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Childhood AD/HD assessments rely almost exclusively on maternal report of children's behavior, thereby leaving open the possibility that fathers might report AD/HD behaviors differently. Despite this possibility, true comparisons of mothers' and fathers' reports are difficult to ascertain given that commonly used assessment procedures were developed primarily from mothers' reports and the parent, child, and family variables that may contribute to differences in reporting are often not taken into account. In response to these concerns, the current study explored mothers' and fathers' ratings of children displaying AD/HD behaviors. In the first phase of the study, two videos, one of a boy and one of a girl displaying comparable AD/HD and normative behavior, were developed and standardized. In the second phase, 50 mother-father dyads of children with behavioral problems rated the videos. Primary analyses did not support the first hypothesis that mothers would rate AD/HD behaviors at higher levels than fathers. Although no significant differences emerged, trends revealed that fathers rated the boy and girl more severely than mothers. Mothers and fathers also rated the girl's AD/HD symptoms more severely than the boy's symptoms. Additionally, parent and family variables, including parents' knowledge of AD/HD, marital dissatisfaction, perceptions of their own child's AD/HD behavior, and the recreational contexts in which parents interact with their children were associated with parents' perceptions of an unfamiliar child's AD/HD behavior. Implications for future research and clinical practice are discussed.

INFORMANT GENDER DIFFERENCES IN PARENTAL REPORTS OF  
ATTENTION-DEFICIT/HYPERACTIVITY DISORDER  
BEHAVIOR IN BOYS AND GIRLS

by

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## CHAPTER I

### INTRODUCTION

Attention-Deficit/Hyperactivity Disorder (AD/HD) is a chronic and pervasive disorder that is characterized by developmentally deviant levels of inattention, impulsivity, and hyperactivity (American Psychiatric Association, 2000). Approximately 3% to 7% of school- aged children within the United States are diagnosed with AD/HD, with males predominating at a ratio of approximately 4:1 to 9:1 depending on informant and sample source (American Psychiatric Association, 2000). Although research on AD/HD has flourished within recent decades, such progress must be tempered by a consideration of the fact that the field, both within research and clinical practice, relies almost exclusively on maternal report. As such, virtually all of what is known about AD/HD is derived from mothers' reports of children's behaviors. Such reliance on maternal report is neither unusual nor surprising given that mothers presumably spend the most amount of time observing child behavior in the greatest number of contexts (Phares, 1997; Richters, 1992). To date, little research has addressed the possibility that fathers might report child AD/HD behaviors differently and thus, provide a unique and valuable perspective. If this were to be the case, this would have bearing on both the assessment and treatment of this disorder.



To date, only one study has compared mothers' and fathers' ratings of child AD/HD behavior. This study found that mothers consistently rated AD/HD behavior as more severe than fathers on broad- and narrow-band AD/HD rating scales (Langberg et al., 2010). Consistent with this finding is evidence from the broader externalizing literature, which suggests that fathers *may* endorse fewer symptoms of problematic child behaviors and rate such symptoms as less severe (Achenbach, McConaughy, & Howell, 1987; Christensen, Margolin, & Sullaway, 1992; Duhig, Renk, Epstein, & Phares, 2000; Jensen, Traylor, Xenakis, & Davis, 1988; Mash & Johnson, 1983; Webster-Stratton, 1988). While suggestive of parental differences, the externalizing literature is limited by the fact that AD/HD behaviors are rarely assessed directly and, in the rare instances that they are, it is within the context of global externalizing behaviors or in conjunction with oppositional and defiant behaviors. Of additional concern, when differences in mothers' and fathers' reports of child externalizing behavior emerge, studies often prematurely conclude that they are primarily due to parental gender, without accounting for the possibility that other parent, child, and family variables may come into play. Thus, in order to establish that gender differences in parental reporting exist, AD/HD behaviors should be addressed more directly and potential confounding variables must be taken into consideration.

In response to these concerns, the current study explored whether mothers and fathers report child AD/HD behavior differently. As background for examining this issue, this paper will first provide an overview of how AD/HD is currently conceptualized and assessed. Following this discussion, the conceptual and methodological limitations that

complicate obtaining accurate comparisons of mothers' and fathers' reports will be provided. This will be followed by a comprehensive review and critique of the indirect literature on inter-parental reporting of child externalizing problems, along with a more detailed description of the one study to date that has directly investigated how mothers' and fathers' reports of child AD/HD may differ. Within this framework, parent, child, and family factors that may contribute to mother-father differences will be explored. Against this background, the rationale for this investigation and a summary of its methodology and findings will be provided.

### **Overview of AD/HD**

**Diagnostic Criteria.** The *Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition – Text Revision* (DSM-IV-TR; American Psychiatric Association, 2000) is widely accepted as the standard for diagnosing mental health disorders, including AD/HD. Five criteria are stipulated in the DSM-IV-TR as being necessary for establishing an AD/HD diagnosis. Of paramount importance is that a child must display clear evidence of impairment in daily functioning that is likely due to AD/HD symptoms. Such symptoms must arise from two symptom clusters, inattention and hyperactivity-impulsivity (American Psychiatric Association, 2000). Symptoms within the inattention cluster include having difficulty sustaining attention to tasks, not following through on instructions, and being easily distracted by extraneous stimuli. Hyperactive-impulsive symptoms include behaviors such as excessive fidgeting, difficulty remaining seated, and difficulty waiting turn. To meet the frequency criterion for a diagnosis of AD/HD, a child must display at least six of nine symptoms of inattention and/or six of nine hyperactive-

impulsive symptoms. If the symptom frequency criterion has been satisfied, such symptoms must occur at a level that is considered developmentally deviant. Although no consistent standard exists for this criterion, it is widely accepted to consider symptoms that place a child's behavior at or above the 93<sup>rd</sup> percentile as clinically significant (Anastopoulos & Shelton, 2001). Additionally, these developmentally deviant symptoms must have an onset prior to seven years of age, be chronic and pervasive, and associated with impairment in functioning in at least two domains (e.g., school, home, and social settings). Lastly, these symptoms and patterns of impairment cannot be better explained by the presence of another mental or medical illness.

Consistent with the symptom clusters, three subtypes of AD/HD exist according to DSM-IV-TR: Predominantly Inattentive Type (I; six or more inattention symptoms with fewer than six hyperactive-impulsive symptoms), Predominantly Hyperactive-Impulsive Type (HI; six or more hyperactive-impulsive symptoms with fewer than six inattention symptoms), and lastly Combined Type (C; six or more inattention *and* hyperactive-impulsive symptoms).

Despite a consistent operational definition of what meets diagnostic threshold for warranting a diagnosis of childhood AD/HD, the validity of these diagnostic criteria for fathers has not been established as fathers are relatively absent from the development of the diagnostic criteria for childhood disorders. This is apparent in the conceptualization of AD/HD as outlined in the DSM-IV-TR, which was based largely on comprehensive and systematic reviews of the existing research and clinical literatures that were formulated based on maternal report. Consequently, the symptoms of AD/HD were

developed from maternal report and therefore, reflect behaviors that are likely to be more evident in mother-child interactions. It is also problematic that the AD/HD symptoms as outlined in the DSM-IV-TR are regarded as more descriptive of boys' behavior, which highlights the possible utility of integrating gender-specific items in the future (Ohan & Johnston, 2005).

**Situational Variability.** Although the symptoms of AD/HD are pervasive and occur across settings, this is often difficult to observe due to the situational variability of the disorder - that is, symptoms are not expressed similarly across situations. As such, symptoms are most evident in situations that are perceived as boring and routine, as well as in group situations when feedback is administered inconsistently, infrequently, or is delayed (Barkley, Edwards, Laneri, Fletcher, & Metevia, 2001; Neef et al., 2001; Zentall, 1985). In contrast, children with AD/HD appear less impaired in one-on-one situations that are of high interest, novel, structured, and provide consistent, frequent, immediate, and specific feedback. In situations in which few demands are placed on children with AD/HD and they are encouraged to engage in self-directed activities, their behavior is often consistent with their unaffected peers (Lawrence et al., 2002; Luk, 1985; Marzocchi, Lucangeli, De Meo, Fini, & Cornoldi, 2002). Such findings suggest that the degree to which the child's AD/HD symptoms are expressed is *contextually dependent*. Thus, the situational variability of the disorder may contribute to discrepancies between mothers' and fathers' reports given that child impairments are less likely to emerge in less structured, recreational activities, which are more characteristic of interactions with fathers (Lamb 1976; 1977; Power & Parke, 1982; Russell & Russell, 1987).

**Impairment.** Symptoms of AD/HD have the potential to impair children's functioning across the academic, home, and social domains. Impairments in academic achievement have included deficits in academic productivity (DuPaul & Stoner, 2003), which are due to an inability to finish assigned tasks, difficulty remaining seated for extended periods of time (Hook, Milich, & Lorch, 1994), and deficits in organization and rehearsal strategies (Barkley, 2006; Douglas & Benezra, 1990). Consequently, this leads to lower grades and greater utilization of special education services (Barkley, Guevremont, Anastopoulos, & Fletcher, 1992), as well as higher drop out and grade retention rates (Klein & Mannuzza, 1991).

Disruptions within the home and with peers are also commonplace for children with AD/HD. Children with AD/HD are less compliant with parental requests and thus, require more parental attention including prompts, reminders, and redirection (Danforth, Barkley, & Stokes, 1991; DuPaul, McGoey, Eckert, & VanBrakle, 2001; Johnston & Mash, 2001). These difficult child characteristics are often associated with negative, aversive, coercive, and conflictual styles of parenting, which collectively place the dyad at risk for disruptions in the parent-child relationship (Andra & Thomas, 1998; Barkley, Anastopoulos, Guevremont, & Fletcher, 1991; Tallmadge & Barkley, 1983). In a similar vein, parents of children with AD/HD adopt more controlling approaches, characterized by an increase in the number of commands, reprimands, and decreased awareness of child initiated interactions (Gerdes, Hoza, & Pelham, 2003; Harvey, Danforth, Ulaszek, & Eberhardt, 2001; McKee, Harvey, Danforth, Ulaszek, & Friedman, 2004). Also commonly reported are elevated levels of parenting stress (Anastopoulos, Guevremont,

Shelton, & DuPaul, 1992; Mash & Johnston, 1983; Ross & Blanc, 1998) and a perceived lack of parenting competence (Mash & Johnson, 1990).

Disruptions in social interactions and adjustment have been well documented in children with AD/HD (Blachman & Hinshaw, 2002), as they display behaviors that negatively impact their social functioning including being impulsive, intrusive on others' conversations, as well as having difficulty with turn taking, organization, and remaining on task (Stroes, Alberts, & van der Meere, 2003). These behaviors may deter children from engaging in play with children with AD/HD. Consequently, children with AD/HD report having fewer friends and being less liked by peers (Pelham & Bender, 1982; Mikami & Hinshaw, 2003).

**Comorbidity.** The impairments associated with AD/HD place children with AD/HD at heightened risk for developing a comorbid disorder. Up to 60% of clinic-referred children with AD/HD meet criteria for a secondary diagnosis (August, Realmuto, MacDonald, & Nugent, 1996). Oppositional Defiant Disorder (ODD) is the most common comorbid condition and, when untreated, can lead to more serious behavioral concerns such as Conduct Disorder (CD; Angold, Costello, & Erkanli, 1999; Cunningham & Boyle, 2002; Jensen, Martin, & Cantwell, 1997). Although less common, children with AD/HD are also at increased risk for internalizing problems. Estimates suggest that children with AD/HD are at 20% to 30% increased risk for depression (Biederman, Mick, & Faraone, 1998), with inattentive features playing a role (Eiraldi, Power, & Nezu, 1997). Additionally, up to 25% of children with AD/HD also display one or more anxiety disorders (Tannock, 2000). Taken together, such findings indicate that

comorbidity is common among children with AD/HD and often complicates the diagnosis and treatment of the disorder.

### **Methods for Assessing AD/HD**

In order to arrive at an accurate diagnosis of AD/HD, a multi-method, multi-informant assessment is considered the gold standard of practice and is typically comprised of clinical interviews with the parent(s) and identified child, parent- and teacher-completed rating scales, psychological testing of the child, direct observational procedures, and record reviews (Anastopoulos & Shelton, 2001).

**Clinical Interviews.** Clinical interviews vary with regard to whether they are administered in an unstructured, semi-structured, or structured format. Unstructured interviews are non-directive and therefore, do not follow a set format. Questions can be modified according to the informant and situation. Semi-structured interviews provide flexibility in administration, such as follow-up questioning and probing, whereas, structured interviews require clinicians to read questions verbatim, without interpretation, and the respondent follows a response set, such as a yes / no format. Evidenced-based semi-structured options include the Schedule for Affective Disorders and Schizophrenia for School-Age Children (K-SADS; Puig-Antich & Chambers, 1978) and the Semistructured Clinical Interview for Children and Adolescents (SCICA; McConaughy & Achenbach, 1994). Evidenced-based structured interviews include the Computerized Diagnostic Interview Schedule for Children-IV (C-DISC-IV; NIMH, 1997) and the Diagnostic Interview for Children and Adolescents-IV (DICA-IV; Reich, Welner, Herjanic, & MHS Staff, 1996). Diagnostic interviews demonstrate strong psychometric

properties, allow for the assessment of comorbidity, and are easy to administer and interpret. Despite these advantages, diagnostic interviews were developed based on mothers' responses, and to date, there is no research that addresses possible mother-father differences in responding.

**Behavioral Rating Scales.** Although clinical interviews examine most of the diagnostic criteria for AD/HD, they do not assess developmental deviance. Therefore, rating scales are not only useful for screening symptoms, obtaining symptom counts, and examining comorbidity in a standardized way, they are also useful for comparing the identified child's behavior with other same-age, same-gendered peers. For this reason and due to their ease of administration and convenience, behavioral rating scales are the most commonly used tool for the assessment of AD/HD (Barkley, 2006). Two types of rating scales exist: *broad-band*, which assess a wide range of child psychiatric issues, and yield composite scores (e.g., internalizing, externalizing problems), as well as subscale scores (e.g., anxiety, depression), and *narrow-band*, which aim to screen a specific disorder, such as AD/HD.

***Broad-band rating scales.*** The most commonly used broad-band rating scales include: the Behavior Assessment for Children – Second Edition (BASC-2; Reynolds & Kamphaus, 1992), Conners' Rating Scales (C-RS; Conners, 1997), Child Behavior Checklist (CBCL; Achenbach, 1991), and Vanderbilt Attention Deficit Hyperactivity Disorder Diagnostic Parent Rating Scale (VADPRS; Wolraich et al., 2003). These and other broad-band rating scales are appropriate for use with children and adolescents; however, they may vary with respect to informants (e.g., parent, teacher, youth self-



report), summary scores, and specific problem areas. As is true for clinical interviews, which are based primarily on maternal report, potential mother-father differences in responding are rarely examined; thus, separate norms based on gender are not available.

***Narrow-band rating scales.*** In contrast with broad-band rating scales, narrow-band rating scales provide an efficient method for screening AD/HD in isolation. Widely used narrow-band rating scales include the Attention-Deficit Hyperactivity Disorder Rating Scale-IV (ADHD-RS; DuPaul, Power, Anastopoulos, & Reid, 1998), Brown Attention Deficit Disorder Scales (BADDSS; Brown, 1996), Disruptive Behavior Disorders Rating Scale (DBRS; Barkley & Murphy, 2006), and the Swanson, Nolan, and Pelham-IV (SNAP-IV; see Swanson, 1992). Although many narrow-band rating scales assess the symptoms of AD/HD as outlined by the DSM-IV-TR and provide symptom counts and developmental deviance, others only screen for the disorder. Rating scales also vary with respect to whether norms are separated by the gender and age of the child, as well as informant type. Separate norms for the gender of the informant are not available, and no information is provided to address the importance of this distinction.

**Summary of Assessment Procedures.** Despite the advantages of adopting a multi-method, multi-informant strategy in evaluating AD/HD behavior, this approach is limited by the fact that the commonly used clinical interviews and behavior rating scales were developed primarily from mothers' reports and therefore, do not include specific norms for male versus female informants. To date, no studies have examined inter-parental agreement of AD/HD behavior using clinical interviews. Of additional concern, the most commonly used broad- and narrow-band measures for assessing AD/HD in

children and adolescents do not provide normative data to evaluate mothers' and fathers' responses independently. Thus, when fathers' responses are obtained, they are evaluated within a maternal context. More commonly, fathers' rating scales are neither collected nor taken into account. Due to these practices, little is known about fathers' perceptions of child AD/HD behavior. These and other limitations that complicate mother-father comparisons will now be discussed in detail.

### **Limitations of the Literature on Parents' Perceptions of Child AD/HD**

**Conceptual Limitations.** The absence of fathers is certainly apparent in the AD/HD literature. A Psych Info database search conducted by Singh (2003) indicated that only 8% of research studies on childhood AD/HD included paternal report. To further complicate this situation, only 3% examined fathers' ratings of their daughters' behaviors. Thus, little is known about fathers' perceptions of AD/HD, and even less is known about fathers' perceptions of girls' behavior.

To date only one study (Langberg et al., 2010) has addressed potential differences in mothers' and fathers' reports of childhood AD/HD behavior, but this study used rating scales constructed from maternal responses and norms. Thus, it is not entirely clear whether true differences in mothers' and fathers' ratings of child AD/HD behavior exist. To further complicate matters, this study did not provide an adequate conceptual rationale for predicting whether mother-father differences were expected to emerge. As will be discussed later, there is theoretical justification for expecting mother-father differences.

**Methodological Limitations.** The scarce literature that examines parents' perceptions of AD/HD also has considerable methodological limitations. Most concerning, most studies exclusively use mothers' reports of child AD/HD. When fathers' perceptions are examined, they are most often provided by mothers' reports of fathers' perceptions rather than by father's direct report (Roggman, Boyce, Cook, & Cook, 2002). In a similar vein, most studies on child externalizing problems are comprised of mothers' ratings of their clinic-referred sons; thus, little is known about fathers' perceptions of daughters' behaviors, especially within community samples (e.g., NICHD ECCRN, 2000). Also problematic is that most studies on parenting are comprised of middle-class, Caucasian, married parents of preschool-aged children, which may not generalize to underrepresented populations (Benetti & Roopnarine, 2006; Biller, 1993; Chen, Seipp, & Johnston, 2007).

When fathers are included, studies often do not establish a consistent operational definition of "fathers" or "involvement," with some including biological fathers, divorced fathers, stepfathers, nonresident fathers, foster fathers, and extended family such as uncles and grandfathers. When studies assess levels of mother-father agreement of child AD/HD, they rarely control for the extent to which parents discuss child behavior and few explicitly request that mothers and fathers complete ratings independently (Jensen et al., 1988). Consequently, parents may be in agreement not because they observe the same behaviors, but rather because they discuss it.

Due to self-selection bias, fathers who participate in research may not generalize to those who do not (Braver & Bay, 1992). Common paternal characteristics among non-

participants include less education, less satisfying marriages, and less developed parenting skills, and more traditional child-rearing beliefs. Additionally, fathers are less likely to participate in research when their child has temperament, health, and behavioral problems (Costigan & Cox, 2001; Hops & Seeley, 1992). Thus, what little research is available is based on fathers who are generally higher functioning with respect to mental health and quality of life variables.

Design issues are also problematic as studies that include fathers typically have an imbalanced number of fathers as compared to mothers. When fathers participate in research, the information they provide is often not analyzed or reported (Pisterman et al., 1989). Differences between mothers' and fathers' reports of child AD/HD behavior are also not allowed to emerge as some researchers adopt a combinatorial rule that classifies a symptom as present when it is endorsed by either parent. Other commonly used statistical strategies include collapsing responses to form composite scores and establishing an "optimal informant" that is assigned a greater weight (Bird, Gould, & Staghezza, 1992; Loeber, Green, Lahey, & Stouthamer-Loeber, 1989; Tiano & McNeil, 2005), all of which yield inconclusive findings, as compared to informants' responses being viewed separately.

It is also concerning that when citing findings of mother-father comparisons, authors are not always clear about what type of question has been asked (Treutler & Epkins, 2003). *Correspondence* refers to correlations, suggesting similar responses between the rank orders of scores, but does not offer information about patterns of responding. In contrast, *discrepancies* between responses are calculated by examining the

mean differences in informants' responses, which allows a comparison of which informant is endorsing greater problems. The differences between *correspondence* and *discrepancies* are important to highlight as they address different questions and yield different findings (Christensen et al., 1992; Duhig et al., 2000; Youngstrom, Loeber, & Stouthamer-Loeber, 2000), with discrepancy scores being more appropriate when examining child, parent, and family factors that impact mothers' and fathers' reports of child behavior (Richters, 1992). Correlations do not take into account the error variance between mothers and fathers; thus, estimates may be artificially inflated (Shrout & Fleiss, 1979). Additionally, high correlations can exist even when significant disagreements between raters emerge. Due to these limitations, true differences between mothers' and fathers' ratings of child AD/HD behavior are not able to be detected if, they are, in fact present. Additionally, with the exception of one study (Langberg et al., 2010), most research on mother-father agreement focuses on externalizing symptoms as opposed to specific AD/HD behavior. Thus, the scarce literature on inter-parental ratings of child externalizing behavior will now be reviewed.

### **Mother-Father Agreement on Rating Scales**

Most studies investigating informant differences on ratings scales do so within the context of parent-child and parent-teacher agreement. Few studies have investigated differences in mothers' and fathers' responses and those that do typically assess the psychometric properties (e.g., measurement and construct validities) of specific rating scales (Alves de Moura & Burns, 2010; Burns et al., 2008; Burns, Desmul, Wash, Silpakit, & Ussahawanitchakit, 2009; Gomez, 2010; Kuppens, Greitens, Onghena, &

Michiels, 2009; Servera, Lorenzo-Seva, Cardo, Rodrigues-Fornells, & Burns, 2010), as opposed to levels of mother-father agreement. Among the limited studies that do examine mother-father agreement in reports of child externalizing behavior, agreement is moderate ( $r = .30$ ; Smith & Jenkins, 1991; Sternberg et al., 1993) to strong ( $r = .74$ ; Walker & Bracken, 1996) with mothers typically reporting more severe externalizing problems than fathers (Achenbach et al., 1987; Christensen et al., 1992; Duhig et al., 2000; Jensen et al., 1988; Langberg et al., 2010; Mash & Johnson, 1983; Webster-Stratton, 1988).

In one of the most commonly cited papers on informant agreement, Achenbach, McConaughy, and Howell (1987) examined 119 studies investigating inter-rater reliability of child and adolescent externalizing problems. Findings indicated that informants who interact with the child in similar environments, such as mothers and fathers, have greater levels of agreement ( $r = .59$ ) than those interacting with the child in different environments, such as parents and teachers ( $r = .28$ ). Duhig et al. (2000) sought to update the Achenbach study by conducting a meta-analysis of 60 studies. Rather than investigating multiple-cross informants, they compared mothers' and fathers' ratings of emotional and behavioral problems. Unlike most studies that only examine levels of parental correspondence or discrepancy, Duhig et al. (2000) explored both questions simultaneously. Findings revealed similarly strong levels of mother-father agreement as evidenced in the Achenbach meta-analysis using broadband measures of externalizing problems ( $r = .61$ ).

Collectively, the two meta-analyses demonstrate an overall strong level of mother-father agreement of child externalizing problems. However, what remains unclear is why some studies have only found moderate correlations, which suggests that despite parents observing their children in somewhat similar situations and discussing child behavior, levels of agreement are not always strong. Even when strong correlations emerge, a significant proportion of the variance remains unaccounted for.

Perhaps the greatest concern is that AD/HD symptoms are almost never directly assessed, but evaluated as part of an externalizing composite or in conjunction with oppositional and defiant behaviors. Additionally, behavior is often examined dimensionally instead of categorically and is rarely evaluated at the symptom level. Thus, it is uncertain whether differences in mothers' and fathers' reports of AD/HD behaviors exist and whether the moderate-to-strong levels of inter-parental agreement within the externalizing literature generalize to AD/HD behavior. Although the broader externalizing literature provides preliminary evidence that mothers may endorse more severe child AD/HD symptoms than fathers, research has only started to address this issue.

Langberg et al. (2010) published the first and only empirical study to date that specifically compares mothers' and fathers' ratings of child AD/HD symptoms. Three hundred and twenty-four mothers and fathers of children diagnosed with AD/HD, Combined Type involved in the Multimodal Treatment Study of Children with ADHD (MTA) completed narrow- (SNAP-IV; see Swanson, 1992) and broad-band (Child Behavior Checklist; CBCL; Achenbach, 1991) measures of AD/HD and externalizing

symptoms, respectively. Findings suggested that, although mothers' and fathers' AD/HD ratings were moderately correlated ( $r = .38$  for the SNAP-IV-ADHD), mothers consistently rated problematic behavior as more severe regardless of the type of measure (narrow- or broad-band) used. Of additional interest, inter-parental agreement was higher for broadband externalizing behaviors and Oppositional Defiant Disorder symptoms than for AD/HD specific ratings.

Parental depression and parenting stress were also tested as moderators. Only parenting stress contributed to the association between mother-father ratings. Ratings of child AD/HD symptoms varied according to the level of parenting stress, with parenting stress being more highly correlated with fathers' ratings than mothers' ratings. At low levels of parenting stress, fathers rated their child's AD/HD behavior less severely than mothers. Fathers and mothers were in greater agreement when both parents reported moderate stress. At high levels of parenting stress, fathers rated their child's AD/HD behavior more severely than mothers.

The Langberg et al. (2010) study provides an important first step in understanding inter-parental agreement specific to AD/HD behavior. Despite this advancement, many questions remain. For example, not addressed in the Langberg study was the impact that other variables, such as child gender, might have on inter-parental agreement. As with previous studies, a large proportion of the variance in mothers' and fathers' ratings was not accounted for. Additionally, because inter-parental agreement was assessed using rating scales that were developed, tested, and normed on mothers' responses it remains unclear whether the differences in responding reflect actual informant differences or



artifacts of the assessment procedures. Assuming there are true differences, the mechanisms to explain such differences must be explored. Because no additional studies on inter-parental agreement of AD/HD behavior are available, the broader externalizing literature will now be reviewed again to examine which factors may account for mother-father differences in reporting.

### **Factors Contributing to Mother-Father Discrepancies**

Parent, child, and family characteristics are thought to impact levels of informant agreement of child psychiatric problems such that elevations in only one informant's ratings may result in lower levels of inter-informant agreement. Despite this assumption, few studies involve parents and those studies that do, exclude fathers. Instead, such studies compare mothers' ratings of child behavior with mothers from control groups, teachers, children, and clinicians. When fathers have been investigated, it is typically in conjunction with mothers and more commonly, it is in regards to internalizing problems. Thus, limited information is available with respect to parent, child, and family factors that may impact mothers' and fathers' ratings of child externalizing problems.

**Parent Factors.** Among the three factors proposed to influence informant agreement, parent characteristics (parental psychiatric status: depression, anxiety, adult AD/HD, and stress; gender-role; parenting attributions; knowledge of AD/HD; and exposure to AD/HD) have received the most attention, but yield inconsistent results. It remains unclear whether these domains impact parents' ratings, and if so, whether they affect mothers' and fathers' ratings of child externalizing behaviors differently.

*Psychiatric status.* The few studies addressing parental depression in isolation provide partial support for the *depression-distortion hypothesis* such that depressed mothers may have more global, negative biases that influence their perceptions of child externalizing behavior to a greater extent than non-depressed informants (see Richters, 1992 for a review). Although several studies have demonstrated that mothers who are depressed rate child externalizing problems more severely, this has been explored mostly within the broader clinical literature (Breslau, Davis, & Prabucki, 1987; Briggs-Gowan, Carter, & Schwab-Stone, 1996). Fewer studies evaluate depressed mothers' ratings of specific child externalizing problems (Chilcoat & Breslau, 1997; Najman et al., 2000; Youngstrom et al., 2000) and only one study explored AD/HD and found that mothers' depressive symptoms were related to negative biases, resulting in elevations in their reports of child AD/HD symptoms (Chi & Hinshaw, 2002). There is mixed evidence that depressive symptoms in both mothers and fathers may be associated with elevated parental reports of child externalizing problems with some studies showing an equal influence on mothers' and fathers' ratings (Treutler & Epkins, 2003), whereas other studies have not replicated this (Jensen et al., 1988). This lack of consensus is further complicated by the fact that most studies do not assess depression in fathers given the higher rates of mood disorders among women than men (Eaton et al., 1997).

Studies examining parental anxiety involve mothers only and indicate that maternal anxiety may elevate mothers' ratings of child externalizing problems (Briggs-Gowan et al., 1996; Chilcoat & Breslau, 1997; Najman et al., 2000; Youngstrom, Izard, & Ackerman, 1999). Because fathers are consistently excluded, assumptions of how

parental anxiety may impact inter-parental agreement of child behavior problems cannot be ascertained. The considerable overlap between individuals who are both anxious and depressed is also problematic (American Psychiatric Association, 2000).

The influence of parental AD/HD is also an important research area as up to 50 percent of biological parents of children with AD/HD may meet criteria for the disorder themselves (Biederman et al., 1995). Although it is widely recognized that parents who have AD/HD themselves may engage in more negative parenting practices (Barkley, Murphy, & Fischer, 2008; Murray & Johnston, 2006; Weiss, Hechtman, & Weiss, 1999), which exacerbate child externalizing problems (e.g., Kendzoria & O'Leary, 1993; Slep & O'Leary, 1998), it remains unclear whether parental AD/HD is associated with elevated ratings of child AD/HD as no studies have addressed this question.

Similarly, there is cursory evidence that global measures of stress may impact parents' ratings of child externalizing problems as mothers' and fathers' ratings may be in greater agreement with other informants when parents report lower stress levels (Kolko & Kazdin, 1993). However, most studies combine mothers' and fathers' responses to form parent composites (Jensen et al., 1998; Kolko & Kazdin, 1993). Thus, the potential impact of inter-parental agreement cannot be ascertained because no studies directly compare mothers' and fathers' levels of global stress. However, one study examined how parenting stress may influence parents' ratings of child AD/HD behavior. Findings suggest that parenting stress may be associated more with fathers' ratings of child AD/HD than mothers' ratings (Langberg et al., 2010). Despite the paucity of research, it appears that higher levels of stress may be associated with parental ratings of more severe

externalizing problems (Youngstrom et al., 2000). What remains uncertain is whether this would equally affect mothers' and fathers' ratings.

**Gender-role.** Parents' gender-role beliefs are also important given their relation to parenting practices and perceptions of child behavior. Even prior to raising children, men and women have different expectations about themselves as parents, as well as their future child's temperament and behavior (Silverman & Dubow, 1991). Once they become parents, men's and women's gender-role beliefs are associated with different parenting styles and parent-child interactions, which some argue is particularly true of fathers (Smiler, 2004). Mothers and fathers more commonly believe that mothers should engage in a larger percentage of the physical and emotional care of children (Moon & Hoffman, 2008). Such traditional attitudes strengthen over time, particularly for mothers, which often leads to a greater division of household labor (Katz-Wise, Priess, & Hyde, 2010). In contrast, fathers engage in higher levels of caregiving and social activities when they and/or their romantic partner endorse less traditional gender beliefs (Beitel & Parke, 1998; Nangle, Kelley, Fals-Stewart, & Levant, 2003). Therefore, it is not surprising that non-traditional and egalitarian beliefs are associated with higher levels of inter-parental agreement of child externalizing behavior ratings (Benetti & Roopnarine, 2006; Fagan & Fantuzzo, 1999). Gender-role beliefs are further influenced by child gender such that mothers and fathers have different expectations for boys' and girls' physical attributes and behavior. This phenomenon strengthens across infancy (Rubin, Provenzano, & Luria, 1974) and persists throughout childhood with mothers and fathers discouraging

aggression, antisocial, and impolite behaviors in their daughters, while being tolerant of such undesirable behavior in sons (Power & Parke, 1982).

*Parenting attributions.* Although not empirically tested, reports of child externalizing problems may be due in part to differences in parenting attributions, which would lend support for why mothers and fathers may rate child behavior differently despite considerable overlap in contexts. Weiner's (1986) research on classroom achievement contends that individuals describe causal explanations of events according to three attributional dimensions, which include locus of control (internal vs. external), stability (temporary vs. permanent), and controllability (controllable vs. uncontrollable). This process has been applied to parents' perceptions of their children's behaviors (Bugental, Blue, & Lewis, 1990). Parenting attributions can either be *child-referent* or *parent-referent* (Bugental, Blue, & Cruzcosa, 1989). *Child-referent* attributions relate to the degree to which parents believe their child is able to control their behavior. Stated differently, they are explanations for child behavior that reside within the child, such as temperament, judgment, or ability. *Parent-referent* attributions are related to parental locus of control, including parenting competence and efficacy (Campis, Lyman, Prentice-Dunn, 1986; Rotter, 1966), such that parents with an external locus of control believe that misbehavior is determined by factors residing outside of the parent's control, including chance, other people, and the personality and temperament of the child. In contrast, parents adopting an internal locus of control believe that misbehavior is related to faulty parenting practices (Campis et al., 1986).

Parents of children with behavioral concerns display higher rates of negative child- (Compas, Adelman, Freundl, Nelson, & Taylor, 1982; Janssens, 1994; Johnston & Patenaude, 1994; Smith & O’Leary, 1995) and parent- (Freeman, Johnston, & Barth, 1997; Johnston & Patenaude, 1994; Roberts, Joe, & Halbert-Rowe, 1992) referent attributions of child behavior, as compared to parents of unaffected children. Although mothers and fathers of children with AD/HD have more negative child- and parent-referent attributions than parents of unaffected children, mothers appear to hold more negative parenting attributions than fathers (Chen et al., 2008; Hoza et al., 2000; Johnston & Freeman, 1997). Future studies need to assess whether these possible differences in mothers’ and fathers’ parenting attributions also influence their ratings of child externalizing problems differently.

***Knowledge and exposure to AD/HD information.*** It seems that informants may also be more likely to endorse AD/HD symptoms if they are familiar with the disorder and are aware of what constitutes atypical behavior. For example, mothers from low SES backgrounds appear to be better raters of AD/HD symptoms in unfamiliar videotaped children when provided with instructional materials on how to identify and rate AD/HD behavior (Johnston, Weiss, Murray, & Miller, 2011). However, this situation is complicated by the fact that definitions of deviant behaviors might differ for mothers and fathers, which has not yet been empirically investigated.

Fathers are also presumed to have a lesser understanding about child psychiatric issues including symptoms and treatment, are less likely to pathologize behavior, and are more tolerant of misbehavior; thus, they are less likely to seek treatment for their children

and themselves (Addis & Mahalik, 2003; Schock, Gavazzi, Fristad, & Goldberg-Arnold, 2002). Research on AD/HD specifically suggests that as compared to mothers, fathers are more likely to believe that the symptoms associated with the disorder are not indicative of a problem that warrants treatment, despite endorsing such symptoms causing impairment. Rather, they attribute behavioral concerns to correctable patterns of indulgent mothering, boys' lack of motivation, and the notion that "boys will be boys" (Singh, 2003). Thus, it appears that exposure to AD/HD, knowledge of the disorder, and perceptions of AD/HD behaviors as problematic are areas that may contribute to differences in parental perceptions of AD/HD and therefore, warrant further exploration.

*Summary of Parent Factors.* Several parent factors have been proposed to impact parents' ratings of child externalizing behavior; however, findings are mixed. There is partial support for a depression-distortion hypothesis such that mothers who are depressed appear to rate child externalizing and AD/HD symptoms more severely. Few studies have explored the role of depression in fathers' ratings and mixed findings complicate conclusions. Fewer studies have addressed the influence of parental anxiety on ratings of child externalizing problems. Although preliminary evidence suggests that maternal anxiety is associated with elevated ratings of child externalizing problems, this has not been tested with fathers. Similarly, it makes conceptual sense that parental AD/HD and global stress may impact ratings, but this has rarely, if ever, been examined with mothers or fathers. The one exception is a study examining parenting stress, which suggests that parenting stress may impact fathers' ratings of child AD/HD more so than mothers' ratings. A clearer pattern of findings emerge with respect to gender-role such

that higher levels of inter-parental agreement are found when parents hold more non-traditional beliefs. Lastly, although there is reason to suspect that parenting attributions, exposure to AD/HD, and knowledge of AD/HD may be related to parents' ratings of child externalizing behavior, this assumption has not been addressed empirically.

**Child Factors.** Less research has examined the child characteristics that may impact parents' ratings of child externalizing problems, which include problem type, age, gender, and race.

**Problem type.** Specific problem behaviors are difficult to explore because they are often aggregated into internalizing and externalizing composites (De Los Reyes & Kazdin, 2005), with greater correspondence for the latter (Achenbach et al., 1987; Christensen et al., 1992; Duhig et al., 2000). This is not surprising given reports are more congruent for outwardly observable behavior such as aggression and hyperactivity, as opposed to inattention (Comer & Kendall, 2004; Diamond & Squires, 1993). Studies operating at the individual-item level also yield higher levels of inter-parental agreement of externalizing symptoms. Symptoms that are more objective, specific, clearly defined, disturbing, and socially undesirable are rated more congruently by mothers and fathers (Christensen et al., 1992).

**Age.** Informant agreement is higher when examining younger children's behavior. (Achenbach et al., 1987; Ende & Vurhulst, 2005; Fitzgerald, Zucker, Maguin, & Reider, 1994). For example, the Achenbach meta-analysis revealed higher correlations for children age six to 11 ( $r = .51$ ) than for children age 12 to 19 ( $r = .41$ ). This suggests that greater informant agreement may be due to younger children's behavior being more



equally observable by mothers and fathers, as well as more consistent across contexts (Achenbach et al., 1987). Additionally, it is plausible that inter-parental congruence may be due to fathers spending more time interacting with younger children as physical play is a larger component of the father-child relationship in preschool (Laflamme, Pomerleau, & Malcuit, 2002; McBride & Mills, 1993; Russell & Russell, 1987).

**Gender.** Of the studies examining child gender, most involve internalizing problems (Angold et al., 1987; Grills & Ollendick, 2003; Ines & Sacco, 1992) as reported by mothers and the identified child (Verhulst & van der Ende, 1992). Those studies that look at parent comparisons often do not demonstrate a gender effect (Achenbach et al., 1987; Christensen et al., 1992), whereas other studies show a parent gender by child gender interaction with mothers reporting more problematic behavior in sons and fathers in daughters (Friedlander, Weiss, & Traylor, 1986; Graham & Stevenson, 1985; Jensen et al., 1988). Still, other studies have found that regardless of parent gender, mothers and fathers consistently rate boys as displaying more externalizing and attention problems, as compared to girls (Ende & Verhulst, 2005; Thurber & Osborn, 1993). Although it remains unclear whether child gender impacts informant agreement, it appears that in general, higher levels of mother-father agreement of child externalizing problems exist in studies that only examine boys' *or* girls' behaviors, as opposed to those that include both (Duhig et al., 2000).

**Race.** There is some indication that informant discrepancies are greater when rating African American children, as compared to Caucasian children (Youngstrom et al., 2000); however, other studies suggest that such differences do not persist once child and

parent variables are considered (Chi & Hinshaw, 2002; Kolko & Kazdin, 1993; Treutler & Epkins, 2003). This lack of consensus may be due in part to differing cultural perceptions of what is considered deviant child behavior and whether this is assessed.

***Summary of Child Factors.*** Among the child factors that may impact parent ratings of child behavior, problem type and age have been the most substantiated factors such that higher levels of inter-parental agreement are found when mothers and fathers rate younger children who display externalizing problems. Some studies have suggested that child gender plays a role in inter-parental agreement of child externalizing ratings, whereas as others have not. Similarly, there is preliminary evidence that greater agreement exists when rating Caucasian children, as opposed to African American children, whereas other studies suggest that the relationship between child race and behavioral ratings does not persist after other child and parent variables are controlled for.

**Family Factors.** Differences in the quantity and quality of parent-child interactions have been mentioned as possible factors impacting mothers' and fathers' ratings, but have rarely been systematically tested. However, these areas provide a useful alternative framework to explain the possibility of differences in reports of child AD/HD behavior. Additionally, socioeconomic status (SES) and family composition characteristics may also influence inter-parental agreement of child externalizing problems.

*Quantitative differences in parent-child interactions.* Rates of father involvement have increased in recent decades due to changes in the demographic characteristics of families, an increasing number of mothers entering the workforce, changes in the division of household labor, and new policies related to the welfare of children (Marsiglio, 1995). Although promising, the increase in father involvement is only minimal and research continues to demonstrate that on average, fathers spend less time with their children, as compared to mothers and that this discrepancy is most evident with respect to care giving responsibilities with young children (Hofferth, Pleck, Stueve, Bianchi, & Sayer, 2002; Laflamme et al., 2002; Pleck & Masciadrelli, 2004). Additionally, there is evidence that fathers may show preferential treatment for sons and, on average, spend more time interacting with sons, as compared to daughters (Blair, Wenk, & Hardesty, 1994; NICHD Early Child Care Research Network, 2000; Starrels, 1994) This is particularly true in adolescence (Crouter, Manke, & McHale, 1995), suggesting that among parent-child dyads, fathers have the fewest behaviors from which to sample when observing older daughters' behaviors.

*Qualitative differences in parent-child interactions.* In addition to interacting less frequently with their children, fathers may also do so in fewer and less diverse contexts (Russell & Russell, 1987). Fathers are more likely to be involved in physical, playful, and social interactions (Lamb, 1976; 1977). Given fathers are less likely to perform a supervisory role, (Bhavnagri & Parke, 1991; Ladd, Profilet, & Hart, 1992) and are more likely to participate in leisure and outdoor activities, (Collins & Russell, 1991; McBride & Mills, 1993; Russell & Russell, 1987), they are less likely to find themselves

in situations that elicit AD/HD behaviors to the same degree as mothers. Not surprisingly, children are less compliant, more aversive, emotional, and oppositional when interacting with mothers (Buhrmester, Camparo, Christensen, Gonzalez, & Hinshaw, 1992; Eisenstadt, McElreath, Eyberg, & McNeil, 1994; Johnston, 1996) and mothers are typically more assertive, directive, and demanding than fathers when interacting with their child (Lytton, 1979; Patterson, 1982; Russell & Russell, 1987). Taken together, the different parent-child interactions between mothers and fathers make it more likely that AD/HD behaviors will be elicited in mother-child interactions, which involve care giving tasks to a larger degree. In contrast, recreational tasks, which are more typical of father-child interactions, will minimize AD/HD behavior. Thus, greater inter-parental agreement may occur when fathers are more involved in daily care-giving tasks (Fitzgerald et al., 1994; Jensen et al., 1988). Fathers also tend to engage in play that is consistent with the child's gender, especially when interacting with boys (Jacklin, DiPetro, & Maccoby, 1984). Fathers initiate active play with sons and do not support it in daughters, with whom they focus more on verbal development (Power & Parke, 1982; Tauber, 1979). Although high activity levels are detrimental to mother-child relationships, they may not negatively impact father-child relationships to the same extent (Buss, 1981). Thus, it is reasonable to suspect that fathers may be more tolerant of AD/HD in sons and less accepting of hyperactive behaviors displayed by daughters.

*Socioeconomic status.* A meta-analysis comparing mothers' and fathers' ratings of child externalizing problems found lower levels of mother-father agreement among families from lower SES backgrounds than for higher SES backgrounds (Duhig et al.,

2000). However, it remains unclear whether this relationship continues when other child and parent factors, such as psychopathology, are accounted for (Chi & Hinshaw, 2002; Kolko & Kazdin, 1993; Treutler & Epkins, 2003).

***Family composition.*** Marital status and marital satisfaction may also impact parent ratings such that parents who are married and are in generally stable relationships are more likely to agree upon levels of child externalizing behavior (Christensen et al., 1992; Jensen, et al., 1998; O’Leary & Vidair, 2005); however, there is evidence to suggest this relationship is less predictive of fathers’ ratings of child behavior (Seiffge-Krenke & Kollmar, 1988; Webster-Stratton, 1988). Additionally, greater agreement is found among biological parents as compared to step-parents (Jensen et al., 1988).

***Summary of Family Factors.*** It appears that the quantity and quality of parent-child interactions may have bearing on inter-parental agreement of child externalizing problems, such that higher levels of agreement emerge when fathers spend more time with children in a larger number of contexts including caregiving. However, this is speculative, with few studies empirically testing the theory. Although the Duhig et al. (2000) meta-analysis suggests that higher levels of mother-father agreement of child externalizing problems are found among families from higher SES, it is uncertain whether this relationship remains once other child and parent factors are accounted for. Lastly, family composition also likely plays a role such that levels of inter-parental agreement may be higher among parents who are married, in generally stable relationships, and when rating a biological child’s behavior. However, it remains unclear whether these factors influence mothers’ ratings to a larger degree than fathers’ ratings.

## **Current Study**

**Rationale.** To date, there has been limited research comparing mothers' and fathers' ratings of child AD/HD behavior. Such examination is warranted given the ramifications on research and clinical practice if differences in mothers' and fathers' reports exist. However, this examination is complicated by the fact that the current manner in which AD/HD is conceptualized and assessed does not easily allow for the examination of inter-parental differences and, consequently, only one study has investigated this topic. In order to compensate for the paucity of research, inferences are often made from the broader child externalizing literature. However, the externalizing literature is plagued by conceptual and methodological limitations and often does not account for the parent, child, and family variables that may contribute to mother-father differences in reporting. The literature reveals inconsistent and inconclusive results, which are often based on mothers and are incorrectly applied to fathers. Of additional concern, fathers' responses are often evaluated using maternal norms. Thus, the current study used raw scores in place of standardized scores based on mothers. Additionally, it is crucial for future research to first establish whether mother-father differences in reports of child AD/HD are present and, only then, can the specific mechanisms that may account for these differences be explored. Thus, the current study elected to have parents rate unfamiliar children in order to minimize the possible carry-over effects that parent, child, and family factors may have on parents' ratings of child behavior problems.

**Research Questions and Hypotheses.** The current study aimed to answer the following primary questions related to parents' ratings of unfamiliar children: 1) How do mothers and fathers compare in their ratings of child AD/HD behavior and 2) Are parental ratings of child AD/HD behavior influenced by the gender of the child being rated? Of secondary interest, do parent, child, and family factors influence mothers' and fathers' ratings of child AD/HD behavior differently? Additionally, how do mothers' and fathers' ratings of AD/HD behavior as displayed by their own child compare?

***Hypothesis 1. Mothers will rate AD/HD behaviors at higher levels than fathers.***

Mothers were predicted to endorse more severe AD/HD than fathers when rating both the boy and the girl in the video. This is based upon consideration of the existing empirical literature that suggests parent factors such as depression and negative parenting attributions may elevate mothers' ratings of child AD/HD more so than fathers' ratings. Additionally, from a theoretical standpoint, mothers typically interact with children in a greater number and type of contexts than fathers. Therefore, due to these family factors they have more behaviors from which to sample, which occur in contexts that are more likely to elicit AD/HD symptoms. In addition to these conceptual justifications, fathers were also expected to endorse fewer AD/HD behaviors because they may be less likely to pathologize misbehavior and in general, may be more tolerant of it.

***Hypothesis 2. Within informants, parents will rate children of the opposite gender as displaying more severe AD/HD behavior.*** It was predicted that mothers would report higher levels of AD/HD when rating the boy, than the girl. Conversely, it was expected that fathers would rate more AD/HD behavior when rating the girl, as compared

to the boy. Empirically speaking, there is evidence that parents, especially fathers, may spend less time with children of the opposite gender and therefore, have a more defined schema of behavior for children of their same gender. Additionally, from a conceptual standpoint, it seems plausible that parents may also have higher expectations for appropriate conduct for children of the same gender, with fathers being more tolerant of hyperactive behavior in boys than in girls.

*Exploratory analysis 1.* On an exploratory basis, the study also aimed to preliminarily examine parent and family factors that are most likely to impact parent ratings. Although no specific predictions are offered, the factors that have received the most conceptual and empirical support were examined as predictors of mothers' and fathers' ratings of the videos of the boys and girl. Parent factors included: gender, depression, gender-role, AD/HD, knowledge of AD/HD and exposure to AD/HD. Family factors included: amount of time spent in caregiving situations with their child, amount of time spent in recreational situations with their child, marital dissatisfaction, and the participants' own child's AD/HD symptoms and severity.

*Exploratory analysis 2.* The study also compared mothers' and fathers' ratings of their own children. Although previous studies suggest that inter-parent agreement is greater when parents rate their own child, as opposed to an unfamiliar child (Burrows & Kelley, 1983), this may be due in part to artifacts of measurement. Because this is an understudied area, this investigation was exploratory and no directional hypotheses were made with respect to participants' AD/HD ratings of their children.



## CHAPTER II

### METHOD

The current study was comprised of two phases. In the first phase, videos of a boy and a girl displaying comparable levels of AD/HD and normative behavior were developed and standardized. In the second phase, participants rated the behavior they observed in the videos and completed other questionnaires pertinent to the study.

#### **Video Development**

The aim of this phase was to create two videos, one of a boy and one of a girl, displaying comparable levels of both AD/HD and normative behavior. Consideration had been given to hiring trained actors to create the videos, but this plan was abandoned in favor of filming clinic-referred children, who presumably would display more naturalistic AD/HD behavior. In order to recruit these children, records of children who had recently participated in an evaluation at the AD/HD Clinic at the University of North Carolina at Greensboro (UNCG) were reviewed. More specifically, this search focused on children aged seven to nine who had received an AD/HD, Combined Type diagnosis. Children were also required to be Caucasian and of at least average physical appearance, likeability, intelligence, and socioeconomic background.

Despite these matching efforts, the filming of the boy and girl initially selected did not produce the desired results. More specifically, the video of the first boy, age seven, was not used because he displayed low levels of AD/HD behavior that were not

equivalent to that of the girl. Thus, a second boy, age eight, was recruited. Although most of this filming was naturalistic, a small portion of the second boy's behavior was scripted to better match his female counterpart. More specifically, he was asked to display AD/HD behavior that paralleled the girl's, such as humming, singing, kicking his legs, playing with distractor items, etc.

The videos were filmed and edited by two upper-level graduate students in the Department of Media Studies at UNCG. Children were filmed on separate days with each filming session lasting approximately four hours including breaks. A large conference room at the AD/HD Clinic at UNCG was converted to resemble a regular classroom. Children were filmed seated at a desk with necessary items for the tasks, as well as distractor items (e.g., paper clips, game pieces, a sand hourglass), to elicit AD/HD behavior. Prior to filming, the investigator and child engaged in brief rapport building exercises. As illustrated in Appendix A, the investigator then provided verbal scripted instructions to begin the filming and additional instructions were provided to introduce new tasks. Children participated in a total of eight developmentally-appropriate tasks including four recreational tasks (coloring, playing with Legos, eating a snack, and organizing a deck of cards) and four academic tasks (mathematics, reading comprehension, writing, and organizing worksheets in corresponding folders). Tasks were completed in the order stated. Although children were aware of the videographer and camera in the room, they were instructed to act as naturalistic as possible.

Once the filming was complete, the four hour videos for each child were edited in a series of stages in order to obtain two videos, each lasting approximately fifteen minutes. To accomplish this, the investigator (a Caucasian, female, upper-level doctoral graduate student in Clinical Psychology) and her major research advisor (a Caucasian, male, Ph.D. level psychologist), both of whom specialize in AD/HD, reviewed the unedited videos to minimize the possible gender-biases of having one person rate the videos.

The raters then identified examples of AD/HD and normative behavior for the boy and girl videos separately. Once this was accomplished, the raters selected and retained the clips that depicted comparable AD/HD and normative behavior displayed by both the boy and the girl. Although the two raters agreed that the boy and girl were well matched on most of the desired dimensions, and displayed naturalistic AD/HD behavior, the boy and girl did not display an equal degree of AD/HD behavior as intended. Rather, the girl displayed slightly higher overall levels of inattention, hyperactivity, and impulsivity. In order to address this concern, in the next phase of editing the boy's most severe behavior and the girl's least severe behavior were selected to make the videos as comparable as possible. Efforts were made to depict the boy and girl displaying equal amounts of AD/HD and normative behavior, preferably across the same tasks, for the same duration of time, and in the same sequence. As such, only a subset of the eight tasks was retained for the final videos. For both videos, the videographers included five seconds of fading in between each segment to give the appearance of a natural transition.

During the next phase of editing, the raters watched the fifteen-minute videos including the transitions. Once a consensus was reached, two videos, totaling approximately thirty minutes, were created by combining the boy's and girl's videos; one video showed the boy first, the other the girl. Scrolling white text against a black background was added to the videos. At the outset of each of the two videos, participants were provided with a twenty-second written introduction. The instructions for the video that presented the girl first read,

You are about to see two videos, one of a girl and one of a boy, who are students in the same regular third grade classroom. Both children were recently absent from school and have been asked to sit apart from the rest of the class in order to complete the work that they missed.

Following both the girl and boy segments, participants were provided additional instructions, which read,

Thank you for watching the video. Now it is time to answer some questions about this child's behavior.

After completing the ratings for the first child, the following written instructions appeared on the screen to introduce the second child,

You are about to watch a video of the other child who was also absent from school and needed to make up missed work.

## Participants

A total of 50 Caucasian mother-father dyads participated in the study. Participants were required to have children who displayed behavioral concerns; thus, a formal diagnosis of AD/HD was permitted, but not required. Most of the participants' children had been formally diagnosed with AD/HD based on parental report (88%) and many of those who had not were currently participating in a psychological evaluation. Similarly, the majority of children (68%) were taking medication to manage their behavior at the time of their parent's participation. Although most participants were married (94%), this was not required. Rather, mothers and fathers had to actively parent the same child, even if across different households. Thus, separated, divorced, and adoptive parents, as well as, step-parents and unmarried romantic partners, were eligible. Participants' ages ranged from 27 to 56, with an average age of 42. The participants' children ranged in age from five to 12 ( $M = 9.16$ ,  $SD = 2.05$ ), were of at least low-average intelligence based upon parental report, biologically related to at least one parent or adopted prior to one year of age, and free of any major developmental disability. Seventy percent of the children were male.

Restrictions on the participants' race and children's ages were established to control for the possible effects these variables may have on parents' ratings of child AD/HD behavior. With the exception of these restrictions, efforts were made to recruit a sample that was demographically representative of the local community. Despite these efforts, the sample was comprised of highly educated individuals, 65% of whom earned a Bachelor's degree or above. Similarly, 97% of participants were employed, students, or

homemakers, with the majority of participants who worked outside of the home holding managerial or professional specialty positions (61%). The sample was also comprised mostly of individuals from the middle and upper classes; twenty-one percent of the participants earned less than \$50,000 a year with an average of two children per household.

### **Primary Outcome Measures**

**Videotaped AD/HD Rating Questionnaire (VARQ;** Refer to Appendix B). To examine participants' independent ratings of AD/HD behavior as displayed by the boy and girl in the videos, a subset of items from the AD/HD Rating Scale-IV (ADHD RS; DuPaul et al., 1998) was selected and modified for use in this study. The VARQ retained 13 of the original 18 items (seven inattentive symptoms: items 1, 3, 6, 8, 10, 12, and 13; six hyperactive-impulsive: items 2, 4, 5, 7, 9, and 11), but with minor changes in the wording for brevity. The five excluded items (1) *Does not seem to listen when spoken to directly*, (2) *blurts out answers before questions have been completed*, (3) *has difficulty awaiting turn*, (4) *is forgetful in daily activities*, and (5) *interrupts or intrudes on others* were removed because they did not apply to the content of the videos. The directions asked parents to indicate how well each of the 13 items described the boy and girl in the video. The response set was expanded to a 5-point Likert scale to increase sensitivity in detecting discrepancies between informants. Responses ranged from 0 (not at all) to 4 (very much) with higher scores reflecting more severe AD/HD behavior. The measure yields symptom count (the number of items endorsed as a '2' or higher) and severity scores.

## **Secondary Outcome Measures**

**ADHD Rating Scale-IV** (A ADHD RS; DuPaul et al., 1998; Refer to Appendix C). The ADHD RS is an 18-item narrow-band questionnaire based on DSM-IV-TR criteria for AD/HD. The scale includes an Inattention Factor (odd numbered items), a Hyperactivity-Impulsivity Factor (even numbered items) and a Total AD/HD Score (all items). Each item is rated on a 4-point scale ranging from 0 (never or rarely) to 3 (very often) with higher scores reflecting more severe AD/HD behavior. The ADHD RS provides symptom count (the number of items endorsed as a '2' or '3') and severity scores, which translate to normed percentiles based on the child's age and gender. Mothers and fathers independently completed the ADHD RS to obtain ratings of their child's AD/HD symptoms. The ADHD RS demonstrates high levels of internal consistency (Total Score = .94, Inattention = .96, and Hyperactivity-Impulsivity = .88).

## **Moderating and Other Variables**

**Child Impression Ratings** (Refer to Appendix D). To control for their possible influence on parents' ratings of AD/HD behavior, participants rated the child's physical appearance, age, likeability, intelligence, and socioeconomic background on a three-point scale, with higher scores reflecting more desirable characteristics (more attractive, likeable, intelligent, and from a higher socioeconomic status). This was accomplished by checking one of three boxes with verbal descriptors. These dimensions, along with the order in which the videos were viewed, were assessed to control for their possible influence on the AD/HD ratings.

**Demographic and Family Questionnaires** (Refer to Appendix E). Participants provided information about their age, gender, race, education, job status, primary job, marital status, household income, psychiatric, and medication status. Additionally they answered questions about their children (the number of, age, gender, biological relation, and medical, psychiatric, and medication status) and their family (the quantity and quality of parent-child interactions in recreational and caregiving activities, caregiver status, marital satisfaction, and major life stressors).

**Adult ADHD Rating Scale-IV** (ADHD RS; Refer to Appendix F). The Adult ADHD RS is a modified version of the ADHD RS (DuPaul et al., 1998) that requires respondents to rate the occurrence of each symptom on a 4-point Likert scale from 0 (not at all) to 3 (very often) during both childhood (ages 5-12) and the past 6 months. The ADHD RS yields inattention and hyperactive-impulsive symptom counts (the number of items endorsed as '2' or higher) and severity scores, as well as a total AD/HD severity score. The total AD/HD severity score, in childhood and currently, were used to assess adult AD/HD symptoms in mothers and fathers.

**Beck Depression Inventory - II** (BDI-II; Beck, Steer, & Brown, 1996). The BDI-II is a 21-item questionnaire that assesses symptoms of depression in adults. For each item, participants were asked to select one of four statements that most closely matched their thoughts and feelings over the past two weeks. Item responses were summed to yield a total score of depression ranging from 0 to 63, with higher scores indicating more severe depression and a score of 10 or higher being representative of individuals with mildly elevated symptoms of depression. The BDI was administered to



assess mothers' and fathers' self-reported levels of depression. The BDI-II has been found to have a high internal consistency ( $\alpha = 0.92$ ; Beck et al., 1996).

**Bem Sex Role Inventory (BSRI; Bem, 1974).** The BSRI is a 60-item questionnaire that measures sex-role stereotyping, but more recently has been regarded as a tool to assess the categorization of characteristics as masculine or feminine. Participants rated themselves on stereotypically masculine and feminine traits using a 7-point Likert scale ranging from 1 (never or almost never true) to 7 (always or almost always true). The rating scale yields Masculinity, Femininity, and Social Desirability raw and standard scores. As indicated in the original article in which it was published, an Androgyny composite score was calculated and used as an estimate of participants' perceptions of themselves according to sex-role stereotypes. Scores close to zero indicated androgyny (high levels of femininity and masculinity), whereas highly positive or highly negative scores reflected high levels of femininity and masculinity, respectively. The BSRI demonstrates adequate levels of reliability with the following ranges according to the two samples on which it was derived: Masculinity ( $\alpha = .86$ ), Femininity ( $\alpha = .80 - .82$ ), and Social Desirability ( $\alpha = .70 - .75$ )

**Test of ADHD Knowledge (TOAK; Anastopoulos, 1992; Refer to Appendix G).** A modified 15-item, True/False version of the TOAK was used in the current study to assess mothers' and fathers' knowledge of childhood AD/HD and its associated features.

**Exposure to AD/HD Rating Scale (Refer to Appendix H).** This 10-item questionnaire assessed participants' exposure to information about AD/HD through mechanisms such as books, articles, and media. Participants were also asked whether

they have experience, personally or professionally, with individuals diagnosed with AD/HD. Items were summed to form an exposure composite.

### **Procedure**

Following a review of records, the parents of the three children who were filmed were apprised of the study during a telephone conversation with the investigator. During the research visit, parents signed consent forms granting permission to develop and screen the videos for research purposes. Additionally, parents signed a form to authorize the release of protected health information and children gave their assent (Refer to Appendices I through K). As compensation, parents of the children received ten dollars per hour of filming and children selected a small toy from a prize box.

Mothers and fathers who agreed to participate in the second phase of the study were recruited primarily from the AD/HD Clinic at UNCG and from local presentations sponsored by the Parents of Children with ADHD Community Support Group. Additional recruitment sites included the Psychology Clinic at UNCG and community partnerships with a local school, pediatric clinic, and community mental health clinic.

Participants who were recruited through their involvement in clinical services or other research studies at the AD/HD Clinic at UNCG were informed of the research opportunity either by taking a research flier (Refer to Appendix L) from the waiting room or by having an AD/HD staff person inform them of the study upon completion of their current involvement. Interested individuals either contacted the investigator directly or were informed of the project by a clinician or researcher and asked if the investigator could contact them to provide additional information. Interested individuals recruited

through the Psychology Clinic at UNCG, ADHD Community Support Group sponsored presentations, and community partnerships were asked to either contact the investigator directly or provide their contact information if they wished to be contacted depending on the recruitment site's preference. Regardless of who initiated the telephone call or the recruitment source, the investigator provided a detailed summary of the study and answered questions, as well as conducted a brief telephone screening to determine research eligibility. Interested and eligible individuals were then scheduled for a research visit.

Research visits were conducted with mothers and fathers, individually or collectively, depending on their preference. Regardless of the format, participants were instructed not to discuss the videos or questionnaires until both participants' data were complete in an effort to obtain independent ratings. When parent dyads scheduled separately, they were required to complete each of the two visits within a two-week period. Research visits took place primarily in a family therapy room at the AD/HD Clinic at UNCG. However, four mother-father dyads elected to have the research visit at their home. In order to accommodate participants' schedules, research visits were offered during daytime, evening, and weekend hours.

Upon arrival, participants were consented and instructed not to compare any of their responses (Refer to Appendix M for consent form). Following consent procedures, participants completed the first packet of measures, which included the Demographic and Family Questionnaire. On average, the consenting process and first packet took 15 minutes to complete. Participants then watched the first half of the video, either of the

boy or girl, lasting 15 minutes. The sequence of video presentation was randomly counterbalanced to control for potential order effects. Thus, half of the mothers and fathers viewed the video of the boy first, whereas the other half watched the video of the girl first. All mother-father pairs shared the same order of presentation. Following the first video, participants completed the second packet, which included the Child Impression Ratings and Videotaped AD/HD Ratings and required less than five minutes to complete. Next, participants watched the video of the other child and immediately completed the third packet, which is identical to the second. Lastly, participants were given the fourth packet, which consisted of the ADHD RS, Adult ADHD RS, BDI, BSRI, TOAK, and Exposure to AD/HD Rating Scale. The final packet took approximately 20 minutes to complete and was administered to participants at the end of the research visit because much of the content relates to AD/HD and could possibly influence parents' ratings of the children in the videos. In total, research visits lasted 60 to 90 minutes. The investigator collected each packet upon its completion in order to prevent participants from comparing or changing their responses.

At the conclusion of the research visit, the investigator addressed all questions and concerns and each participant received 15 dollars as compensation. As illustrated in Appendix N, parents received a research summary of the information that they provided about themselves and family.

## CHAPTER III

### RESULTS

#### **Preliminary Analyses**

Preliminary analyses were conducted to examine whether variables deviated from a normal distribution. Examination of the descriptive statistics and distribution plots of the variables of interest indicated that all of the variables were normally distributed with values within the acceptable range, defined as skewness and kurtosis values that did not exceed 1.5 (Lomax, 2001). Because all of the variables upheld the assumptions of the parametric tests needed for subsequent analyses, none of the variables required transformation.

**Internal Consistency.** Given the Videotaped AD/HD Rating Questionnaire (VARQ) is a new measure with unknown psychometric properties Cronbach's alpha was calculated based on participants' ratings of the videos of the girl and the boy. Although all of the other measures used in the current study have published psychometric properties, the internal consistency of these measures in the current sample was also examined to ensure that it was commensurate with the values found in the samples in which the measure was developed. Additionally, many of the published measures do not provide separate reliabilities based on informant gender. Therefore, prior to conducting the main analyses, internal consistency was calculated for mothers' and fathers' responses on the VARQ separately, as well as collectively. Similarly, internal consistency

was computed for the participants' responses to the videos of the boy and girl separately, as well as collectively.

Following the guidelines outlined by Nunnally and Bernstein (1994), which were later expanded upon by George and Mallery (2003), measures were considered to demonstrate adequate reliability if Cronbach's alpha exceed .70, with .80 and .90 deemed high and excellent, respectively. Regardless of whether mothers' and fathers' responses were examined separately or collapsed, and regardless of whether participants' ratings of the videos of the boy and girl were examined separately or collapsed, the VARQ demonstrated adequate to high levels of internal consistency for all of the composites yielding the following ranges: Total Score ( $\alpha = .90 - .93$ ), Inattention Composite ( $\alpha = .87 - .93$ ), and Hyperactivity-Impulsivity Composite ( $\alpha = .78 - .84$ ). Similarly high levels of internal consistency were found for the ADHD Rating Scale-IV (ADHD RS). Regardless of whether mothers' and fathers' responses were evaluated separately or together, the range of internal consistency was excellent for the Total ( $\alpha = .92$ ) and Inattention ( $\alpha = .90 - .91$ ) Composites and high for the Hyperactivity-Impulsivity Composite ( $\alpha = .89$ ), which is consistent with the reliability estimates found in the authors' original sample.

Reliability estimates for the Adult ADHD Rating Scale-IV (ADHD RS) were not available; however, in the current study, excellent levels of internal consistency were found regardless of whether mothers' and fathers' responses were analyzed separately or combined. The ranges of internal consistency for symptoms reported in childhood were as follows: Total Score ( $\alpha = .94 - .96$ ), Inattention Composite ( $\alpha = .89 - .94$ ), and Hyperactivity-Impulsivity Composite ( $\alpha = .90 - .91$ ). Although still demonstrating high

reliability, the internal consistency for current symptoms was somewhat lower, with the following ranges: Total Score ( $\alpha = .87 - .89$ ), Inattention Composite ( $\alpha = .83 - .87$ ), and Hyperactivity-Impulsivity Composite ( $\alpha = .69 - .80$ ). The Beck Depression Inventory - II demonstrated high levels of internal consistency for all participants ( $\alpha = .84$ ), and for mothers ( $\alpha = .87$ ) and fathers ( $\alpha = .80$ ) separately, which is somewhat lower than the values found in the sample in which the measure was developed. Similarly, the Bem Sex Role Inventory revealed high reliability regardless of whether mothers and fathers were evaluated separately or combined with the following ranges for Masculinity ( $\alpha = .87 - .88$ ) and Femininity ( $\alpha = .81 - .85$ ), which is comparable to the values found in the original published study. In line with prior research (Anastopoulos, Shelton, DuPaul, & Guevremont, 1993), the Test of AD/HD Knowledge showed low internal consistency for mothers and fathers together ( $\alpha = .25$ ) and for mothers ( $\alpha = .18$ ) and fathers ( $\alpha = .29$ ), separately. This result is not surprising given the multiple domains covered by this measure and the fact that it was developed primarily as a measure of treatment outcome and does possess high test-retest reliability ( $r = .84$ ). The Exposure to AD/HD Rating Scale that was created for use in the current study showed nearly adequate levels of reliability when mothers' and fathers' responses were collapsed ( $\alpha = .69$ ), with higher internal consistency for mothers ( $\alpha = .72$ ) than fathers ( $\alpha = .62$ ).

**Group Comparability of Parent and Family Demographic Variables.** Tables 1 and 2 provide summaries of the parent and family demographic characteristics for the entire sample and for mothers and fathers, separately. One-way Analyses of Variance (ANOVAs) and Chi Square tests were conducted to assess the comparability of the

groups on continuous and categorical variables, respectively. Based on the ANOVAs, the groups were statistically equivalent (with all  $p$  values  $> .1$ ) with respect to the participants' number of children,  $F(1, 98) = .10, p = .75$ , and number of life stressors  $F(1, 98) = 1.28, p = .26$ . Although not reaching statistical significance, there was a trend for participants' age,  $F(1, 98) = 3.45, p = .07$ , such that fathers were slightly older than mothers.

Based on the Chi Square tests, mothers and fathers were statistically equivalent (with all  $p$  values  $> .05$ ) regarding the following domains: level of education  $\chi^2(5, N = 100) = 5.58, p = .35$ ; income,  $\chi^2(4, N = 100) = 2.42, p = .66$ ; quality of the parent-child relationship,  $\chi^2(1, N = 100) = .80, p = .37$ ; marital dissatisfaction,  $\chi^2(4, N = 99) = 3.23, p = .52$ ; presence of a psychological condition,  $\chi^2(1, N = 100) = 1.53, p = .22$ ; and medication status  $\chi^2(1, N = 100) = .22, p = .64$ . In contrast, mothers and fathers were statistically different with respect to employment status,  $\chi^2(5, N = 100) = 26.04, p = .00$ ; current job type,  $\chi^2(5, N = 100) = 27.92, p = .00$ ; and time spent in caregiving situations,  $\chi^2(5, N = 100) = 32.01, p = .00$ , suggesting that a higher percentage of mothers were not working, homemakers, and spent more hours per week providing care to their children, as compared to fathers. Although not reaching statistical significance, there was a trend for the amount of time participants spent in recreational activities,  $\chi^2(5, N = 100) = 9.91, p = .08$ , with a slightly higher percentage of mothers engaging in more recreational activities with their children per week, as compared to fathers.



**Group Comparability of Parent Variables.** Table 3 provides a summary of the descriptive statistics for the parent variables thought to impact participants' VARQ ratings for the overall sample, as well as for mothers and fathers, separately. Findings from a series of ANOVAs suggested that the groups did not differ statistically with respect to current symptoms of parental AD/HD,  $F(1, 98) = .08, p = .78$ ; however, mothers and fathers were statistically different when comparing the Total Severity Score for childhood AD/HD symptoms  $F(1, 97) = 11.66, p = .00$ , with fathers reporting more severe symptoms, as compared to mothers. Additionally, mothers and fathers were statistically different in other domains including knowledge of AD/HD,  $F(1, 98) = 13.57, p = .00$ ; degree of exposure to AD/HD,  $F(1, 98) = .905, p = .00$ ; and gender-role,  $F(1, 98) = 18.84, p = .00$ , suggesting that mothers have more knowledge of AD/HD than fathers, are exposed to AD/HD information more often, and in a greater number of contexts than fathers, and not surprisingly, mothers identify more with a feminine than masculine gender-role, as compared to fathers. Although not reaching statistical significance, there was a trend for severity of depressive symptoms,  $F(1, 98) = 2.55, p = .11$ , such that mothers endorsed slightly more symptoms than fathers.

**Group Comparability of Video Child Impression Ratings.** A summary of the participants' impression ratings of the children in the videos is presented in Table 4 for the overall sample, and for mothers and fathers, separately. According to the ANOVAs examining participants' impressions of the boy in the video, mothers and fathers were statistically equivalent in regards to the boy's likeability,  $F(1, 98) = .39, p = .53$  and perceived socioeconomic status,  $F(1, 98) = .08, p = .78$ ; however, mothers' and fathers'

ratings of the boy's perceived age,  $F(1, 98) = 7.23, p = .01$ , was statistically different with fathers rating the boy as older. Although not statistically significant, trends emerged for the boy's perceived appearance,  $F(1, 98) = 2.22, p = .14$ , and intelligence,  $F(1, 98) = 3.90, p = .051$ , indicating that fathers rated the boy as slightly less attractive and less intelligent than mothers.

Unlike the ratings of the boy in the video, mothers' and fathers' ratings of the girl were statistically equivalent for most of the domains including perceptions of the girl's appearance,  $F(1, 98) = 1.51, p = .22$ ; likability,  $F(1, 98) = .32, p = .57$ ; intelligence,  $F(1, 98) = .28, p = .60$ ; and socioeconomic status,  $F(1, 98) = .40, p = .53$ . Mothers' and fathers' perceptions of the girl's age was the only domain reaching statistical significance,  $F(1, 98) = 4.00, p = .05$ . Consistent with participants' ratings of the boy, fathers also rated the girl in the video as older than did mothers.

**Group Comparability of Order of Video Presentation.** One-way Analyses of Variance were conducted separately for mothers and fathers to examine whether the order of presentation impacted their VARQ ratings. A summary of mothers' and fathers' VARQ ratings according to the order of video presentation are illustrated in Tables 5 and 6. Mothers' VARQ ratings for the boy were statistically different depending on whether they viewed the video of the boy first or second. More specifically, mothers rated the boy's Total AD/HD Severity higher,  $F(1, 48) = 4.03, p = .05$ , when they watched the video of the boy second versus first. Although no additional mother-completed VARQ indices for the boy reached statistical significance, the order in which the video of the boy was presented was related to somewhat higher Inattention Count,  $F(1, 48) = 3.26, p = .08$ ,

and Inattention Severity Scores,  $F(1, 48) = 2.97, p = .09$ ; and Hyperactivity-Impulsivity Count,  $F(1, 48) = 3.13, p = .08$ , and Hyperactivity-Impulsivity Severity Scores,  $F(1, 48) = 3.88, p = .06$ , such that mothers rated the boy slightly higher when viewing the boy second. The order in which the video of the girl was presented was related to significantly higher Inattention Count,  $F(1, 48) = 4.26, p = .05$ , with mothers rating the girl more severely when viewed second instead of first. Although no additional VARQ indices were statistically significant, trends emerged for mothers' ratings of the girl's Total AD/HD Severity,  $F(1, 48) = 2.29, p = .14$  and Hyperactivity-Impulsivity Severity,  $F(1, 48) = 2.42, p = .13$ , such that mothers rated the girl marginally higher when watching the video of the girl second.

For fathers, the VARQ ratings for the boy were statistically equivalent regardless of whether they rated the boy or girl first. This was true for all of the AD/HD composite scores including the VARQ Total Symptom Severity score,  $F(1, 48) = .02, p = .89$ . In contrast, fathers' Total Symptom Severity scores for the girl were statistically different based on the order in which the videos were presented,  $F(1, 48) = 8.10, p = .01$ , such that the girl was rated higher when rated second. Significantly higher scores also emerged for Inattention Severity,  $F(1, 48) = 4.21, p = .05$ ; Hyperactivity-Impulsivity Count,  $F(1, 48) = 6.20, p = .02$ ; and Hyperactivity-Impulsivity Severity,  $F(1, 48) = 10.26, p = .00$ .

In summary, regardless of whether mothers rated the boy or the girl in the video, they consistently rated the child in the second video as displaying more AD/HD behavior than the child in the first video. This pattern was also true for fathers, but only when rating the video of the girl.

## Primary Analyses

**Hypothesis #1: Mothers will rate AD/HD behaviors at higher levels than fathers.** A summary of the means and standard deviations of mothers' and fathers' VARQ ratings are illustrated in Table 7. Because the order of video presentation influenced mothers' and fathers' Videotaped AD/HD Rating Scale scores, a series of One-way Analysis of Covariance (ANCOVAs) were conducted to examine possible differences between mothers' and fathers' VARQ ratings while controlling for order of video presentation.

None of the ANCOVAs for the ratings of the boy in the video were significant; however, trends emerged for the presentation order covariate with regard to Hyperactivity-Impulsivity Severity,  $F(1, 97) = 2.33, p = .13$  and Total Severity,  $F(1, 97) = 2.28, p = .13$ . Although not reaching statistical significance, additional trends were noted suggesting that gender played a role in mothers' and fathers' VARQ ratings for Inattention Count,  $F(1, 97) = 2.31, p = .13$ ; Hyperactivity-Impulsivity Count,  $F(1, 97) = 3.37, p = .07$ ; and Hyperactivity-Impulsivity Severity  $F(1, 97) = 2.19, p = .14$ , such that fathers' VARQ ratings of the boy were somewhat higher than mothers' ratings.

The ANCOVA results for the ratings of the girl indicated that the order of video presentation played a significant covariate role in mothers' and fathers' VARQ ratings for all of the indices: Inattention Count,  $F(1, 97) = 6.18, p = .02$ ; Inattention Severity,  $F(1, 97) = 5.42, p = .02$ ; Hyperactivity-Impulsivity Count,  $F(1, 97) = 6.96, p = .01$ ; Hyperactivity-Impulsivity Severity,  $F(1, 97) = 11.31, p = .00$  and Total Severity,  $F(1, 97) = 9.25, p = .00$ . After controlling for order of video presentation, gender differences were

not significant; however, a gender trend emerged, such that fathers' ratings of the girl's hyperactive-impulsive severity were slightly higher than mothers' ratings,  $F(1, 97) = 2.23, p = .14$ .

**Hypothesis 2. Within informants, parents will rate children of the opposite gender as displaying more severe AD/HD behavior.** In order to determine whether child gender impacted participants' videotaped AD/HD ratings, a series of paired-samples t-tests were conducted for mothers and fathers separately. Mothers' VARQ scores when rating the boy and girl were statistically different for all of the AD/HD indices: Inattention Count,  $t(50) = -3.23, p = .00$ ; Inattention Severity,  $t(50) = -3.53, p = .00$ ; Hyperactivity-Impulsivity Count,  $t(50) = -7.43, p = .00$ ; Hyperactivity-Impulsivity Severity,  $t(50) = -6.77, p = .00$  and Total Severity,  $t(50) = -5.15, p = .00$ . More specifically, mothers consistently rated the girl's levels of AD/HD higher than the boy's with respect to all of the AD/HD indices.

As with mothers' ratings, fathers' VARQ ratings of the boy and girl were statistically different on all of the AD/HD indices: Inattention Count,  $t(50) = -3.43, p = .00$ ; Inattention Severity,  $t(50) = -4.04, p = .00$ ; Hyperactivity-Impulsivity Count,  $t(50) = -6.61, p = .00$ ; Hyperactivity-Impulsivity Severity,  $t(50) = -7.29, p = .00$  and Total Severity,  $t(50) = -6.23, p = .00$ . Consistent with mothers' ratings, fathers rated the girl's levels of AD/HD higher than the boy's for all of the VARQ composite scores.

## **Post-Hoc Analyses**

To address the possibility of an order effect, two post-hoc One-way ANOVAs were conducted using half of the sample. As summarized in Table 8, the first ANOVA examined the 25 mother-father dyads who viewed the video of the boy first, whereas the other ANOVA used the 25 mother-father dyads who viewed the video of the girl first. Significant differences emerged for mothers' and fathers' Hyperactivity-Impulsivity Symptom Count ratings of the boy,  $F(1, 48) = 5.03, p = .03$ , with fathers rating the boy higher. Although no additional significant differences were found, there was a trend for the Total Symptom Severity,  $F(1, 48) = 3.03, p = .09$ , and the three remaining composites: Inattention Symptom Count,  $F(1, 48) = 3.89, p = .06$ ; Inattention Symptom Severity,  $F(1, 48) = 2.20, p = .15$ ; and Hyperactivity-Impulsivity Severity,  $F(1, 48) = 3.52, p = .07$ , with fathers rating the boy's AD/HD behavior somewhat higher than mothers on these dimensions. Mothers' and fathers' ratings of the video of the girl did not differ significantly for the Total Symptom Severity,  $F(1, 48) = .051, p = .82$ , or for any of the AD/HD composite scores.

## **Exploratory Analyses**

**Relationship between Parent and Family Variables and VARQ Ratings.** On an exploratory basis, parent and family variables thought to influence participants' ratings of AD/HD were examined. Child variables were not included because the characteristics that have been shown to impact parents' ratings of child behavior (e.g., age, race) were controlled for through the selection of the children used in the videos. Additionally, the child impression ratings appeared to be related to the VARQ ratings and therefore, were

not entered as a separate construct. Despite this exclusion, parent and family variables were selected based upon a consideration of the theoretical and conceptual literatures. Parent variables included: gender, depression, gender-role, current AD/HD symptom severity, knowledge of AD/HD, and exposure to AD/HD. Family variables encompassed hours spent in caregiving situations, hours spent in recreational situations, marital dissatisfaction, and participants' total AD/HD symptom severity ratings of their own child.

**Correlational Analyses.** To explore the relationship of possible parent and family predictor variables with VARQ ratings of the boy and girl, correlational analyses were conducted for the overall sample and for mothers and fathers separately, as summarized in Tables 9 through 11. Although several of the variables of interest were positively correlated, most were only moderately correlated. When mothers' and fathers' responses were collapsed, their AD/HD ratings of their own child were positively correlated ( $r = .21$ ) with their AD/HD ratings of the boy in the video, such that the higher they rated their own child's Total AD/HD Symptom Severity, the higher they rated the boy's Total AD/HD Symptom Severity. Additionally, mothers' and fathers' ratings of the girl's Total AD/HD Symptom Severity were positively correlated with their ratings of the boy's Total AD/HD Symptom Severity ( $r = .33$ ); thus, the higher they rated the boy's AD/HD symptoms, the higher they rated the girl's symptoms.

When mothers' responses were examined separately, gender-role ( $r = .33$ ) and knowledge of AD/HD ( $r = -.30$ ) were found to correlate with their AD/HD ratings of the boy, suggesting that mothers who identified with a more feminine gender-role and had

less knowledge of AD/HD rated the boy as displaying more severe Total AD/HD Symptom Severity. For fathers, the time spent in caregiving situations was positively correlated with their AD/HD ratings of the girl ( $r = .31$ ), such that the more they were involved in caregiving with their own child, the higher they rated the girl's Total AD/HD Symptoms Severity. Fathers' AD/HD ratings of their own child were also positively correlated with their Total AD/HD Symptom Severity ratings of the boy ( $r = .46$ ) and girl ( $r = .31$ ) in the video; the higher they rated their own child's AD/HD, the higher they rated each of the children in the video's AD/HD. As with mothers' and fathers' ratings when collapsed, fathers' AD/HD ratings of the boy and girl in the videos were moderately correlated ( $r = .46$ ) such that higher AD/HD ratings of one video, were related to higher ratings for the other.

**Regression Analyses.** Stepwise multiple linear regressions were conducted to examine how parent and family variables were associated with mothers' and fathers' VARQ ratings of the boy and girl. Although the initial intent was to explore mothers' and fathers' ratings separately, this was not feasible given that order of video presentation influenced participants' VARQ ratings. As such, only the mother-father dyads that viewed the boy and girl videos first were retained in subsequent analyses, yielding a sample of 50 participants. In order to accommodate this small sample size, mothers' and fathers' ratings were combined. In both sets of stepwise regressions, parent variables (i.e., gender, depression, gender-role, current total AD/HD symptom severity, knowledge of AD/HD, and exposure to AD/HD) were entered in Block 1 and family variables (i.e.,



hours spent in caregiving situations, hours spent in recreational situations, marital dissatisfaction, and ADHD RS ratings of their own children) were entered in Block 2.

The first set of stepwise regressions examined Total AD/HD Symptom Severity Scores; thus, this composite was used for the VARQ as an outcome variable and for the ADHD RS as a family predictor variable. Findings from these stepwise regressions are summarized in Tables 12 and 13. When rating the video of the boy, mothers' and fathers' knowledge of AD/HD significantly predicted their ratings of the boy's AD/HD total symptom severity,  $\beta = -.28$ ,  $t(50) = -2.03$ ,  $p = .05$ , explaining eight percent of the variance in participants' VARQ Total Symptom Severity scores when rating the boy,  $\Delta R^2 = .08$ ,  $F(1,47) = 4.12$ ,  $p = .05$ . Thus, less knowledge of AD/HD predicted higher AD/HD ratings of the boy. When rating the girl, mothers' and fathers' marital dissatisfaction significantly predicted their AD/HD Total Symptom Severity scores,  $\beta = .38$ ,  $t(50) = 2.84$ ,  $p = .01$ , which explained 14 percent of the variance in VARQ Total Symptom Severity scores when rating the girl,  $\Delta R^2 = .14$ ,  $F(1,48) = 8.05$ ,  $p = .01$ . Higher marital dissatisfaction predicted higher AD/HD ratings of the girl.

Subsequent stepwise regressions separately examined VARQ composite scores for inattention and hyperactivity-impulsivity and are summarized in Tables 14 through 18. Blocks 1 and 2, the parent and family blocks, respectively, remained the same for all variables with one exception. The Child ADHD RS Composite (e.g., Inattention Count, Inattention Severity, Hyperactivity-Impulsivity Count, and Hyperactivity-Impulsivity Severity) that was included in the family block always matched the dependent variable.

For example, if the VARQ Inattentive Count score was used as the outcome variable, the ADHD RS Inattention Count score was selected as the predictor variable.

For the boy's VARQ Inattention Count and Severity scores, no significant predictors emerged. However, mothers' and fathers' knowledge of AD/HD,  $\beta = -.36$ ,  $t(50) = -2.62$ ,  $p = .01$  significantly predicted their ratings of the boy's AD/HD Hyperactivity-Impulsivity Count score and accounted for 13 percent of the variance,  $\Delta R^2 = .13$ ,  $F(1,47) = 6.84$ ,  $p = .01$ . As was seen in the regression looking at the association between AD/HD knowledge and total AD/HD severity ratings of the boy, less knowledge of AD/HD also predicted higher Hyperactivity-Impulsivity Count ratings of the boy. However, in contrast to the regression examining total AD/HD severity ratings for the girl that suggested higher marital dissatisfaction predicted higher AD/HD ratings, the opposite pattern emerged for the boy. Higher levels of marital dissatisfaction significantly predicted lower ratings of the boy's AD/HD Hyperactivity-Impulsivity Count score,  $\beta = -.31$ ,  $t(50) = -2.36$ ,  $p = .02$ , explaining an additional 10 percent of the variance in VARQ Hyperactivity-Impulsivity Count scores,  $\Delta R^2 = .10$ ,  $F(1,46) = 5.59$ ,  $p = .02$ . Collectively, knowledge of AD/HD and marital dissatisfaction accounted for a total of 23 percent of the variance. When examining the boy's Hyperactive-Impulsive Severity Scores, parents' knowledge of AD/HD,  $\beta = -.35$ ,  $t(50) = -2.52$ ,  $p = .02$ ; ratings of their own child's Hyperactive-Impulsive Severity score,  $\beta = .27$ ,  $t(50) = 2.06$ ,  $p = .05$ ; and marital dissatisfaction,  $\beta = -.29$ ,  $t(50) = -2.22$ ,  $p = .03$ , emerged as significant predictors and accounted for 27 percent of the variance. Taken together, less knowledge of ADHD, higher ratings of their own child's hyperactivity-impulsivity severity, and lower levels of

marital dissatisfaction predicted higher Hyperactivity-Impulsivity Count ratings of the boy.

For the girl's VARQ Inattention Count, no significant predictors emerged. However, the amount of time mothers and fathers spent in recreational activities with their own child predicted their ratings of the girl's Inattention Severity,  $\beta = -.30$ ,  $t(50) = -2.15$ ,  $p = .04$ , which explained nine percent of the variance,  $\Delta R^2 = .09$ ,  $F(1,48) = 4.62$ ,  $p = .04$ . Therefore, participants who spent less time interacting with their own child in recreational activities rated the girl's Inattention Severity higher. Mothers' and fathers' marital dissatisfaction also predicted their Hyperactive-Impulsive Count Scores when rating the girl,  $\beta = .36$ ,  $t(50) = 2.64$ ,  $p = .01$ , accounting for 13 percent of the variance,  $\Delta R^2 = .13$ ,  $F(1,48) = 6.98$ ,  $p = .01$ ). Participants' marital dissatisfaction also predicted ratings of the girl's Hyperactivity-Impulsivity Severity score,  $\beta = .42$ ,  $t(50) = 3.24$ ,  $p = .01$ , explaining 18 percent of the variance,  $\Delta R^2 = .18$ ,  $F(1,48) = 10.52$ ,  $p = .01$ ).

In summary, less knowledge of AD/HD and higher ratings of their own child's AD/HD behavior were associated with higher ratings of the boy's AD/HD. For the girl, spending less time in recreational situations with their own child was related to parents' higher ratings of the girl's AD/HD. Although marital dissatisfaction was associated with parents' ratings of the boy and the girl, the direction of the relationship depended on the gender of the child being rated, with higher levels of marital dissatisfaction predicting higher levels of AD/HD behavior when rating the girl. This relationship was reversed when rating the boy such that higher levels of marital dissatisfaction related to lower AD/HD ratings.

**Mother-Father AD/HD Ratings of their Children.** Of secondary interest was the question of how mothers' and fathers' ratings of their own children compare. To address this, a Chi Square test was first conducted to determine whether mothers and fathers were rating their children on or off of medication. Findings suggest that although 68% of children currently were taking medication to manage their behavior, mothers and fathers did not significantly differ on whether they rated their children on or off medication,  $\chi^2(1, N = 68) = .80, p = .50$ . Following this, a series of One-Way ANOVAs were conducted. As illustrated in Table 19, mothers' and fathers' ratings were statistically equivalent when ratings their child's Total Symptom Severity,  $F(1, 98) = .50, p = .48$ ; Inattention Symptom Count,  $F(1, 98) = 1.07, p = .30$ ; Inattention Symptom Severity,  $F(1, 98) = 1.45, p = .23$ ; Hyperactivity-Impulsivity Symptom Count,  $F(1, 98) = .01, p = .92$ ; and Hyperactivity-Impulsivity Severity,  $F(1, 98) = .01, p = .94$ .

## CHAPTER IV

### DISCUSSION

Although the assessment procedures for diagnosing AD/HD continue to be refined, such progress is hindered by the fact that the information gathered from parents relies almost exclusively on maternal report of children's behavior. Clinicians often assume that because mothers typically spend more time interacting with children in a greater number of contexts (Phares, 1997; Richters, 1992), they are more accurate reporters of child behavior than fathers. Only one study (Langberg et al., 2010) has directly compared mothers' and fathers' ratings of child AD/HD. Findings from the study, along with studies examining inter-parental agreement of global child externalizing problems, suggest that fathers may endorse fewer and less severe AD/HD symptoms as compared to mothers. The validity of this conclusion is difficult to confirm given that AD/HD symptoms are rarely examined in isolation. Of additional concern, studies that explore potential differences in parental reporting rely exclusively on behavior rating scales that were developed from mothers' reports. As such, specific norms for male versus female informants are not available. Despite this limitation, researchers continue to have fathers complete maternally-derived ratings scales, which forces fathers' responses to be evaluated within a maternal context. Thus, it remains unclear whether the differences between mothers' and fathers' reports of child behavior

problems found in previous studies are due to actual differences in reporting, or if the differences simply reflect measurement artifact. Further complicating this situation, studies that find differences in mothers' and fathers' reports do not account for other factors that may predict such differences.

To address these concerns, the current study explored mothers' and fathers' ratings of child AD/HD symptoms among unfamiliar videotaped children. By rating videos and using raw scores, it was believed that parents' responses would be less constrained than if using a maternally-derived behavior rating scale. Of additional benefit, factors such as parenting attributions, as well as quantitative and qualitative differences in parent-child interactions, would arguably influence parents' ratings of unfamiliar children to a lesser extent than if rating their own child. Thus, it was presumed that these design considerations would more easily allow true differences in mothers' and fathers' ratings to emerge. On an exploratory basis, the current study also explored other parent and family variables that may contribute to differences in AD/HD ratings.

### **Study Hypotheses**

**Hypothesis 1.** The findings did not support the first hypothesis, that mothers would rate AD/HD behaviors at higher levels than fathers. After controlling for the order effect, which played a larger role in participants' ratings of the girl, no significant differences emerged in mothers' and fathers' AD/HD ratings with respect to the boy or the girl. Contrary to expectations, several statistical trends emerged, consistently suggesting that fathers' AD/HD ratings of the boy were slightly higher than mothers' ratings in terms of inattention symptoms, hyperactivity-impulsivity symptoms, and

hyperactivity-impulsivity severity. Additionally, fathers rated the girl's hyperactivity-impulsivity severity slightly higher than did mothers.

In order to better understand the influence of the order effect on participants' videotaped AD/HD ratings, post-hoc analyses were conducted comparing the 25 mother-father dyads that viewed the video of the boy first with the remaining 25 mother-father dyads that viewed the video of the girl first. Of the dyads that viewed the boy first, fathers rated the boy's hyperactivity-impulsivity symptom counts higher than mothers. Although no other significant differences were found, trends emerged such that fathers rated the boy slightly higher than did mothers in terms of total symptom severity and the remaining AD/HD indices. In contrast to the AD/HD ratings for the boy, mothers and fathers who viewed the video of the girl first did not differ with regard to any of the AD/HD indices. Although the findings from the current study were not consistently in the predicted direction, the results highlight the utility of obtaining separate AD/HD ratings from parents, as mothers and fathers appear to perceive AD/HD behavior somewhat differently, and therefore, provide unique and valuable perspectives.

The finding that fathers rated AD/HD behavior at slightly higher levels than mothers is in the opposite direction of what would be expected based upon a consideration of the previous literature. Previous findings indicate that fathers may rate child behavior problems *less* severely than mothers (Achenbach et al., 1987; Christensen et al., 1992; Duhig et al., 2000; Jensen et al., 1988; Mash & Johnson, 1983; Webster-Stratton, 1988). Unlike the existing literature, the current study examined parental AD/HD ratings of *unfamiliar* children. Thus, it is plausible that when rating their own

children, mothers' AD/HD ratings are more severe than fathers' ratings because mothers typically interact with their own children in a greater number and type of contexts (Phares, 1997; Richters, 1992). If mothers have more behaviors from which to sample, which occur in contexts that are more likely to elicit AD/HD symptoms, mothers would rate their child's AD/HD more severely than fathers. However, these factors should not carry over to mothers' AD/HD ratings of an unfamiliar child to the same degree as if rating their own child.

Additionally, there is an assumption that fathers are less likely to pathologize misbehavior and may be more tolerant of it (Addis & Mahalik, 2003; Schock, et al., 2002; Singh, 2003). However, these findings are also based on fathers' beliefs about their own children, which may not generalize to an unfamiliar child. It is conceivable that fathers may have lower thresholds for behavioral problems in unfamiliar children than with their own child. In contrast, mothers may have a higher tolerance for misbehavior in an unfamiliar child because they may recognize how the unfamiliar child's behavior resembles their own child's behavior. If mothers are in fact more sympathetic of the unfamiliar child, they may also be inclined to rate the child in a socially desirable manner and rate the behavior as less problematic.

There is also reason to suspect that parent factors such as life stressors, marital discord, AD/HD, and depression may influence mothers' AD/HD ratings more than fathers' ratings. However, with the exception of a trend emerging for depression, mothers and fathers did not differ with respect to levels of psychopathology. Additionally, participants reported lower levels of psychopathology than would be expected for parents



of children with behavior problems. Due to these circumstances, the parent variables that have been linked to parents' ratings in previous research were not able to be examined. However, inter-parental differences emerged in that mothers had more knowledge of AD/HD and exposure to information about AD/HD than did fathers. Upon first inspection this seems inconsistent with the finding that parents may rate AD/HD behavior at higher levels when provided with instructions on how to identify and rate such behavior (Johnston et al., 2011). However, it seems plausible that by having a better understanding of the disorder, mothers may also hold more positive child-referent parenting attributions than fathers. If mothers do in fact perceive the child's misbehavior as less volitional than do fathers, this may also lead to lower AD/HD ratings. Lastly, although attempts were made to create equivalent videos, fathers perceived the boy and girl as older than did mothers. Thus, it remains unclear whether this caused fathers to have higher expectations for the children's behavior because they evaluated it using a framework of what older children's behavior should look like.

**Hypothesis 2.** There was partial support for the second hypothesis, that parents would rate children of the opposite gender as displaying more severe AD/HD behavior than children of the same gender; mothers and fathers rated the girl's AD/HD more severely than the boy's AD/HD. The finding that fathers rated the girl more severely than the boy is consistent with previous studies (Friedlander et al., 1986). Additionally, from a conceptual standpoint, if fathers do in fact spend less time with children of the opposite gender as research suggests (Blair et al., 1994; NICHD Early Child Care Research Network, 2000; Starrels, 1994), it seems likely that fathers may have a less defined

schema of behavior for girls than do mothers, which may lead to more severe ratings. However, mothers did not show the same pattern of responding. It is possible that this is because mothers have an equally developed schema of behavior for boys and girls, as a child's gender may not impact the quantity and quality of parent-child interactions to the same degree for mothers as for fathers.

Parents may have also rated the unfamiliar girl's AD/HD behavior more severely than the boy's because they may have different definitions as to what constitutes deviant behavior for boys versus girls. If the videos were indeed equivalent with respect to AD/HD behavior, it is possible that the girl's behavior was evaluated using higher standards. This contention is in line with findings that mothers and fathers have different expectations for boys' and girls' behavior. Parents tend to discourage aggressive, antisocial, and impolite behaviors in their daughters, while being more tolerant of undesirable behavior in sons (Power & Parke, 1982). Additionally, hyperactive-impulsive behaviors are deemed more acceptable when displayed by boys than girls, often due to the rationalization that "boys will be boys" (Singh, 2003). Thus, it is possible that in order for parents to perceive the videos of the boy and girl as being comparable, the video of the girl would need to be edited to reflect much less severe AD/HD behavior than the boy.

### **Exploratory Analyses**

**Exploratory Analysis 1.** The study examined parent and family factors that may impact mothers' and fathers' ratings of AD/HD. Child factors could not be examined because the factors that have been shown to potentially influence parents' ratings of child

behavior, including the child impression ratings, were either controlled for through the selection of the children in the videos or were too closely related to the videotaped AD/HD ratings. Thus, only parent and family factors were selected. Parent factors included gender, depression, gender-role, current AD/HD symptom severity, knowledge of AD/HD, and exposure to AD/HD. Family factors encompassed hours spent in caregiving situations, hours spent in recreational situations, marital dissatisfaction, and participants' total AD/HD symptom severity ratings of their own child.

Results of the correlational analyses suggest that parents' AD/HD ratings of the unfamiliar children were related to their own child's AD/HD behavior. Such carry-over effects make intuitive sense given parents likely used perceptions of their own child's behavior as anchors from which to compare the unfamiliar child. Also not surprisingly, parents' AD/HD ratings of the boy and girl were related, with the video of the first child serving as a comparison for the second child. When parents were examined separately, mothers who held more traditional gender-roles rated the boy more severely. This is consistent with findings that women who hold more traditional gender beliefs typically engage in a larger proportion of the caregiving (Moon & Hoffman, 2008). Thus, if mothers provide more care and have more behavior from which to sample, it is not surprising that this would lead to more severe AD/HD ratings. This rationale is consistent with the finding that fathers who provided more care to their own child rated the girl's AD/HD behavior more severely. The results also revealed that mothers who had less knowledge of AD/HD rated the boy's behavior more severely, possibly because they misinterpreted the AD/HD behavior as being oppositional and defiant.

Following correlational analyses, regressions were conducted and revealed that several parent and family variables were associated with AD/HD ratings of the unfamiliar children when mothers' and fathers' ratings were collapsed. As was evident in the correlational analyses, parents' knowledge of AD/HD and their ratings of their own child's AD/HD were associated with parents' AD/HD ratings of the videos. More specifically, less knowledge of AD/HD and higher ratings of their own child's AD/HD behavior were associated with higher ratings of the boy's AD/HD. Spending less time with their own child in recreational situations was related to parents' higher AD/HD ratings of the girl. This makes sense under the assumption that if parents interact with their own children less often in recreational settings this may result in greater interaction in caregiving contexts that are more likely to elicit AD/HD behavior. This is consistent with the finding that when parents rate severe AD/HD behavior in their own child they are more likely to rate AD/HD behavior in an unfamiliar child more severely. Another possible explanation for this finding is that less time spent in recreational settings may have a greater impact on fathers' ratings than mothers' ratings. Fathers typically have the fewest behaviors from which to sample when rating girls' behavior and are more likely to interact with girls in recreational situations than in caregiving contexts. Thus, if fathers in fact interact with their own daughters less often they may have a less defined framework of how to evaluate girls' behavior. This may make rating an unfamiliar girl more difficult for fathers, and as such, they may perceive the girl's AD/HD behavior as being more severe.

Although marital dissatisfaction was associated with parents' ratings of the boy and the girl, the direction of the relationship depended on the gender of the child being rated with higher levels of marital dissatisfaction predicting higher levels of AD/HD behavior when rating the girl. This relationship was reversed when rating the boy such that higher levels of marital dissatisfaction related to lower AD/HD ratings. The finding related to parents' ratings of the girl is consistent with previous research that indicates parents evaluate children's behavior more negatively when experiencing marital discord (Christensen et al., 1992; Jensen et al., 1998; O'Leary & Vidair, 2005). However, the fact that greater marital dissatisfaction predicted lower AD/HD ratings for the boy runs counter to this. From a theoretical standpoint, it is possible that parents experiencing high levels of marital discord may in general be less accurate raters of child behavior and as such, they may rely more heavily on stereotyped thinking of how boys and girls should behave. If there is a double standard such that it is more acceptable for boys to display less appropriate behavior, which seems likely, then when ratings boys and girls who display AD/HD behavior parents may be less tolerant of the girl's behavior and therefore, rate it more severely. In contrast, if parents rely on the notion that the boy is simply being a boy, they may be more inclined to minimize the negative behavior.

**Exploratory Analysis 2.** In addition to comparing mothers' and fathers' ratings of unfamiliar children, the study also explored participants' ratings of their own children's AD/HD behavior. Consistent with previous studies (Burrows & Kelley, 1983), mothers' and fathers' AD/HD ratings of their own child showed greater inter-parent agreement than did ratings of the unfamiliar children. In fact, the higher levels of

agreement that emerged in the current study resulted in no significant differences between mothers' and fathers' ratings of their own child's AD/HD. This is surprising given the previous findings that mothers may rate AD/HD symptoms more severely than fathers. However, the current sample differed from previous studies in several ways. Although the current sample was not clinical, it was mostly comprised (88%) of parents whose children were diagnosed with AD/HD. In contrast, most other studies have relied on community samples. Of the participants' children, most were currently receiving psychosocial treatment or medication management. Additionally, many of the participants had received psychoeducation through the evaluation process or by attending AD/HD support group meetings at which they were recruited. Due to these factors, the sample was comprised of participants who presumably had more knowledge of and exposure to AD/HD information than the general population.

The current study also differed from previous work in that parents reported lower levels of parental psychopathology, general life stress, and marital dissatisfaction than would be anticipated among parents of children with behavioral concerns. Lastly, parents from the current study were from higher socioeconomic backgrounds, married, in generally stable relationships, and rating a biological child, all of which have been associated with higher levels of inter-parental agreement. For all of these reasons, it is less surprising that inter-parental differences did not emerge among highly functioning, treatment savvy participants, as compared samples in previous studies.

## **Limitations**

The results of this study must be tempered by consideration of several limitations. First, the study aimed to recruit 60 mother-father dyads. Power analyses indicated that this sample size would have sufficient power to detect significant main effects for parent gender, child gender, as well as the interaction. Despite attempts to attain this sample, fifty mother-father dyads participated in the study. Thus, it remains unclear whether trend relationships would have been strengthened to reflect significant differences with an increased sample size. Additionally, mothers' and fathers' responses needed to be collapsed for some of the exploratory analyses due to the order effect; therefore, inferences could not be made about how certain parent and family factors are uniquely associated with maternal and paternal ratings.

A final statistical limitation was that adjustments were not made to take into account the large number of comparisons. Because of this multiple testing problem, consideration had been given to making adjustments; however, this option was abandoned given the exploratory nature of the study. Similarly, because a Repeated Measures Multivariate Analysis of Variance design cannot correct for the dependency between variables and cannot easily allow for the examination of interaction effects, this option was also discounted. However, future studies investigating this topic should likely adopt a mixed-model ANOVA approach as it is well-suited for examining the possible main and interaction effects of parent gender, child gender, and order effects simultaneously while also adjusting for multiple comparisons.

Although attempts were made to match the boy's and girl's behavior, it remains unclear whether this was successful. Another goal of the study was to capture naturalistic child behavior; however, it was apparent that at times both of the children were aware of the camera's presence in the room. Of additional concern, following completion of the study, many of the participants reported that they rated the child's AD/HD behavior less severely because they assumed that the children had completed their work. Thus, off-task behaviors were misinterpreted as boredom.

It is also uncertain whether the findings generalize to underrepresented populations. Although efforts were made to recruit participants that were representative of the local community, the current sample was comprised mostly of middle-class participants. Additionally, participants were Caucasian and most were married. Thus, it remains unclear whether the current findings would be replicated in more racially diverse families with different types of partnerships. Of additional concern, participants displayed low levels of psychopathology and were treatment savvy. As such, different findings may emerge if parents display greater mental health concerns or have less knowledge of AD/HD.

These limitations are likely due to a self-selection bias; parents who elect to participate in research may not generalize to those who do not. This may be especially true for fathers, who are less likely to participate in studies when they are less educated, have less satisfying marriages and poorer parenting skills, and hold more traditional child-rearing beliefs (Braver & Bay, 1992). Thus, the existing literature, along with the current study, makes less of a contribution to understanding fathers who are generally of



lower functioning. In a similar vein, fathers are less likely to participate in research when their child has temperament, health, and behavioral problems (Costigan & Cox, 2001; Hops & Seeley, 1992). This often leads to recruitment difficulties, which was problematic for the current study.

Although the study did not alert participants to the fact that they would be rating AD/HD behavior, parents assumed this for several reasons. First, the majority of participants were recruited from their past involvement in clinical services or research studies through the AD/HD Clinic at UNCG. Second, the remaining participants were informed of the study at a local AD/HD support group meeting. Third, most of the research visits were conducted at the AD/HD Clinic at UNCG. Due to these contextual clues, parents assumed that they were evaluating AD/HD behavior and several parents mentioned that the children in the videos must be previous clients. Because these factors may have led to elevated ratings, future phases of this study will attempt to recruit participants from other sources and hold research visits at other locations.

Lastly, although the current study used a new rating scale, the VARQ, and also evaluated parents' responses using raw scores instead of standardized scores based upon maternal norms, it is still problematic that many of the measures' items were maternally-derived. However, until the theories and diagnostic criteria on which AD/HD is based are updated to reflect child behaviors that occur within mother- and father-child interactions, such measures are the best viable option.

## **Summary**

Bearing these limitations in mind, the current study represents the first attempt to examine mothers' and fathers' ratings of child AD/HD symptoms among unfamiliar videotaped children, thereby minimizing the problem of comparing mother and father AD/HD ratings in the context of maternally-derived rating scales. This study also uniquely addressed the larger contextual parent, child, and family factors that may influence parents' ratings of child AD/HD symptoms.

Although contrary to expectations, it was found that fathers rated AD/HD behavior in unfamiliar children at slightly higher levels than mothers, suggesting that mothers and fathers do in fact perceive child behaviors differently. Additionally, the results suggest that mothers and fathers rated the unfamiliar girl more severely. Although it remains unclear whether this was due to differences in parental perceptions, it appears that a consideration of child gender seems warranted. Particularly noteworthy were the findings that parent and family factors such as knowledge of AD/HD, marital satisfaction, perceptions of their own child's behavior, and the recreational contexts in which parents interact with their children, were associated with parents' perceptions of an unfamiliar child's AD/HD behavior. Thus, these results provide new insight for understanding parents' perceptions of child behavior.

## **Future Research**

To address the possibility that the results of the current study were impacted by the sample itself, it might be valuable to conduct a study that captures parents' ratings prior to the evaluation process. Arguably, more significant differences in mothers' and

fathers' reporting may emerge when parents have not yet received psychoeducation or other forms of treatment. Additionally, future studies should aim to recruit participants experiencing greater levels of psychopathology that is commensurate with levels more typically found among parents of children with behavior problems.

In addition to a study using parents of undiagnosed children, it may also be useful to examine differences in non-parents' ratings of child AD/HD behavior. By comparing men and women who have not yet had children, the unique effect of gender can be explored without the interaction between parent gender and parenting perceptions. In a similar vein, comparing informants other than parents would provide additional insight into how gender may impact ratings of child AD/HD behavior. A logical next step would be to have male and female teachers rate the videos to determine whether differences emerge in structured classroom settings. This is of great utility given teacher ratings play a critical role in assessing the cross-situational criterion necessary for making a diagnosis of AD/HD in children.

Although the current study examined how parental gender may influence reports of child AD/HD symptoms, it should be noted that gender is not a direct construct. Rather, gender broadly encompasses the socially constructed roles that society deems appropriate for men and women. As such, gender is a proxy for other constructs. For example, as evidenced in the current study, mothers and fathers differ with respect to the situations in which they interact with their children. Future studies should consider examining these and other variables, such as parents' exposure to child behavior across academic, social, and family domains. Additionally, it appears that parents may have

difficulty recalling how much time is spent with their child in various settings; thus, it is possible that more accurate estimates of parent-child interactions may be obtained if parents are asked to keep daily logs or are prompted using experience sampling methodology.

Although it is imperative to address these research areas, this is complicated by the fact that the theories and symptoms on which AD/HD was based were derived from samples comprised of mothers and thus, reflect behaviors that are more likely to be elicited in mother-child interactions. To further complicate this situation, the parent- and teacher-completed ratings scales that are commonly used to assess AD/HD were developed and tested primarily on mothers and female teachers. Thus, future studies comparing ratings of child AD/HD behavior would be well advised to create gender-sensitive measures that provide norms based on the gender of the informant. Additionally, studies should adopt more sophisticated comparisons of parents' AD/HD ratings. Most studies explore comparisons using AD/HD symptom composites. Future research should look beyond global ratings and instead, address how specific symptoms map on to impairment indices.

Perhaps most important is the need to improve efforts to recruit fathers in research. Estimates from 2003 suggest that only eight percent of research studies on childhood AD/HD include paternal report (Singh, 2003), and inspection of the recent literature suggests that this trend is not improving. Of additional concern, when fathers participate in research studies, their responses are often combined with mothers' responses and are assigned lesser weight in clinical decision-making. Direct comparisons

between mothers' and fathers' ratings of child behavior should be made such that differences can be allowed to emerge. In the rare instances that studies assess possible mother-father differences, there is little guarantee that the parents did not discuss their responses (Roggman, Boyce, Cook, & Cook, 2002). In summary, researchers should encourage and value paternal involvement by evaluating fathers' unique responses in clinically meaningful ways. Special attention should also be given to recruiting fathers in treatment outcome research as to address concerns that may be specific to the father-child relationship.

### **Clinical Implications**

Findings from the current study have bearing on clinical assessments of childhood AD/HD. First, little effort is made to engage fathers in the evaluation process. Often, clinicians do not insist on fathers' participation due to the belief that mothers are optimal informants, and as such, fathers do not provide diagnostic information above and beyond what mothers contribute. However, findings from the current study suggest that this is an inappropriate practice because fathers provide a unique perspective. More specifically, fathers in the current study rated the boy and girl somewhat more severely than mothers. Although the differences were not large and would not likely change diagnostic conclusions, trends suggest that mothers and fathers perceived AD/HD behavior in slightly different ways. If greater weight had been given to mothers' ratings, as is commonplace in clinical settings, a different diagnostic picture would have emerged, classifying children as somewhat less severe. This is concerning, as treatment areas may have been overlooked.

This highlights the importance of establishing a convention for how best to assign weightings to informants' ratings. The findings from the current study suggest that aspects of the parent and family should be considered in making this decision. For example, parent factors such as knowledge of AD/HD, marital satisfaction, and the amount of time parents interact with their child in a diverse number of settings may also be determinants of parents' AD/HD ratings. Although the current study did not find evidence that parental psychopathology influences parents' ratings, there is sufficient empirical justification to suggest that parent functioning should be routinely assessed in clinical evaluations. Thus, clinicians are encouraged to administer self-report rating scales to assess parental depression, anxiety, and AD/HD, as these areas may impact child ratings and adherence to future treatment recommendations. When discrepancies between parents' ratings arise on specific rating scales, clinicians are also encouraged to compare mothers' and fathers' responses separately, along with other information obtained in a multi-method assessment. This permits a comparison of how mothers' and fathers' reports converge with other data, which will further assist in assigning weight to ratings.

The fact that differences did not emerge in the current study with respect to parents' reports of their own child's behavior suggests that differences in ratings may be minimized when parents have lower levels of psychopathology themselves, are more equitable in the amount of caregiving they provide, and have more knowledge of AD/HD and exposure to information about the disorder. Thus, it is promising that parents who are treatment savvy and are psychologically well adjusted themselves tend to show higher

convergence on ratings of AD/HD behavior. This provides further justification for involving fathers in the evaluation process.

In addition to fathers' participation contributing to greater diagnostic clarity, the inclusion of fathers in evaluation procedures has also been associated with higher rates of paternal engagement in treatment (Doherty, 1981). It makes intuitive sense that fathers would be more likely to participate in treatment when they played an integral role in the diagnostic process. As such, more favorable treatment outcomes have been documented in studies of behavioral parent training when fathers were involved (Webster-Stratton, 1985). Paternal involvement in treatment has also been associated with more favorable outcomes for mothers, such as decreased maternal parenting stress, increased parenting alliance, and greater use of consistent discipline strategies (Harvey, 2000). Improvements in the father-child relationship and the marital relationship have also been noted (Buhrmester et al., 1992). Not only are these improvements related to short-term gains (Lundahl et al., 2008), but there is emerging evidence for maintenance effects as well (Bagner & Eyberg, 2003).

In summary, there is a need for psychosocial interventions that enhance fathers' involvement in AD/HD treatment. According to the guidelines established by Fabiano and colleagues (2007), when working with children with AD/HD, clinicians should set the standard that fathers will be involved in treatment, collect information from both parents, modify treatments to be more representative of father-child concerns, and use recreational formats to deliver parent training. Researchers and clinicians alike would be well advised to follow these practices to ensure the best quality of care possible.

Additionally, results from the current study indicate that treatment gains may be maximized when other domains of functioning are assessed and targeted prior to implementing parenting interventions. More specifically, the current findings speak to the importance of increasing parental knowledge of AD/HD, decreasing marital tensions, and improving parent-child interactions.

### **Conclusions**

The findings from the current study preliminarily suggest that mothers and fathers may perceive child AD/HD behavior in somewhat different ways. However, these differences may be smaller than initially expected and may not always be in the predicted direction. Within this sample, fathers rated AD/HD behavior somewhat higher than mothers when rating an unfamiliar boy and girl. This finding was not anticipated; however, it suggests that parents may use different guidelines when evaluating an unfamiliar child's behavior. Of additional interest, mothers and fathers rated the girl's AD/HD behavior more severely than the boy's behavior, which provides preliminary evidence that parents may have different standards by which they evaluate boys' and girls' behavior. Although differences did not emerge when rating their own child's AD/HD behavior, this implies that inter-parental agreement may be higher among treatment savvy, high functioning parents. This speaks to the benefit of involving fathers in assessment and treatment procedures. Perhaps the most valuable finding was that knowledge of AD/HD, marital satisfaction, and the situations in which parents interact most often with their child, were associated with parents' ratings of child AD/HD behavior. Assessing these areas should become standard practice in evaluating AD/HD.



In conclusion, the current study provides a useful framework for comparing mothers' and fathers' reports of child AD/HD behavior. It is imperative that future research and clinical practice develop improved standards for obtaining and synthesizing mothers' and fathers' reports of child behavior. Only then can the unique contributions of mothers and fathers be understood and appreciated.

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APPENDIX A

TABLES

Table 1. Demographic Characteristics of Sample

Characteristic	Mothers and Fathers (N = 100)	Mothers (n = 50)	Fathers (n = 50)
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Age (in years) <sup>†</sup>	41.96 (6.32)	40.80 (5.89)	43.12 (6.59)
Number of Life Stressors	1.56 (1.77)	1.76 (1.91)	1.36 (1.61)
Education Level	<u>% (N)</u>	<u>% (n)</u>	<u>% (n)</u>
Some High School	3.0 (3)	2.0 (1)	4.0 (2)
High School Diploma or GED	6.0 (6)	4.0 (2)	8.0 (4)
Some College or Associates	26.0 (26)	24.0 (12)	28.0 (14)
Bachelor's Degree	35.0 (35)	38.0 (19)	32.0 (16)
Master's Degree	24.0 (24)	30.0 (15)	18.0 (9)
Advanced Degree	6.0 (6)	2.0 (1)	10.0 (5)
Employment Status***			
Not Working	3.0 (3)	4.0 (2)	2.0 (1)
Retired	0.0 (0)	0.0 (0)	0.0 (0)
Homemaker	12.0 (12)	24.0 (12)	0.0 (0)
Employed (full-time)	65.0 (65)	42.0 (21)	88.0 (44)
Employed (part-time)	14.0 (14)	22.0 (11)	6.0 (3)
Disabled	0.0 (0)	0.0 (0)	0.0 (0)
Student	4.0 (4)	6.0 (3)	2.0 (1)
Other	2.0 (2)	2.0 (1)	2.0 (1)
Current Job Type***			
Stay-at-Home Parent	17.0 (17)	34.0 (17)	0.0 (0)
Managerial, Professional Specialty	57.0 (57)	46.0 (23)	68.0 (34)
Technical, Sales, Administration	9.0 (9)	12.0 (6)	6.0 (3)
Service	6.0 (6)	6.0 (3)	6.0 (3)
Operators, Fabricators, Laborers	6.0 (6)	0.0 (0)	12.0 (6)
Other	5.0 (5)	1.0 (1)	8.0 (4)
Diagnosed with Psychological Condition			
Yes	38.0 (38)	44.0 (22)	32.0 (16)
No	62.0 (62)	56.0 (28)	68.0 (34)
Currently Taking Psychiatric Medication			
Yes	24.0 (24)	26.0 (13)	22.0 (11)
No	76.0 (76)	74.0 (37)	78.0 (39)

Note. Difference between Mothers' and Fathers' Ratings: <sup>†</sup> p < .15. \*p < .05. \*\*p < .01. \*\*\*p < .001.

Table 2. Family Characteristics of Sample

Characteristic	Mothers and Fathers (N = 100)	Mothers (n = 50)	Fathers (n = 50)
	<u>M (SD)</u>	<u>M (SD)</u>	<u>M (SD)</u>
Number of Children	2.41 (.94)	2.38 (.95)	2.44 (.95)
Recreational Hours Per Week <sup>†</sup>	<u>% (N)</u>	<u>% (n)</u>	<u>% (n)</u>
0 - 10	39.0 (39)	44.0 (22)	34.0 (17)
11 - 20	43.0 (43)	30.0 (15)	56.0 (28)
21 - 30	9.0 (9)	12.0 (6)	6.0 (3)
31 - 40	3.0 (3)	4.0 (2)	2.0 (1)
41 - 50	2.0 (2)	2.0 (1)	2.0 (1)
51 or More	4.0 (4)	8.0 (4)	0.0 (0)
Caregiving Hours Per Week***			
0 - 10	8.0 (8)	4.0 (2)	12.0 (6)
11 - 20	34.0 (34)	14.0 (7)	54.0 (27)
21 - 30	24.0 (24)	24.0 (12)	24.0 (12)
31 - 40	12.0 (12)	18.0 (9)	6.0 (3)
41 - 50	12.0 (12)	20.0 (10)	4.0 (2)
51 or More	10.0 (10)	20.0 (10)	0.0 (0)
Quality of Parent - Child Relationship			
Very Close	87.0 (87)	90.0 (45)	84.0 (42)
Somewhat Close	34.0 (34)	10.0 (5)	16.0 (8)
Occasionally Close	0.0 (0)	0.0 (0)	0.0 (0)
Somewhat Not Close	0.0 (0)	0.0 (0)	0.0 (0)
Very Not Close	0.0 (0)	0.0 (0)	0.0 (0)
Marital Dissatisfaction			
Very Satisfied	66.0 (66)	60.0 (30)	72.0 (36)
Somewhat Satisfied	25.0 (25)	28.0 (14)	22.0 (11)
Occasionally Satisfied	4.0 (4)	6.0 (3)	2.0 (1)
Somewhat Unsatisfied	3.0 (3)	4.0 (2)	2.0 (1)
Very Unsatisfied	1.0 (1)	2.0 (1)	98.0 (49)
Not Applicable	1.0 (1)	0.0 (0)	2.0 (1)

Note. Difference between Mothers' and Fathers' Ratings: <sup>†</sup> p < .15. \*p < .05. \*\*p < .01. \*\*\*p < .001.

Table 3. Descriptive Statistics of Parent Variables Impacting VARQ Ratings

	Mothers and Fathers (N = 100)	Mothers (n = 50)	Fathers (n = 50)
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
<u>ADHD RS</u>			
<u>Childhood</u>			
IA Count**	2.74 (3.08)	1.82 (2.43)	3.67 (3.41)
IA Severity**	10.20 (6.74)	8.06 (5.76)	12.39 (7.02)
HI Count*	2.46 (2.69)	1.82 (2.30)	3.12 (2.91)
HI Severity**	9.09 (6.58)	7.12 (6.21)	11.10 (6.39)
Total Severity**	19.29 (12.75)	15.18 (11.33)	23.49 (12.86)
<u>Current</u>			
IA Count	1.55 (2.18)	1.64 (2.43)	1.46 (1.91)
IA Severity	7.66 (4.98)	7.96 (5.42)	7.36 (4.53)
HI Count	1.18 (1.53)	1.16 (1.63)	1.20 (1.43)
HI Severity	5.46 (3.84)	5.38 (4.10)	5.54 (3.61)
Total Severity	13.12 (7.94)	13.34 (8.43)	12.90 (7.49)
<u>TOAK</u> ***	11.95 (1.59)	12.50 (1.27)	11.40 (1.69)
<u>Exposure</u> **	20.96 (3.60)	22.00 (3.74)	19.92 (3.16)
<u>Androgyny</u> ***	-.50 (2.49)	.50 (2.22)	-1.50 (2.37)
<u>BDI-II</u> <sup>†</sup>	7.92 (5.69)	8.82 (6.37)	7.02 (4.80)

*Note.* ADHD RS = ADHD Rating Scale; IA = Inattention; HI = Hyperactivity-Impulsivity; TOAK = Test of AD/HD Knowledge; Exposure = Exposure to AD/HD; Androgyny = Androgyny Score from Bem Sex Role Inventory; BDI-II = Beck Depression Inventory-II; Difference between Mothers' and Fathers' Ratings: <sup>†</sup> p < .15. \*p < .05. \*\*p < .01. \*\*\*p < .001.

Table 4. Descriptive Statistics of Child Impression Ratings

	Mothers and Fathers (N = 100)	Mothers (n = 50)	Fathers (n = 50)
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
<u>Boy Video</u>			
Appearance <sup>†</sup>	2.13 (.35)	2.18 (.39)	2.08 (.27)
Age**	2.11 (.34)	2.02 (.14)	2.20 (.45)
Likeability	2.21 (.48)	2.24 (.52)	2.18 (.44)
Intelligence <sup>†</sup>	2.28 (.51)	2.38 (.49)	2.18 (.52)
SES	2.07 (.36)	2.08 (.34)	2.06 (.37)
<u>Girl Video</u>			
Appearance	2.07 (.41)	2.02 (.38)	2.12 (.44)
Age*	1.93 (.36)	1.86 (.35)	2.00 (.35)
Likeability	2.11 (.53)	2.08 (.57)	2.14 (.50)
Intelligence	2.11 (.57)	2.08 (.53)	2.14 (.61)
SES	1.98 (.32)	2.00 (.29)	1.96 (.35)

Note. SES = Socioeconomic Status; Difference between Mothers' and Fathers' Ratings: <sup>†</sup> p < .15.  
\*p < .05. \*\*p < .01. \*\*\*p < .001.

Table 5. Descriptive Statistics of Mother- and Father- Completed VARQ Scores for the Boy by Order of Presentation

	Boy Video Viewed First (n = 25)	Boy Video Viewed Second (n = 25)
	<i>M (SD)</i>	<i>M (SD)</i>
<u>Mother-Completed VARQ</u>		
IA Count <sup>t</sup>	3.72 (2.53)	4.92 (2.16)
IA Severity <sup>t</sup>	12.52 (7.48)	15.96 (6.59)
HI Count <sup>t</sup>	2.36 (1.35)	3.04 (1.37)
HI Severity <sup>t</sup>	7.88 (4.52)	10.32 (4.23)
Total Severity*	20.40 (11.15)	26.28 (9.51)
<u>Father-Completed VARQ</u>		
IA Count	5.00 (2.04)	5.00 (2.16)
IA Severity	15.40 (6.20)	15.56 (6.76)
HI Count	3.24 (1.42)	3.20 (1.50)
HI Severity	10.28 (4.52)	10.52 (4.22)
Total Severity	25.68 (10.30)	26.08 (10.38)

*Note.* VARQ = Videotaped AD/HD Ratings Questionnaire; IA = Inattention; HI = Hyperactivity-Impulsivity; Difference between Mothers' and Fathers' Ratings: <sup>t</sup> p < .15. \*p < .05. \*\*p < .01. \*\*\*p < .001.

Table 6. Descriptive Statistics of Mother- and Father- Completed VARQ Scores for the Girl by Order of Presentation

	Girl Video Viewed First (n = 25)	Girl Video Viewed Second (n = 25)
	<i>M (SD)</i>	<i>M (SD)</i>
<u>Mother-Completed VARQ</u>		
IA Count *	5.24 (1.79)	6.12 (1.17)
IA Severity	17.48 (6.54)	19.56 (4.79)
HI Count	4.24 (1.39)	4.72 (1.31)
HI Severity <sup>t</sup>	13.28 (4.67)	15.24 (4.24)
Total Severity <sup>t</sup>	30.76 (10.55)	34.80 (8.20)
<u>Father-Completed VARQ</u>		
IA Count	5.76 (1.30)	6.24 (1.13)
IA Severity*	17.80 (4.80)	20.72 (5.26)
HI Count*	4.32 (1.46)	5.24 (1.13)
HI Severity**	13.56 (4.13)	17.64 (4.85)
Total Severity**	31.36 (8.01)	38.36 (9.37)

*Note.* VARQ = Videotaped AD/HD Ratings Questionnaire; IA = Inattention; HI = Hyperactivity-Impulsivity; Difference between Mothers' and Fathers' Ratings: <sup>t</sup> p < .15. \*p < .05. \*\*p < .01. \*\*\*p < .001.

Table 7. Descriptive Statistics of Mother- and Father-Completed VARQ

	Mothers (n = 50)	Fathers (n = 50)
	<i>M (SD)</i>	<i>M (SD)</i>
<u>VARQ Ratings of Boy</u>		
IA Count	4.32 (2.40)	5.00 (2.08)
IA Severity	14.24 (7.19)	15.48 (6.42)
HI Count	2.70 (1.39)	3.22 (1.45)
HI Severity	9.10 (4.51)	10.40 (4.33)
Total Severity	23.34 (10.68)	25.88 (10.24)
<u>VARQ Ratings of Girl</u>		
IA Count	5.68 (1.56)	6.00 (1.23)
IA Severity	18.52 (5.77)	19.26 (5.19)
HI Count	4.48 (1.36)	4.78 (1.38)
HI Severity	14.26 (4.52)	15.60 (4.91)
Total Severity	32.78 (9.57)	34.86 (9.32)

*Note.* VARQ = Videotaped AD/HD Ratings Questionnaire; IA = Inattention; HI = Hyperactivity-Impulsivity.



Table 8. Descriptive Statistics of Mother- and Father-Completed VARQ when Rating Video Viewed First

	Mothers (n = 25)	Fathers (n = 25)
	<u>M (SD)</u>	<u>M (SD)</u>
<u>VARQ of Boy</u>		
IA Count <sup>t</sup>	3.72 (2.53)	5.00 (2.04)
IA Severity <sup>t</sup>	12.52 (7.48)	15.40 (6.20)
HI Count*	2.36 (1.35)	3.24 (1.42)
HI Severity <sup>t</sup>	7.88 (4.52)	10.28 (4.52)
Total Severity <sup>t</sup>	20.40 (11.15)	25.68 (10.30)
<u>VARQ of Girl</u>		
IA Count	5.24 (1.79)	5.76 (1.30)
IA Severity	17.48 (6.54)	17.80 (4.80)
HI Count	4.24 (1.39)	4.32 (1.46)
HI Severity	13.28 (4.67)	13.56 (4.13)
Total Severity	30.76 (10.55)	31.36 (8.01)

*Note.* VARQ = Videotaped AD/HD Ratings Questionnaire; IA = Inattention; HI = Hyperactivity -Impulsivity; Difference between Mothers' and Fathers' Ratings: <sup>t</sup> p < .15. \*p < .05. \*\*p < .01. \*\*\*p < .001.

Table 9. Correlations among Variables for Overall Sample

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1 Parent Gender	---											
2 BDI-II	.16	---										
3 Androgyny	.40**	.16	---									
4 ADHD RS Current	.03	.36**	-.03	---								
5 TOAK	.35**	.02	.07	.10	---							
6 Exposure	.29**	-.11	.01	.18	.20*	---						
7 Caregiving Hours	.55**	.22*	.20*	.04	.06	.21*	---					
8 Recreational Hours	.13	-.02	-.01	.03	.01	-.08	.21*	---				
9 Marital Dissatisfaction	.17	.43**	.17	.10	-.09	-.24*	.14	-.02	---			
10 Child ADHD RS	.07	.31**	.04	.16	.00	-.11	.17	.06	.12	---		
11 Boy –VARQ Total Score	-.12	.03	.05	-.02	-.19	-.13	-.10	-.10	.02	.21*	---	
12 Girl – VARQ Total Score	-.11	.07	-.12	.07	-.17	-.07	.06	-.09	.19	.14	.33**	---

*Note.* BDI-II = Beck Depression Inventory-II; Androgyny = Androgyny Score from Bem Sex Role Inventory; ADHD RS Current = Total Current AD/HD Severity Score for Adult ADHD RS; TOAK = Test of AD/HD Knowledge; Exposure = Exposure to AD/HD; ADHD RS = ADHD Rating Scale; VARQ = Videotaped AD/HD Rating Questionnaire; Total Score = Total Severity Score.

\*  $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

Table 10. Correlations among Variables for Mothers

Variable	1	2	3	4	5	6	7	8	9	10	11
1 BDI-II	---										
2 Androgyny	.12	---									
3 ADHD RS Current	.40**	-.19	---								
4 TOAK	-.12	-.26	-.02	---							
5 Exposure	-.27	-.18	.21	.01	---						
6 Caregiving Hours	.14	-.04	.11	-.17	.09	---					
7 Recreational Hours	-.09	-.05	-.06	-.14	-.09	.25	---				
8 Marital Dissatisfaction	.51**	.12	.23	-.24	-.43**	.06	-.06	---			
9 Child ADHD RS	.33*	.05	.09	-.11	-.26	.23	.11	.07	---		
10 Boy –VARQ Total Score	.03	.33*	.07	-.30*	-.04	-.03	-.06	.00	-.02	---	
11 Girl – VARQ Total Score	.14	.05	.17	-.18	.03	.05	-.06	.20	-.01	.18	---

*Note.* BDI-II = Beck Depression Inventory-II; Androgyny = Androgyny Score from Bem Sex Role Inventory; ADHD RS Current = Total Current AD/HD Severity Score for Adult ADHD RS; TOAK = Test of AD/HD Knowledge; Exposure = Exposure to AD/HD; ADHD RS = ADHD Rating Scale; VARQ = Videotaped AD/HD Rating Questionnaire; Total Score = Total Severity Score.

\*  $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

Table 11. Correlations among Variables for Fathers

Variable	1	2	3	4	5	6	7	8	9	10	11
1 BDI-II	---										
2 Androgyny	.11	---									
3 ADHD RS Current	.29*	.12	---								
4 TOAK	.04	.04	.19	---							
5 Exposure	.01	-.06	.14	.20	---						
6 Caregiving Hours	.23	-.01	-.12	-.20	.00	---					
7 Recreational Hours	.08	-.10	.21	.08	-.21	-.10	---				
8 Marital Dissatisfaction	.20	.10	-.11	-.08	-.12	.02	-.00	---			
9 Child ADHD RS	.27	-.01	.25	.04	.01	.05	-.04	.18	---		
10 Boy –VARQ Total Score	.07	-.11	-.11	-.05	-.18	-.05	-.13	.11	.46**	---	
11 Girl – VARQ Total Score	.03	-.21	-.04	-.10	-.12	.31*	-.11	.24	.31*	.46**	---

*Note.* BDI-II = Beck Depression Inventory-II; Androgyny = Androgyny Score from Bem Sex Role Inventory; ADHD RS Current = Total Current AD/HD Severity Score for Adult ADHD RS; TOAK = Test of AD/HD Knowledge; Exposure = Exposure to AD/HD; ADHD RS = ADHD Rating Scale; VARQ = Videotaped AD/HD Rating Questionnaire; Total Score = Total Severity Score.

\*  $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

Table 12. Stepwise Multiple Linear Regression Using Parent and Family Variables to Predict VARQ Total Severity Ratings for First Video Presentation of Boy

	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>
Predictor Variables in Final Model					
TOAK	.08	-2.16	1.07	-.28	.05

*Note.* VARQ = Videotaped AD/HD Rating Questionnaire; TOAK = Test of AD/HD Knowledge.

Table 13. Stepwise Multiple Linear Regression Using Parent and Family Variables to Predict VARQ Total Severity Ratings for First Video Presentation of Girl

	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>
Predictor Variables in Final Model					
Marital Dissatisfaction	.14	4.19	1.48	.38	.01

*Note.* VARQ = Videotaped AD/HD Rating Questionnaire.

Table 14. Stepwise Multiple Linear Regression Using Parent and Family Variables to Predict VARQ HI Symptom Counts for First Video Presentation of Boy

	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>
Predictor Variables in Final Model					
TOAK	.13	-.36	.14	-.36	.01
Marital Dissatisfaction	.10	-.59	.25	-.31	.02

*Note.* VARQ = Videotaped AD/HD Rating Questionnaire; HI = Hyperactivity-Impulsivity; TOAK = Test of AD/HD Knowledge.

Table 15. Stepwise Multiple Linear Regression Using Parent and Family Variables to Predict VARQ HI Severity Ratings for First Video Presentation of Boy

	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>
Predictor Variables in Final Model					
TOAK	.12	-1.11	.44	-.35	.02
ADHD RS HI Severity	.07	.18	.09	.27	.05
Marital Dissatisfaction	.08	-1.76	.79	-.29	.03

*Note.* VARQ = Videotaped AD/HD Rating Questionnaire; HI = Hyperactivity-Impulsivity; TOAK = Test of AD/HD Knowledge; ADHD RS = ADHD Rating Scale.



Table 16. Stepwise Multiple Linear Regression Using Parent and Family Variables to Predict VARQ IA Severity Ratings for First Video Presentation of Girl

	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>
Predictor Variables in Final Model					
Recreational Hours	.09	-1.50	.70	-.30	.04

*Note.* VARQ = Videotaped AD/HD Rating Questionnaire; IA= Inattention.

Table 17. Stepwise Multiple Linear Regression Using Parent and Family Variables to Predict VARQ HI Symptom Counts for First Video Presentation of Girl

	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>
Predictor Variables in Final Model					
Marital Dissatisfaction	.13	.60	.23	.36	.01

*Note.* VARQ = Videotaped AD/HD Rating Questionnaire; HI = Hyperactivity-Impulsivity.

Table 18. Stepwise Multiple Linear Regression Using Parent and Family Variables to Predict VARQ HI Severity Ratings for First Video Presentation of Girl

	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>
Predictor Variables in Final Model					
Marital Dissatisfaction	.18	2.21	.68	.42	.01

*Note.* VARQ = Videotaped AD/HD Rating Questionnaire; HI = Hyperactivity-Impulsivity.

Table 19. Descriptive Statistics of Mother- and Father-Completed ADHD RS of Their Own Child

	Mothers (n = 50)	Fathers (n = 50)
<u>Scale</u>	<u>M (SD)</u>	<u>M (SD)</u>
IA Count	5.22 (3.20)	4.56 (3.19)
IA Severity	16.18 (6.35)	14.68 (6.12)
HI Count	4.00 (2.84)	4.06 (3.05)
HI Severity	13.28 (6.39)	13.18 (6.62)
Total Severity	29.46 (11.24)	27.86 (11.37)

*Note.* ADHD RS = ADHD Rating Scale; IA = Inattention; HI = Hyperactivity-Impulsivity.

## APPENDIX B

### VIDEOTAPE SCRIPT AND MATERIALS

#### Initial Instructions

- *I'll be asking you to do a number of things today that you would normally do at home and at school, like playing with Legos and answering math problems. Some of the things may be really easy for you, but others may be a bit more difficult. But don't worry. On most of the tasks there are no right or wrong answers and your work will not be graded on any tasks. Just try to do your very best on everything.*
- *We will be taping you doing these things, but we want you to pretend that there is not a camera in the room and to act like you normally would. Also, please pretend that there are no other people in the room. We know this may be hard to do so we will be taking breaks in between tasks so you can ask questions. But during taping, please do not talk unless you have a question that cannot wait.*
- *See this line in the carpet? It is here to help us remember when we can and cannot talk to each other. When I am on this side of the line with you (point) then it is OK for us to talk. But when I am on the other side of the line with the camera (point) we cannot talk to each other. Does that make sense?*
- *Great! Now remember... you are not being graded on anything and most of the tasks should be exciting to do. So have fun!!!*

#### Home-simulation Tasks

- 1. Coloring Worksheet – *I would like for you to color in a picture for me. You can choose one of these pictures to work on and you can only use the supplies that are on this table (point). You will have ten minutes to make the picture as pretty as you can. Someone will let you know when your time is up. When it is, please clean up what you have used. Just try your best and have fun!*
  - Materials needed – coloring books, crayons, markers, construction paper, glue, glue stick, glitter, scissors, sticker, and distraction art supply box on window.

- 2. Lego Task – *I would like for you to build this police car out of Legos for me. I have already built one for you so you know what it should look like. Also, there are instructions in your box for you to follow. Please build the car and let us know when you have finished. Have fun!*
  - Materials needed – one new Lego box and one model.
  
- 3. Snack Time – *Thank you for working so hard on everything! Let’s take a break from these things to give you a rest. I have some snacks for you and you can pick which one you would like. The only thing I ask is that before you eat your snack I would like for you to build a cracker sandwich. All you need to do is take a cracker, put some meat on top, and then add a slice of cheese. I have some sauce packets for you if you want to use them. You will also be given a juice box and small dessert. Please don’t eat the dessert until you have finished all of the other food that you want. Don’t forget that you need to make a cracker sandwich and then eat your desert and when you are done please throw everything away in this garbage can. Thanks!*
  - Materials needed – 2 Lunchable options, sauce packets, paper towels, garbage can, and coins on the floor.
  
- 4. Organizing a Deck of Cards – *Now we are going to play a different kind of game. I had a full deck of cards here but I got them out of order by spilling them on this desk and onto the floor. I would like for you to put them back into order for me by getting all the 2’s together, then the 3’s, all the way up to 10’s Jack’s, Queens, Kings, and Aces. Do you remember what order they go in? Great! Once they are all in order please put them back in the box and put the box on this table. Thank you so much for helping me with this.*
  - Materials needed – One deck of cards dispersed randomly on the floor and a distracter block.

#### Academic Tasks

- 1. Math Sheets – *Now I am going to ask you to do some things that you would normally do in school. First, I would like you to do some math problems. Remember, we are not grading you on how well you do, but we would like for you to try your best. Try to answer as many as you can, without skipping any. You will have ten minutes to do as many as you can. Thanks!*
  - Materials needed – Pencils, erasers, math worksheets, and distracter paperclips.

- 2. Reading Comprehension Sheets – *Now I would like for you to complete these reading work-sheets. You will read a short story and then answer some questions about the story. Please try your best. You will have ten minutes to finish as many questions as you can.*
  - Materials needed – Pencils, erasers, and reading worksheets.
  
- 3. Writing Task – *I would like for you to write a story about what you think one of these books is about. The story can be about anything you want as long as it has to do with one of these books. If you can't think of a good story here is a sheet of ideas that may help you start your story. Please write the best story that you can. You will have ten minutes to finish your story. Have fun with it!*
  - Materials needed – Pencils, erasers, paper, books, and distracter glitter pens.
  
- 4. Clean-up task – *We are almost done. The only thing left for you to do is to clean up like you would to go home after school. Here are three folders that are labeled “Math,” “Reading,” and “Writing.” Please put the worksheets in the right folder so that all of the math worksheets go in the math folder, all of the reading worksheets go in the reading folder, and the story you wrote about the book and all of the books go in the writing folder. Also, please return all of your pencils, pens, and any other supplies that you may have used in the blue pencil box. Lastly, please put all of these things in this book bag.*
  - Materials needed – Everything that is already on the table, additional math and reading worksheets, three notebooks, and book bag.

## APPENDIX C

### VIDEOTAPED AD/HD RATING QUESTIONNAIRE

**For each statement below, please indicate how well it describes the child in the videotape.**

	<u>Not at all</u>		<u>Somewhat</u>		<u>Very Much</u>
1. Fails to give close attention to details.	0	1	2	3	4
2. Fidgets with hands or feet or squirms in seat.	0	1	2	3	4
3. Has difficulty sustaining attention in tasks.	0	1	2	3	4
4. Leaves seat in situations in which remaining seated is expected.	0	1	2	3	4
5. Runs about or climbs excessively in situations in which it is inappropriate.	0	1	2	3	4
6. Does not follow through on instructions and fails to finish work.	0	1	2	3	4
7. Has difficulty engaging in activities quietly.	0	1	2	3	4
8. Has difficulty organizing tasks and activities.	0	1	2	3	4
9. Is “on the go” or acts as if “driven by a motor.”	0	1	2	3	4
10. Avoids tasks that require mental effort.	0	1	2	3	4
11. Talks excessively.	0	1	2	3	4
12. Loses things necessary for tasks.	0	1	2	3	4
13. Is easily distracted.	0	1	2	3	4



## APPENDIX D

### ADHD RATING SCALE – IV

**Please circle the number that best describes YOUR CHILD’S behavior over the past 6 months.**

	<u>Never</u> <u>Or Rarely</u>	<u>Sometimes</u>	<u>Often</u>	<u>Very</u> <u>Often</u>
1. Fails to give close attention to details or makes careless mistakes in schoolwork.	0	1	2	3
2. Fidgets with hands or feet or squirms in seat.	0	1	2	3
3. Has difficulty sustaining attention in tasks or play activities.	0	1	2	3
4. Leaves seat in classroom or in other situations in which remaining seated is expected.	0	1	2	3
5. Does not seem to listen when spoken to directly.	0	1	2	3
6. Runs about or climbs excessively in situations in which it is inappropriate.	0	1	2	3
7. Does not follow through on instructions and fails to finish work.	0	1	2	3
8. Has difficulty playing or engaging in leisure activities quietly.	0	1	2	3
9. Has difficulty organizing tasks and activities.	0	1	2	3
10. Is “on the go” or acts as if “driven by a motor.”	0	1	2	3
11. Avoids tasks (e.g., schoolwork, homework) that require mental effort.	0	1	2	3
12. Talks excessively.	0	1	2	3
13. Loses things necessary for tasks or activities.	0	1	2	3
14. Blurts out answers before questions have been completed.	0	1	2	3
15. Is easily distracted.	0	1	2	3
16. Has difficulty awaiting turn.	0	1	2	3
17. Is forgetful in daily activities.	0	1	2	3
18. Interrupts or intrudes on others.	0	1	2	3

## APPENDIX E

### CHILD IMPRESSION RATINGS

Please complete the following questions about the child in the videotape:

1. Which statement best describes the child's physical appearance? (check one)

- Below average looking
- Average looking
- Above average looking

2. How old do you think this child is? (check one)

- 5 to 7 years old
- 8 to 10 years old
- 11 to 13 years old

3. How likeable was the child? (check one)

- Not likeable
- Likeable
- Very likeable

4. How smart do you think the child is? (check one)

- Below average intelligence
- Average intelligence
- Above average intelligence

5. What kind of background do you think the child comes from? (check one)

- Poor family
- Middle class family
- Wealthy family

APPENDIX F

DEMOGRAPHIC AND FAMILY QUESTIONNAIRE

Please complete the following questions about yourself.

1. Your age: \_\_\_\_\_
2. Your gender (circle one):      Male              Female
3. Your ethnicity (check one):
  - Caucasian
  - African American
  - Hispanic
  - Asian
  - Native American
  - Other
4. Your education (check one):
  - Some high school
  - High school diploma or GED
  - Some college or associates degree
  - Bachelor's degree
  - Masters degree
  - Advanced degree (e.g. Ph.D., MD., JD, etc).
5. Your current job status (check one):
  - Not working
  - Retired
  - Homemaker
  - Employed (full-time)
  - Employed (part-time)
  - Disabled, unable to work
  - Student
  - Other (Specify): \_\_\_\_\_

6. Which of the statements below best describe your main or primary job? If you are not working now, which statement best describes your past main job; that is, the job you held the longest? (**Mark one only**)

- Stay-at-home parent** (not working outside the home)
- Managerial, professional specialty** (e.g. teacher, guidance counselor, registered nurse, doctor, lawyer, accountant, architect, computer/systems analyst, personnel manager, sales manager, etc.)
- Technical, sales, administrative support** (e.g. computer programmer/operator, vocational/practical nurse, dental assistant, laboratory technician, sales clerk, cashier, receptionist, secretary, word processor, etc.)
- Service** (e.g. policeman, nursing assistant, teaching assistant, child care attendant, maid, cook, waitress, food service clerk, seamstress, etc.)
- Operators, fabricators, and laborers** (e.g. factory, assembly, truck driver, construction worker, etc.)
- Other** (Specify): \_\_\_\_\_

7. Your marital status (check one):

- Married
- Living in a committed relationship

8. Your household income (including that of your spouse, if applicable; check one):

- less than 30,000
- 31,000-50,000
- 51,000-70,000
- 71,000-90,000
- 91,000 or more

**Please complete the following questions about your family.**

1. How many children do you have? \_\_\_\_\_
2. Please list their age(s), gender(s), and whether they are your biological child:

Age	Gender	Biological Child (Y/N)

3. Have any of your children been diagnosed with a major medical condition? (circle one)

**Yes                  No**

4. Have any of your children been diagnosed with a psychological condition? (circle one)

**Yes                  No**

5. Are any of your children currently taking medication for behavioral reasons or for any other reasons? (circle one)

**Yes                  No**

6. Are you the primary caregiver? (circle one)

**Yes                  No**

7. During the school year, on average how many hours **per week** do you spend with your child (ren) doing **recreational (e.g. play) activities?** (check one)

- 0 - 10
- 11 - 20
- 21 - 30
- 31 - 40
- 41 - 50
- 51 or more

8. During the school year, on average how many hours **per week** do you spend together with your child (ren) doing **care giving (e.g. discipline, meals, homework, bedtime routine) activities?** (check one)

- 0 - 10
- 11 - 20
- 21 - 30
- 31 - 40
- 41 - 50
- 51 or more

9. How close are you to your children? (check one)

- Very close
- Somewhat close
- Occasionally close
- Somewhat not close
- Very not close

10. How satisfied are you with your relationship with your significant other? (check one)

- Very satisfied
- Somewhat satisfied
- Occasionally satisfied
- Somewhat unsatisfied
- Very unsatisfied

11. Have you ever been diagnosed with a psychological condition? (circle one)

**Yes**                      **No**

12. Are you currently taking medication to manage a psychological condition? (circle one)

**Yes**                      **No**

13a. Have you or your family experienced any major life stressors within the past year? (circle one)

**Yes**                      **No**

13b. If you circled yes, please mark all that apply:

- Pregnancy
- Medical problems
- Job termination
- New sibling
- Psychiatric problems
- Layoff
- Marriage
- Death of relative/friend
- Financial problems
- Marital tensions
- Change in residence
- Legal problems
- Separation/divorce
- Change in work schedule
- Other please explain

## APPENDIX G

### ADULT ADHD RATING SCALE - IV

**Indicate the number that best describes YOUR behavior during each of the following time periods: 0=Never or rarely, 1=Sometimes, 2=Often, 3=Very Often**

	<u>Childhood</u> <u>(Ages 5 to 12)</u>	<u>Currently</u> <u>Past 6 Months</u>
1. Fail to give close attention to details or make careless mistakes in my work.	_____	_____
2. Fidget with hands or feet or squirm in my seat.	_____	_____
3. Difficulty sustaining my attention in tasks or fun activities.	_____	_____
4. Leave my seat in situations in which remaining seated is expected.	_____	_____
5. Don't listen when spoken to directly.	_____	_____
6. Feel restless. (In childhood, ran about or climbed excessively)	_____	_____
7. Don't follow through on instructions and fail to finish work.	_____	_____
8. Have difficulty engaging in leisure activities or doing fun things quietly.	_____	_____
9. Have difficulty organizing tasks and activities.	_____	_____
10. Feel "on the go" or "driven by a motor."	_____	_____
11. Avoid, dislike, or feel reluctant to engage in work that requires sustained mental effort.	_____	_____
12. Talk excessively.	_____	_____
13. Lose things necessary for tasks and activities.	_____	_____
14. Blur out answers before questions have been complete.	_____	_____
15. Easily distracted.	_____	_____
16. Having difficulty awaiting my turn.	_____	_____
17. Forgetful in daily activities.	_____	_____
18. Interrupt or intrude on others.	_____	_____



## APPENDIX H

### TEST OF AD/HD KNOWLEDGE

**Please circle T if you believe the statement is true. Circle F if you think the statement is false. If you are not sure of an answer, give your best guess.**

- |                                                                                                                        |   |   |
|------------------------------------------------------------------------------------------------------------------------|---|---|
| 1. Most children with AD/HD outgrow their problems by the time they are adults.                                        | T | F |
| 2. Special diets, like the Feingold diet, have been scientifically proven to cure the symptoms of AD/HD.               | T | F |
| 3. AD/HD may sometimes be inherited (passed along in the family).                                                      | T | F |
| 4. Boys and girls have similar rates of AD/HD.                                                                         | T | F |
| 5. In many cases, medication will help a child earn better grades.                                                     | T | F |
| 6. There is a blood test that can identify children with AD/HD.                                                        | T | F |
| 7. Psychological/behavioral treatments improve attention and reduce disruptive behavior.                               | T | F |
| 8. The diagnosis of AD/HD can be made if problems first emerge at the age of 14.                                       | T | F |
| 9. Children with severe AD/HD problems can pay attention to things that interest them for a long period of time.       | T | F |
| 10. Common side effects of Ritalin and other stimulant medications are Zombie-like appearance and behavior.            | T | F |
| 11. In addition to their primary problems, many children with AD/HD have problems keeping friends.                     | T | F |
| 12. AD/HD is caused by bad parenting.                                                                                  | T | F |
| 13. Parents of children with AD/HD report higher levels of parenting stress than do parents of children without AD/HD. | T | F |
| 14. Approximately 15-20% of children have AD/HD.                                                                       | T | F |
| 15. Children with AD/HD are at much higher risk of having depression and anxiety than are children without AD/HD.      | T | F |

## APPENDIX I

### EXPOSURE TO AD/HD RATING SCALE

**Below are questions about Attention Deficit/Hyperactivity Disorder (AD/HD). AD/HD refers to a condition that includes clinically significant levels of either inattention or hyperactivity-impulsivity, or both.**

1. How many television programs on AD/HD have you watched?  
a. 0                      b. 1 or 2                      c. 3 – 5                      d. 6 or more
2. How many magazine/newspaper articles on AD/HD have you read?  
a. 0                      b. 1 or 2                      c. 3 – 5                      d. 6 or more
3. How many books on AD/HD have you read?  
a. 0                      b. 1 or 2                      c. 3 – 5                      d. 6 or more
4. How many lectures/presentations on AD/HD have you attended?  
a. 0                      b. 1 or 2                      c. 3 – 5                      d. 6 or more
5. Do you know anyone who has AD/HD?  
a. No                      b. Yes
6. Is there anyone in your immediate family (e.g. yourself, spouse, child, parent, brother, sister) who has been formally diagnosed as having AD/HD?  
a. No                      b. Yes
7. Have you or anyone in your family ever been treated for AD/HD?  
a. Never                      b. Previously received                      c. Presently receiving
8. Is there anyone in your extended family (e.g. grandparent, aunt, uncle, cousin, niece, nephew) who has been diagnosed with AD/HD?  
a. No                      b. Yes
9. Do you have any friends who have been diagnosed as having AD/HD or who have a child with this diagnosis?  
a. No                      b. Yes
10. How many children do you know that have a formal diagnosis of AD/HD?  
a. 0                      b. 1-5                      c. 5-9                      d. 10

APPENDIX J

CONSENT FORM FOR PARENTS OF CHILDREN BEING FILMED

THE UNIVERSITY OF NORTH CAROLINA  
GREENSBORO

CONSENT TO ACT AS A HUMAN PARTICIPANT:

Project Title: Parent Ratings of Children's Behavior

Project Director: Jennifer Sommer, M.A. Faculty Supervisor: Arthur D. Anastopoulos, Ph.D.

Parent's Name: \_\_\_\_\_

Participant's Name: \_\_\_\_\_ Date of Birth: \_\_\_\_\_

Date of Consent: \_\_\_\_\_

**Purpose**

The purpose of this study is to gain a better understanding of how mothers and fathers rate disruptive behavior in children.

**Description and Explanation of Procedures:**

Your child will be videotaped by a videographer from the Department of Broadcasting and Cinema at the University of North Carolina at Greensboro and will be asked to participate in two types of activities: academic tasks (e.g. completing age-appropriate math work sheets) and recreational tasks (e.g. building with Legos). A member of the research team will discuss with your child what these activities involve, work with your child on these things, and allow them to ask any questions that they may have. The videographer will film your child until they have enough footage, which will take no more than a total of twelve hours, across one to two afternoons. Once taping is complete, the videographer will edit and create two tapes that are no longer than twenty minutes each in length. The videotapes will then be shown for research purposes for this study, and possibly in future studies.

By signing this consent you grant permission for the AD/HD Clinic at UNCG to screen the videotapes to research participants and acknowledge that the videotapes are property of the AD/HD Clinic.

**Potential Risks and Discomforts:**

There is minimal risk associated with participating in this study. Although study participants who watch your child's videotape will not be given your child's name, it is possible that a participant may recognize your child. Additionally, you may ask questions at any time, and you may also withdraw your child from the project at any time without penalty.

**Benefits:**

The results of this study will benefit society by increasing knowledge of how mothers and fathers may report child behaviors differently. Your videotapes may be used in future studies that provide

knowledge, which may also better inform how disruptive behavior disorders are diagnosed and treated.

**Compensation:** Your family will receive \$10.00 per hour for your child's participation.

**Confidentiality:**

Your child's name and identity will be kept confidential. Information that you provide will be stored in locked filing cabinets that are only accessible to project staff. Your information will not be destroyed after the conclusion of this project as the videotapes may be used in future studies.

**Consent:**

By signing this consent form, you agree that you understand the procedures involved in this research. You also agree that you are aware of potential risks and benefits. You are free to refuse to participate or to withdraw from this research at any time without penalty or prejudice. Your participation is entirely voluntary. In addition, your refusal to participate will not affect your relationship with UNCG or the AD/HD Clinic at UNCG in any way. Your privacy will be protected because you will not be identified by name as a participant in this project.

The research and this consent form have been approved by the University of North Carolina at Greensboro Institutional Review Board, which ensures that research involving people follows federal regulations. Questions regarding your rights as a participant in this project can be answered by calling Mr. Eric Allen, who is the UNCG Compliance Officer (336) 256-1482. Questions regarding the research itself will be answered by Jennifer Sommer by calling (336) 346-3192, ext. 304 or Dr. Arthur Anastopoulos at (336) 346-3192, ext. 303. Any new information that develops during the project will be provided to you if the information might affect your willingness to continue participation in the project.

By signing this consent form you are agreeing that you read, or it has been read to you, and you fully understand the contents of this document and are openly willing consent to take part in this study. All of your questions concerning this study have been answered. By signing this form, you are agreeing that you are 18 years of age or older and are agreeing to participate, or have the individual specified above as a participant participate, in this study described to you by Jennifer Sommer.

\_\_\_\_\_  
Parent/Guardian Signature

\_\_\_\_\_  
Date

APPENDIX K

AUTHORIZATION TO DISCLOSE PHI

Jennifer Sommer, M. A. at the University of North Carolina at Greensboro is conducting a study examining how mothers and fathers rate behaviors in children. Because this research project requires forwarding protected health information (PHI) to the research team, Jennifer Sommer is asking for your permission to send such information.

By signing below, you are authorizing the AD/HD Clinic at UNCG to release your name, your child's name, and your telephone number to Jennifer. This authorization will expire in 1 year, unless you revoke it in writing before that time. (A revocation will not apply to any personal health information that was released under this authorization before the date of revocation.)

If you choose NOT to authorize release of this information, it will not affect your health care at the AD/HD Clinic. The AD/HD Clinic will not receive any money or benefit from releasing this information. You have a right to inspect or copy the information to be disclosed. You also have a right to receive a copy of this authorization.

If you allow release of this information to Jennifer Sommer, the information will no longer be subject to the Health Information Portability and Accountability Act (HIPAA). Jennifer Sommer may disclose it without contacting you again for further authorization.

I authorize the AD/HD Clinic at UNCG to release the following information to Jennifer Sommer:

My name:

My child's name:

My phone number:

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

Patient is unable to sign because s/he is \_\_\_\_ years old or \_\_\_\_\_ (other reason)

Parent/Guardian (circle) signature: \_\_\_\_\_

APPENDIX L

ASSENT FORM FOR CHILD BEING FILMED

*THE UNIVERSITY OF NORTH CAROLINA*  
GREENSBORO

**Child Assent Form**

We are doing a research project to learn about how mothers and fathers feel about the way children behave. To learn more about this, it is important that we have videotapes showing kids doing different activities; and that is why we need your help.

If you agree to be in our study, we are going to ask you to complete some academic tasks such as simple math problems and to play with some toys you would at home like Legos. Someone will help you to do these things and will answer any questions that you have. These tasks will be videotaped and the videos will be shown to grownups.

You should find the activities fun; however, if you decide at any time not to finish, you may stop whenever you want. No one will be upset with you if you want to stop videotaping.

By participating in this study you will provide important information about how kids act and how parents feel about the way kids act. In addition, your family will receive \$10 for every hour that you help us. The filming will take no more than a total of twelve hours, across one to two afternoons.

We will show the videotapes you helped us make to parents in this study and may show them to other people in the future. Although these people will see you in the videotapes, they will not be told your name or anything about you.

Signing this paper means that you have read this or had it read to you and that you want to be in the study. If you don't want to be in the study, don't sign the paper. Remember, being in the study is up to you, and no one will be upset if you don't sign this paper or even if you change your mind later.

Signature of Participant \_\_\_\_\_ Date \_\_\_\_\_

Signature of Investigator \_\_\_\_\_ Date \_\_\_\_\_

APPENDIX M

RECRUITMENT FLIER

The AD/HD Clinic at UNCG  
Is Conducting a Research Study Asking:

**How do mothers and fathers rate  
disruptive behavior in children?**

Who can participate?

- Mothers and fathers who
  - Have concerns about their own child's behavior
  - Parent the same child
  - Are Caucasian
  - Have a child between the ages of 5 and 12

How much time will it take?

- It takes approximately 90 minutes for parents to watch and rate two videotapes of children's behavior, as well as to complete questionnaires about their own thoughts and feelings, and provide information about their own child and family.

Is there compensation for participation?

- Parents will receive a summary report of responses about themselves and their family.
- Each couple will receive \$30.00 for participating.

How do I get more information?

- Please call project director Jennifer Sommer, M. A. at: 336-346-3192 ext. 304 for more information or e-mail to the following address: **[jlsommer@uncg.edu](mailto:jlsommer@uncg.edu)**

Faculty Sponsor: Arthur D. Anastopoulos, Ph.D.

AD/HD Clinic at UNCG  
1100 West Market Street, 3<sup>rd</sup> Floor  
P. O. Box 26170  
Greensboro, NC 27402-6170

## APPENDIX N

### CONSENT FORM FOR PARTICIPANTS RATING VIDEOS

THE UNIVERSITY OF NORTH CAROLINA  
GREENSBORO

#### CONSENT TO ACT AS A HUMAN PARTICIPANT:

Project Title: Parent Ratings of Children's Behavior

Project Director: Jennifer Sommer, M.A. Faculty Supervisor: Arthur D. Anastopoulos, Ph.D.

Participant's Name: \_\_\_\_\_ Date of Birth: \_\_\_\_\_

Date of Consent: \_\_\_\_\_

#### **Purpose**

The purpose of this study is to gain a better understanding of how mothers and fathers of children age five to twelve rate disruptive behaviors in children.

#### **Description and Explanation of Procedures:**

A member of the research team will show you two videotapes of children's behavior while engaging in tasks you might observe as a parent at home, such as academic and recreational activities. Following each videotape you will be asked to complete questionnaires about the children's behaviors. This portion should take approximately one hour to complete. Following watching and rating the videotapes, you will be asked to complete some questionnaires about your own thoughts and feelings, as well as information about your own child and family. This portion should take approximately thirty minutes to complete. In total, the research visit should take approximately 90 minutes to complete.

#### **Potential Risks and Discomforts:**

There is minimal risk associated with participating in this study. Some questionnaires ask about personal information such as emotional experiences that you may have had, which may cause you to feel uncomfortable. You may ask questions at any time, and you may skip any questions that you do not want to answer. You may also withdraw from the project at any time without penalty.

#### **Benefits:**

The results of this study will benefit society by increasing knowledge of how mothers and fathers may report child behaviors differently. This knowledge may better inform how childhood behavior disorders are diagnosed and treated. Based on the information that you provide, you will receive a written summary of your responses about yourself and your family.

**Compensation:** As a couple you will receive \$30.00 for your participation.

#### **Confidentiality:**

The answers you provide will be kept confidential. Information that you provide will be identified only by a number. The only people who will see information about you are the researchers involved in this project. Your name will not be used in any reports from this study. The forms that you complete will be stored in locked filing cabinets. Passwords will protect information that has



been entered on a computer. All information will be destroyed five years after the conclusion of this project.

**Consent:**

By signing this consent form, you agree that you understand the procedures involved in this research. You also agree that you are aware of potential risks and benefits. You are free to refuse to participate or to withdraw from this research at any time without penalty or prejudice. Your participation is entirely voluntary. In addition, your refusal to participate will not affect your relationship with UNCG or the AD/HD Clinic at UNCG in any way. Your privacy will be protected because you will not be identified by name as a participant in this project.

The research and this consent form have been approved by the University of North Carolina at Greensboro Institutional Review Board, which ensures that research involving people follows federal regulations. Questions regarding your rights as a participant in this project can be answered by calling Mr. Eric Allen, who is the UNCG Compliance Officer (336) 256-1482. Questions regarding the research itself will be answered by Jennifer Sommer by calling (336) 346-3192, ext. 304 or Dr. Arthur Anastopoulos at (336) 346-3192, ext. 303. Any new information that develops during the project will be provided to you if the information might affect your willingness to continue participation in the project.

By signing this consent form you are agreeing that you read, or it has been read to you, and you fully understand the contents of this document and are openly willing consent to take part in this study. All of your questions concerning this study have been answered. By signing this form, you are agreeing that you are 18 years of age or older and are agreeing to participate, or have the individual specified above as a participant participate, in this study described to you by Jennifer Sommer.

\_\_\_\_\_  
Parent/Guardian Signature

\_\_\_\_\_  
Date

## APPENDIX O

### RESEARCH SUMMARY SENT TO PARENTS

DATE

DEAR NAME,

We would like to take this opportunity to thank you for participating in our research project looking at how mothers and fathers rate behavior in children. We enjoyed meeting with you and your significant other. Your participation has helped us better understand how best to work with families of children with AD/HD and the importance of incorporating mother's *and* father's unique perspectives.

Attached is a summary of the information that we collected about you and your SON/DAUGHTER, NAME. Because this information was collected as part of a research study, and not a clinical evaluation, we are not able to offer formal clinical diagnoses or treatment recommendations. However, you can share the attached summary with any health care professional who may be evaluating you or your child in the future.

We very much appreciate your time and participation in our study. We will continue to keep you on our mailing list to update you about the overall findings of the research study once it is complete. Should you have any questions, please feel free to contact us at (336) 346-3192, extension 304.

Sincerely,

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Jennifer L. Sommer, M.A.  
Graduate Student Researcher

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Arthur D. Anastopoulos, Ph.D.  
Research Supervisor

**SUMMARY OF CHILD ASSESSMENT RESULTS**  
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**Adult ADHD RS:**

Subscale	Number of Symptoms	
	Childhood	Past 6 Months
Inattention		
Hyperactive-Impulsive		

**BDI:**

Total Score	Interpretation

**Test of AD/HD Knowledge:**

Correct Answers	Incorrect Answers

**Child ADHD RS:**

Subscale	Number of Symptoms	Percentile
Inattention		
Hyperactive-Impulsive		

## **DESCRIPTION OF QUESTIONNAIRES**

### **Adult ADHD Rating Scale (ADHD RS)**

The Adult ADHD Rating Scale is an 18-item checklist that directly assesses AD/HD symptoms in adults as outlined in the Diagnostic & Statistical Manual of Mental Disorders - Fourth Edition (DSM-IV). The self-report version of this scale was used in the current study to determine the number of inattentive (up to 9) and hyperactive-impulsive (up to 9) symptoms that you may have experienced as a child and in the past six months.

### **Beck Depression Inventory (BDI)**

The Beck Depression Inventory is 21-item questionnaire that assesses depressive symptoms in adults. The BDI was used in the current study to determine the presence and severity of depressive symptoms that you may be currently experiencing. Scores on the BDI range from 0 to 63 with scores of 9 or less falling in the normal range.

### **Test of AD/HD Knowledge (TOAK)**

The Test of AD/HD Knowledge assesses parents' knowledge of AD/HD. A 15-item version of the test was used in the current study. The correct answers to these questions are attached.

### **Child ADHD Rating Scale (ADHD RS)**

The ADHD Rating Scale is an 18-item checklist that directly assesses AD/HD symptoms in childhood as defined by the Diagnostic & Statistical Manual of Mental Disorders - Fourth Edition (DSM-IV). The parent version of this scale was used in the current study to determine the number of inattentive (up to 9) and hyperactive-impulsive (up to 9) symptoms that your child may display. Additionally, the percentile score describes the degree to which your child's symptoms deviate from expectations based upon comparisons with children of the same age and gender.

### Test of AD/HD Knowledge (TOAK) – Answer Key

1. Most children with AD/HD outgrow their problems by the time they are adults. False
2. Special diets, like the Feingold diet, have been scientifically proven to cure the symptoms of AD/HD. False
3. AD/HD may sometimes be inherited (passed along in the family). True
4. Boys and girls have similar rates of AD/HD. False
5. In many cases, medication will help a child earn better grades in school. True
6. There is a blood test that can identify children with AD/HD. False
7. Psychological/behavioral treatments improve attention and reduce disruptive behavior. True
8. The diagnosis of AD/HD can be made if problems first emerge at the age of 14. False
9. Children with severe AD/HD problems can pay attention to things that interest them for a long period of time. True
10. Common side effects of Ritalin and other stimulant medications are Zombie-like appearance and behavior. False
11. In addition to their primary problems, many children with AD/HD have problems keeping friends. True
12. AD/HD is caused by bad parenting. False
13. Parents of children with AD/HD report higher levels of parenting stress than do parents of children without AD/HD. True
14. Approximately 15-20% of children have AD/HD. False
15. Children with AD/HD are at much higher risk of having depression and anxiety than are children without AD/HD. True