were excluded due to poor tape quality and the 57 participants included in the current study, and few differences were found, with the exception of mother ethnicity/race. Participants who were excluded due to recording difficulties were more likely to be African American than Caucasian [χ^2 (3, N= 70) =22.514, $p < .001$]. After participants with unusable interaction tapes were excluded, a sample of 58 mothers remained, of whom, all but one of whom was either African American or Caucasian. The data for the mother who was neither African American nor Caucasian was compared to that of both groups; however, no consistent pattern emerged. Consequently, for simplicity in the data analysis, this one participant was thrown out so that maternal race could be analyzed in a more efficient manner that would conserve power. Thus, 57 mother-child dyads were used in the analyses of observed responsiveness. Demographic characteristics for the 57 children and their mothers included in the present study are presented in Tables 1 and 2, respectively.

Procedures

As part of the larger study, participants completed a telephone screen to determine eligibility. If eligible, the mother and her child with ADHD were assessed during a single laboratory session, which included a series of DSM-IV semi-structured diagnostic interviews for parent and child and an observational measure of parent-child interactions. In addition, measures of child behavior, maternal mood, ADHD symptoms, and parenting behaviors were collected.

Parent-Child Interaction Procedures

The parent-child interaction was conducted in the University of Maryland ADHD laboratory where a one-way mirror allowed for the discreet observation of mother-child dyads. The interaction took place in a small room set up with a child-size table and two chairs for the mother and child. The interaction was divided into 4 tasks. The first task was a 5-minute clean-up task where the mother was provided a sheet of paper with instructions on how the child should clean up a room with clothes, trash, and toy pieces strewn about. The mother had to instruct the child as to how to pick up the room. The second situation was a 5-minute free-play segment where the mother and child were given toys and games; the mother was instructed to follow the child's lead in play. The third situation was a 10-minute homework task, where the mother was to provide as much or as little help as the child needed on a set of age-appropriate math problems. The last situation was a 5-minute teaching task (Rubin, Cheah, & Fox, 2001) that involved the mother helping the child and/or teaching the child to put together an age-appropriate Lego model without touching the model herself.

Coding Measures

Observational Coding System

Parent-child interactions were coded with the responsiveness coding system developed by Johnston and colleagues (1998, revised 2002) (see Appendix A). The coding system reflects six dimensions of maternal parenting behavior which are rated on a Likert scale of 1-7, whereby higher scores reflect more of the construct. The dimensions of parenting are described below:

1. Authoritative Control: This dimension reflected the extent to which the mother used an authoritative versus autocratic method of controlling her child's behavior. A mother who was authoritative based on the coding system was more democratic in the parent-child interaction and encouraged her child to participate in decision-making and gave directions that encouraged the child to act in a mature and competent manner. Mothers rated low on this dimension were characterized as having an autocratic style of control which involved the use of direct, harsh commands and possibly physical restraint. Based on the low frequency of permissive parenting practices, the coding system was modified so that low scores on this dimension are not reflective of permissive parenting, but rather an autocratic style of control. (Seipp & Johnston, 2005).
2. Sensitivity of Maternal Control: This dimension reflected the degree to which the mother exerted control and directed the child's behavior in a way that was sensitive to the child's needs. Included in this rating was the appropriateness of the mother's attempts to set limits in a situation or lack of an attempt to set limits. The child's capabilities and needs were considered in this rating as well.

3. General Responsiveness: This dimension referred to the mother's *overall ability* to be sensitive to her child's needs, requests, interests and ability and to coordinate her behavior with the child's behavior.
4. Maternal Affective Tone: This dimension described the mother's emotional tone and was coded based on verbal statements, nonverbal gestures, body posture, facial expression and tone of voice. A low score on this dimension reflected a mother who displayed frequent or intense negative affect, as opposed to high scores, which represented a mother who displayed high affect. Neutral scores were given to mothers who displayed equal amounts of positive and negative affect.
5. Maternal Acceptance of the Child: This dimension reflected the extent to which the mother accepted, was affectionate with, encouraged and appeared to enjoy spending time with her child. This dimension took into account the amount of praise used by the mother regardless of the child's outcomes.
6. Maternal Involvement in the Interaction: This dimension assessed the amount of time the mother spends involved with the child during the interaction, including verbal and physical interactions as well as visual attention.

Additional Category for Use with the Coding System

The dimension of intrusion was added to the coding system to better address the aims of both the larger study and the current study. This dimension was not part of the maternal responsive coding system developed by Johnston (2002); however, this dimension was added to the coding system to more clearly capture the distinct ways in which a mother may be unresponsive. The following definition of intrusion was

conceptualized based on the literature of both parenting practices and the concept of responsiveness:

1. Intrusiveness: This dimension captured a mother's physical intrusion or pre-emptive interference with a child's ongoing activity as well as any verbal behaviors, which with or without meaning, inappropriately intruded on the ongoing activity or speech of the child, excluding attempts to appropriately redirect the child. A physical intrusion was characterized by any intrusion into the child's workspace or an obtrusive, unsolicited act of entering into or taking over the child's activity or an object with which the child was occupied. Verbal intrusions were indicated by: 1) the mother's use of a verbal response before the child completed a statement or question; or 2) the child was not given an adequate chance to respond with a statement or to comply with a command, as indicated by the mother repeating the command or issuing a new command before five seconds had elapsed; or 3) the mother issued a command when the child was already engaged in the desired activity and was an appropriate effort towards task completion.

Coder Training

Before coding the observational data, coders underwent a thorough training process involving: weekly coding meetings, reading, and training on the concept of responsiveness, and practice coding. Coders were two doctoral students in clinical psychology. The training protocol was modeled after the training protocol used by the developer of the responsiveness coding system, Dr. Charlotte Johnston, who was a consultant on the larger project. Dr. Johnston trained the coders for the current project during an intensive 3-day training session in which the coding system was discussed and

practice tapes were coded as a group. Following the initial training session with Dr. Johnston, coders continued to practice code as a group and then individually until 80% agreement was obtained (defined as ratings within 1-point of each other on the 7-point scale). Practice tapes were also sent to Dr. Johnston's lab where her research team criterion-coded the tapes to ensure reliability. Any differences between the Johnston lab ratings and the UMD ratings were discussed and clarified with Dr. Johnston via telephone conference.

Coding Procedure

Coders began by watching the entire mother-child interaction in order to gain an understanding of the child's needs and abilities. After watching the tape once in its entirety, coders watched the tape in one-minute intervals during which they rated the mother's behavior for each of the seven dimensions. Each of the dimensions was rated as independent (i.e., high ratings on one dimension did not imply high ratings on another). Coding assignments were randomized by task and 30% of the interactions were double-coded to assess reliability.

Interrater reliability was assessed using intraclass correlations (ICCs) comparing the two coders on each of the coding dimensions. ICCs reflect true inter-subject variance as a proportion of the total variance, where total variance is true variance plus variance attributable to inter-rater error (Shrout & Fleiss, 1979). The range for ICCs is between 0 (all variance attributable to inter-rater error) and 1 (no variance attributable to inter-rater error) and while the minimum acceptable value for ICCs has been suggested to be .75 (Shrout & Fleiss, 1979), others have suggested a range of .50-.80 to reflect moderate agreement (Landis & Koch, 1977). Interclass correlations averaged across each of the

four segments were .81 for responsiveness, .83 for authoritative control, .78 for Sensitivity of Control, .96 for Positive Affect, .96 for Acceptance, .80 for Involvement, and .87 for Intrusiveness.

Additional Measures

As part of the larger study, assessments focused on four domains: a) diagnostic interview of child behavior via parent report; b) parent ratings of child behavior and impairment; c) brief intelligence testing of child; d) videotaped parent-child interactions (described above). Informants for child behavior measures were selected based on findings that both parent and teacher reports account for unique variance in identifying children with impairing ADHD (Hart, Lahey, Loeber, Hanson, 1994; Jensen et al., 1999; Loeber & Lahey, 1989).

Diagnosis of Child ADHD

Schedule for Affective Disorders for School-Aged Children, Fifth Version (K-SADS-E; Orvaschel & Puig-Antich, 1995): The K-SADS-E (epidemiological version) is a valid and reliable semi-structured interview (Ambrosini, Metz, Prabucki, & Lee, 1989) which consists of definitions of items, followed by a set of probes and scales that have to be rated on the basis of the information provided. On the basis of the information, current DSM-IV diagnoses were established as well as diagnoses over the past 12 months. Severity of the disorder was along the spectrum: mild, moderate and severe. For this particular study, the K-SADS-E was administered to the mothers to verify child ADHD diagnoses. The K-SADS-E has been shown to demonstrate inter-rater reliability for diagnosis of ADHD, ODD and CD with the following kappa scores respectively, .77, .51, .68 (Ambrosini, 2000). Additionally, Kaufman and colleagues (1997) showed criterion

validity with K-SADS current diagnoses using the Internalizing and Externalizing subscales of the Child Behavior Checklist and the Conners Parent Rating Scale for ADHD. For the current study, kappa scores were: .86 for ADHD, 1.00 for ODD and 1.0 for CD.

Disruptive Behavior Disorders (DBD) symptom checklist (Pelham et al., 1992):

Mothers and teachers completed the Disruptive Behavior Disorders (DBD) symptom checklist (Pelham, Gnagy, Greenslade, & Milich, 1992). On the DBD, mothers and teachers indicate the degree to which each DSM-IV symptom of ADHD, ODD, and CD is present, with symptoms rated “pretty much” or “very much” considered present (Pelham et al., 1992). Internal consistency for the DBD is .96 for the ADHD scale, .95 for the ODD scale and .76 for the CD scale.

For both the K-SADS and the DBD, symptoms were considered present if they were endorsed by *either* the parent *or* the teacher as occurring to a clinically significant degree (Piacentini, Cohen, & Cohen, 1992) which is based on the DSM-IV ADHD criterion that symptoms must be present in two or more settings.

Children’s Impairment Rating Scale (CIRS; Fabiano, Pelham, Waschbusch, Gnagy, Lahey, Chronis et. al., 2006): Cross-situational impairment necessary for a DSM-IV diagnosis of ADHD was evaluated using parent and teacher forms of the Children’s Impairment Rating Scale (CIRS; Fabiano et al., 2006). On the CIRS, mothers assessed their child’s impairment and need for treatment across multiple domains. Unlike other scales of impairment which provide global indications of the child’s problems, the CIRS provides information on specific impaired areas of functioning. Ratings are made on a 7-point scale, with scores above the midpoint indicating clinically significant impairment.

Test-retest correlations for the parent CIRS have been shown to range from .51 -.69 ($p < .001$) and for the teacher CIRS from .40-.58 ($p < .001$). Cross-informant reliability has been shown to be .56 for the global impairment item. Moreover, the CIRS has demonstrated concurrent validity with other established paper-and-pencil measures of impairment and has accurately discriminated between children with ADHD and those without the disorder (Fabiano et. al., 2006).

Intelligence Testing

Wechsler Intelligence Scale for Children, 3rd Ed. (WISC-III, Weschler, 1991):

The Vocabulary and Block Design subtests of the WISC-III were administered to assess for cognitive impairment to rule out children with an estimated IQ below 70.

Self-report of Maternal Mood

The Beck Depression Inventory II (BDI-II; Beck, Steer, & Brown, 1996). As depression has been show to affect maternal parenting behavior (Cummings & Davies, 1994b), mothers completed a self-report inventory of their mood. The BDI-II is a psychometrically sound, 21-item self-report instrument that assesses depressive symptomatology. Mothers completed the BDI-II as part of the baseline assessment about how they were feeling during the prior 2 weeks. A total score is obtained by summing all the items, with greater scores indicating a greater degree of depression. Psychometric data indicates coefficient alphas of .92 for an outpatient sample and .93 for a college sample, demonstrating high reliability (Beck et al., 1996).

Statistical Procedure for Analyzing Data

Calculation of Responsiveness Scores

Average ratings for each of the dimensions of responsiveness were computed for each task by totaling the ratings at each minute and dividing by the total number of minutes in the task. Therefore, for each task, average scores were produced for: Authoritative Control, Sensitivity of Control, Responsiveness, Affect, Acceptance, Involvement and Intrusiveness. For the current study, these dimensions were found to be highly inter-correlated within and between tasks as shown in Tables 4 and 5. Since it has been reported that the original dimensions of responsiveness (excluding intrusiveness) load onto a single factor of overall responsiveness (Johnston et al., 2002; Seipp & Johnston, 2005), dimension scores were averaged together to produce an overall responsiveness score for each task. These task-specific dimension scores and overall responsiveness scores were used in post-hoc exploratory analyses.

Although initially it was thought that analyses would be conducted examining structured and unstructured tasks separately based on the previous literature suggesting parenting differences across these two types of tasks (Danforth, Barkley, Stokes, 1991), preliminary analyses revealed variable relationships between overall responsiveness and dimension scores across the four tasks (see Table 5). Therefore, the dimension scores for each task were averaged to compute an overall dimension score for the entire interaction. An overall responsiveness score was also computed for the entire interaction by averaging the task specific overall responsiveness scores.

Intrusiveness, a dimension of responsiveness operationalized and utilized for the purposes of this study was not included in the overall responsiveness score as it was not a

dimension of the original coding system, and was not highly correlated with overall responsiveness (Table 5). However, the dimension of intrusiveness was still included in the main analyses examining overall and task-specific dimensions of responsiveness.

Chapter 5: Results

Participant Characteristics

There were no significant differences between boys and girls with ADHD in terms of demographic variables (e.g. age, ethnicity, and IQ), ADHD diagnosis, comorbidity, or medication status. However, mothers and teachers rated boys with ADHD as having significantly more symptoms of ODD than girls [$F(1,56)= 4.33, p<.05$]. Consequently, ODD symptoms were accounted for as a covariate in all hierarchical linear regression equations examining relationships between child gender and maternal responsiveness.

Comparisons of mothers of boys and mothers of girls with ADHD were also non-significant in terms of demographic variables (age, ethnicity/race, marital status, total family income, etc.) and maternal mood symptoms (BDI-II total score).

Regression Analyses

Analyses were designed to examine the relationships between child gender and: (1) overall maternal responsiveness and (2) the seven individual dimensions of responsiveness. Descriptive statistics for all responsiveness variables are presented separately for boys and girls with ADHD in Table 3.

Pearson product-moment correlations were used to assess the relationships between responsiveness variables and child and mother demographics (child and mother age and ethnicity/race, child medication status and WISC scores and mother BDI-II score, education, marital status and total family income) and child behavior (ADHD, ODD and CD symptoms and diagnosis) (see Tables 4 and 5). Variables that were

significantly related to the dependent variable (i.e., overall responsiveness or the overall dimension scores) were included on step 1 of the corresponding hierarchical linear regression analysis predicting that dependent variable from child gender. Categorical variables (i.e., maternal ethnicity/race, marital status, etc.) were dummy-coded. Child gender was entered as step 2 in all regression analyses. Separate regressions were conducted for overall maternal responsiveness and for each dimension of responsiveness.

Post-hoc analyses were conducted for each task separately. For these exploratory analyses, an alpha of $p < .01$ was utilized to control for multiple comparisons.

Overall Responsiveness

Patterns of bivariate relations between child and mother demographics and child behavior and overall maternal responsiveness were evaluated. Overall responsiveness was significantly related to child age ($r = -.352, p < .001$) and mother ethnicity/race ($r = .367, p < .01$). Results are displayed in Table 6 which shows that both child age and maternal ethnicity, but not child gender, add significantly to the model predicting overall maternal responsiveness. Mothers of younger children displayed greater levels of overall responsiveness than mothers of older children, and Caucasian mothers demonstrated higher levels of overall responsiveness than African American mothers. Together, the variables in step 1 (child age, child ODD symptoms and maternal ethnicity/race) accounted for 19.8% of the variance in the model.

Follow-up analyses were conducted exploring the relationship between child gender and overall responsiveness in each separate task (clean-up, free play, homework, Lego). Child gender did not predict overall maternal responsiveness in the clean-up, free

play or Lego tasks. However, it should be noted that while not significant at $p < .01$, child gender evidenced a slight relation to overall responsiveness in the homework task ($\beta = .251, p < .05$), such that mothers of girls with ADHD displayed higher levels of responsiveness than mothers of boys with ADHD. Child gender accounted for 6% of the variance in the model.

Authoritative Control

Demographic variables related to authoritative control included: child age ($r = -.322, p < .05$) and mother ethnicity/race ($r = .343, p < .01$). Results did not support the hypothesized relationship between child gender and overall authoritative control when these significant demographic variables were taken into account (see Table 7). Taken together though, the variables in step 1 (child age, child ODD symptoms, and maternal ethnicity/race) accounted for almost 17% of the variance in authoritative control.

Follow-up analyses examining authoritative control across the different tasks did not support the relationship between child gender and authoritative control in any of the tasks. However, maternal ethnicity/race ($\beta = .330, p < .01$) was significantly related to authoritative control in the homework task. Caucasian mothers exhibited higher levels of authoritative control than African American mothers.

Sensitivity of control

Preliminary correlations found that child age was significantly related to sensitivity of control ($r = -.305, p < .05$). In the regression analysis, contrary to hypotheses, child gender was not related to overall sensitivity of control, but once again child age was negatively related to overall sensitivity (see Table 8).

When analyses were conducted examining the relationship between child gender and sensitivity of control within the four tasks, results were non-significant.

General Responsiveness

In the analyses of the dimension of responsiveness, preliminary correlation analyses demonstrated that the responsiveness dimension was significantly related to child age ($r = -.274, p < .05$), child verbal ability (WISC verbal-scaled score) ($r = .341, p < .05$) and maternal ethnicity/race ($r = .329, p < .05$). As presented in Table 9, results did not support the hypothesis positing differences between mothers of boys with ADHD and mothers of girls with the disorder on the dimension of responsiveness. Rather, the combination of the variables in Step 1 (child age, ODD symptoms, WISC verbal score and maternal ethnicity/race) demonstrated a significant relationship to the responsiveness dimension and accounted for almost 21% of the variance in the model.

Follow-up analyses examining the relationship between child gender and the dimension of responsiveness within each task found no significant relationships. However, in the clean up task, the dimension of responsiveness was significantly related to maternal ethnicity/race ($\beta = .336, p < .01$), whereby Caucasian mothers displayed higher levels of responsiveness in the clean up task than African American mothers. In the free play task, after accounting for child ODD symptoms, child ethnicity/race was significantly related to maternal responsiveness ($\beta = .356, p < .01$) such that Caucasian children received higher levels of responsiveness than non-Caucasian children. Additionally, in the homework task, the dimension of responsiveness was significantly negatively related to child age ($\beta = -.354, p < .01$), such that mothers of younger children displayed higher levels of responsiveness than mothers of older children.

Affect

Preliminary analyses revealed a strong relationship between maternal affect and a number of demographic variables including child non-verbal cognitive ability (WISC Performance, Scaled Score) ($r = .322, p < .05$), and maternal ethnicity/race ($r = .282, p < .05$). Results did not support the hypothesis that mothers of boys with ADHD would exhibit more positive affect than mothers of girls with ADHD, after considering these variables (see Table 10). However, child performance ability was positively related to maternal affect such that as child WISC performance scores increased, so did overall maternal affect.

Follow-up analyses did not reveal any significant relationships between child gender and maternal affect at the conservative level of $p < .01$. However, it is worth noting that during the homework task the relationship between child gender and maternal affect was related at $p < .05$ ($\beta = .305, p = .021$) when child ODD symptoms, age and maternal ethnicity/race were taken into account. Mothers of girls with ADHD demonstrated greater levels of positive affect than mothers of boys with ADHD. This may suggest that mothers of girls with ADHD are more positive during homework situations than mothers of boys with the disorder.

Acceptance

Results of preliminary analyses suggested that child age ($r = -.323, p < .05$) and maternal ethnicity/race ($r = .297, p < .05$) were related to acceptance so they were included on step 1 of the regression equation. Contrary to the hypothesis, there were no differences in levels of acceptance between mothers of boys and mothers of girls with ADHD (see Table 11). Rather, only child age showed a negative relationship to maternal acceptance,

as mothers of younger children displayed higher levels of acceptance than mothers of older children.

In the examination of the relationship between child gender and maternal acceptance in each of the four individual tasks, results did not demonstrate a significant relationship between the variables. However in the free play task, after accounting for child ODD symptoms, maternal acceptance was significantly related to both child ethnicity/race ($\beta = .481, p < .001$) and mother marital status ($\beta = -.453, p < .001$). Caucasian children received higher levels of acceptance than non-Caucasian children, and mothers who were not married displayed higher levels of acceptance than mothers who were married.

Involvement

Pearson product-moment correlations between demographic variables and overall maternal involvement revealed a significant negative relationship between child age and maternal involvement ($r = -.415, p < .01$) and a positive relationship between maternal ethnicity/race ($r = .387, p < .01$) and involvement. As child age increased, maternal involvement decreased. Additionally, Caucasian mothers exhibited higher levels of involvement than African American mothers. Contrary to expectation, the regression analyses revealed no significant relationship between child gender and overall maternal involvement (see Table 12). Taken together, the variables in step 1 (child age, ODD symptoms, and maternal ethnicity/race) accounted for 25% of the variance in the model.

Although follow-up analyses were conducted, child gender did not evidence any significant relationships with maternal involvement in any of the four tasks. During the homework task, maternal ethnicity/race ($\beta = .380, p < .01$) was significantly related to

maternal involvement, whereby Caucasian mothers exhibited higher levels of involvement than African American mothers.

Intrusiveness

Correlational analyses revealed a significant positive relationship between overall maternal intrusiveness and maternal BDI-II score ($r = .292, p < .05$). However, the hypothesis that mothers of boys with ADHD would exhibit greater levels of intrusive behaviors than mother of girls with ADHD was not supported (see Table 13).

Follow-up analyses examining the relationship between child gender and maternal intrusiveness within each task did not produce any significant relations between these variables.

Chapter 6: Discussion

General Discussion

The present study examined the relationship between child gender and maternal responsiveness in mothers of boys and girls with ADHD. Contrary to the hypotheses, child gender was not related to the overall construct of maternal responsiveness. Additionally, analyses of the dimensions of responsiveness (i.e. control, sensitivity, responsiveness, affect, acceptance, involvement or intrusiveness) did not support the relationship between child gender and observed maternal responsiveness. These findings support past research which has suggested no differences between boys and girls with ADHD in terms of child behavior (i.e. noncompliance, negativity, etc) and mother's discrete parenting behavior (i.e. use of commands, use of control, etc) during mother-child interactions (Befera & Barkley, 1985; Breen, 1985; Breen & Barkley, 1988). One finding from the past literature which was not replicated in the current study was the finding that mothers of boys with ADHD provide more praise to their children than do mothers of girls with ADHD (Danforth et al., 1991). Rather, when individual tasks were examined in the current study, particularly the homework task, mothers of girls with ADHD were found to provide higher levels of positive affect to their children than mothers of boys with ADHD.

The failure to find a significant relationship between child gender and maternal responsiveness could be the result of a number of factors. First, these findings may reflect the fact that there really are no differences in the way mothers parent boys versus girls with ADHD. In the examination of discrete parenting behaviors, a review by Danforth,

Barkley and Stokes (1991) indeed suggested few differences in the observed parent-child interactions of boys and girls with ADHD. More recently, Cunningham and Boyle (2002) confirmed these findings in a study of boys and girls with ADHD, ODD and ADHD/ODD, where they found few parenting differences.

Despite the similarities between the results of the current study and past research examining mother-child interactions in children with ADHD, the current study still provides inconsistent results with the developmental literature examining differential treatment of boys and girls. Specifically, in literature examining parenting in both non-disordered infants and young children, results have suggested that when girls are irritable or hard-to-manage, mothers of these girls are less responsive than mothers of boys (Kim et al., 2005; Maccoby, Snow and Jacklin, 1984; Radke-Yarrow & Kochanska, 1990; Robinson et al., 1993). The current study may have proved inconsistent with these results due to limited power to detect differences. Studies examining gender differences in the developmental literature often include equal numbers of boys and girls; however, such a sample is difficult to recruit in the ADHD population given the differing prevalence rates in males and females. It should also be noted that the current study focused on school-aged children as opposed to infants and young children, the populations in which differential treatment has demonstrated. Given that the current study found that maternal responsiveness was negatively related to child age, longitudinal studies examining maternal responsiveness over time are needed assess whether responsiveness varies in accordance with developmental changes in children.

A second possible explanation for the current findings concerns the nature of the females in this study. In comparison to community samples of girls with ADHD, research

has suggested that clinic referred females (such as those in this study) present with greater impairment, more hyperactivity and more comorbidity (Gaub & Carlson, 1997; Gershon, 2001). In essence, they resemble clinic referred boys with ADHD in terms of symptom presentation and impairment. Additionally, some research on parent-child interactions has suggested that the greatest interaction difficulties (i.e. maternal negativity, child non-compliance) and highest levels of parent reported stress occur when children have both ADHD and ODD/CD behavior (for a review, see Johnston & Mash, 2001). Given that in community samples boys with ADHD present with greater amounts of ODD and CD behavior than females, parenting differences in mothers of boys and girls with ADHD may be more likely. However, in the current study, clinically-referred boys and girls with ADHD showed similar levels of inattentive, hyperactive, total ADHD symptom counts, impairment and conduct disorder symptoms. In fact, the only variable these groups differed on was ODD symptoms. Therefore, the similarity between boys and girls in our clinic sample may account for the lack of differences in maternal responsiveness between the groups. Given that the responsiveness coding system was designed to take into account child behavior and that child behavior was similar for boys and girls, it is not surprising that no differences were found in maternal responsiveness between the genders. Also, the responsiveness coding system itself may not fully capture gender differences, as it was developed and has been used with exclusively male samples (Johnston et al., 2002; Seipp & Johnston, 2005).

A final consideration is the generalizability of the parent-child interaction. With any observed task, there is a concern of reactivity of participants. Reactivity refers to the phenomenon by which participants may alter their behavior as a result of being observed

(Asplan & Garnder, 2003). While research has suggested these effects are less likely with young children, the mothers in the current study may have been susceptible to reactivity and altered their parenting behavior as a result of being videotaped. Moreover, a review of observational coding studies has suggested that parent-child interaction tasks conducted in an artificial setting may not reflect true parent-child behaviors that occur in everyday life (Gardner, 1997). Therefore, it may be the case that maternal responsiveness varies according to child gender, but that this difference is not always captured in a laboratory setting.

While the primary aims of this study were not supported, a few of the exploratory analyses should be highlighted. First, mothers of girls demonstrated higher levels of overall responsiveness during the homework task than mothers of boys. Moreover, mothers of girls displayed more positive affect during the homework task than mothers of boys with the disorder. These findings on the homework task may be related to the task itself which consisted of math problems. A plethora of research has examined sex differences in mathematical ability and beliefs about math ability in children and adults. Research on children's actual math ability suggests boys perform better than girls on achievement tests in the stereotypically masculine areas of math and science; however, more recently, girls have begun closing this gap in achievement testing, and more often the two groups obtain similar scores (e.g., U.S. Department of Education, 2000, 2004; for reviews, see American Association of University Women, 1999; Hyde et al., 1990). Yet despite their actual ability, females often underestimate their mathematics competence (Wigfield et al. 1997). Moreover, research on parental beliefs has suggested that parents hold gender differentiated views of their children's academic abilities (Holloway & Hess,

1985; Yee & Eccles, 1988) and these beliefs are more gender differentiated than objective indicators of a child's actual performance (Alexander & Entwisle, 1988; Eccles & Harold, 1991; Jacobs & Eccles, 1992). Therefore, mothers of girls with ADHD may be more responsive and offer more positive affect (i.e. praise, encouragement, etc) than mothers of boys with ADHD during math homework in order to support their daughters during an assumed difficult task. In fact, developmental research has found that when children experience difficulty with a task, parents become more involved in directing and organizing the task for their children (Blechman & McEnroe, 1985; Damast, Tamis-LeMonda, & Bornstein, 1996; Neitzel & Stright, 2004; Pratt, Green, MacVicar, & Bountrogianni, 1992; Rogoff, 1990). However, it should be noted that the current study is limited in that we did not conduct achievement testing, so we are unable to examine children's actual math ability. However, boys and girls with ADHD in this study did not differ on WISC performance or verbal scores. Another limitation is that we did not include a stereotypically female task (e.g., a language task). Additional research is needed to examine the relationships between maternal responsiveness and maternal expectations about a child's performance in a given task as well as maternal responsiveness and "female" oriented tasks.

While the main analyses failed to yield significant results for the examination of child gender and responsiveness, a number of other variables including maternal ethnicity/race and child age were found to be significantly related to maternal responsiveness. Maternal ethnicity/race was significantly related to overall responsiveness and the dimensions of control, responsiveness, and involvement. In all cases, Caucasian mothers demonstrated higher levels of responsiveness than African

American mothers. These results are consistent with the infant development literature suggesting differences in maternal responsiveness as a function of ethnicity/race (Richman, Miller, & LeVine, 1992). Additionally, Forehand and Kotchick (1996) reviewed the importance of cultural beliefs, heritage and the social factors associated with ethnicity on parenting behaviors and found all to have a profound impact.

Research utilizing self-reported measures of parenting behavior (e.g. Alabama Parenting Questionnaire) has also demonstrated differences between Caucasian and African American mothers in terms of involvement, monitoring/supervision, and the use of inconsistent discipline (Shelton, Frick & Wootton, 1996). However, all of these results must be reviewed with a critical eye as most measures of parenting, including the responsiveness coding system used in the current study, were developed on predominantly Caucasian samples. Therefore, this measure may not adequately capture maternal responsiveness in ethnically diverse samples. Additionally as Richman et al. (1992) note, results should not be taken to indicate that one group of mothers is less responsive to their children than another group, but rather that groups of mothers may be responsive in different ways, ways that may not be captured by the current coding system. For instance, the longitudinal work of Deater-Deckard and colleagues (2003) suggests that low levels of maternal responsiveness and use of corporal punishment may not be predictive of negative outcomes in African-American children. Additional research is needed to clarify the relationship between ethnicity/race and maternal responsiveness.

Another variable associated with overall responsiveness and the dimensions of sensitivity, responsiveness, acceptance and involvement was child age. In all cases,

mothers of younger children demonstrated higher levels of responsiveness than mothers of older children. Studies of parent-child interactions in children with ADHD have supported differences in parenting based on child age (Barkley et al., 1984; Barkley et al., 1985; Johnston & Pelham, 1990). However, in contrast to the results presented here, these studies found that mothers of older children issued fewer commands, engaged in more social interactions, and were less directive and less negative in the face of noncompliance than mothers of younger children. Yet, these studies focused on discrete parenting behavior. To date, no studies have examined maternal responsiveness as a function of child age. Consequently, the contrast between these studies and the current findings serve to highlight the differences between the construct of responsiveness and discrete parenting behaviors. As younger children with ADHD may struggle more in structured task situations that tax their core difficulties, conceptually it follows that mothers would be more responsive with these children than with older children with ADHD. However, this theory awaits further investigation.

Limitations

The current study evidences a number of limitations that should be considered when interpreting these results. First, the resulting sample was smaller than expected and may have been underpowered to detect gender differences. Future studies need to assess maternal responsiveness in larger samples of boys and girls with ADHD. Another limitation is the reliance on observed maternal parenting behavior. Self-report and observational measures of parenting often produce inconsistent results (Sessa et al., 2001, Johnston et al., 2002), which are thought to suggest meaningful differences between self and observer perceptions of parenting behaviors. Therefore, mothers of boys and girls

with ADHD may perceive their own parenting behaviors as different while observers do not note the differences.

The cross-sectional nature of this study is a further limitation as parent-child relationships are dynamic and reciprocal over time. Given that gender differences in children with ADHD may emerge at older ages (i.e., adolescence), especially those related to comorbidity, future studies should address this critical developmental period. As positive parenting practices have been suggested to have protective effects on children with ADHD (Chronis et al., in press; Johnston & Mash, 2001), maternal responsiveness may act as a protective factor to the development of depression in adolescent girls with ADHD.

Despite these limitations, the unique contribution of this study is that it is the first study to examine the construct of maternal responsiveness in females with ADHD. The under-representation of female participants in the ADHD literature has resulted in a number of unanswered questions regarding the relationship between child gender and ADHD. As the inclusion of females in studies on ADHD has increased, important information has been garnered about the differences in symptom presentation and comorbidity between boys and girls with ADHD. Yet, not all research must prove differences. Even the knowledge that boys and girls with ADHD may be similar in certain respects provides additional information to clinicians, pediatricians and parents. Therefore, although the current study did not evidence any differences between these groups, it provides new information about clinically-referred females with ADHD.

Clinical Implications

With regard to clinical implications, the current study provides a few points of discussion. First, this study offers supporting evidence that females with ADHD who present to ADHD specialty clinics may look very similar to their male counterparts with ADHD in terms of symptoms and impairment. Therefore, it is important for clinicians and researchers to assess females based on their presenting behaviors, rather than assuming that females with ADHD will present with the inattentive subtype and primary impairments in the academic domain, as is often typified in the literature. In the future, it may be important to tease apart the differences in functioning and impairment, including impairments in parent-child interactions, in clinic versus community samples of girls with ADHD. More research needs to focus on this more severe form of the disorder in clinical samples of females to see if it approximates the presentation in males with ADHD in all domains.

Another implication of this research involves the importance of responsiveness for both males and females with ADHD. For example, longitudinal studies are needed to examine whether responsive parenting will predict the same types of outcomes in both males and females with ADHD, and how child ethnicity/race may affect this relationship. Since responsiveness relates to the overall quality of the parent-child interaction, this construct may be of particular importance to psychosocial treatments for children with ADHD, namely behavioral parent training. As one of only two empirically supported treatments for ADHD, behavioral parent training presents a unique opportunity to intervene at an environmental level. Teaching mothers of boys and girls with ADHD new ways to parent their children with ADHD may enhance this treatment.

Table 1

Child Demographics Separated by Child Gender

Variable	Boys (n= 42)		Girls (n = 15)	
	Mean (SD)	%	Mean (SD)	%
Age (years)	8.00 (1.13)		8.13 (1.3)	
WISC Verbal (scaled score)	11.44 (3.88)		11.64 (3.3)	
WISC Performance (scaled score)	9.61 (3.71)		9.57(3.4)	
DBD symptoms				
Inattention	7.81 (2.07)		7.93 (2.4)	
Hyperactivity	6.90 (2.07)		6.00 (2.1)	
Total ADHD symptoms	14.71 (3.90)		13.93 (3.5)	
ODD symptoms	3.98 (2.52)		2.40 (2.5)	
CD symptoms	1.17 (1.67)		.87 (.7)	
Ethnicity/Race				
Caucasian		33.3		66.7
African-American		45.2		26.7
Mixed		7.1		6.7
Other		2.4		0
Refused		9.5		0
ADHD Diagnosis				
Combined Type		78.6		80.0
Inattentive Type		16.7		13.3
Hyperactive/Impulsive Type		4.8		6.7
Comorbidity				
Oppositional Defiant Disorder		42.9		53.3
Conduct Disorder		26.2		6.7
Medication Status				
On medication		40.5		26.7
Not on medication		59.5		73.3

Note. ADHD = Attention Deficit/Hyperactivity disorder; DBD = Disruptive Behavior Disorders Rating Scale

Table 2

Mother Demographics Separated by Child Gender

Variable	Boys (n = 42)		Girls (n = 15)	
	Mean (SD)	%	Mean (SD)	%
Age	38.74 (5.84)		40.40 (6.5)	
BDI	8.81 (8.26)		8.47 (7.6)	
Average Education Level (years)	15.34 (2.34)		15.57 (2.9)	
Average Total Family Income	\$100,000-\$104,999 (\$75,000-\$79,999) ^a		\$80,000-\$84,999 (\$55,000-\$59,999) ^b	
Marital Status (%)				
Married		73.2		66.6
Divorced/Separated/ Other		26.8		33.4
Ethnicity/Race				
Caucasian		50.0		66.7
African American		50.0		33.3

Note. BDI = Beck Depression Inventory

^a n = 37. ^b n = 14.

Table 3.
Means and Standard of Overall Responsiveness Variables and by Task

Behavior	Overall		Clean-up		Free Play	
	Boys*	Girls**	Boys	Girls	Boys	Girls
Overall Responsiveness	4.93 (.50)	5.23 (.49)	5.31 (.71)	5.46 (.70)	4.91 (.69)	4.90 (.72)
Authoritative Control	4.27 (.78)	4.33 (1.0)	4.76 (1.4)	4.72 (1.2)	3.80 (1.7)	3.49 (1.9)
Sensitivity of Control Responsiveness	4.47 (.77)	4.52 (1.0)	4.96 (1.2)	5.07 (1.3)	3.80 (1.7)	3.40 (1.9)
Affect	4.66 (.53)	4.84 (.49)	4.89 (.79)	5.14 (.82)	4.96 (.71)	5.04 (.52)
Acceptance	4.66 (.53)	4.91 (.65)	4.87 (.87)	5.29 (.84)	4.51 (.57)	4.69 (.52)
Involvement	6.10 (.46)	6.24 (.45)	6.21 (.60)	6.15 (.84)	5.87 (.85)	6.27 (.68)
Intrusiveness	5.81 (.42)	5.97 (.31)	6.00 (.75)	6.01 (.37)	5.77 (.63)	5.80 (.54)

Behavior	Homework		Lego	
	Boys	Girls	Boys	Girls
Overall Responsiveness	4.96 (.60)	5.37 (.74)	5.12 (.58)	5.32 (.56)
Authoritative Control	4.12 (1.2)	4.61 (1.6)	4.40 (1.2)	4.8 (1.2)
Sensitivity of Control Responsiveness	4.45 (1.2)	4.78 (1.6)	4.68 (1.3)	5.12 (1.1)
Affect	4.41 (.63)	4.92 (.63)	4.48 (.66)	4.40 (.47)
Acceptance	4.57 (.68)	5.08 (.85)	4.76 (.68)	4.78 (.78)
Involvement	6.05 (.95)	6.15 (.88)	6.30 (.59)	6.46 (.55)
Intrusiveness	5.73 (.80)	6.14 (.42)	5.82 (.67)	5.97 (.50)

Note. The values in overall column represent the means and standard deviations of variables across all tasks

* For boys n = 42. ** For girls n = 15.

Table 4. Correlations between Responsiveness Variables and Maternal Demographics

	1	2	3	4	5	6	7	8
Observed Parenting Composite								
1. CU Responsiveness	---							
2. FP Responsiveness	.448**	---						
3. HW Responsiveness	.285*	.061	---					
4. Lego Responsiveness	.502**	.233	.169	---				
5. Overall Responsiveness	.832**	.664**	.567**	.674**	---			
Observed Overall Parenting Dimensions								
6. Authoritative Control	.674**	.657**	.459**	.546**	.853**	---		
7. Sensitivity of Control	.631**	.609**	.380**	.531**	.786**	.819**	---	
8. Responsiveness	.761**	.467**	.481**	.633**	.845**	.542**	.535**	---
9. Affect	.743**	.521**	.387**	.478**	.785**	.523**	.348**	.749**
10. Acceptance	.751**	.407**	.517**	.579**	.825**	.552**	.449**	.742**
11. Involvement	.469**	.465**	.651**	.392**	.728**	.555**	.456**	.566**
12. Intrusiveness	.229	.238	.096	.237	.202	.033	-.049	.403**
Mother Demographics								
13. Mother Age	.028	.076	.137	.094	.115	.114	.026	.207
14. BDI Total Score	-.008	-.110	.094	-.146	-.086	-.230	-.237	.108
15. Ethnicity/Race	.276*	.221	.443**	.169	.367**	.343**	.231	.329*
16. Education	-.068	-.084	-.118	.290*	.000	-.006	-.115	.088
17. Total Family Income	.001	.132	.176	.056	.126	.161	.070	.066
	9	10	11	12	13	14	15	16
Observed Parenting Composite								
1. CU Responsiveness								
2. FP Responsiveness								
3. HW Responsiveness								
4. Lego Responsiveness								
5. Overall Responsiveness								
Observed Overall Parenting Dimensions								
6. Authoritative Control								
7. Sensitivity of Control								
8. Responsiveness								
9. Affect	---							
10. Acceptance	.802**	---						
11. Involvement	.566**	.569**	---					
12. Intrusiveness	.391**	.271*	-.093	--				
Mother Demographics								
13. Mother Age	.057	.029	.039	.048	--			
14. BDI Total Score	.102	.000	-.093	.292*	-.080	--		
15. Ethnicity/Race	.282*	.297*	.387**	-.015	-.038	.198	--	
16. Education	.044	.046	-.075	.136	.376**	-.226	-.045	--
17. Total Family Income	.045	.213	.064	.043	.323*	-.044	.266	.498**

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

Table 5
Correlation between Responsiveness Variables and Child Demographic/Behavior Variables (con't on next page)

	1	2	3	4	5	6	7	8	9	10	11
Observed Parenting Composite											
1. CU Responsiveness	---										
2. FP Responsiveness	.448*	---									
3. HW Responsiveness	.285*	.061	---								
4. Lego Responsiveness	.502*	.233	.169	---							
5. Overall Responsiveness	.832*	.664*	.567*	.674*	---						
Observed Overall Parenting Dimensions											
6. Authoritative Control	.674*	.657*	.459*	.546*	.853*	---					
7. Sensitivity of Control	.631*	.609*	.380*	.531*	.786*	.819*	---				
8. Responsiveness	.761*	.467*	.481*	.633*	.845*	.542*	.535*	---			
9. Affect	.743*	.521*	.387*	.478*	.785*	.523*	.348*	.749*	---		
10. Acceptance	.751*	.407*	.517*	.579*	.825*	.552*	.449*	.742*	.802*	---	
11. Involvement	.469*	.465*	.651*	.392*	.728*	.555*	.456*	.566*	.566*	.569*	---
12. Intrusiveness	.229	.238	.096	.237	.202	.033	-.049	.403*	.391*	.271*	-.093
Child Demographics and Behavior											
13. Child Age	-.139	-.095	.430*	-.241	.352*	-.322*	-.305*	-.274*	-.184	-.323*	.415**
14. WISC Verbal	.172	.092	.224	.099	.190	.085	-.016	.341*	.241	.256	.089
15. WISC Performance	.133	.081	.080	.126	.135	-.002	-.037	.200	.322*	.202	.080
16. Medication Status	.074	-.144	.011	-.019	-.036	.069	-.002	.008	-.128	-.161	-.046
17. DBD inattention symptoms	.056	.081	.230	-.071	.91	.139	-.083	.130	.131	-.011	.150
18. DBD hyperactive symptoms	.172	-.201	.145	-.081	.014	-.013	-.074	.121	.068	.062	.018
19. DBD Total ADHD symptoms	.143	-.086	.224	-.093	.061	.070	-.095	.153	.118	.034	.097
20. DBD ODD symptoms	.135	-.217	-.082	.134	-.019	-.082	-.080	.096	-.015	.096	-.100
21. DBD CD symptoms	.184	-.014	-.039	-.058	.052	-.001	.097	.034	.000	.075	.078

Table 5 con't.

	12	13	14	15	16	17	18	19	20	21
12. Intrusiveness	--									
Child Demographics and Behavior										
13. Child Age	.104	--								
14. WISC Verbal	.217	-.219	--							
15. WISC Performance	.195	-.053	.243	--						
16. Medication Status	-.100	.168	.160	-.126	--					
17. DBD inattention symptoms	.037	.191	-.123	-.117	.091	--				
18. DBD hyperactive symptoms	-.012	-.128	.002	-.027	.208	.347**	--			
19. DBD Total ADHD symptoms	.013	.025	-.068	-.084	.187	.791**	.848**	--		
20. DBD ODD symptoms	.065	-.037	-.003	-.012	.088	.174	.618**	.501**	--	
21. DBD CD symptoms	.053	-.086	-.253	-.128	.170	.016	.364**	.246	.565**	--

Table 6.
 Hierarchical Regression Analyses for Demographic Characteristics and Child Gender
 Predicting Overall Responsiveness for all tasks

Variable	R total	R²total	R²change	F change	df	β
Step 1	.444	.198	.198	4.348**	3	
Child Age						-.275*
Child ODD symptoms						.035
Mother ethnicity/race						.265*
Step 2	.463	.215	.017	1.130	4	
Child gender						.137

Note. ODD = Oppositional Defiant Disorder.

* $p < .05$.

Table 7

Hierarchical Regression Analyses for Demographic Characteristics and Child Gender
Predicting Overall Authoritative Control for all tasks

Variable	R total	R ² total	R ² change	F change	df	β
Step 1	.416	.173	.173	3.687*	3	
Child Age						-.241
Child ODD symptoms						-.068
Mother ethnicity/race						.263
Step 2	.416	.173	.000	.010	4	
Child gender						-.014

Note. ODD = Oppositional Defiant Disorder.

* $p < .05$.

Table 8
 Hierarchical Regression Analyses for Demographic Characteristics and Child Gender
 Predicting Overall Sensitivity of Control for all tasks

Variable	R total	R ² total	R ² change	F change	df	β
Step 1	.319	.102	.102	3.052	2	
Child Age						-.309*
Child ODD symptoms						-.086
Step 2	.319	.102	.000	.020	3	
Child gender						.019

Note. ODD = Oppositional Defiant Disorder.

* $p < .05$.

Table 9
 Hierarchical Regression Analyses for Demographic Characteristics and Child Gender
 Predicting General Responsiveness score for all tasks

Variable	R total	R ² total	R ² change	F change	df	β
Step 1	.452	.205	.205	3.279*	4	
Child Age						-.185
Child ODD symptoms						.169
Child WISC Verbal ^a						.216
Mother ethnicity/race						.178
Step 2	.497	.247	.043	2.834	5	
Child gender						.217

Note. ODD = Oppositional Defiant Disorder; WISC = Wechsler Intelligence Scaled for Children

^a = Scaled scores from the verbal subscales of the WISC were used.

* $p < .05$.

Table 10
 Hierarchical Regression Analyses for Demographic Characteristics and Child Gender
 Predicting Overall Affect for all tasks

Variable	R total	R ² total	R ² change	F change	df	β
Step 1	.364	.132	.132	2.645	3	
Child ODD symptoms						.044
Child WISC Performance ^a						.277*
Mother ethnicity/race						.150
Step 2	.403	.163	.030	1.840	4	
Child gender						.182

Note. ODD = Oppositional Defiant Disorder; WISC = Wechsler Intelligence Scaled for Children

^a = Scaled scores from the performance subscales of the WISC were used.

* $p < .05$.

Table 11
 Hierarchical Regression Analyses for Demographic Characteristics and Child Gender
 Predicting Overall Acceptance for all tasks

Variable	R total	R ² total	R ² change	F change	df	β
Step 1	.399	.159	.159	3.339*	3	
Child Age						-.267*
Child ODD symptoms						.168
Mother ethnicity/race						.197
Step 2	.454	.206	.047	3.084	4	
Child gender						.228

Note. ODD = Oppositional Defiant Disorder

* $p < .05$.

Table 12
 Hierarchical Regression Analyses for Demographic Characteristics and Child Gender
 Predicting Overall Involvement for all tasks

Variable	R total	R ² total	R ² change	F change	df	β
Step 1	.503	.253	.253	5.988 ⁺	3	
Child Age						-.341*
Child ODD symptoms						-.060
Mother ethnicity/race						.261*
Step 2	.511	.261	.008	.565	4	
Child gender						.094

Note. ODD = Oppositional Defiant Disorder

* $p < .05$. ⁺ $p < .001$.

Table 13

Hierarchical Regression Analyses for Demographic Characteristics and Child Gender
Predicting Overall Intrusiveness for all tasks

Variable	R total	R²total	R²change	F change	df	β
Step 1	.303	.092	.092	1.792	3	
Child Age						.076
Child ODD symptoms						.050
Mother BDI Score						.277*
Step 2	.357	.127	.035	2.087	4	
Child gender						.195

Note. BDI= Beck Depression Inventory

* $p < .05$.

Appendices

Appendix A: Responsiveness Coding Manual

All other measures are not available in electronic format; therefore, are not included in the Appendices.

Appendix A: Responsiveness Coding Manual

Manual for Global Ratings of Mother Behavior

Parenting Lab

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The rating dimensions and their descriptions presented in this manual reflect both the new developments from the Parenting Lab, as well as extensions and modifications of existing coding procedures such as those of Campbell, 1991; Carlson et al., 1995; Goldsmith & Rogoff, 1995; and Harnish et al., 1995. Observers are expected to complete the assigned readings as part of their training.

The ratings described in this manual reflect the observer's general impressions of the mother's behavior in the interaction, based on observation of the videotape. Observer impressions should be based on both the verbal content of the interaction (i.e., what the mother says), nonverbal actions and emotional cues such as tone of voice and posture, and on the pattern of coordination between mother and child behavior (e.g., does the mother usually wait for the child to finish speaking or does she often interrupt the child).

For each minute of the mother-child interaction during each of four sections (i.e., free play, parent busy, commands), observers use 7 point scales to rate six general areas of the interaction. Before actually coding the sections, the observers watch each section to get a general idea of how the interactions proceed (e.g. how much control the child needs). For each minute, ratings indicate the level of the characteristic that best describes the mother's behavior during the minute or the level that was most predominant during the minute.

For each dimension, ratings are made on a 1 to 7 scale. Observers will start with a neutral rating of 4 or n/a for each interaction. If anything in the interaction strikes them as being more extreme than this, they will rate the interaction accordingly using the 1 to 7 scale. The entire range of each rating scale should be used as appropriate. A rating of 7 is used on when **both** the quantity **and** the quality of the construct are high. Each dimension is rated independently, such that a high score on one dimension does not imply a high score on other dimensions, even though it is likely that ratings across the dimensions will be correlated.

Observers complete the identification information at the top of the coding sheet before coding begins.

Authoritative Control

This dimension reflects the extent to which the mother uses an authoritative method of controlling the child's behavior. Mothers rated high on this dimension will use an authoritative style of control. In contrast, mothers rated low on this dimension will use an autocratic style of control.

A mother who is autocratic is more like a dictator in the relationship. She makes her position of control in the relationship clear and uses power to enforce this position. An autocratic mother will try to run the interaction or activity in a way that suits her needs and desires as opposed to a way that suits the needs and desires of the child. She uses very direct commands or teaches the child in a lecturing manner. For example, she may act as if she is an "expert" and give a long didactic lecture explaining a concept. Her commands will not be accompanied by appropriate rationales or reasons. The mother's commands may be harsh, intrusive, or coercive. For example, she may threaten the child. The mother may restrict or prohibit the child's actions, and seems to demand submission, limiting the child's freedom of movement and action. The mother structures all or almost all of the child's activities. She may use physical restraint to change the child's behavior.

In contrast, a mother who is authoritative is more democratic in the relationship. Although she does not abdicate parental responsibility, she encourages the child to participate in decision-making and offers appropriate reasons or rationales for her commands. She uses indirect, low-key, or suggestive commands or instructions. For example, she may say "let's do this" or "maybe you can...", or will use leading questions in an attempt to get the child to accept the direction. For example, she may tell the child to put away the toys, explaining that it is time to go, and tell the child what will happen next. Authoritative mothers give directions that encourage the child to act in a mature, competent manner; an example would be urging the child to show what a good job he can do.

*****Note: N/A is used when there is no need for control in the situation.***

Levels 1, 2, 3 (Autocratic)

"Stop that right now!"

"Put that away!"

"Don't do that!"

Level 4 (Mix of autocratic and authoritative)

Levels 5, 6, 7 – (Authoritative)

"Weren't we going to do this?"

"See that box of toys? Let's look at them."

"Pick the dots up, please"

"Show me what a good job you can do"

Sensitivity of Maternal Control

This dimension reflects the degree to which the mother exerts control or directs the child's behavior in a manner that is sensitive to the child's needs. Coding the sensitivity of control requires assessing whether the child needs direction. Ratings of sensitivity of control must consider the appropriateness of the mother's attempts to set limits in the situation (or lack of such an attempt); that is, whether the situation calls for control or not. Similarly, ratings of control sensitivity must consider the child's capabilities when deciding what level of control is appropriate.

A mother who is low in sensitivity of control makes demands that are unreasonable for the child's abilities and/or interest level and shows a lack of sensitivity to the child's level of understanding or capability. The mother either does much more controlling and directing than is warranted for the child's developmental level or, in the other extreme, fails to give the structure and organization needed by the child in the situation. An example of excessive control is continual attempts to direct the minute details of the child's activity. The mother in this situation is conspicuous for the extreme frequency of interruptions of the child's activity and seems constantly "at" the child. Alternatively, in the other form of low sensitivity of control, the mother should do a great deal more controlling because the child appears to need this structure and organization. She may fail to set limits or give instructions when needed and may defer to the child at just the time when he needs her to take charge. The mother's responses to the child's requests for assistance may be ill-timed, ambiguous, or misleading, or involve explanations that are either too complex or too simplistic for the child. For example, the mother may continue to repeat a complicated instruction, even if the child's behavior indicates he is unable to use this instruction to succeed at the task. The mother does not use instructions or explanations to extend her child's ability to perform independently. The mother may give vague or insufficient reasons (e.g. "that's just the way it is") for her instructions.

Sensitive maternal control involves the use of instructions in a subtle way that matches demands to the child's behavior and level of understanding and encourages the child's participation in decision-making. She acts as a resource for the child. For example, mothers who are sensitive will coordinate their prompts for the child to attend to work to times when the child's attention has wandered. Her use of direction is guided by the child's performance. Mothers who use sensitive control are adaptable to the changing demands of the situation and the child. Mothers high on sensitive control use control or explanations only when necessary to provide needed structure for the child, but stay out of the child's way when not needed. She exerts firm control at points of parent-child divergence, but doesn't restrict the child with unnecessarily punitive or intrusive rules and prohibitions. The mother uses commands which teach the child about methods, rules, concepts, etc. related to the activity. She may use guiding questions that help the child to infer general principles for understanding the task. The mother offers constructive assistance and supervision. She uses clear messages to direct the child toward desired behavior, she prepares and sets up

the environment to assist the child, and she paces her provision of information and direction.

*****Note: N/A is used when there is no need for control in the situation.***

*****Note: in general, a responsive and sensitive mother attempts to follow the given experimental protocol as closely as possible but does make concessions when called for by the child's behavior or characteristics.***

Levels 1,2,3 - Low Sensitivity

- Persisting with own agenda
- Giving child inappropriate control in command situation
- "Because you have to do it that way" (in response to the child's question of why he has to play Topple)
- "I didn't ask you if you wanted to do it, just do it!"

Levels 5,6,7 - High Sensitivity

- "What do you think comes next?"
- Ignoring innocuous goofy behaviour.
- Allowing child to take toys out of her hand during play.
- Pausing before giving a command to give child a chance to reorient.

General responsiveness

This dimension refers to the mother's overall ability to be sensitive to her child's needs or state, and to coordinate her behavior to the child's.

A mother low in responsiveness is intrusive and operates more on her own agenda as opposed to the agenda of the child. The mother's behavior is not congruent with the child's behavior. She seems unaware of her child's cues, needs, requests, or interests and generally does not coordinate her behavior with that of her child. The mother may attempt to change her child's ongoing activity, even when the child appears happy with what he is doing and there is no reason to change. The mother may intrude on the child, perhaps by forcing physical proximity or by verbally demanding that the child respond to her. Indifference to or ignoring of the child's requests or behavior may also reflect low responsiveness. Mothers who are not responsive may act in a way that inappropriately distracts the child or may fail to set limits when the child needs them. The mother interacts with the child as a playmate or partner rather than as a facility parent, and encourages activities for her own enjoyment rather than to meet her child's needs. The mother does not comply with or ignores the child's suggestions or directions. She shows a lack of sensitivity to the child's emotional cues, failing to acknowledge or adjust her behavior in response to the child's emotional state or interests. The mother's initiations are intrusive or out of synchrony with what the child is doing; that is, her pacing may be too fast or too slow, and she does not follow the child's lead.

A mother who is responsive to the child appears to be in synchrony with the child. She understands what her child is like, what his ongoing needs are, how to appropriately adapt her behavior to that of the child, and how to best facilitate the child's activities. In general, responsive mothers are child-centered rather than mother-centered, able to set aside their own agenda in order to focus on the child. *Note that while the play section should be almost entirely child-driven, the other sections must be more mother-driven; but even here, a responsive mother meets the experimental protocol in the way that is most sensitive to the child.*

A responsive mother is aware of the constraints and requirements of the situation, and of how the child's needs are affected by the situation. For example, she assesses how her child will react to the toys or tasks and adjusts her behavior to facilitate the child's enjoyment or success. A responsive mother attends and listens to the child's signals, acknowledges the child's verbalizations and needs (when appropriate), cooperates with appropriate child requests, and, where possible, follows or participates in child-initiated activities. For example, if the child becomes antsy and distractible, the mother will change her own tactics to make the task or activity more engaging for the child. The mother is very sensitive in picking up on the child's cues, even if these are subtle. Her responses to the child are appropriately timed, neither too fast and abrupt nor too delayed or weak. A responsive mother may change the protocol where appropriate to facilitate the child's performance of the tasks.

Levels 1,2,3 - Low Responsiveness

- Asking the child's opinion about something at a time when he is trying to concentrate.
- Distracting the child.
- Not reading child's signals for more direction e.g. one toy left to pick up; mother doesn't tell child where it is.
- Never acknowledging the child's frustration.
- Mother persists in seeing whether *she* can stack Topple pieces rather than giving the child a turn.

Levels 5,6,7 - High Responsiveness

- Placing the child's needs ahead of a strict interpretation of the instructions she has been given.
- Playing fair - altering rules of game to equalize child's chances of success.
- Letting the child go first the a game.
- When the game board tilts during Topple, Mother shows empathy for child's frustration.

Maternal Affective Tone

This dimension describes the mother's emotional tone in the interaction and is coded on the basis of verbal statements, nonverbal gestures, body posture, facial expressions, and tone of voice.

A mother showing negative affect may display clear and pronounced anger or displeasure. Alternately, the mother may appear irritated or display sadness.

A mother displaying neutral affect shows approximately equal amounts of positive and negative affect or neutral affect throughout the interval. Neutral affect involves a neutral tone of voice and an absence of either effusive or hostile nonverbal gestures. Neutral affect is calm, mild, quiet, cordial, and polite.

A mother showing positive affect may exhibit expressions of happiness, warmth, or pleasure. Her expressions of positive affect are unmistakably pleasant and may be expressed by loudness, length of nonverbal gesture, or intensity of voice intonation or gesture.

Levels 1,2,3 – Negative affective tone

- Sounding irritated when addressing child.
- Facial expressions and/or body posture indicate anger or sadness.
- Hostile nonverbal gestures.
- Rigid or unfriendly body posture when interacting with child.

Level 4 – Neutral affective tone

- Calm and polite when speaking to child.
- Nonverbal communication is neither warm nor irritated.

Levels 5,6,7 – Positive affective tone

- Pleasant voice when speaking to child.
- Gestures convey happiness or warmth.
- Body posture seems relaxed and happy.

Maternal Acceptance of the Child

This dimension reflects the extent to which the mother accepts, is affectionate, encourages, and appears to enjoy spending time with the child.

A rejecting mother may be cold, hostile, extremely reserved, or indifferent to the child. She may treat the child with disrespect. She may disapprove of the child and his behavior, make negative comments about the child or the interaction with the child, or display demeaning affect. Enjoyment in the child is absent. The mother may make derogatory or sarcastic remarks about the child, and she may laugh at the child's mistakes or efforts, rather than being supportive. A mother is very rejecting if the child tries to elicit appropriate praise from her and she ignores this attempt.

An accepting mother shows a warm, loving attitude toward and has a strong affiliation to the child. The mother displays genuine positive feelings for the child, expressed either physically or verbally. For example, she touches the child affectionately, smiles, jokes, compliments, playfully teases, supports and displays delight in the child. An accepting mother openly expresses affection and love for the child through touch, vocal tone, and verbal endearments. Accepting mothers may be effusive with approval and admiration for the child; the mother approves and praises even ordinary behavior.

Levels 1,2,3 - Rejecting

- "He won't be able to do this"
- "Well it took you long enough."
- "I said green...the green ones" (said sarcastically as child mistakenly picks up yellow dots)

Levels 5,6,7 - Accepting

- "Hey, we picked the same ones!"
- "You're really good at that!"
- Tosses the child's hair

Maternal Involvement in the Interaction

This dimension assesses how much time the mother spends involved with the child. Involvement is indicated by the mother's verbal interactions, her physical presence, and/or her visual attention.

A mother who is low on involvement may seem withdrawn or may seem interested in her own activities rather than in interacting with the child. The mother may ignore the child's attempts to interact with her and appear disinterested in the child's activities. She may appear unable to do almost anything with the child or seems at a loss for ideas, stumbles around, and seems unsure of what to do.

A mother who is high on involvement seems interested in the interaction, and spends most of her time interacting with the child. In the play situation, she may initiate conversations or games. She responds to the child's initiations, discusses ideas with the child, and appears interested in the child. She may have a high level of physical contact with the child. For older children, a mother may express involvement through visual and verbal, rather than physical contact. An example would be a mother who sits quietly and watches her child doing homework.

Levels 1,2,3 - Low Involvement

- Mother preoccupied with other thoughts, occurrences, etc.
- Reads magazines while child plays.
- Seems bored playing Topple with child.

Levels 5,6,7 - High Involvement

- Close proximity of mother to child, playing games with child, helping to clean up.
- Mother and child have a conversation about the interaction.
- Mother seems interested in playing Topple with the child.

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