

Examining Parental Psychopathology, Parenting, and Coparenting in Families of
Children with Attention-Deficit/Hyperactivity Disorder

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Abstract

Disruptive behaviour disorders are the most frequent reason for referral of children and adolescents to mental health services. The financial, health, and social toll on these children, their families, and society is considerable. Many questions remain regarding families of children with ADHD such as the links between parental psychopathology, parenting and coparenting variables and child adjustment. I examined self-reported parenting, coparenting and psychopathology in parents of children with attention-deficit/hyperactivity disorder (ADHD) and in parents of children without ADHD. Mothers and fathers of 25 children (9 girls, 16 boys) aged 6-12 with ADHD and 20 children without ADHD (8 girls, 12 boys) completed the positive involvement subscale of the Alabama Parenting Questionnaire (Shelton, Frick, & Wootton, 1996), the Parenting Scale (Arnold, O’Leary, Wolff & Acker, 1993), the Child-Rearing Disagreements scale (Jouriles et al., 1991), the Parental Alliance Measure (Abidin & Brunner, 1995), the Adult Self-Report (Achenbach & Rescorla, 2003) and the Conners’ Adult Attention Rating Scale-Screening Version (Conners, Erhardt, & Sparrow, 1999). Both mothers and fathers of children with ADHD reported more symptoms of ADHD, internalizing problems, and tobacco use than did mothers and fathers of children without ADHD. In addition, children with ADHD were significantly more likely than children without ADHD to live in families where *both* the mother and the father experienced high levels of symptomatology. There were significant gender differences in parenting, with mothers reporting more laxness and greater involvement than did fathers. Significant group differences were found, with parents of children with ADHD reporting more overreactivity than did parents of children without ADHD. In terms of coparenting there were no significant differences between mothers and fathers or between parents of children with and without ADHD for either child-rearing disagreements or parental alliance. Avoidant

symptoms in fathers were significantly related to laxness in parenting. Child-rearing disagreements were significantly correlated with mother's somatic and antisocial problems and with father's anxiety, avoidance, ADHD, hyperactive/impulsive and antisocial problems. There was an inverse relationship between fathers' ratings of the parental alliance and fathers' avoidant and antisocial problems. Findings from this study highlight the importance of understanding the family context of children with ADHD and demonstrate the usefulness of considering the experience of fathers of children with ADHD. Finally, the potential of interventions to meet the needs of children with ADHD and their families is considered.

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Statement of Co-Authorship

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Table of Contents

Abstract	ii
Acknowledgements	iv
Statement of Co-Authorship.....	v
Table of Contents	vi
General Introduction	8
What is ADHD.....	8
Psychopathology in Parents of Children with ADHD	12
Self-reported Parenting in Families of Children with ADHD.....	15
Self-reported Coparenting in Families of Children with ADHD	16
Importance of Examining Fathers	19
Goals of the Current Study.....	20
Table 1	23
Table 2.....	27
Manuscript One	29
Psychopathology in Parents of Children with Attention-Deficit/Hyperactivity Disorder.....	31
Method	35
Results	39
Discussion	43
References	50
Table 1	59
Table 2.....	60
Manuscript Two	61
Self-Reported Parenting and Coparenting in Parents of Children with Attention-Deficit/Hyperactivity Disorder.....	63
Method	69
Results	75
Discussion	79
References	87
Table 1	96
Table 2.....	97
Table 3.....	99
Table 4.....	100
General Discussion.....	101
Recruitment	101
Diagnostic Challenges.....	104
Parental Psychopathology	106
Presence of Borderline and Clinical Problems in Both Parents.....	111
Parenting.....	112
Coparenting	114
Parental Psychopathology and Parenting.....	117
Parental Psychopathology and Coparenting.....	118
Inclusion of Fathers.....	118
Strengths and Limitations.....	119

Future Directions.....	121
Implications for Practice.....	125
Conclusion.....	129
References	130
Appendix A: Research Ethics Board Approvals	148
Appendix B: Study Measures.....	150
Appendix C: Study Notice	161
Appendix D: Consent Forms.....	163

General Introduction

This study was designed to increase our understanding of parental psychopathology, self-reported parenting practices, and coparenting in families of children with Attention-Deficit/Hyperactivity Disorder (ADHD), and children without ADHD. To lay the background for this study, first the features of ADHD will be described. Next the literature on parental psychopathology and on parent-child-interaction in families with a child with ADHD will be presented. Finally, the literature on coparenting will be reviewed. The necessity of examining fathers will be underlined throughout these sections. Following this introduction, two manuscripts (Luedemann, Lee, Johnston, Hunsley, Kuehn & Robaey, 2011; Luedemann, & Lee, 2011) present the study methodology and results. An overall discussion section summarizes the findings from these two manuscripts.

What is ADHD?

Attention-Deficit/Hyperactivity Disorder (ADHD) is one of the most common mental disorders among children, affecting 3-7% of all school-aged children (Voeller, 2004; Wilens, Biederman & Spencer, 2002). The most common behaviours seen in children with ADHD include developmentally inappropriate levels of hyperactivity, impulsivity, and inattention. To be defined as symptoms of ADHD, behaviours must appear before age seven, continue for more than six months, and be present in two or more settings, such as school and home. Symptoms of ADHD are more likely to occur in group situations (e.g., classrooms, playgroups and work settings) (American Psychiatric Association, APA, 2000). Symptoms of ADHD may be minimal in situations where the environment is novel, the individual is receiving one-on-one attention (e.g., clinician's office), or the individual is involved in engaging activities. In addition, the symptoms must occur more often and be more severe, than found in other children of the same

age (APA, 2000). In order to understand the nature of ADHD it is important to understand the core characteristics of ADHD (Johnston & Mah, 2008).

ADHD is two to nine times more likely to be diagnosed in boys than in girls, however, the male-to-female ratios tend to vary depending on the setting and the type of ADHD (APA, 2000; Voeller, 2004). Subtypes of ADHD are indicated based on the predominant symptom pattern for the past six months (APA, 2000). The three subtypes of ADHD are based on elevations of a group of symptoms: ADHD predominantly hyperactive-impulsive (ADHD-HI), ADHD primarily inattentive (ADHD-I), and ADHD combined type (ADHD-C) that includes children with high levels of both hyperactive/impulsive and inattentive symptoms. The current study focused on children diagnosed with ADHD-C because this is the most common subtype of ADHD (Brown et al., 2001). Individuals diagnosed with ADHD-C show difficulties with both inattention and impulsive-hyperactive behaviours. They often lack persistent effort or have difficulty in sustaining responsiveness to tasks that do not have intrinsic appeal or for which the immediate consequences for completion of the task are minimal and unappealing (Barkley, 2006).

Both clinical (e.g., Multimodal Treatment Study of Children with ADHD, Cooperative Group (MTA), 1999) and epidemiological studies (e.g., August, Realmuto, MacDonald, Nugent, & Crosby, 1996) have found high concentrations of comorbid disorders in samples of children with ADHD. Children with ADHD are at increased risk for developing Oppositional Defiant Disorder (ODD) (Daley, 2006; Johnston, Murray, Hinshaw, Pelham, & Hoza, 2002). ODD refers to a recurrent pattern of negativistic, hostile, and defiant behaviour toward authority figures (APA, 2000). The symptoms of ODD include: recurrent losses of temper, arguments with adults, active defiance or refusal to comply with adults' requests, deliberate annoyance, blaming of

others for his or her misbehaviours, anger or resentment, and spitefulness or vindictiveness (APA, 2000). To meet criteria for a diagnosis of ODD, at least four of these symptoms must be present for at least six months (APA, 2000). The behaviour must occur more frequently than is typical for children of comparable age and must cause clinically significant impairment in social or academic functioning (APA, 2000). Consideration of comorbid diagnoses is important in the assessment of ADHD and can be accomplished by using rating scales that cover a broad range of symptoms (Pelham, Fabiano & Massetti, 2005). The use of rating scales, rather than diagnostic interviews, provides information from parents and teachers in a quick and cost-effective manner.

Although ADHD is a disorder that is first evident in childhood, in 50% of individuals diagnosed with ADHD symptoms persist into adolescence and adulthood, and are associated with high rates of conduct disorder, school failure, substance use, and car accidents (APA, 2000; Fischer, Barkley, Smallish, & Fletcher, 2002). The genetic contribution to ADHD symptoms is the highest of any psychiatric disorder (70-95%; Barkley, Fischer, Smallish & Fletcher, 2002). Therefore, it is possible that parents of children with ADHD may themselves suffer ADHD symptoms. Although ADHD is widely acknowledged to be a biologically-based disorder, the functioning of these children is related in important ways to the functioning of their parents and families.

The heterogeneity of ADHD suggests multiple causal pathways, with genes and environment interacting in a multitude of ways to produce the behaviors that are characteristic of ADHD (Campbell, 2000; Rutter & Sroufe, 2000; Taylor, 1999). A developmental psychopathology (DP) framework, can be used to explain how ADHD characteristics develop and identifies multiple modes through which family factors, such as biology and family environment, interact to effect the development of ADHD and conduct disorder characteristics

(Johnston & Mash, 2001; Rutter & Sroufe, 2000). According to this framework, biological factors, such as genetics, create a vulnerability to psychopathology that is activated under condition of stressful family environment (Mash & Johnston, 2005). This model postulates that individuals with a low genetic predisposition require a larger family stressor to trigger pathology, whereas those with a high genetic predisposition require only a small family stressor to elicit pathology. Similarly, protective family environmental factors, such as a responsive, supporting environment, they may mitigate the development of the disorder (Mash & Johnston, 2005).

Although heritability estimates are relatively strong, they do not account for the total variability in the expression of ADHD (Faraone & Biederman, 2000; Kuntsi & Stevenson, 2000). This suggests that the family environment should not be overlooked in studies of children with ADHD and their families (Johnston & Mash, 2001; Mash & Johnston, 2005). Several developmental pathways in which genetic and environmental factors interact have been suggested (Rutter & Sroufe, 2000; Taylor, 1999). In this study a transactional model was adopted in which parent characteristics and child characteristics were viewed as having reciprocal effects on one another (Bronfenbrenner, 1986; Darling & Steinberg, 1993). The presence of symptoms of ADHD in children can be a stressor that disturbs family and marital functioning (Harpin, 2005). It is not assumed that there is a unidirectional causal influence of parents on children. In fact, child adjustment problems may contribute to parental adjustment problems. Research has shown that parenting difficulties are unlikely to play a large role in the emergence of ADHD in children (Barkley, 1998), however, it is hypothesized that parenting, and parental psychopathology are important in the management of ADHD symptoms and in the development of comorbid oppositional symptoms. Inconsistent parenting has been significantly associated

with childhood ADHD, even after controlling for oppositional and conduct problems (Ellis & Nigg, 2009).

Psychopathology in Parents of Children with ADHD

The evidence with respect to parental psychopathology and childhood ADHD is complex (Johnston & Mash, 2001). Table 1 presents studies that have examined psychopathology in parents of children diagnosed with ADHD and other disruptive behaviour disorders. As can be seen from the table, the most common comparison group is a nondisordered or non-ADHD group. Researchers have identified elevated depressive symptoms, substance abuse and paternal antisocial behaviour in parents of children with ADHD (Chronis et al., 2003; Mick, Biederman, Santangelo, & Wypij, 2003). However, other investigators have found no differences between parents of children with ADHD and parents of nondisordered children (Faraone, Biederman, & Mick, 1997). Since Phares and Compas (1992) highlighted the tendency for researchers to focus attention on maternal rather than paternal psychopathology, there has been growing attention to the possible links between paternal psychopathology and child adjustment. A meta-analysis found that, although maternal psychopathology had stronger links to children's internalizing problems than did paternal psychopathology, maternal and paternal psychopathology were equally important in predicting children's externalizing problems (Connell & Goodman, 2002). Large scale studies in both the US and Australia have demonstrated the negative effects of combined maternal and paternal psychopathology on child adjustment (Brennan, Hammen, Katz, & LaBrocque, 2002; Kahn, Brandt, & Whitaker, 2004). In the present study the contribution of both maternal and paternal psychopathology to the prediction of child adjustment was examined.

ADHD. Studies have found elevated ADHD symptoms among mothers of children with ADHD (Chronis et al., 2003; Epstein et al., 2000; Faraone, Biederman, Feighner, & Monteaux,

2000; Nigg & Hinshaw, 1998). A small number of studies have also found that fathers of children with ADHD have more symptoms of ADHD compared to fathers of children without ADHD (Epstein et al., 2000; Faraone et al., 2000). The study was designed to address the urgent need to examine ADHD symptomatology in both mothers and fathers of children with ADHD and to examine links between adult ADHD symptoms and both parenting and coparenting.

Internalizing problems. Several studies have found elevated rates of depressive symptoms (Johnston, 1996; Kashdan et al., 2004) and diagnosed depression (Chronis et al., 2003; Faraone et al., 2000; Nigg & Hinshaw, 1998; Pfiffner et al., 1999) in mothers of children with ADHD. Although depressive symptoms were also examined in fathers (Johnston, 1996; Kashdan et al., 2004) only two studies (Faraone et al., 2000; Nigg & Hinshaw, 1998) assessed diagnosed depression in fathers. To date these studies suggest that fathers of children with ADHD did not differ significantly from fathers with nondisordered children. However, more studies are needed to extend these findings and determine whether this result is replicated in different samples. The current study was designed to assess self-reported depressive symptoms in both mothers and fathers.

A number of studies have found elevated rates of anxiety symptoms (Nigg & Hinshaw, 1998) and anxiety disorders (Perrin & Last, 1996; Soltanifar et al., 2009) in mothers of children with ADHD. In contrast, family history data have shown no increased risk for anxiety in fathers of children with ADHD (Perrin & Last, 1996). To date, only one study has directly assessed anxiety in fathers of children with and without ADHD and found no significant difference between the groups (Segenreich et al., 2009). The current study includes self-report of symptoms of anxiety in both mothers and fathers of children with ADHD.

The association between ADHD and general health is not clear (Barkley, 2006). Adults with a childhood history of ADHD have higher than expected rates of health problems (Barkley, 2006). Furthermore, children with ADHD also report more somatic complaints (Johnson, Alvarez & Johnson, 2008) and have poorer health (Hartsough & Lambert, 1985) than do children without ADHD. Thus, it is important to examine whether parents of children with ADHD also report more somatic complaints than do parents of children without ADHD. Given the links between stress and a variety of physical health problems (Contrada, 2011) and the elevated stress levels in parents of children with ADHD (Podolski & Nigg, 2001; Whalen et al., 2006; Whalen, Odgers, Reed, & Henker, 2011), it is reasonable to hypothesize that parents with a child with ADHD will report higher somatic problems than will parents of children without ADHD.

Substance use. Overall, parents of children with ADHD have been found to consume more alcohol than do parents of children without ADHD (Molina, Pelham & Lang, 1997). A literature review by Pelham and Lang, (1999) reported evidence of increased alcohol problems in mothers and fathers of children with ADHD compared to fathers of children without ADHD. This suggests a higher overall rate of substance use in the parents of children with ADHD. The current study was designed to extend this literature to include self-reports of tobacco use in parents in addition to alcohol problems.

Antisocial problems. Large scale studies examining the combined effects of maternal and paternal psychopathology on child adjustment (Brennan, Hammen, Katz, & LaBrocque, 2002; Kahn, Brandt, & Whitaker, 2004; Marmorstein, Malone, & Iacono, 2004) have found that although parental antisocial behavior is associated with ADHD, the links are much stronger for conduct problems than for ADHD. Thus, in this study I examined parental antisocial behaviour in relation to child ADHD, and included oppositional symptoms in the child as a covariate in all

analyses. The sample size in the current study was too small to include a third group of children with comorbid ADHD/ODD. Therefore oppositional symptoms were entered as a covariate to examine whether there was an effect on the outcome variable after removing the variance accounted for by children's oppositional symptoms.

Self-reported Parenting in Families of Children with ADHD

Examining parenting in children with ADHD is crucial given the importance of parents in the psychosocial development of children (Grusec, 2011). Both direct observation and self-reports have been used to examine the parenting practices in families of children with ADHD (Collett, Gimpel, Greenon, & Gunderson, 2001). One method consists in observing parents interacting with their child in either play-directed or task-directed situations and coding the interaction (Anderson et al., 1994; Buhrmester, Camparo, Christensen, Gonzalez, & Hinshaw, 1992; Campbell et al., 1986). Although the usefulness of observational methods is well-established (Anderson et al., 1994; Buhrmester, et al., 1992; Campbell et al., 1986), a serious limitation is that they are time-consuming and expensive (Arnold, O'Leary, Wolff, & Acker, 1993; Collett et al., 2001). Another method that has been used in previous studies consists of administering self-report measures. Several studies have reported a high correlation between self-report and observational measures in families of children with ADHD and ADHD/ODD (Johnston, et al., 2002; Johnston, Scoular, & Ohan, 2004). In the current study both positive (positive involvement) and negative (ineffective discipline) aspects of parenting in mothers and fathers were assessed via self-report.

Overall, studies of mothers of children with ADHD and ADHD with comorbid ODD report more negative parenting practices and less positive parenting practices than do mothers of nondisordered children. The majority of these studies have assessed negative parenting practices

and found that mothers of children with ADHD display more laxness (Collett et al., 2001; Harvey, Danforth, Ulaszek, & Eberhardt, 2001; Seipp & Johnston, 2005), overreactivity (Collett et al., 2001; Harvey et al., 2001; Seipp & Johnston, 2005), authoritarian parenting (Hinshaw, Zupan, Simmel, Nigg, & Melnick, 1997; Lange, Sheerin, Carr, Dooley, Barton, & Marshall et al., 2005), and directive, commanding, and negative parenting behaviours than do mothers of children without ADHD (Johnston & Mash, 2001). Recent studies have also examined positive aspects of parenting including involvement (Arnold, O’Leary, & Edwards, 1997; Johnston et al., 2002; Pfiffner, McBurnett, Rathouz, & Judice, 2005) and warmth (Gerdes et al., 2003; Pfiffner et al., 2005). These positive aspects of parenting might also influence the expression of ADHD and ADHD/ODD symptoms. In contrast to the large body of literature on mothers’ parenting, the investigation of fathers’ parenting in families with a child with ADHD is relatively rare. Table 2 provides an overview of recent studies that have also included a self-report of parenting by fathers with a child diagnosed with ADHD. Research on men’s parenting of their children with ADHD suggests both similarities and differences to the patterns found for mothers. Like mothers of children with ADHD, fathers of children with ADHD engage in more directive, negative and power assertive discipline than do fathers of nondisordered children (Gerdes et al., 2003; Hoza et al., 2000; Johnston, 1996). One difference between mothers and fathers is that there appears to be stronger evidence of laxness in fathers than there is of overreactivity (McKee et al., 2004).

Self-reported Coparenting in Families of Children with ADHD

In the large literature on parenting and its effects, most studies focused on one parent at a time (McHale, Kuersten-Hogan & Rao, 2004). Far less is known on the relationship between parents, although there is a growing recognition of the importance of the co-parental relationship in children’s adjustment. The term “co-parenting” was originally used in research examining

divorced parents (Hetherington, Cox, & Cox, 1982). Much research in this area has addressed how parents who are separated work together in parenting their children. More recent research has looked at the co-parental relationship in terms of mothers and fathers who are together, either married or co-habiting (Feinberg, 2002; Lee, Beauregard, & Bax, 2005; McHale et al., 2002). Parents with a positive coparental relationship value each other's contributions to parenting, and are cooperative with one another in respect to their child (Jia & Schoppe-Sullivan, 2011). In the current study I examined both negative and positive aspects of the coparental relationship: child-related disagreement and the parental alliance. Despite the obvious potential advantages of having two dedicated parents, coordination of parenting is often a challenge (Feinberg, 2002). It is normal for mothers and fathers, as parents, to feel, think, and act differently; this is especially true in raising children with special needs (Costigan, Floyd, Harter, & McClintock, 1997). Clinicians are well aware of the challenges faced by parents of a child with ADHD in providing extra structure and in ensuring that the child's needs are met, not only at home, but also in academic and extracurricular settings. It is reasonable to expect that raising a child with ADHD would be more easily accomplished by two adults working cooperatively than by two parents who are in conflict about parenting. Given the challenges of meeting their children's higher than average needs for routine, structure, and consistency, it was hypothesized that the quality of the co-parental relationship would be especially important for families with a child with ADHD. However, little previous research has examined this relationship. The present study examined two aspects of the co-parental relationship: child-rearing disagreement and the parental alliance.

Child-rearing disagreements refer to the inevitable conflict parents have over child-related issues (McHale & Fivaz-Depeursinge, 1999). Disagreement about rules and expectations,

maturity demands and discipline strategies have been associated with children's behaviour problems in both clinic and community samples (Dadds & Powell, 1991; Mahoney, Jouriles, & Scavone, 1997; Snyder, Klein, Gdowski, Faulstich, & LaCombe, 1988). In an observational study, Johnston and Behrenz (1993) found that mothers and fathers of ADHD children exhibited less positive and more negative communications than did parents of nondisordered children. This suggests that the clear link between child-rearing disagreement and behaviour problems in general may extend to parents of children with ADHD. Although the bulk of work in this area has examined the links between maternal ratings of child-rearing disagreement and child behaviour problems, work by Lee and colleagues (Lee, Beauregard, & Bax, 2005) found evidence in a community sample that fathers' ratings of child-rearing disagreement are also linked to behaviour problems in pre-school age children. As fathers become more involved in raising their children, the opportunities for differences of opinion about child-rearing increase (Cummings, Goeke-Morey, & Raymond, 2004). In the current study, mothers and fathers will rate the extent of their child-rearing disagreements.

The construct of parental alliance was first defined by Weissman and Cohen (1985). The parental alliance is a positive aspect of the co-parental relationship that reflects communication and teamwork as well as respect between two parents (Abidin & Konold, 1999). A strong parental alliance is related to child adjustment and may buffer children against the effects of marital discord (Abidin & Brunner, 1995). Furthermore, maternal ratings of the parental alliance were a better predictor of child problems than was marital satisfaction (Bearss & Eyberg, 1998). Harvey (2000) measured the parental alliance in children with behaviour problems using the Parental Alliance Inventory (PAI; Abidin & Brunner, 1995). She also examined a second positive aspect of coparenting in her study: parenting similarity. Harvey examined a sample of

children with both ADHD and ADHD/ODD and found that parenting similarity was related to greater marital adjustment and less marital conflict in families of children with ADHD.

Furthermore, when fathers reported a strong parental alliance and discipline similarity, it was linked with lower parenting stress for mothers.

Importance of Examining Fathers

Research in the field of parenting far more commonly includes reports by mothers than by fathers (e.g., Bearss & Eyberg, 1998; Jouriles et al., 1991; Seipp & Johnston, 2005). This selective research focus has led to fathers' parenting being overlooked (Cowan & Cowan, 2002). The study of paternal influences on child development is a relatively recent phenomenon and its importance is becoming more and more apparent (Bouchard, Lee, Asgary, & Pelletier, 2007; McBride & Rane, 1998). Compared to the wealth of research on mothers, there has been much more limited consideration of paternal roles in the development of externalizing behaviour problems such as ADHD, even though it has been clearly demonstrated that fathers contribute significantly to child development (Connell & Goodman, 2002). Considering ADHD has a strong genetic component, it is important to recognize that fathers account for half of their children's genes (Connell & Goodman, 2002). Furthermore, through their involvement in caregiving (engagement, accessibility, responsibility) and contributions to the family dynamics, the father also has an influence on the environmental factors that will shape his child (Connell & Goodman, 2002).

A major contribution of the current study is the inclusion of paternal self-reported psychopathology, parenting, and coparenting. Although the majority of North American children live in a household with two parents, considerable numbers of fathers do not live with their children. Nonetheless, the majority of nonresident fathers maintain at least some contact with

their children (Phares & Lum, 1997). Nonresidential fathers can have positive effects on the child through authoritative parenting that are similar to the positive effects of authoritative parenting by residential fathers (Amato & Gilbreth, 1999). This highlights the importance of examining the role of both residential and nonresidential fathers in parenting children with ADHD.

To date many studies of parenting have not included a definition of the father (e.g., Keown & Woodward, 2002). The definition of the father and the residential status of the father are important considerations in the current study. A decision to include only fathers who reside with their children would have limited the representativeness of the sample. For the purpose of the current study both residential and non-residential fathers were examined. In addition, biological and nonbiological fathers were included. Data from only one father were collected for each child included in the study.

Goals of the Current Study

The current study was designed to 1) examine a broad range of symptoms of parental psychopathology in parents of children with ADHD and a comparison group, 2) explore mothers' and fathers' reports of their positive involvement and ineffective discipline towards their children with ADHD, and 3) assess the ways that parents of children with ADHD work together as a team and the extent to which they disagree about their child. For all of these goals a special emphasis was placed on the role of fathers.

Parental Psychopathology. Based on previous research, it was hypothesized that both mothers and fathers of children with ADHD would report more ADHD symptoms than would mothers and fathers of children without ADHD. Based on the majority of previous studies, it was predicted that the rates of both depressive and anxiety symptoms would be higher for mothers of

children with ADHD than for mothers of children without ADHD, but would not differ significantly between the two groups of fathers. It was hypothesized that parents of children with ADHD would report greater somatic complaints than would parents of children without ADHD. Based on previous studies, it was hypothesized that mothers and fathers of children with ADHD would report higher rates of substance use than would parents of children without ADHD. It was hypothesized that parents of children with ADHD would report greater antisocial problems than parents of children without ADHD, but that this effect would be explained by co-occurring oppositional problems in the child. In general, we predicted that both mothers and fathers of children with ADHD would report significantly more psychopathology than would parents of children without ADHD, and subsequently, that children with ADHD would be more likely to have two parents with significant levels of psychopathology than would parents of children without ADHD.

Parenting and Coparenting. It was hypothesized that, compared to parents of comparison children, mothers and fathers of children with ADHD would report: 1) lower levels of positive involvement; 2) more negative/ineffective discipline 3) more child rearing disagreement and 4) similar levels of parental alliance.

As relatively few studies have examined the effects of parenting and coparenting in both mothers and fathers we explored the links between maternal and paternal reports. We formulated two competing hypotheses that reflect two different theoretical frameworks. The ‘similarity’ predicted that there would be a positive association so that the greater the laxness in one parent, the greater it would be in the other. This is based on the concept of assortative mating that predicts that individuals with psychological difficulties may be attracted to one another (Buss, 1984). Similarity is established through a positive correlation between a father’s score and a

mother's score on the same characteristic. The alternative 'compensation' hypothesis, which is grounded in family systems models, predicts that one parent may compensate for the behaviours of the other. The compensation hypothesis predicted an inverse relationship, so that the greater laxness in one parent, the greater the overreactivity in the other parent.

Links between Parental Psychopathology with Parenting and Coparenting

The following predictions were made about the way parenting would be related to parental psychopathology in the group of families with a child with ADHD: 1) positive involvement would be inversely associated with depressive symptoms reported by both mothers and fathers, as well as inversely related to paternal avoidance; 2) laxness would be positively associated with all types of parental psychopathology and 3) overreactivity would be positively associated with parental ADHD symptoms. It was hypothesized that there would be a negative association between parental alliance and child-rearing disagreement so that the stronger the reported parental alliance the fewer child-rearing disagreements. Finally, it was predicted that coparenting would be affected by parental psychopathology in the group of families with a child with ADHD: 4) child-rearing disagreement would be positively associated with all types of parental psychopathology in both mothers and fathers and 5) parental alliance would be inversely associated with parental avoidant and antisocial problems in fathers and antisocial problems in mothers.

The findings are presented in two manuscripts. In the first, I examined parental psychopathology in families of children with ADHD. In the second manuscript I examined parenting and coparenting in families of children with ADHD, as well as their links with parental psychopathology.

Table 1

Studies Examining Psychopathology in Parents of Children with Disruptive Behaviour Disorders.

Study	Sample	Measures Used	Mother Report	Mother Psychopathology	Father Report	Father Psychopathology	Conclusions
Biederman, Faraone, Keenan, Kneese, & Tsuang, 1990	N=99 Age: 6-17 Groups: Boys: 73 ADHD, 26 control	NIMH-DIS	X	ADHD, Antisocial, Depression, Anxiety, Substance use	X	ADHD, Antisocial, Depression, Anxiety, Substance use, Childhood ADHD, ODD, CD, APD*	Families of children with ADHD > risk for ADHD, antisocial disorders and mood disorders
Chronis et al., 2003	N = 214 boys & girls Age: 3-7 Groups: Boys: 92 ND, 23 ADHD, 57 ADHD+ODD/CD, Girls: 24 ND, 7 ADHD, 11 ADHD+ODD/CD	SCID-NP, BDI, MAST-S, DHQ	X	Mood Disorders, Anxiety Disorders, Childhood ADHD, APD, Substance abuse			Child ADHD associated with parental ADHD; child ADHD+ODD/CD associated with parental mood, anxiety and substance disorders
Epstein et al., 2000	N= 867 boys & girls, <i>ns</i> not specified Age: 7.0-9.9 Groups: 579 ADHD-C, 288 LNCG ^a	CAARS ^b	X	Symptoms of ADHD	X	Symptoms of ADHD	Parents of children with ADHD scored higher on CAARS
Faraone et al., 2000	N = 520 Age: 6-17 Groups: Boys: 140 ADHD, 120 ND, Girls: 140 ADHD, 122 ND Boys: 238 parents ND boys, 280 parents ADHD; Girls: 239 parents ND, 275 parents ADHD	SCID, Kiddie SADS-E (in past tense)	X	CD, Major Depression, ADHD, More than 2 Anxiety Disorders,	X	CD, Major Depression, Multiple Anxiety Disorder, ADHD	Relatives of child probands were at higher risk for ADHD, CD, Depression, anxiety disorders

Study	Sample	Measures Used	Mother Report	Mother Psychopathology	Father Report	Father Psychopathology	Conclusions
Ghanizadeh, Mohammadi & Moini, 2008	N=81 Child Gender: 66 boys, 14 girls Age: 5-18 79 mothers, 72 fathers	Kiddi-Schedule for Affective Disorders and Schizophrenia	X	ADHD, MDD, BMD, SAD, PTSD, OCD	X	ADHD, MDD, BMD, SAD, PTSD, OCD	The prevalence of lifetime ADHD in the parents was 45.8% for fathers and 17.7% for mothers. The rate for MDD in mothers and fathers was 48.1% and 43.0%, respectively.
Johnston, 1996	N= 81 Child Gender: unknown Age: 5-11 Groups: 23 ADHD-LOD ^c , 25 ADHD-HOD ^d , 33 ND	SCL 90-R	X	Symptoms of Obsessive-Compulsive, Depression, Hostility	X	Symptoms of Obsessive-Compulsive, Depression, Hostility	Maternal psychopathology: ADHD-LOD = ADHD-HOD > ND and was associated with child ADHD; fathers showed increasing disturbances with ND<LOD<HOD Child ADHD positively related to Parental Psychopathology
Kashdan et al., 2004	N = 45 boys ADHD Age: 5-12 45 mothers, 45 fathers	DBD, BDI, STAI	X	Depressive Symptoms, Anxiety	X	Depressive Symptoms, Anxiety	
Mick, Biederman, Santangelo, & Wypij, 2003	N= 262 Age: 6-17 Groups:140 ADHD, 122 non-ADHD	SCID	X	Symptoms ADHD, Major Depressive Disorder, Anxiety, Bipolar	X	Symptoms ADHD, Major Depressive Disorder, Anxiety, Bipolar	Familial risk for Major Depression in ADHD families.
Nigg & Hinshaw, 1998	N= 142 boys Groups: 31 ADHD, 49 ADHD + ODD/CD, 62 non-ADHD	WURS, DIS-3-R	X	GAD, Major Depressive Disorder, Mania, Substance	X	GAD, Major Depressive Disorder, Mania, Substance	Maternal depression ADHD: ADHD+ODD/CD > ND

	Age: 6-12 132 mothers, 117 fathers		abuse/dependence APD	abuse/dependence APD	Paternal APD: ADHD+ODD/CD > ND Paternal ADHD: ADHD & ADHD+ODD/CD > ND
Pfiffner et al., 1999	N= 177 boys Age: 7-12 Groups: 111 ADHD, 66 non-ADHD	SCID, SADS	X	Internalizing Disorders Externalizing Disorders	Internalizing disorders in children related to those of parents, Externalizing disorders in children related to those of parents
Segenreich et al., 2009	N= 66 Age: 9-14 Groups: 36 ADHD (21 mothers, 15 fathers), 30 control (18 mothers, 12 fathers)	ASRS, BDI, STAI	X	Depression, Anxiety	mothers of ADHD children had higher depressive & anxiety levels than controls. No significant differences between fathers of ADHD and control children
Soltanifar et al., 2009	N=100 mothers Age: 6-12 Groups: 50 ADHD, 50 non ADHD	BDI, STAI	X	Depression, Anxiety	Intensity of depression and trait anxiety in mothers of ADHD children > than the control group

Note:

^a Local normative comparison group

^b Two parent families completed four CAARS questionnaires, maternal self-report, paternal self-report, maternal other-report about father and paternal other-report about mother, single families completed only one CAARS questionnaire

^c ADHD children with lower levels of oppositional-defiant behaviour

^d ADHD children with higher levels of oppositional-defiant behaviour

* Father Psychopathology based on maternal reports

ADHD: Attention Deficit-Hyperactivity Disorder

APD: Antisocial Personality Disorder

ASRS: Adult Self Report Scale

BDI: Beck Depression Inventory

CAARS: Conners' Adult ADHD Rating Scale

CD: Conduct Disorder

DBD: Disruptive Behaviour Disorders Rating Scale

DHQ: Drinking History Questionnaire

DIS-3-R: Diagnostic Interview Schedule for DSM-III-R

GAD: General Anxiety Disorder

Kiddie-SADS-E: Schedule for Affective Disorders and Schizophrenia for School-Age Children: Epidemiologic Version

MAST-S: Short Michigan Alcoholism Screening Test

MDD: Major Depressive Disorder

ND: Nondisordered

NIMH-DIS: National Institute of Mental Health Diagnostic Interview Schedule

ODD: Oppositional-Defiant Disorder

SAD: Seasonal Affective Disorder

SCID: Structured Clinical Interview for DSM-III-R

SCID-NP: Structured Clinical Interview for DSM-III-R, Non-Patient Edition

SCL 90-R: The Symptom Checklist 90-Revised

STAI-State-trait Anxiety Inventory

WURS: Wender Utah Rating Scale

Table 2

Studies of Self-Reported Parenting in Parents of Children diagnosed with ADHD

Study	Sample	Age range	Measures	Mother report	Father report
Arnold et al., 1997	N = 71 mothers and fathers Gender: 65 boys, 6 girls Groups: 52 ADHD, 12 ADHD/ODD, 1 ADHD/CD	7-12	- Parenting Scale	X	X
Gerdes et al., 2003	N= 197 MTA Gender: boys Groups: 142 ADHD (125 mothers, 61 fathers), 55 control (50 mothers, 35 fathers)	7-13	- Parent-Child Relationship Questionnaire (parent & child versions)	X	X
Hoza et al., 2000	N= 105 MTA Gender: 79 boys, 26 girls Groups: 105 ADHD-C, (100 mothers, 57 fathers)	7-10	- Parenting Sense of Competence Scale - Parenting Scale - Interactions Questionnaire	X	X
Johnston, 1996	N=48 families of ADHD children, 33 nondisordered Groups: 33 ND, 23 ADHD-LOD and 25 ADHD-HOD	5-11	- Home Situations Questionnaire - Parenting Sense of Competence Scale - Perceived Social Support Scale - Dyadic Adjustment Scale - Life Experiences Survey - The COPE Inventory - Parenting Scale - Audiotape assessment of parenting.	X	X
McKee et al., 2004	N=46 46 mothers, 26 fathers Groups: ADHD-C, ADHD-HI N = 149	4-12	- Alabama Parenting Questionnaire - Parent-Child Relationship Scale-brief version	X	X
Pfiffner et al., 2005	Gender: 123 boys, 26 girls Groups: 34 ADHD-C, 40 ADHD-C/ODD, 27 ADHD-C /CD (145 mothers; 125 fathers)	5-11		X	X

Note. MTA. Multi-modal treatment study of children with Attention Deficit/Hyperactivity Disorder. ADHD-LOD- lower levels of oppositional defiant behavior; ADHD-HOD- higher levels of oppositional defiant behavior

Running head: PARENTAL PSYCHOPATHOLOGY

Psychopathology in Parents of Children with Attention-Deficit/Hyperactivity Disorder

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Abstract

We examined symptoms of psychopathology in parents of children with attention-deficit/hyperactivity disorder (ADHD) and in parents of children without ADHD. Mothers and fathers of 25 children (9 girls, 16 boys) aged 6-12 with ADHD, and 20 children without ADHD (8 girls, 12 boys) completed the Adult Self-Report Form of the Achenbach System of Empirically Based Assessment and the Conners' Adult Attention Rating Scale-Screening Version. Both mothers and fathers of children with ADHD reported more symptoms of ADHD, internalizing problems, and tobacco use than did mothers and fathers of children without ADHD. In addition, children with ADHD were significantly more likely than children without ADHD to live in families where *both* the mother and the father experienced high levels of symptomatology. This study is unique in that it provides both parents' perspectives and highlights the need to address psychopathology in mothers and fathers, given the critical role that parents play in the treatment of children with ADHD.

Keywords: attention-deficit/hyperactivity disorder, parental psychopathology, children

Psychopathology in Parents of Children with Attention-Deficit/Hyperactivity Disorder

There has been a growing recognition of the link between parental and child psychopathology (e.g., Goodman & Brand, 2008). This study was designed to examine self-reports of psychopathology symptoms in mothers and fathers of children with and without attention-deficit/hyperactivity disorder (ADHD). ADHD is one of the most common developmental disorders with a prevalence of 3-7% among school-aged children (American Psychiatric Association, APA, 2000). ADHD is frequently comorbid with other disorders, including oppositional defiant disorder (ODD), conduct disorder, anxiety or mood disorders, and learning problems (Pliszka, 1998; Spencer, Biederman, & Wilens, 1999). Although ADHD is a disorder that is first evident in childhood, in 50% to 60% of individuals symptoms persist into adolescence and adulthood (Barkley, Fischer, Smallish, & Fletcher, 2002).

As the genetic contribution to ADHD symptoms is the highest of any psychiatric disorder (Faraone et al., 2005), it is possible that parents of children with ADHD may themselves suffer ADHD symptoms. In addition to genetic vulnerability, the demanding and stressful nature of raising a child with ADHD is likely to be related not only to child outcomes, but to other aspects of family life, including the psychological functioning of parents (Harrison & Sofronoff, 2002; Johnston & Mash, 2001). Thus, it is important to assess not only parental ADHD, but also a variety of possible other disorders among parents of children with ADHD. Although we know from cross-sectional and longitudinal studies that fathers play an important and unique role in child development (Bogels & Phares, 2008), most studies have focused exclusively on mothers and there is limited research on fathers in families of children with ADHD (Fabiano, 2007). The provision of clear evidence of the significance of the father would be important in efforts to promote father involvement in evidence-based clinical services. In sum, this study is focused on

examining a range of symptoms of psychopathology reported by mothers and fathers of children with ADHD. In the following sections, we review evidence regarding psychopathology in parents of children with ADHD.

ADHD symptoms

Studies have found elevated ADHD symptoms among mothers of children with ADHD (Chronis et al., 2003; Epstein et al., 2000; Faraone, Biederman, Feighner, & Monteaux, 2000; Nigg & Hinshaw, 1998). In addition, there is strong evidence for a genetic basis for ADHD. About 25% of children with ADHD have parents who meet diagnostic criteria for ADHD (Faraone & Doyle, 2001). The current study provides information from mothers and fathers of the same child regarding both their child's ADHD symptoms as well as the parent's self-reported ADHD symptoms.

Internalizing problems

Elevated rates of depressive symptoms (Johnston, 1996; Kashdan et al., 2004) and diagnosed depression (Chronis et al., 2003; Faraone et al., 2000; Nigg & Hinshaw, 1998; Piffner et al., 1999) have been found in mothers of children with ADHD. In contrast, fathers of children with ADHD have not been found to differ significantly from fathers of children without ADHD in terms of rates of depressive symptoms (Johnston, 1996; Kashdan et al., 2004) or diagnosed depression (Brown & Pacini, 1989; Faraone et al., 2000; Nigg & Hinshaw, 1998; Segenreich, Fortes, Coutinho, Pastura, & Mattos, 2009; Soltanifar, Moharreri, & Soltanifar, 2009). A number of studies have found elevated rates of anxiety symptoms (Nigg & Hinshaw, 1998) and anxiety disorders (Perrin & Last, 1996; Soltanifar et al., 2009) in mothers of children with ADHD compared to mothers of children without ADHD. In contrast, family history data have shown no increased risk for anxiety in fathers of children with ADHD (Perrin & Last, 1996). To date, only

one study has directly assessed anxiety in fathers of children with and without ADHD and found no significant difference between the groups (Segenreich et al., 2009). The current study includes self-report of symptoms of anxiety in both mothers and fathers of children with ADHD.

The association between ADHD and general health is not clear (Barkley, 2006), although adults with a childhood history of ADHD have higher than expected rates of health problems (Barkley, 2006). Children with ADHD also report more somatic complaints (Johnson, Alvarez & Johnson, 2008) and have poorer health (Hartsough & Lambert, 1985) than do children without ADHD. Thus, it is important to examine whether parents of children with ADHD also report more somatic complaints than do parents of children without ADHD. Given the links between stress and a variety of physical health problems (Contrada, 2011) and the elevated stress levels in mothers of children with ADHD (Podolski & Nigg, 2001; Whalen et al., 2006; Whalen, Odgers, Reed, & Henker, 2011), it is reasonable to hypothesize that parents with a child with ADHD may report higher somatic problems than do parents of children without ADHD.

Substance use

Several studies have found increased alcohol consumption and alcohol problems in mothers of children with ADHD (Pelham & Lang, 1999). The prevalence of alcohol problems has been found to be higher for fathers of boys with ADHD than among fathers of boys without ADHD (Biederman, Faraone, Keenan, Knee, & Tsuang, 1990). Overall, parents of children with ADHD have been found to consume more alcohol than do parents of children without ADHD (Molina, Pelham & Lang, 1997). In addition, childhood ADHD symptomatology predicts a greater number of cigarettes smoked per day as adults and during pregnancy (Willoughby, Kollins, & McClernon, 2009). This suggests a higher overall rate of substance use in the parents

of children with ADHD; the current study will extend this literature to include self-reports of tobacco use in parents.

Antisocial problems

Large scale studies examining the combined effects of maternal and paternal psychopathology on child adjustment (Brennan, Hammen, Katz, & LaBrocque, 2002; Kahn, Brandt, & Whitaker, 2004; Marmorstein, Malone, & Iacono, 2004) have found that although parental antisocial behavior is associated with ADHD, the links are much stronger for conduct problems than for ADHD. Thus, in this study we examined parental antisocial behavior in relation to child ADHD, but oppositional symptoms in the child were included as a covariate in all analyses.

Co-occurrence of psychopathology in both parents

Previous research has examined several types of parental psychopathology, including ADHD, internalizing problems, substance use and antisocial problems. However, within the literature on parents of children with ADHD, little is known about the co-occurrence of psychopathology in both parents. We do not know the proportion of children with ADHD who have two parents with significant psychopathology.

In summary, there is evidence that mothers and fathers of children with ADHD are more likely to experience symptoms of psychopathology than are parents of children without ADHD. Because adult psychopathology can affect the parents' ability to carry out daily parenting tasks (Harvey, Danforth, McKee, Ulaszek, & Friedman, 2003; Murray & Johnston, 2006), a more precise understanding of these psychopathologies may guide efforts to incorporate screening and treatment of these parental problems into existing services for children with ADHD. Our

theories, assessment, and treatment of children with ADHD have focused heavily on the children, but may need to be broadened to include their parents.

Hypotheses. It was hypothesized that both mothers and fathers of children with ADHD would report more ADHD symptoms than would mothers and fathers of children without ADHD. Based on the majority of previous studies, it was predicted that the rates of both depressive and anxiety symptoms would be higher for mothers of children with ADHD than mothers of children without ADHD, but would not differ significantly between the two groups of fathers. It was hypothesized that parents of children with ADHD would report greater somatic complaints than would parents of children without ADHD. Based on previous studies, it was hypothesized that mothers and fathers of children with ADHD would report higher rates of substance use than would parents of children without ADHD. It was hypothesized that parents of children with ADHD would report greater antisocial problems than would parents of children without ADHD, but that this effect would be explained by co-occurring oppositional problems in the child. In general, we predicted that both mothers and fathers of children with ADHD would report significantly more psychopathology than would parents of children without ADHD, and subsequently, that children with ADHD would be more likely to have two parents with significant levels of psychopathology than would parents of children without ADHD.

Method

Participants

The current study focused on children diagnosed with ADHD combined type (ADHD-C), the most common subtype which accounts for most treatment referrals (Brown et al., 2001). Families in the ADHD group were recruited through the ADHD clinic at the Children's Hospital of Eastern Ontario as well as through pediatricians who specialize in the diagnosis and treatment

of ADHD. Families in the comparison group were recruited through community advertisements and a kiosk at a local parenting show. Children aged 6-12 were recruited (M age=8.49, SD =1.80). The ADHD-C group consisted of 25 children who met the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) diagnostic criteria for ADHD combined type and 20 children formed the comparison group. The sample consisted of 17 girls (nine ADHD, eight comparison) and 28 boys (16 ADHD, 12 comparison).

Mothers' average age was 38 years ($SD = 5.0$) and fathers' was 41 years ($SD = 6.6$). Of the parents, 84% were White, 4% were Asian, 2% were Black, 3% were Aboriginal, 3% were Arab/West Asian and 4% were of unknown ethnicity. This sample is slightly less ethnically diverse than the population of the region in which the sample was recruited (Statistics Canada, Census 2006). Couples had been married (or living together) an average of 13.9 years ($SD = 5.5$) and had between one and five children ($M = 2.27$; $SD = 0.81$). The mean family income of \$80 000-\$89 000 CDN is comparable to the median total family income for the Ottawa-Gatineau region (Statistics Canada, Census 2006). There were no significant differences between the parents of children with and without ADHD in terms of total family income $t(1,43) = .59$, $p = .56$, number of children in the family $t(1,43) = -.86$, $p = .39$, or years parents had been together $t(1,43) = -.64$, $p = .53$. There was also no significant differences between mother ethnicity $t(1,41) = .01$, $p = .99$, and father ethnicity $t(1,43) = .27$, $p = .79$.

Inclusion criteria. Children in both groups were aged 6-12 years (the most common age range in which ADHD is diagnosed; Brown et al., 2001). Families with eligible children were included if both the mother and father were eligible and willing to participate. Parents were required to allow us to contact their child's teacher in order for the teacher to complete rating

scales. Married (91%), common-law (2.2%), and separated (6.7%) mothers and fathers were included.

Assignment to groups. To participate in the comparison group, children had to be rated by at least one parent and the teacher as below *T* scores of 60 on the Conners' Parent and Teacher Rating Scale Cognitive Problems/Inattention, and Hyperactivity subscales (CP/TRS R; Conners, 2001, described below) and the parent and teacher needed to report that the child's symptoms did not interfere with their daily functioning at home or at school.

To be assigned to the ADHD group, a child must have been diagnosed with ADHD by a health professional. In addition, the child had to be rated by at least one parent and the teacher as having symptoms in the clinical range (*T* score of 65 or above) on the Conner's Parent or Teacher Rating Scale Cognitive Problems/Inattention and Hyperactivity subscales (Conners, Sitarenios, Parker, & Epstein, 1998). In addition, consistent with DSM-IV-TR criteria for ADHD, children in the ADHD group had clinically significant levels of impairment, and their symptoms were present before age seven (APA, 2000). Children's scores on these measures are presented in Table 1.

Procedure

Families attended a research session during which they completed self-report measures. Written informed consent was obtained from all parents. Each parent received an honorarium of \$20 CDN for their participation. In addition to the research session, packages were sent to teachers and included the Conners' Teacher Rating Scale- short version. In the case where the child had more than one teacher, the teacher who spent the most time with the child was asked to complete the questionnaire.

Ethics. Ethical approval was obtained from the research ethics boards at the Children's Hospital of Eastern Ontario and the University of Ottawa.

Measures

Child behavior rating scales. The Conners' Parent and Teacher Rating Scales-Revised short version (CP/TRS-R:S; Conners, 2001) were used to assess child symptoms of ADHD; ODD symptoms were measured using the oppositional subscale. These measures are psychometrically sound and address DSM-IV criteria. These scales provide age- and sex-specific norms. Short versions of the rating scales were chosen because they take approximately 5-10 minutes to complete and have psychometric properties comparable to those of the full length scales (Johnston & Mah, 2008). For this sample, the internal consistencies for the subscales were cognitive problems/inattention .96 for mothers, .95 for fathers and .89 for teachers; hyperactivity: .93 for mothers, .94 for fathers and .95 for teachers; oppositional: .93 for mothers, .92 for fathers and .95 for teachers.

Parental psychopathology. The Conners' Adult Attention Rating Scale-Screening Version (CAARS-SV; Conners, Erhardt, & Sparrow, 1999) is a 30-item measure of ADHD symptoms for use with adults that can be completed in 10-15 minutes and covers the DSM-IV criteria for ADHD. The CAARS-SV is a 4-point, Likert style rating scale that yields an ADHD Index. Norms are available by gender and age-groups. Internal consistency in this sample for the ADHD index was .88 for mothers and .88 for fathers.

The Adult Self-Report Form for Ages 18-59 (ASR; Achenbach & Rescorla, 2003) is a 126-item scale assessing adult functioning which can be completed in 15-20 minutes. Norms are provided for each gender in two different age categories (18-35 and 36-59). The ASR allows for the evaluation of parental symptoms across the spectrum including DSM-IV oriented scales for

Attention Deficit/ Hyperactivity Problems (Hyperactivity/Impulsivity and Inattention subscales); Depressive Problems; Anxiety Problems; Somatic Problems; Substance Use Scales; Avoidant Personality Problems; and Antisocial Personality Problems. The ASR scores have been found to be valid and consistent with the DSM-IV diagnostic categories (Achenbach & Rescorla, 2003). Internal consistencies in the current sample were: Depressive Problems .75 for mothers and .83 for fathers; Anxiety Problems .78 for mothers and .78 for fathers; Somatic Complaints .71 for mothers and .73 for fathers; ADHD Problems .84 for mothers and .86 for fathers; Antisocial Personality Problems .80 for mothers and .79 for fathers; Avoidant personality problems .59 for mothers and .80 for fathers. Only subscales with adequate internal consistencies of above .70 (Hunsley & Mash, 2008) were used in the analysis and therefore no further analyses were conducted on mother's Avoidant Personality Problems subscale. As substance use was measured in the ASR with a single item for smoking, alcohol and drug use, internal consistency is not reported for this scale.

Demographics. Participants completed a demographic questionnaire assessing variables such as parent age, number of children in the family, number of years the parents had been partners, how many hours per week each parent worked for pay or went to school, total family income, as well as ethnicity. Two questions were also included addressing consultation with a professional about the child's difficulties (pediatrician, family physician, psychiatrist, psychologist, social worker, behavioral consultant) and which services they received to help with the management of their child's behavior (individual or family counseling, parenting program, support group, special help at school, or other services not included in the list).

Results

Services for Children

Among parents of the 25 children diagnosed with ADHD 52 % ($n=13$) reported that their child takes stimulant medication regularly and 24% ($n=6$) were on a stimulant medication at the time of participation. Not surprisingly, the number of families who received psychological intervention prior to participating in the study was higher in families of children with ADHD than in comparison families. Families of children with ADHD consulted with a greater number of professionals (psychologist, psychiatrist) and accessed a greater number of services (individual or family counseling and parent programs) than did families of comparison children. Pediatricians were consulted by significantly more families of children with ADHD ($n = 14$, 36%) than comparison families ($n = 2$, 5 %), $\chi^2 (1, n= 39) = 14.25, p<.001$, Cramer's $V=.604$ which indicates a high association Psychiatrists were consulted by significantly more families of children with ADHD ($n = 4$, 10%) than comparison families ($n = 0$), $\chi^2 (1, n= 39) = 4.23, p<.05$, Cramer's $V=.330$ which indicates a moderate association. Psychologists were consulted by significantly more families of children with ADHD ($n=16$, 64%) compared to families of comparison children ($n=3$, 15 %), $\chi^2 (1, n= 39) = 16.08, p<.001$, Cramer's $V=.642$ which indicates a high association. Individual or family counseling was received by 11 families (55%) of children with ADHD compared to only one family (4%) of comparison children, $\chi^2 (1, n= 39) = 11.32, p<.01$, Cramer's $V=.539$ which indicates a high association. Finally, seven families of children with ADHD (35%) participated in parenting programs, compared to one comparison family (4%), $\chi^2 (1, n= 39) = 4.91, p<.05$, Cramer's $V=.350$ which indicates a moderate association. For the chi square analyses above we have the power to detect a large effect size with a sample size of 45, and alpha set at 0.05.

Parental Psychopathology

A series of mixed model repeated measures analyses of covariance (RM ANCOVA) was conducted with parent gender (mother, father) as the within subject factor and group (ADHD, comparison) as the between subject factor to explore differences between mothers and fathers of children with and without ADHD on the subscale scores of the CAARS and the ASR. Child ODD symptoms served as the covariate in all analyses. Means and standard deviations are shown in Table 2.

Although a small effect size may be of theoretical interest, medium and large effect sizes are most likely to have clinical implications. A retrospective power analysis was conducted using the GPower 3.1.3 statistical program to determine the ability of the ANCOVA to detect an effect, if the effect actually exists. With alpha set at .05 and a medium effect size, power was relatively low to detect differences. For a large effect size the power is .75 which should allow for the detection of group differences. Therefore in interpreting findings, it should be noted that the power to detect medium effects is limited and significant results likely reflect fairly large effect sizes (Cohen, 1992).

ADHD. Results for parental ADHD symptoms were mixed and differed according to the assessment tool. For the CAARS ADHD index *T* score, there was no significant main effect for group or parent gender and no significant interaction between group and parent gender. Child ODD symptoms were not a significant covariate for the CAARS. In contrast, as predicted, there were significant main effects for group on the ASR AD/H problems scale $F(1, 42)=4.90, p<.05$, $\eta_p^2=.104$ the ASR hyperactive/impulsive symptoms scale $F(1, 42)=7.57, p<.01, \eta_p^2=.152$, and the inattentive symptoms scale $F(1, 42)=8.56, p<.01, \eta_p^2=.169$. For all these three scales, parents of children with ADHD endorsed more ADHD symptoms in themselves than did parents of children without ADHD. There were no significant effects for parent gender nor interactions

between parent gender and group and the covariate of child ODD symptoms was not significant for any of these variables.

Internalizing problems. Hypotheses were partially supported with respect to internalizing problems in the parents. There were significant main effects of group on the ASR depressive problems subscale, $F(1, 42)=6.89, p < .05, \eta_p^2=.141$, the ASR anxiety problems subscale $F(1, 42)=9.30, p < .05, \eta_p^2=.181$ and on the ASR somatic problems subscale $F(1, 42)=6.02, p < .05, \eta_p^2=.125$. For all three types of internalizing problems, parents of children with ADHD reported more problems than did parents of comparison children. Contrary to predictions, there were no significant main effects of parent gender nor interactions of group by parent gender, and the covariate of child ODD symptoms was not significant in analyses of parent depressive, anxiety, or somatic problems. There was no significant group difference for avoidant personality problems in fathers and ODD was not a significant covariate.

Substance use. There was partial support for hypotheses with respect to parental substance use. For self-reported alcohol use there were no significant group or gender differences, but there was a significant and group by parent gender interaction $F(1, 42)= 4.77, p < .05, \eta_p^2=.102$, but post hoc tests did not yield significant differences. Child ODD symptoms was not a significant covariate. There was a significant main effect for group on the ASR tobacco use scale $F(1, 42)=4.44, p < .05, \eta_p^2=.096$, with parents in the ADHD group reporting that they smoked more than did parents in the comparison group. There was no significant main effect of parent gender nor interaction of group and parent gender and the covariate ODD was not significant. There were no significant main effects or interactions and ODD was not a significant covariate for parent-reported drug use.

Antisocial problems. Contrary to prediction, there were no significant main effects, or interactions for parental reports of antisocial problems. Surprisingly, child ODD was not a significant covariate in predicting parental antisocial problems.

Presence of borderline and clinical problems in parents. Of children in the ADHD sample, 88% had parents who reported emotional or behavioral problems that were in the clinical or borderline-clinical range on at least one measure. In fact, 6/25 of children with ADHD (24%) had two parents who reported problems in the clinical range and 3/25 (12%) had two parents who reported psychological difficulties in the borderline clinical range. In the comparison group, 45% of children had parents who reported emotional or behavioral problems on at least one measure that were in the clinical or borderline range; and only 2/20 (10%) reported both parents with psychological difficulties in the borderline-clinical range. A chi-square test was performed to examine the relation between group and the likelihood of both parents having psychological problems. The relation between these variables was significant $\chi^2 (1, n = 45) = 6.18, p < .05$, Cramer's $V = .371$ which indicates a moderate association. Children with ADHD were more likely to have both mothers and fathers who reported clinical and borderline-clinical difficulties compared to children without ADHD.

Discussion

The current study was designed to examine a broad range of psychopathology symptoms reported by mothers and fathers of children with ADHD. Parental psychopathology is a risk factor for adverse outcomes in children with ADHD (Johnston & Mash, 2001). In general, consistent with prior research, parents of children with ADHD reported more symptoms of psychopathology than did parents of children without ADHD. There were no large effects of

parent gender. Overall, our data suggest that psychopathology in the fathers of children with ADHD has a profile similar to that of mothers.

Our results were consistent with previous studies (Chronis et al., 2003; Epstein et al., 2000) indicating that both mothers and fathers of children with ADHD reported more symptoms of ADHD than do mothers and fathers of comparison children. These difficulties with hyperactivity/impulsivity and inattention can affect a parent's ability to effectively manage the child's ADHD (Murray & Johnston, 2006; Weiss, Hechtman & Weiss, 2000). For example, these symptoms may affect a parent's ability to keep appointments, maintain attention during visits with physicians, or reliably administer child medication (Weiss et al., 2000). Specifically, parental ADHD has been found to negatively affect the outcomes of behavioral parent training for children with ADHD (Chronis-Tuscano et al., 2008; 2010; Sonuga-Barke, Daley, & Thompson, 2002).

The discrepancy between the results obtained on the ASR and the CAARS, which is a specific measure of ADHD symptomatology, was surprising. The two measures have similar numbers of items with the ASR ADHD problems scale having 13 items and the CAARS ADHD index having 12 items. The correlation between the CAARS ADHD index and the ASR AD/H Problems for mothers was $r=.74, p<.01$. For fathers the correlation between the CAARS ADHD index and the ASR AD/H Problems was $r=.63, p<.01$. As there is a fairly strong correlation between the measures it is surprising that differences were only found on the ASR. To our knowledge, no other studies have reported correlations between the CAARS and the ASR. It is possible that parents who were uncomfortable about ADHD symptomatology may have found it easier to recognize that the CAARS items refer to ADHD symptoms and hence been less willing to endorse these symptoms. Also, the ASR items were embedded in a larger set of items covering

a range of psychological symptoms, whereas the CAARS focuses solely on ADHD symptoms. Collett and colleagues (2003) found that scales that map onto DSM-IV criteria have high face validity, and it may not be difficult for a person to communicate an impression of having, or not having, ADHD symptoms. An additional issue that may have affected responses was the fact that the title for the CAARS appeared on the questionnaire, perhaps flagging the association with ADHD, whereas the ASR did not contain the name of the measure. Several studies have also shown that individuals with ADHD tend to underreport their symptoms (Barkley, 1997; Jiang & Johnston, in press). Consistent with previous studies (Johnston, 1996; Kashdan et al., 2004), we found that mothers of children with ADHD reported more depressive symptoms than did mothers of children without ADHD. In contrast to previous research (Johnston, 1996; Kashdan et al., 2004), we found that fathers of children with ADHD also differed significantly in terms of depressive symptoms from fathers of children without ADHD. The discrepancy with previous studies may be partially explained by the fact that our depressive problems subscale was embedded in a global measure of psychopathology rather than a stand-alone depression measure, or by the severity of child and parent ADHD symptoms in our sample as both parents and children had clinically significant problems with attention. Similar to Nigg and Hinshaw (1998), we also found elevated symptoms of anxiety in mothers of children with ADHD compared to mothers of children without ADHD. However, in contrast to Segenreich and colleagues (2009), we found that fathers of children with ADHD also reported higher symptoms of anxiety than did fathers of comparison children. A novel finding is that mothers and fathers of children with ADHD reported more somatic complaints than did parents of children without ADHD. Although somatic complaints have not been studied in this population, it is not an altogether surprising

finding given that children with ADHD report more somatic complaints than children without ADHD (Johnson et al., 2008).

Although we had a significant group by gender interaction for alcohol use there were no significant differences when post hoc testing was conducted. This difference may be more evident in a larger sample. Mothers and fathers of children with ADHD in our sample both reported higher tobacco use than did mothers and fathers of children without ADHD. This is consistent with recent reports of increased odds of neurobehavioral disorders in children exposed to second hand smoke (Kabir, Connolly, & Alpert, 2011). Adolescents and adults with ADHD become addicted to cigarette smoking at twice the rate of non-ADHD individuals (Wilens, Biederman, & Spencer, 2002). Although increased substance use has been found in the literature on parents of children with ADHD (McGough et al., 2005), we did not replicate this general finding of higher drug use perhaps because our sample was comprised of relatively high functioning two-parent families.

An important finding in the current study is that parents of children with ADHD were more likely to report clinical and borderline-clinical difficulties than were parents of children without ADHD. In fact, over a third of children with ADHD had two parents who reported problems in the clinical or borderline-clinical range. The inclusion of only one parent in studies on the development of child psychopathology is problematic. Our results suggest that the relationship between mother, father and child's difficulties is an important area for further study. In addition, our finding that a large percentage of the parents of children with ADHD had clinically significant difficulties suggests that despite the fact that many of these families had received services for their children, they continue to struggle with their own difficulties.

A notable strength of the current study is the fact that a variety of symptoms were examined simultaneously in both mothers and fathers. The inclusion of fathers' reports is very important because fathers have been underrepresented in research examining parents of children with psychopathology (Cassano, Adrian, Veits, & Zeman, 2006). In addition, the use of the ASR provides data on a range of psychological difficulties that parents may encounter and allows for the examination of symptoms that have often been seen in this population (ADHD, depression, anxiety, substance use, and antisocial personality problems) and symptoms that are less well researched (somatic complaints).

A limitation of this study was the relatively small sample size which limited the power to detect small or medium effects. It is important to note that despite restrictions imposed by the small sample size, significant differences were found between parents of children with ADHD and parents of children without ADHD in terms of their self-reported psychopathology. Another limitation of the current study is the unknown representativeness of the sample. The sample obtained in the current study consists mainly of married parents, who both participated, are Caucasian, and from a fairly high socioeconomic status. Therefore this may have limited the generalizability to other samples. It is possible the services they received may have attenuated some of the difficulties they were experiencing. The time commitments required of families, and the requirement that both parents participate, may have also contributed to a sample of fairly high functioning families. Future studies should aim to reduce study completion time and perhaps integrate relevant questionnaires into the assessment process at the clinic or hospital. Also, the majority of our sample was White. The low rates of ethnic minority children and families in all of child psychopathology research is a major concern that needs to be addressed in future work, as it is unknown whether findings may generalize to such participants. It is

noteworthy that studies using ethnically diverse participants have found results similar to those of the present study. For example a study on Iranian children found elevated ADHD symptoms in fathers and mood and anxiety disorders in mothers (Ghanizadeh et al., 2008).

Due to the fact that we recruited families of children who had been diagnosed with ADHD, the majority were receiving services for the child's problems, including medication and psychological services or counseling. It is reasonable to expect that this will have reduced differences between the ADHD and comparison groups.

Clinical Implications

The results of this study suggest the potential benefits of screening for parental psychopathology and highlight the importance of supporting both mothers and fathers of children with ADHD, in addition to helping their children. An interesting finding is the fact that fathers of children with ADHD are also at risk for higher levels of depressive and anxious symptoms.

The results of this study help inform intervention programs at the parental level and provide information for modifying interventions. As we have found that parents of children with ADHD experience more symptoms of inattention, anxiety, depression and tobacco use, we may need to include information on these difficulties in our parenting interventions. In addition, the traditional method of delivering parenting information in a group format may not be the most suitable for parents who have difficulty paying attention in groups or for an extended period of time. We may need to be more creative with our interventions to reach these families such as using online or videotaped interventions.

These results underscore the importance of evaluating family and parent needs when developing intervention strategies for children struggling with ADHD. Assessment of parental psychopathology should be a standard component in the comprehensive assessment of children

with ADHD. Many parents in this study reported significant psychological difficulties despite the fact that they were often already receiving treatment for the child's ADHD. It would be interesting to compare these results to a sample of participants who had not yet received any intervention to determine if treatment of child ADHD affects self-reported parental psychopathology.

Parental problems predict poor treatment compliance and less favorable treatment outcomes (Hoza et al., 2000). As many of the parental disorders assessed in the current study follow a persistent (e.g., ADHD) or recurrent course (e.g., depression), even associations with lifetime parental disorders may contribute to less optimal treatment outcomes. Treatment strategies addressing parental psychopathology may be important for improving parent and family functioning and reducing child impairment (Harrison & Sofronoff, 2002). The inclusion of parents in treatment planning is essential, and our results highlight the importance of also including fathers.

Although additional research is required to gain a more complete understanding of psychopathology in parents of children with ADHD, our findings indicate that mothers and fathers of children with ADHD report more symptoms of psychopathology than do mothers and fathers of children without ADHD. Previous studies have found that high rates of comorbidity in parents, in particular comorbidity of ADHD and mood disorders, may lead to more complex cases associated with reduced therapeutic efficacy and a poorer ADHD outcome in children (Hoza et al., 2000; Wilens et al., 2002). This would be interesting to examine in a larger sample with information from both mothers and fathers. Also, future studies should attempt to include a group of children with comorbid ADHD/ODD in order to determine if there are differences in parental psychopathology between these groups.

References

- Achenbach, T. M., & Rescorla, L. A. (2003). *Manual for the ASEBA adult forms & profiles*. Burlington, VT: University of Vermont, Research Center for Children, Youth, & Families.
- American Psychiatric Association (2000). *Diagnostic and Statistical Manual of Mental Disorders, 4th edition-text revision*. Washington, DC: Author.
- Barkley, R. A. (1997). Age dependent decline in ADHD: True recovery or statistical illusion? *The ADHD Report*, 5, 1-5.
- Barkley, R. A. (1998). *Attention deficit hyperactivity disorder: A handbook for diagnosis and treatment (2nd ed.)*. New York: Guilford Press.
- Barkley, R. A. (2006). Primary symptoms, diagnostic criteria, prevalence, and gender differences. In R.A. Barkley (Ed.), *Attention-deficit hyperactivity disorder: A handbook for diagnosis and treatment (3rd Ed.)* (pp. 76-121). New York, NY: The Guilford Press.
- Barkley, R. A., Fischer, M., Smallish, L., & Fletcher, K. R. (2002). The persistence of attention deficit hyperactivity disorder into young adulthood as a function of reporting source and definition of disorder. *Journal of Abnormal Psychology*, 111, 279–289.
- Biederman, J., Faraone S. V., Keenan, K., Knee D., & Tsuang, M. T. (1990). Family, genetic and psychosocial risk factors in DSM-III attention deficit disorder. *Journal of the American Academy of Child and Adolescent Psychiatry*, 29, 526-533.
- Bogels, S. & Phares, V. (2008). Fathers' role in the etiology, prevention and treatment of child anxiety: A review and new model. *Clinical Psychology Review*, 28, 539-558.
- Brennan, P. A., Hammen, C., Katz, A. R., & LaBrocque, R. M. (2002). Maternal

- depression, paternal psychopathology, and adolescent diagnostic outcomes. *Journal of Consulting and Clinical Psychology*, 70, 1075-1085.
- Brown, R. T., Freeman, W. S., Perrin, J. M., Stein, M. T., Amier, R. W., Feldman, H. M., Wolraich, M. L. (2001). Prevalence and assessment of attention-deficit/hyperactivity disorder in primary care settings. *Pediatrics*, 107, e43.
- Brown, R. T., & Pacini, J. N. (1989). Perceived family functioning, marital status, and depression in parents of boys with Attention Deficit Disorder. *Journal of Learning Disabilities*, 22, 581-587.
- Cassano, M., Adrian, M., Veits, G., & Zeman, J. (2006). The inclusion of fathers in the empirical investigation of child psychopathology: An update. *Journal of Clinical Child and Adolescent Psychology*, 35, 583-589.
- Chronis, A. M., Lahey, B. B., Pelham, W. E., Kipp, H. L., Baumann, B. L., & Lee, S. S. (2003). Psychopathology and substance abuse in parents of young children with Attention Deficit/Hyperactivity Disorder. *Journal of the American Academy of Child and Adolescent Psychiatry*, 42, 1424-1432.
- Chronis-Tuscano, A., Rooney, M., Seymour, K. E., Lavin, H. J., Pian, J., Robb, A.,...Stein, M.A. (2010). Effects of maternal stimulant medication on observed parenting in mother-child dyads with Attention-Deficit/Hyperactivity Disorder. *Journal of Clinical Child & Adolescent Psychology*, 39, 581-587.
- Chronis-Tuscano, A., Seymour, K., Stein, M., Jones, H., Jiles, C., Rooney, M., ...Robb, A. (2008). Efficacy of osmotic-release oral system (oros) for mothers with Attention-deficit/hyperactivity disorder: preliminary report of effects on ADHD symptoms and parenting. *Journal of Clinical Psychiatry*, 69, 1938-1947.

- Collett, B. R., Ohan, J., & Myers, K. (2003). Ten-year review of rating scales. V: Scales assessing Attention-Deficit/Hyperactivity Disorder. *Journal of the American Academy of Child and Adolescent Psychiatry*, 42, 1015-1037.
- Conners, C. K. (2001). *Conners' Rating Scales-Revised (CRS-R): Technical Manual*. North Tonawanda, NY. Multi-Health Systems.
- Conners, C. K., Erhardt, D., & Sparrow, E. (1999). *Conners' Adult ADHD Rating scales (CAARS)*. North Tonawanda, NY. Multi- Health Systems.
- Conners, C. K., Sitarenios, G., Parker, J. D., & Epstein, J. N. (1998). Revision and restandardization of the Conners Teacher Rating Scale (CTRS-R): factor structure, reliability and criterion validity. *Journal of Abnormal Child Psychology*, 26, 279-291.
- Contrada, R. J. (2011). Stress, Adaptation and Health. In R. J. Contrada & A. Baum (Eds), *The handbook of stress science: Biology, psychology, and health* (pp. 1-9). New York: Springer Publishing.
- Epstein, J. N., Conners, C. K., Erhardt, D., Arnold, L. E., Hechtman, L., Hinshaw, S. P., Hoza, B., Newcorn, J. H., Swanson, J. M., & Vitiello, B. (2000). Familial aggregation of ADHD characteristics. *Journal of Abnormal Child Psychology*, 28, 585-594.
- Fabiano, G. A. (2007). Father participation in behavioural parent training for ADHD: Review and recommendations for increasing inclusion and engagement. *Journal of Family Psychology*, 21, 683-693.
- Faraone, S. V., Biederman, J., Feighner, J. A., Monteaux, M. C. (2000). Assessing symptoms of attention deficit hyperactivity disorder in children and adults: Which is more valid? *Journal of Consulting and Clinical Psychology*, 68, 830-842.
- Faraone, S. V. & Doyle, A. E. (2001). The nature and heritability of attention-deficit/

- hyperactivity disorder. *Child & Adolescent Psychiatry Clinics of North America*, 10, 299-316.
- Faraone, S. V., Perlis, R. H., Doyle, A. E., Smoller, J. W., Goralnick, J. J., Holmgren, M. A., & Sklar, P. (2005). Molecular genetics of Attention-Deficit/Hyperactivity Disorder. *Biological Psychiatry*, 57, 1313-1323.
- Faul, F. (2010). G Power 3.1.3 Statistical Program. Retrieved from <http://www.pscho.uni-duesseldorf.de/abteilungen/aap/gpower3/>.
- Ghanizadeh, A., Mohammadi, M. R. & Moini, R. (2008). Comorbidity of psychiatric disorders and parental psychiatric disorders in a sample of Iranian children With ADHD. *Journal of Attention Disorders*, 12, 149-155.
- Goodman, S. H. & Brand, S. (2008). Psychopathology in parents: Clinical issues for children and adolescents. In M. Hersen & A.M. Gross (Eds.), *Handbook of Clinical Psychology, Volume 2: Children* (pp. 937-965). Hoboken, NJ: Wiley.
- Harrison, C., & Sofronoff, K. (2002). ADHD and parental psychological distress: role of demographics, child behavioral characteristics, and parental cognitions. *Journal of the American Academy of Child and Adolescent Psychiatry*, 41, 703-711.
- Hartsough, C. S. & Lambert, N. M. (1985). Medical factors in hyperactive and normal children: prenatal, developmental, and health history findings. *Health & Behavioral Clinical Psychology*, 55, 190-201.
- Harvey, E., Danforth, J. S., McKee, E., Ulaszek, W. R., & Friedman, J. L. (2003). Parenting of children with Attention-deficit/hyperactivity disorder (ADHD): The role of parental ADHD symptomatology. *Journal of Attention Disorders*, 7, 31-41.
- Hoza, B., Owens, J. S., Pelham, W. E., Swanson, J. M., Conners, C. K., Hinshaw, S.

- P., Arnold, L. E., & Kraemar, H. C. (2000). Parent cognitions as predictors of child treatment response in attention-deficit/hyperactivity disorder. *Journal of Abnormal Child Psychology*, 28, 569-583.
- Hunsley, J. & Mash, E. J. (2008). Developing criteria for evidence-based assessment: an introduction to assessments that work. In John Hunsley & Eric J. Mash (Eds.), *A guide to assessments that work* (pp. 3-14). New York: Oxford University Press.
- Jiang, Y., & Johnston, C. (in press 2011). The relationship between ADHD symptoms and competence as reported by both self and others. *Journal of Attention Disorders*.
- Johnson, J. H., Alvarez, H. K., & Johnson, T. A. (2008). Comorbidity and symptom mimicry in Attention-Deficit/Hyperactivity Disorder: Implications for assessment and treatment. In Maria, B.L. (Ed.), *Current Management in Child Neurology* (pp. 225-230). Shelton, CT: People's Medical Publishing House.
- Johnston, C. (1996). Parent characteristics and parent-child interactions in families of nonproblem children and ADHD children with higher and lower levels of oppositional-defiant behaviour. *Journal of Abnormal Child Psychology*, 24, 85-103.
- Johnston, C., & Mah, J. W. T. (2008). Child Attention-Deficit/Hyperactivity Disorder. In John Hunsley & Eric J. Mash (Eds.), *A guide to assessments that work* (pp. 17-40). New York: Oxford University Press.
- Johnston, C., & Mash, E. J. (2001). Families of children with Attention-Deficit/Hyperactivity Disorder: Review and recommendations for future research. *Clinical Child and Family Psychology Review*, 4, 183-207.
- Kabir, Z., Connolly, G. N. & Alpert, H. R. (2011). Secondhand smoke exposure and neurobehavioral disorders among children in the United States. *Pediatrics*, 128, e1-e8.

- Kahn, R. S., Brandt, D. & Whitaker, R. C. (2004). Combined effect of mothers' and fathers' mental health symptoms on children's behavioral and emotional well-being. *Archives of Pediatrics and Adolescent Medicine*, 158, 721-729.
- Kashdan, T. B., Jacob, R. G., Pelham, W. E., Lang, A. R., Hoza, B., Blumenthal, J. D., & Gnagy, E. M. (2004). Depression and anxiety in parents of children with ADHD and varying levels of oppositional defiant behaviors: Modeling relationships with family functioning. *Journal of Clinical Child and Adolescent Psychology*, 33, 169-181.
- Marmorstein, N. R., Malone, S. M., & Iacono, W. G. (2004). Psychiatric disorders among offspring of depressed mothers: Associations with paternal psychopathology. *The American Journal of Psychiatry*, 161, 1588-1594.
- McGough, J. J., Smalley, S. L., McCracken, J. T., Yang, M., Del'Homme, M., Lynn, D. E., Loo, S. (2005). Psychiatric comorbidity in adult Attention Deficit Hyperactivity Disorder: findings from multiplex families. *The American Journal of Psychiatry*, 162, 1621-1627.
- Molina, B. S. G., Pelham, W. E., Lang, A. R. (1997). Alcohol expectancies and drinking characteristics in parents of children with attention-deficit/ hyperactivity disorder. *Alcoholism: Clinical and Experimental Research*, 21, 557-566.
- Murray, C. & Johnston, C. (2006). Parenting in mothers with and without Attention-Deficit/ Hyperactivity Disorder. *Journal of Abnormal Psychology*, 115, 52-61.
- Nigg, J. T., & Hinshaw, S. P. (1998). Parent personality traits and psychopathology associated with antisocial behaviours in childhood attention-deficit hyperactivity disorder. *Journal of Child Psychology and Psychiatry*, 39, 145-159.
- Pelham, W. E. & Lang, A. R. (1999). Can your children drive you to drink? Stress and

- parenting in adults interacting with children with ADHD. *Alcohol Research & Health*, 23, 292-298.
- Perrin, S., & Last, C. G. (1996). Relationship between ADHD and anxiety in boys: Results from a family study. *Journal of the American Academy of Child and Adolescent Psychiatry*, 35, 988-996.
- Pfiffner, L. J., McBurnett, K., Lahey, B. B., Loeber, R., Green, S., Frick, P. J., & Rathouz, P. J. (1999). Association of parental psychopathology to the comorbid disorders of boys with attention deficit-hyperactivity disorder. *Journal of Consulting and Clinical Psychology*, 67, 881-893.
- Pliszka, S. R. (1998). Comorbidity of attention-deficit/hyperactivity disorder with psychiatric disorder: an overview. *Journal of Clinical Psychiatry*, 59, 50-58.
- Podolski, C-L., & Nigg, J. T. (2001). Parent stress and coping in relation to child ADHD severity and associated child disruptive behavior problems. *Journal of Clinical Child Psychology*, 30, 503-513.
- Segenreich, D, Fortes, D., Coutinho, G., Pastura, G., & Mattos, P. (2009). Anxiety and depression in parents of a Brazilian non-clinical sample of attention-deficit/hyperactivity disorder (ADHD) students. *Brazilian Journal of Medical and Biological Research*, 42, 465-469.
- Soltanifar, A., Moharreri, F., & Soltanifar, A. (2009). Depressive and anxiety symptoms in mothers of children with ADHD compared to the control group. *Iranian Journal of Psychiatry*; 4, 112-115.
- Sonuga-Barke, E. J. S., Daley, D., & Thompson, M. (2002). Does maternal ADHD

- reduce the effectiveness of parent training for preschool children's ADHD? *Journal of the American Academy of Child and Adolescent Psychiatry*, 41, 696-702.
- Spencer, T., Biederman, J., & Wilens, T. (1999). Attention-deficit/ hyperactivity disorder and comorbidity. *Pediatric Clinics of North America*, 46, 915-927.
- Statistics Canada (2008). *2006 Census of Canada: Median total income, by family type, by census metropolitan area*. Retrieved July, 2011 from Statistics Canada: <http://www40.statcan.gc.ca/l01/cst01/famil107a-eng.htm>.
- Statistics Canada (2008). *2006 Census of Canada: Visible minority groups, 2006 counts, for Canada, provinces and territories, and census divisions*. Retrieved July 2011 from Statistics Canada: <http://www12.statcan.ca/census-recensement/2006/dp-pd/hlt/97-562/index.cfm?Lang=E>.
- Weiss, M., Hechtman, L., & Weiss, G. (2000). ADHD in parents. *Journal of the American Academy of Child and Adolescent Psychiatry*, 39, 1059-1061.
- Whalen, C. K., Henker, B., Jamner, L. D., Ishikawa, S. S., Floro, J. N., Swindle, R.,... Johnston, J.A. (2006). Toward mapping daily challenges of living with ADHD: Maternal and child perspectives using electronic diaries. *Journal of Abnormal Child Psychology*, 34, 115-130.
- Whalen, C. K., Odgers, C. L., Henker, B., & Reed, P. L. (2011). Dissecting daily distress in mothers of children with ADHD: An electronic diary study. *Journal of Family Psychology*, 25, 402-411.
- Wilens, T. E., Biederman, J., & Spencer, T. J. (2002). Attention Deficit/Hyperactivity Disorder across the lifespan. *Annual Review of Medicine*, 53, 113-131.
- Willoughby, M. T., Kollins, S. H., & McClernon, F. J. (2009). Association between

smoking and retrospectively reported attention-deficit/hyperactivity disorder symptoms in a large sample of new mothers. *Nicotine & Tobacco Research*, 11, 313-322.

Table 1

Ratings of Child Behavior on the Conners Parent and Teacher Rating Scales

Scale	<u>Comparison Group</u>		<u>ADHD Group</u>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Mothers				
Oppositional <i>T</i> score	54.00	12.14	71.16	14.54
Cognitive Problems/Inattention <i>T</i> -score	55.55	10.95	76.08	9.00
Hyperactivity <i>T</i> score	52.30	9.95	79.24	9.94
ADHD Index <i>T</i> score	55.55	11.06	77.68	9.08
Fathers				
Oppositional <i>T</i> score	48.40	6.76	68.24	12.57
Cognitive Problems/Inattention <i>T</i> score	51.20	7.32	73.60	8.65
Hyperactivity <i>T</i> score	50.05	5.94	76.16	10.84
ADHD Index <i>T</i> score	51.10	6.54	73.44	6.71
Teachers				
Oppositional <i>T</i> score	46.64	2.13	70.83	16.14
Cognitive Problems/Inattention <i>T</i> score	49.36	6.79	68.96	10.01
Hyperactivity <i>T</i> score	46.50	4.07	75.29	11.93
ADHD Index <i>T</i> score	49.07	4.46	77.38	10.47

Table 2 *Parent Self-Reported Psychopathology*

	Mother		Father	
	<u>Comparison</u> <i>M</i> <i>SD</i>	<u>ADHD</u> <i>M</i> <i>SD</i>	<u>Comparison</u> <i>M</i> <i>SD</i>	<u>ADHD</u> <i>M</i> <i>SD</i>
CAARS ADHD Index	46.20 10.75	48.04 13.12	46.50 7.80	46.80 12.43
ASR				
AD/H Problems	55.50 _a 7.92	57.00 _b 7.64	54.05 _a 7.85	59.32 _b 9.34
Hyperactivity/Impulsivity	62.20 _a 14.86	69.40 _b 18.36	59.80 _a 11.25	70.16 _b 17.81
Inattention	69.40 _a 15.62	70.72 _b 18.23	63.30 _a 16.60	78.92 _b 16.71
Depressive Problems	53.35 _a 3.80	57.72 _b 7.40	54.40 _a 5.91	57.92 _b 8.33
Anxiety Problems	52.85 _a 4.39	57.44 _b 7.14	53.60 _a 6.57	56.52 _b 7.24
Somatic Problems	53.50 _a 5.41	56.32 _b 6.50	53.00 _a 4.10	56.56 _b 8.11
Alcohol Use	52.10 _a 4.45	53.76 _b 6.21	55.15 _c 6.18	53.28 _d 4.69
Tobacco Use	50.75 _a 2.45	53.40 _b 4.92	50.80 _a 2.02	52.52 _b 4.46
Drug Use	51.00 4.47	50.96 3.37	50.00 .00	51.92 8.62
Antisocial Problems	54.00 4.66	57.32 7.54	54.25 5.60	56.56 7.22
Avoidant Problems	Not reported due to unacceptable alpha		55.30 6.82	56.28 8.03

Note: Only scales with significant differences have subscripts. Means sharing the same subscript are not different at $p = 0.05$

Running head: PARENTING AND COPARENTING IN ADHD

Self-Reported Parenting and Coparenting in Parents of Children with Attention-Deficit/Hyperactivity Disorder

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Abstract

We examined self-reported parenting, coparenting and psychopathology in parents of children with attention-deficit/hyperactivity disorder (ADHD) and in parents of children without ADHD. Mothers and fathers of 25 children (9 girls, 16 boys) aged 6-12 with ADHD and 20 children without ADHD (8 girls, 12 boys) completed the positive involvement subscale of the Alabama Parenting Questionnaire (Shelton, Frick, & Wootton, 1996), the Parenting Scale (Arnold, O'Leary, Wolff, & Acker, 1993), the Child-Rearing Disagreements Scale (Jouriles et al., 1991), the Parental Alliance Measure (Abidin & Konold, 1999), and the Adult Self-Report (Achenbach & Rescorla, 2003). Significant gender differences in parenting were found in terms of mothers reporting more laxness and greater involvement than did fathers. Significant group differences were found with parents of children with ADHD reporting more overreactivity than did parents of children without ADHD. In terms of coparenting there were no significant differences between mothers and fathers or between parents of children with and without ADHD for either child-rearing disagreements or parental alliance. Avoidant symptoms in both groups of fathers were significantly related to laxness in parenting. Child-rearing disagreements were significantly correlated with mother's somatic and antisocial problems and with father's anxiety, avoidance, ADHD, hyperactive/impulsive and antisocial problems across both ADHD and comparison families. There was an inverse relationship between fathers' ratings of the parental alliance and fathers' avoidant and antisocial problems. The results highlight the differences between mothers and fathers and emphasize the importance of considering both mothers' and fathers' perspectives on parenting. Finally, these findings suggest that is it important to consider parent factors in the treatment of children with ADHD.

Keywords: attention-deficit/hyperactivity disorder, parenting, coparenting

Self-Reported Parenting and Coparenting in Parents of Children with Attention-Deficit/Hyperactivity Disorder

Studies have shown that family factors such as inconsistent parenting, disruptive parent-child relationships, and marital functioning, influence the development of ADHD behaviours in children (Johnston & Mash, 2001). Similarly, the difficult nature of a child with ADHD may place an extra stress on the family systems, serving to impair the psychological functioning of parents and disrupt relationships within the family (Johnston & Mash, 2001). Therefore, given the reciprocal nature of ADHD and family factors it is important that research investigate qualities of the family context in children diagnosed with ADHD.

Self-reported parenting in families of children with ADHD

Research has consistently underlined the importance of parents in the psychosocial development of children (Grusec, 2011). Parenting is particularly important in children with disruptive behavior disorders such as attention deficit hyperactivity disorder (ADHD) and oppositional defiant disorder (ODD) (Harvey, Danforth, Ulaszek, & Eberhardt, 2001). Power assertive and negative parenting strategies have been linked to child problem behaviour (Baumrind, 1968). In addition, hyperactive, impulsive, and inattentive symptoms characteristic of children with ADHD can elicit negative parenting behaviours from parents (Harvey et al. 2001). Discipline, routine and consistency play an important role in managing ADHD symptoms in children and are the focus of parenting programs (Whalen & Henker, 1998).

It is clear that, although fathers are similar to mothers in some aspects of their parenting, there are important differences. For example children are likely to have more physical play with their fathers than with their mothers (Beitel & Parke, 1998; Duhig, Renk, Epstein, & Phares, 2000; Lamb, 2010). Children benefit from the availability of two parents (Flouri & Buchanan,

2003). Although the majority of North American youth live in a household with two parents, substantial numbers of fathers do not reside with their children. Nevertheless, the majority of nonresident fathers maintain at least some contact with their children (Phares & Lum, 1997; Walter, 2000). Like residential fathers, nonresidential fathers can have a positive effect on the child through authoritative parenting, feelings of closeness (Amato & Gilbreth, 1999), presence of paternal warmth and responsive parenting (Harper & Fine, 2006).

Mothers of children with ADHD display more laxness (Collett et al., 2001; Harvey, et al., 2001; Seipp & Johnston, 2005), overreactivity (Collett et al., 2001; Harvey et al., 2001; Seipp & Johnston, 2005), and directive, commanding, and negative parenting behaviours than do mothers of children without ADHD (Johnston & Mash, 2001). Although there has been a greater focus on ineffective or problematic discipline and neglect (Locke & Prinz, 2002), recent studies have also begun to examine positive parenting including involvement (Johnston et al., 2002; Pffner, McBurnett, Rathouz, & Judice, 2005) and warmth (Gerdes, Hoza, & Pelham, 2003; Pffner et al., 2005). Overall, studies of mothers of children with ADHD and ADHD/ODD report more negative parenting practices and less positive parenting practices among these parents than among mothers of nondisordered children (Lange et al., 2005; McLaughlin & Harrison, 2006).

In contrast to the large body of literature on mothers, the investigation of fathers in families with a child with ADHD is less common (Neff, 2010; Phares & Compas, 1992; Singh, 2003). Although women have been shown to be reliable informants about their husbands' and ex-husbands' functioning, there are aspects of men's functioning to which mothers do not have access and therefore direct assessment of fathers is recommended (Caspi et al., 2001; Johnston & Mash, 2001). Therefore a primary goal of the current study was to directly assess the fathers of children with and without ADHD. Research on men's parenting of their children with ADHD

suggests both similarities and differences to the patterns found for mothers. Like mothers, fathers of children with ADHD report higher levels of authoritarian parenting (Lange et al., 2005), less warmth (Gerdes et al., 2003), more laxness (Harvey et al., 2001; McKee, Harvey, Danforth, Ulaszek, & Freidman, 2004), more overreactivity (Harvey et al., 2001) and more power assertiveness (Gerdes et al., 2003) than do fathers of nondisordered children. However there appears to be stronger evidence of laxness in fathers of children with ADHD than there is of overreactivity (McKee et al., 2004). Relatively few studies have examined the links between maternal and paternal parenting behaviours. For the most part, studies that have included fathers have fewer numbers of fathers than mothers which may affect the generalizability of the results (e.g., Collett et al., 2001; Gerdes et al., 2003; Lange et al., 2005; McKee et al., 2004). It would be helpful to examine mothers and fathers within the same family, to determine how their parenting is associated. For example, it is possible that lax parenting behaviour by one parent may be associated with the other parent's choice of discipline strategies.

The Co-Parental Relationship in Caring for a Child with ADHD

Evidence suggests that successful coparenting relationships are beneficial for children's socioemotional development (McHale et al., 2002; Mchale & Lindahl, 2011). These coparenting relationships involve active cooperation and communication between parents as well as an absence of destructive conflict. Important components of a supportive coparental relationship include a joint investment in the child, respecting the judgments of the other parent, ongoing communication and valuing the importance of the other parent in the child development (Cohen & Weissman, 1984).

Despite an impressive body of literature on parenting and its effects on children, most studies have focused on one parent and one child at a time (McHale, Kuersten-Hogan, & Rao,

2004). Far less is known about the relationship between parents, although there is a growing recognition of the importance of the co-parental relationship in children's adjustment. In families with children with special needs, research has highlighted that parents must work together as a team, both as direct providers for their children's special requirements and as advocates for their children in the school and health systems (Costigan, Floyd, Harter, & McClintock, 1997). Thus it is reasonable to expect that raising a child with ADHD would be more easily accomplished by two adults working cooperatively than by two parents who are in conflict about parenting.

Despite the obvious potential advantages of having two dedicated parents, coordination of parenting is often a challenge (Feinberg, 2002). It is normal for mothers and fathers, as parents, to feel, think, and act differently; this is especially true in raising children with special needs (Costigan et al., 1997). Children with ADHD have higher than average needs for routine, structure, and consistency. Given the challenges of responding to these child demands, it is reasonable to hypothesize that the quality of the co-parental relationship may be especially important for families with a child with ADHD.

A negative aspect of the co-parental relationship is the disagreements parents have over child-rearing issues and differences regarding parenting the child (McHale & Fivaz-Depeursinge, 1999). Child-related conflict about rules, expectations and discipline strategies has been linked to child externalizing problems (Mahoney, Jouriles, & Scavone, 1997). To date most of the studies in this area have examined maternal rating of child-rearing disagreement and their relation to child behavior problems; however Lee, Beauregard and Bax (2005) studied a community sample of mothers and fathers of pre-school age children and found that both mothers' and fathers' ratings of child-rearing disagreements were related to child behavior problems. Although the bulk of work in this area has included a variety of behaviour problems (O'Leary & Vidair, 2005),

one study (Johnston & Behrenz, 1993) investigated child-rearing discussions among couples with children with ADHD. They found that parents of children with ADHD were more negative in their communication with each other than were couples of children without ADHD.

Unfortunately, the limited sample sizes and restricted measurement of coparenting in this study leaves many questions unanswered. To our knowledge this is the only study that has examined child-rearing disagreement in a clinic sample with children diagnosed with ADHD and thus, an objective of the present study is to further investigate coparenting in families of children with and without ADHD.

The parental alliance is a positive aspect of the co-parental relationship that reflects communication and teamwork as well as respect between two parents (Abidin & Konold, 1999). A strong parental alliance is related to child adjustment and may buffer children against the effects of marital discord (Abidin & Brunner, 1995). The extent to which parents support versus undermine each other's parenting is an important component of the coparenting relationship (Feinberg, 2003; McHale et al., 2004). Supportive co-parents value each other's contributions to parenting, respect each other's authority, and are cooperative and warm when interacting with their child together. One preliminary study found that the parental alliance in mother-father pairs who attended treatment for a child diagnosed with ADHD was similar to that found in a normative sample and significantly higher than in parents of children with an ODD or CD diagnosis (Abidin & Konold, 1999). To our knowledge, no study has simultaneously examined both the positive and negative aspects of the co-parental relationship in families with a child diagnosed with ADHD. In the current study both child-rearing disagreement and the parental alliance were examined.

Finally, an interesting avenue of research examines the relationship between different parenting and coparenting variables. Coparenting has been found to be linked to parental involvement. For example, studies have found that fathers tend to be less involved in parenting when there is interparental conflict (e.g., Carlson & McLanahan, 2006; Jouriles & Farris, 1992). In contrast, a supportive interparental relationship is associated with fathers' greater engagement with children (e.g., McBride & Rane, 1998). The current study was designed to also examine the relationship between parenting and coparenting variables.

Parental Psychopathology and Parenting

To date the majority of studies linking parental psychopathology with parenting have examined the impact of mothers' psychopathology on parental behaviour (e.g., Chronis et al., 2003; Pfiffner et al., 1999). We know less about the impact of psychopathology on father's parenting, even though substantial associations between paternal psychological symptoms and child maladjustment have been found (Phares & Compas, 1992). In an earlier report on this sample (Luedemann et al., 2011) found that parents of children with ADHD reported higher levels of internalizing problems, ADHD symptoms, and tobacco use than did parents of comparison children. We report here on the links between self-reported parenting and self-reported symptoms of psychopathology in the parents of children with ADHD.

Hypotheses. We hypothesized that compared to parents of comparison children, mothers and fathers of children with ADHD would report: 1) lower levels of positive involvement; 2) more negative/ineffective discipline 3) more child-rearing disagreement. We also predicted that 4) mothers and fathers of children with ADHD would report similar levels of the parental alliance to comparison families.

As relatively few studies have examined the effects of parenting and coparenting in both mothers and fathers we explored the links between maternal and paternal reports. The similarity hypothesis predicted that: 5) there would be a positive association between maternal and paternal so that the greater the laxness in one parent, the greater it would be in the other. The compensation hypothesis, on the other hand predicted that: 6) there would be an inverse relationship, so that the greater laxness in one parent, the greater the overreactivity in the other parent. We examined both of these possibilities in both groups of parents. In terms of coparenting, we predicted a negative association between parental alliance and child-rearing disagreement so that the stronger the reported parental alliance the less child-rearing disagreements. Based on previous studies we made the following predictions about the way parenting would be affected by parental psychopathology in the group of families with a child with ADHD: 7) positive involvement would be inversely associated with depressive symptoms reported by both mothers and fathers, as well as inversely related to paternal avoidance; 8) laxness would be positively associated with all types of parental psychopathology, and 9) overreactivity would be positively associated with parental ADHD symptoms.

Finally, based on previous research we made the following predictions about the way coparenting would be affected by parental psychopathology in the group of families with a child with ADHD: 10) child-rearing disagreement would be positively associated with all types of parental psychopathology in both mothers and fathers and 11) parental alliance would be inversely associated with parental avoidant and antisocial problems in fathers and antisocial problems in mothers.

Method

Participants

The current study focused on children diagnosed with ADHD combined type (ADHD-C), the most common subtype which accounts for most treatment referrals (Brown et al., 2001). Families in the ADHD group were recruited through the ADHD clinic at the Children's Hospital of Eastern Ontario as well as through pediatricians who specialize in the diagnosis and treatment of ADHD. Families in the comparison group were recruited through community advertisements and a kiosk at a local parenting show. Children aged 6-12 years were recruited (M age = 8.49, SD = 1.80). The ADHD-C group consisted of 25 children who met DSM-IV-TR diagnostic criteria for ADHD combined type; 20 children formed the comparison group. The sample consisted of 17 girls (n = nine ADHD, n = eight comparison) and 28 boys (n = 16 ADHD, n = 12 comparison).

Mothers' average age was 38 years (SD = 5.0) and fathers' was 41 years (SD = 6.6). Of the parents, 84% were White, 4% were Asian, 2% were Black, 3% were Aboriginal, 3% were Arab/West Asian and 4% were of unknown ethnicity. As 78% of the Ottawa-Gatineau region is White, this sample is slightly less ethnically diverse than the population of the region in which the sample was recruited (Statistics Canada, Census 2006). Couples had been married (or living together) an average of 13.9 years (SD = 5.5) and had between one and five children (M = 2.27; SD = 0.81). The mean family income of \$80,000-\$89,000 CDN is comparable to the median total family income for the Ottawa-Gatineau region (Statistics Canada, Census 2006).

Inclusion criteria. Children in both groups were aged 6-12 years (the most common age range in which ADHD is diagnosed; Brown et al., 2001). Families with eligible children were included if both the mother and father were eligible and willing to participate. Parents were required to allow us to contact their child's teacher in order for the teacher to complete rating scales. In research in this area there is no consensus on the definition of a father figure. Some

investigators do not include a definition (e.g., Keown & Woodward, 2002), other investigators restrict the sample to biological fathers (e.g., Chronis et al., 2003), and other researchers focus on residential fathers (e.g., Gerdes et al., 2003). Given the importance of nonresidential fathers (Amato & Gilbreth, 1999), they were not excluded from the sample. To be included in the study, a nonresident father must have had weekly contact with the child and a step-father must have been involved in the child's life for at least two years. Married (91%), common-law (2.2%), and separated (6.7%) mothers and fathers were included.

Assignment to groups. To participate in the comparison group, children had to be rated by at least one parent and the teacher as below a *T* score of 60 on the Conners' Parent and Teacher Rating Scale Cognitive Problems/Inattention and Hyperactivity subscales (CP/TRS R; Conners, 2001, described below) and the parent and teacher needed to report that any symptoms experienced by the child did not interfere with his/her daily functioning at home or at school. To be assigned to the ADHD group, a child must have been diagnosed with ADHD by a psychiatrist or psychologist. In addition, the child had to be rated by at least one parent and the teacher as having symptoms in the clinical range (*T* score of 65 or above) on the Conner's Parent or Teacher Rating Scale Cognitive Problems/Inattention and Hyperactivity subscales (Conners, Sitarenios, Parker, & Epstein, 1998).

Procedure

Families attended a research session during which they completed self-report measures. Written informed consent was obtained from all parents. Each parent received an honorarium of \$20 CDN for their participation. In addition to the research session, packages were sent to teachers and included the Conners' Teacher Rating Scale- short version. In the case where the

child had more than one teacher, the teacher who spent the most time with the child was asked to complete the questionnaire.

Ethics. Ethical approval was obtained from the research ethics boards at the Children's Hospital of Eastern Ontario and the University of Ottawa.

Measures

Parenting.

Involvement. Mothers and fathers completed the 16-item positive involvement subscale of the Alabama Parenting Questionnaire (APQ; Shelton, Frick, & Wootton, 1996). This subscale was selected because it assesses positive aspects of parenting that are not covered in the Parenting Scale (Arnold, O'Leary, Wolff, & Acker, 1993). Parents are asked to respond using a 5-point Likert scale ranging from 1 (*Never*) to 5 (*Always*) about how frequently they engage in certain behaviors such as (e.g. *you play fun games or do other fun things with your child; you compliment your child when he/she does something well*). This scale discriminates between parents of nondisordered children and children with disruptive behaviour disorders (Shelton et al., 1996). Internal consistency in this sample for the positive involvement subscale was .90 for mothers and .83 for fathers.

Ineffective Discipline. Mothers and fathers completed the 30-item Parenting Scale (PS; Arnold, O'Leary, Wolff, & Acker, 1993; Harvey, Danforth, Ulaszek, & Eberhardt, 2001). Parents are provided with two anchors, a dysfunctional approach to discipline and its corresponding effective discipline strategy (*when my child misbehaves... I raise my voice or yell/I speak to my child calmly, I am the kind of parent that... sets limits on what my child is allowed to do/lets my child do whatever he/she wants*). They are asked to respond using a 7-point Likert scale ranging from 7 (*frequent use of an ineffective strategy*) to 1 (*frequent use of an*

effective strategy). Factor analyses of this scale have revealed two robust factors: laxness and overreactivity (Harvey et al., 2001). *Laxness* describes the extent to which a parent gives in, fails to enforce rules, or provides positive consequences for child misbehavior. The Laxness subscale has good internal consistency for both mothers and fathers ($\alpha = .85$ for mothers, $\alpha = .84$ for fathers). Harvey and colleagues (2001) found good two-week test retest reliability of .83, and the subscale reliably distinguishes clinic-referred parents from non-referred parents (Arnold et al., 1993). The Laxness subscale is significantly correlated ($r = .82$) with observational ratings of parental laxness (Arnold et al., 1993). The 10-item *Overreactivity* subscale measures the extent to which a parent's behavior is characterized by anger, meanness, and irritability during disciplinary encounters. The Overreactivity subscale has good internal consistency ($\alpha = .84$ for mothers, $\alpha = .82$ for fathers: Harvey et al., 2001) and a two-week test-retest reliability of $\alpha = .82$ (Arnold et al., 1993). The Overreactivity subscale discriminates between clinic-referred and nonproblem families and is significantly correlated ($r = .85$) with observational ratings of parental overreactivity (Arnold et al., 1993). The Parenting Scale has been used in both community and clinical contexts, and scale responses have been shown to discriminate between school-age children with and without ADHD (Harvey et al., 2001). In this sample, internal consistency for the laxness subscale was .81 for mothers and .85 for fathers; the overreactivity subscale was .83 for mothers and .83 for fathers.

Coparenting.

Child-Rearing Disagreement. Mothers and fathers responded to the 21-item Child-Rearing Disagreements Scale (CRD; Jouriles et al., 1991). Items reflect common topics of child-rearing disagreement, such as *being too lenient with our child*, *not taking an equal hand in disciplining our child*. For each item, parents indicate the frequency of disagreement over the

past two months on a Likert-type scale ranging from 1 (*never*) to 6 (*daily*). Jouriles et al. (1991) reported validity data including an inverse relation to global marital satisfaction and a positive association with both general marital conflict and child exposure to conflict. In this sample the internal consistency was .92 for mothers and .91 for fathers.

Parental Alliance. Mothers and fathers completed the 20-item Parental Alliance Measure (PAM; Abidin & Konold, 1999). The PAM assesses the extent to which parents perceive themselves as working as a team in parenting their child. As factor structures for fathers and mothers are different, only the overall score was employed (Abidin & Konold, 1999). The PAM is inversely related to parenting stress and separated/divorced parents score significantly lower than do married parents (Abidin & Konold, 1999). Internal consistency for the current sample was .96 for mothers and .92 for fathers.

Parental Psychopathology. Mothers and fathers completed the Adult Self-Report Form for Ages 18-59 (ASR; Achenbach & Rescorla, 2003), a 126-item scale assessing adult functioning which can be completed in 15-20 minutes. Norms are provided for each gender in two different age categories (18-35 and 36-59). The ASR includes DSM-IV oriented scales for Attention Deficit/ Hyperactivity Problems (Hyperactivity/Impulsivity and Inattention subscales); Depressive Problems; Anxiety Problems; Somatic Problems; Substance Use Scales; Avoidant Personality Problems; and Antisocial Personality Problems. The ASR scores have been found to be valid and consistent with the DSM-IV diagnostic categories (Achenbach & Rescorla, 2003). Internal consistencies in the current sample were: Depressive Problems .75 for mothers and .83 for fathers; Anxiety Problems .78 for mothers and .78 for fathers; Somatic Complaints .71 for mothers and .73 for fathers; ADHD Problems .84 for mothers and .86 for fathers; Antisocial Personality Problems .80 for mothers and .79 for fathers; Avoidant personality problems .59 for

mothers and .80 for fathers. Only subscales with adequate internal consistencies of above .70 (Hunsley & Mash, 2008) were used in the analysis and therefore no further analyses were conducted on the Avoidant Personality Problems subscale for mothers. As substance use was measured in the ASR with three single unrelated items, there is no internal consistency for smoking, alcohol or drug use.

Demographics

Parents completed a questionnaire about income, ethnic background, number of children in the family and mental health services previously received.

Results

Services for Children

Because it is possible that the variables under study here may be affected by services, reports of services received by families were examined. Among parents of the 25 children diagnosed with ADHD 52 % ($n=13$) reported that their child takes stimulant medication regularly and 24% ($n=6$) were on a stimulant medication at the time of participation. Not surprisingly, the number of families who received psychological intervention prior to participating in the study was higher in families of children with ADHD than in comparison families. Families of children with ADHD consulted with a greater number of professionals (psychologist, psychiatrist) and accessed a greater number of services (individual or family counseling and parent programs) than did families of comparison children. Pediatricians were consulted by significantly more families of children with ADHD ($n = 14$, 36%) than comparison families ($n = 2$, 5 %), $\chi^2 (1, n= 39) = 14.25, p<.001$, Cramer's $V=.604$ Psychiatrists were consulted by significantly more families of children with ADHD ($n = 4$, 10%) than comparison families ($n = 0$), $\chi^2 (1, n= 39) = 4.23, p<.05$, Cramer's $V=.330$. Psychologists were consulted by

significantly more families of children with ADHD ($n=16$, 64%) compared to families of comparison children ($n=3$, 15 %), $\chi^2(1, n=39) = 16.08, p < .001$, Cramer's $V = .642$. Individual or family counseling was received by 11 families (55%) of children with ADHD compared to only one family (4%) of comparison children, $\chi^2(1, n=39) = 11.32, p < .01$, Cramer's $V = .539$. Finally, seven families of children with ADHD (35%) participated in parenting programs, compared to one comparison family (4%), $\chi^2(1, n=39) = 4.91, p < .05$, Cramer's $V = .350$. For the chi square analyses above we have the power to detect a large effect size with a sample size of 45, and alpha set at 0.05.

.Differences in Parenting and Coparenting between Families with a Child with ADHD and Comparison Families

To test hypotheses 1, 2, 3, and 4 a series of mixed model repeated measures analyses of covariance (RM ANCOVA) was conducted with parent gender (mother, father) as the within participant factor and group (ADHD, comparison) as the between participant factor. These analyses explore differences between mothers and fathers of children with and without ADHD on measures of parenting and coparenting. Child ODD symptoms served as the covariate in all analyses.

For all analyses alpha was set at the .05 level of significance due to the preliminary nature of the investigation. Because of the limited sample size we chose to retain this level and α was not adjusted to accommodate multiple comparisons. Although there are several correlations presented, the use of the Bonferroni correction was not employed in order to balance the risk of Type I and Type II error. Effect sizes are presented for all analyses.

Positive Involvement. There was no significant main effect for group $F(1, 41) = .10, p > .05$, but there was a significant main effect of parent gender $F(1, 41) = 6.30, p < .05, \eta^2 = .133$,

with mothers reporting more positive involvement than fathers did. There was no significant group by parent gender interaction $F(1, 41)=.21, p>.05$. ODD was not a significant covariate.

Ineffective Discipline. For laxness, there was no significant main effect of group $F(1, 42)=1.74, p>.05$, but there was a significant main effect of parent gender $F(1, 42)=4.46, p<.05$, $\eta^2=.096$, with mothers reporting more laxness than did fathers. There was a significant main effect of group for Overreactivity $F(1, 42)=4.63, p<.05$, $\eta^2=.099$, with parents of children with ADHD reporting higher overreactivity than did parents of children without ADHD. There was no significant main effect of parent gender for overreactivity $F(1, 42)=.04, p>.05$ and there were no significant group by parent interactions for either type of ineffective discipline. ODD was not a significant covariate.

Child-Rearing Disagreement. There was no significant main effect for group $F(1, 41)=2.29, p>.05$, or gender $F(1, 41)=.05, p>.05$, and no interaction between group and parent gender $F(1, 41)=.25, p>.05$ on the child-rearing disagreements scale. ODD was not a significant covariate.

Parental Alliance. There was no significant main effect for group $F(1, 42)=1.04, p>.05$, or parent gender $F(1, 42)=.21, p>.05$ and no significant interaction between group and parent gender $F(1, 42)=.30, p>.05$ for parental alliance. ODD was not a significant covariate.

Links between Maternal and Paternal Parenting and Coparenting

To test hypotheses 5 and 6 correlations were calculated. The correlation matrix for maternal and paternal parenting and coparenting scores is presented in Table 2. As can be seen, there are significant positive correlations for each parent between laxness and reports of child-rearing disagreements (mothers: $r=.40, p<.01$; fathers: $r=.36, p<.05$). For mothers, laxness is inversely related to the parental alliance ($r=-.40, p<.01$). There is also a significant positive

correlation between reports of overreactivity and reports of child-rearing disagreement for mothers ($r=.39, p<.01$) and fathers ($r=.39, p<.01$). Positive involvement is inversely related to reports of overreactivity ($r=-.34, p<.05$) and child-rearing disagreement ($r=-.33, p<.05$) for mothers. For fathers, positive involvement is inversely related to reports of laxness ($r=-.34, p<.05$). In addition, reports of child-rearing disagreements are inversely related to the parental alliance for mothers ($r=-.36, p<.05$) and fathers, ($r=-.58, p<.01$).

There is no evidence to support the similarity hypothesis with respect to ineffective parenting, as there were no significant correlations between maternal laxness and paternal laxness, or between maternal and paternal overreactivity; there was however, evidence of similarity in positive involvement ($r=.51, p<.01$). There was partial support for the compensatory hypothesis as there was a significant correlation between mother's overreactivity and the father's laxness ($r=.38, p<.05$). There was a significant correlation between mothers' and fathers' reports of child-rearing disagreements ($r=.64, p<.01$) and of the parental alliance ($r=.48, p<.01$).

Links between Self-reported Parenting and Psychopathology

To test hypotheses 7, 8 and 9 regarding the relationship between self-reported parenting and parental psychopathology several correlations were calculated. Table 3 shows the correlations between self-reported parenting and self-reported parental psychopathology separately for mothers and fathers. Contrary to predictions, positive involvement was not significantly associated with depressive symptoms reported by mothers and fathers, or to paternal avoidance. Hypotheses concerning laxness were supported only with respect to paternal avoidant personality problems ($r=.46, p<.05$). Contrary to hypotheses, overreactivity was not associated with parental ADHD symptoms.

Links between Self-reported Coparenting and Psychopathology

To test hypotheses 10 and 11 regarding self-reported coparenting and parental psychopathology correlations were conducted. Table 4 shows the correlations between self-reported coparenting and self-reported psychopathology separately for mothers and fathers. Examination of the correlations in Table 4 reveals that hypotheses with respect to child-rearing disagreements were partially supported. There were significant correlations between mothers' reports of somatic ($r=.49, p<.05$) and antisocial problems ($r=.45, p<.05$) and child-rearing disagreements as well as fathers' reports of anxiety ($r=.44, p<.05$), avoidance ($r=.40, p<.05$), ADHD ($r=.51, p<.01$), hyperactive/impulsive ($r=.52, p<.01$), and antisocial problems ($r=.72, p<.01$) and child-rearing disagreements. Hypotheses with respect to the parental alliance were supported for fathers, but not for mothers, in that there was an inverse relationship between parental alliance and fathers' self-reported avoidant ($r=-.50, p<.05$), and antisocial problems ($r=-.44, p<.05$).

Discussion

The current study was designed to examine self-reported parenting, coparenting and psychopathology in parents of children with attention-deficit/hyperactivity disorder (ADHD) and in parents of children without ADHD. We recruited 45 families, 25 families of children with ADHD and 20 families of children without ADHD. Due to the stringent inclusion criteria for ADHD the data likely reflects a true group of children with ADHD-C. This sample reflects a subset of mothers and fathers that were both willing to participate in the study, were mostly White and of fairly high socioeconomic status and therefore the findings may not generalize to other samples. Among the families with a child with ADHD, 35% had already participated in a parenting program. The small sample size restricts power to detect small and medium effects. Although large effects may be the most clinically meaningful, it would have been ideal to have

been able to detect small and medium effects as well. Our recruitment criteria required the involvement of both parents, which may have restricted the sample to families in which parents coordinate their efforts. Although we predicted differences between mothers and fathers of children with ADHD and mothers and fathers with comparison children in terms of both positive and ineffective parenting, we found few differences. Contrary to our hypotheses, we did not find any group differences in involvement between parents of children with ADHD and parents of comparison children, but we found that across groups mothers reported higher positive involvement than did fathers. In terms of gender differences, past studies have found mixed results with regard to mothers' and fathers' positive involvement with their children with ADHD, with some investigators reporting greater positive involvement by mothers (e.g., Piffner et al., 2005; Russell & Russell, 1994) and others finding greater positive involvement reported by fathers (e.g., Kashdan et al., 2004). Consistent with the findings reported by Piffner and colleagues (2005) mothers in both groups in the current study reported more positive involvement than did fathers. This may be explained by the common finding that mothers spend more time interacting with their children than do fathers even when both parents are present (e.g., Arnold et al., 1997). In this sample mothers reported working or going to school for 30 hours a week as compared to fathers who worked approximately 40 hours, which could have allowed mothers more time to be involved with their children.

Contradicting previous research, in this sample, we did not find evidence of higher reported laxness in parents of children with ADHD than in comparison parents. It is possible that this discrepancy may be explained by the fact that the majority of the families in the ADHD group had received intervention which may have attenuated any possible group differences. In the current study mothers reported significantly more laxness than did fathers. That is, mothers

reported a greater tendency to allow rules to go unenforced than did fathers. This is consistent with studies that suggest that fathers are responsible for discipline (Chang & Gau, 2010) and that fathers are less lax than mothers are (Scheck & Emerick, 1976). Consistent with previous research (Harvey et al., 2001) and our current hypothesis, parents of children with ADHD reported higher overreactivity than did parents of children without ADHD.

The lack of predicted differences in laxness and positive involvement is puzzling. One possible contributing factor that may have attenuated differences is interventions received by parents. It is possible that parenting programs had increased positive involvement and reduced laxness, by helping parents to interact positively, to give clear commands, and to follow through with consequences.

The current study provided interesting information about coparenting. Our hypothesis that there would be increased child-rearing disagreement among parents of children with ADHD as compared to comparison parents was not supported. Perhaps because parents in the current study have been together for many years (M control = 13.28 years and M ADHD = 14.39 years) they have adapted to the added challenges of raising a child with ADHD and therefore have developed coordinated efforts at parenting. This is contradictory to findings of Johnston and Behrenz (1993) who found that mothers and fathers of ADHD children exhibited less positive and more negative communications than did parents of non-disordered children. It is important to note that Johnston and Behrenz observed parent's discussions, rather than using a self-report measure, so it is possible that the discrepancy reflects the effects of self-report versus observer rating.

Results with respect to the parental alliance are consistent with the data reported by Abidin and Konold (1999) who found that the quality of the alliance in parents of ADHD

children was similar the parental alliance of the normative group. Abidin and Konold (1999) interpreted the strong parental alliance in families of children with ADHD as related to the fact that these parents agreed to participate in their child's treatment and had attended parent education classes. Our sample is very similar in that many received services which may have enhanced their alliance. A possible explanation for the strong parental alliance may be that parents in this sample had longer to develop the parental alliance with their school-age children compared to many studies which examine infant, toddlers or preschoolers (Fivaz-Depeursinge & Corboz-Warnery, 1999; Gable, Belsky, & Crnic, 1995; McHale, Kazali, et al., 2004; Schoppe-Sullivan et al., 2004). Including both parents in the study required not only willingness of each parent to participate, but also willingness to work together. This likely yielded a higher-functioning subsample of the population who may have an above average alliance as parents.

When parents are able to coordinate their co-parental roles, a sense of teamwork and accomplishment can develop. Schoppe-Sullivan and colleagues (2009) have found that positive coparenting helps manage problem behaviour associated with ADHD. The focus on positive as well as more negative aspects of parenting and coparenting in this study adds to the growing literature focusing on family strengths and resiliency.

We also examined the ways that mothers' and fathers' reports were related. We found evidence for the similarity hypothesis with respect to positive involvement. We found evidence for the compensatory hypothesis in the significant correlation between mother's overreactivity and the father's laxness that is, the more lax the father's parenting style, the greater overreactivity reported by the mother. It stands to reason that if one parent displays more laxness, the other may feel they need to compensate for the lack of discipline. This risky relationship between overreactivity and laxness is clinically relevant and likely warrants further

investigation. The findings indicate that it is important to assess involvement and ineffective discipline by both parents as part of a comprehensive assessment of children with ADHD and their parents. It may be possible to help parents understand the links between their parenting so they can jointly set clear limits, praise compliance, and follow through on consequences for noncompliance.

In terms of the links between self-reported parenting and self-reported psychopathology, we found a significant correlation between fathers' self-reported avoidant personality problems and lax parenting. This was consistent with our hypothesis that parental psychopathology would be positively related to negative parenting practices. Contrary to prediction, there were no significant relationships between mothers' parenting and self-reported psychopathology. With alpha set at 0.05 for the correlation and a sample size of 45 participants there was only significant power to detect a large effect size. A possible explanation for the lack of significant results could be due to the limited power available to detect a small or medium effect size.

Finally, in terms of the links between self-reported coparenting and self-reported psychopathology, we found that child-rearing disagreements were significantly correlated with mothers' reports of their own somatic and antisocial problems and with fathers' self-reported anxiety, avoidance, ADHD, hyperactive/impulsive and antisocial problems. Our hypothesis that parental psychopathology would be related to an increase in child-rearing disagreement was partially supported. Self-reported antisocial symptoms were related to child-rearing disagreements for both mothers and fathers. Paternal problems such as ADHD, hyperactive/impulsive problems and antisocial problems were related to fathers' self-reports of child-rearing disagreement. These results provide preliminary evidence of an association between paternal psychopathology and child-rearing disagreement. In terms of the positive

aspect of coparenting, there was an inverse relationship between parental alliance and fathers' avoidant and antisocial problems. This is consistent with our hypothesis that fathers' reports of avoidant and antisocial behaviours would negatively influence their parental alliance with the child's mother. Taken together these findings suggest that parental psychopathology is related to self-reported coparenting.

Limitations and Future Directions

The major limitation to the current study is the small sample size which reduces power to detect anything but large effects. A number of factors may have affected the representativeness of the sample. First, by recruiting families in which two parents were willing to participate, it required not only willingness of each parent to participate, but also willingness to work together. This may have yielded a higher-functioning subsample of the population. Second, by recruiting families of children who had been diagnosed with ADHD, the majority were receiving services for the child's problems, including medication and psychological services or counseling. It is likely that this will have reduced differences between the ADHD and comparison groups. An examination of the samples used in other similar studies found that either families had not received services or this variable was not assessed and/or reported in the study. The reporting of whether or not families were recruited before receiving services is very important for interpreting study findings. Taken together these issues mean that we must be careful in generalizing results to the larger population. It is possible that our sample represents a resilient sub-group of families with a child with ADHD. It is likely that our sample is less diverse in terms of family composition and family income than is the population of families with a child with ADHD.

It would be useful to include parenting and coparenting measures as part of the routine battery of measures given to clients. This would likely increase the participation of families in

similar studies and also ensure that we receive information from families at the beginning stages of their assessment. It would also be interesting to measure coparenting at intake and determine if coparenting improves over the course of services. Another consideration for future research would be to have early recruitment to ensure that participant families have not received previous forms of intervention. This would allow for a comparison of parenting and coparenting in families that have not received intervention measures. It would also help to ensure that children were not on stimulant medication which could affect the amount of child-rearing disagreement between parents. Further research is also needed with a larger sample size and distinct ADHD and ADHD/ODD groups to disentangle parenting and coparenting findings. Finally, longitudinal studies would provide insight into the causal nature of relationships between mothers and fathers parenting and coparenting.

Clinical Implications

Examining both positive and negative aspects of parenting is clinically relevant because interventions for behavioral disorders focus on improving parents' use of discipline and increasing parents' positive interactions with their children (Sonuga-Barke, Daley, Thompson, Laver-Bradbury, & Weeks, 2001; Webster-Stratton, Reid, & Beauchaine, 2011). The problems that families—and parents as individuals—experience at home should be considered when designing psychosocial interventions for families in order to support the family system, in addition to the child. Further, clinicians treating children with ADHD may be able to help families improve the quality of parental involvement using specific activities as a part of behavioral parent training.

A recent study by Harvey and colleagues (2011) found that children with behavior problems who were exposed to overreactive parenting practices tended to have more ODD

symptoms 3 years later. This provides support for parent training interventions that provide parents with positive alternatives to harsh parenting (Webster-Stratton & Taylor, 2001). The fact that parents of children with ADHD display more overreactivity than do parents of children without ADHD suggests they could benefit from programs that offer hands on training and practice in a group setting. It may be useful to consider ways to modify parenting groups to accommodate the challenges faced by some parents of children with ADHD such as the fact that parents themselves may also experience ADHD symptoms. There is preliminary evidence that medication management of parental ADHD symptoms facilitates benefits of parent training (Daley & Thompson 2007; Sonuga-Barke, Daley, & Thompson, 2002). Bor, Sanders, and Markie-Dadds (2002) found that parenting interventions should be completed initially with added sessions to address the specific difficulties of the parents such as ADHD.

The finding that parents of children with ADHD do not differ from parents of comparison children in terms of child-rearing disagreement, and parental alliance suggests that couples in this sample were able to make their coparenting relationships work despite the challenges of raising a child with ADHD and the specifics of how they are able to do this may help inform clinical interventions. It is possible that this finding is specific to the present sample and further study of child-rearing disagreement, and parental alliance would allow researchers to determine whether these results can be generalized to the larger population.

In conclusion, results from this study offer important insights into mothers' and fathers' experiences in parenting and working together to co-parent their children. In addition, further information about fathers' experiences contributes to our understanding of family functioning and should help direct interventions and future research on families of children with ADHD (Baker 1994).

References

- Abidin, R. R., & Brunner, J. F. (1995). Development of a Parenting Alliance Inventory. *Journal of Clinical Child Psychology, 24*, 31-40.
- Abidin, R. R., & Konold, T. (1999). *Parenting Alliance Measure - Professional Manual*. Odessa, FL: Psychological Assessment Resources.
- Achenbach, T. M., & Rescorla, L. A. (2003). *Manual for the ASEBA adult forms & profiles*. Burlington, VT: University of Vermont, Research Center for Children, Youth, & Families.
- Amato, P. R., & Gilbreth, J. G. (1999). Nonresident fathers and children's well-being: A meta-analysis. *Journal of Marriage and the Family, 61*, 557-573.
- American Psychiatric Association (2000). *Diagnostic and Statistical Manual of Mental Disorders, 4th edition-text revision*. Washington, DC: Author.
- Arnold, D. S., O'Leary, S. G., Wolff, L. S., & Acker, M. M. (1993). The Parenting Scale: A measure of dysfunctional parenting in discipline situations. *Psychological Assessment, 5*, 137-144.
- Arnold, E. H., O'Leary, S. G., & Edwards, G. H. (1997). Father involvement and self-reported parenting of children with Attention Deficit-Hyperactivity Disorder. *Journal of Consulting and Clinical Psychology, 65*, 337-342.
- Baker, D. B. (1994). Parenting Stress and ADHD: A comparison of mothers and fathers. *Journal of Emotional and Behavioral Disorders, 2*, 46-50.
- Baumrind, D. (1968). Authoritarian vs. authoritative control. *Adolescence, 3*, 255-272.
- Baumrind, D. (1971). Current patterns of parental authority. *Developmental Psychology Monographs, 4* (1, Pt. 2).

- Bearss, K., & Eyberg, S. (1998). A test of the parenting alliance theory. *Early Education and Development, 9*, 179–185.
- Beitel, A., & Parke, R. (1998). Paternal involvement in infancy: The role of maternal and paternal attitudes. *Journal of Family Psychology, 12*, 268–288.
- Belsky, J., Putnam, S., & Crnic, K. (1996). Coparenting, parenting and early emotional development. *New Directions for Child Development, 74*, 45-55.
- Bor, W., Sanders, M.R., & Markie-Dadds, C. (2002). The effects of the Triple p-positive parenting program on preschool children with co-occurring disruptive behavior and attentional/hyperactive difficulties. *Journal of Abnormal Child Psychology, 30*, 571-587.
- Brown, R. T., Freeman, W. S., Perrin, J. M., Stein, M. T., Amier, R. W., Feldman, H. M., Wolraich, M. L. (2001). Prevalence and assessment of attention-deficit/hyperactivity disorder in primary care settings. *Pediatrics, 107*, e43.
- Carlson, M. J., & McLanahan, S., S. (2006). Strengthening unmarried families: Could enhancing couple relationships also improve parenting? *Social Service Review, 80*, 297-321.
- Caspi, A., Taylor, A., Smart, M., Jackson, J., Tagami, S., & Moffit, T. E. (2001). Can women provide reliable information about their children's fathers? Cross-informant agreement about lifetime antisocial behavior. *Journal of Child Psychology and Psychiatry and Allied Disciplines, 42*, 915–920.
- Chang, L.-R., & Gau, S. S-F. (2010). Fathering and father-child interactions in families of children with Attention-Deficit/Hyperactivity Disorder. *Taiwanese Journal of Psychiatry, 24*, 14-29.
- Chronis, A. M., Lahey, B. B., Pelham, W. E., Kipp, H. L., Baumann, B. L., & Lee, S. S.

- (2003). Psychopathology and substance abuse in parents of young children with Attention Deficit/Hyperactivity Disorder. *Journal of the American Academy of Child and Adolescent Psychiatry*, 42, 1424-1432.
- Cohn, R., & Weissman, R. (1984). The parenting alliance. In R. Cohen, B. Cohler, & S. Weissman (Eds.), *Parenthood: A psychodynamic perspective* (pp. 161-192). New York: Guilford.
- Collett, B. R., Gimpel, G. A., Greenson, J. N., & Gunderson, T. L. (2001). Assessment of discipline styles among parents of preschool through school-age children. *Journal of Psychopathology and Behavioral Assessment*, 23, 163-169.
- Conners, C.K. (2001). *Conners' Rating Scales-Revised (CRS-R): Technical Manual*. North Tonawanda, NY. Multi-Health Systems.
- Conners, C. K., Sitarenios, G., Parker, J. D., & Epstein, J. N. (1998). Revision and restandardization of the Conners Teacher Rating Scale (CTRS-R): factor structure, reliability and criterion validity. *Journal of Abnormal Child Psychology*, 26, 279-91.
- Costigan, C., Floyd, F., Harter, K., & McClintock, J. (1997). Family process and adaptation to children with mental retardation: Disruption and resilience in family problem-solving interactions. *Journal of Family Psychology*, 11, 515-529.
- Cowan, P.A., & Cowan, C. P. (2002). Interventions as tests of family systems theories: Marital and family relationships in children's development and psychopathology. *Development and Psychopathology*, 14, 731-759.
- Cowan, P. A., & McHale, J. P. (1996) Coparenting in a family context: Emerging achievements, current dilemmas, and future directions. In J. P. McHale & P. A. Cowan (Eds.), *New directions for child development: Vol 74. Understanding how family-level dynamics*

- affect children's development: Studies of two-parent families* (pp 93-106). San Francisco: Jossey-Bass.
- Dadds, M. R., & Powell, M. B. (1991). The relationship of interparental conflict and global marital adjustment to aggression, anxiety, and immaturity in aggressive and nonclinic children. *Journal of Abnormal Child Psychology*, 19, 553-567.
- Daley, D. & Thompson, M. (2007). Parent training for ADHD in preschool children. *Advances in ADHD*, 2, 11-16.
- Duhig, A. M., Renk, K., Epstein, M.K., & Phares, V. (2000). Interparental agreement on internalizing, externalizing, and total behavior problems: A Meta-analysis. *Clinical Psychology: Science and Practice*, 7, 435-453.
- Feinberg, M. E. (2002). Coparenting and the transition to parenthood: A framework for prevention. *Clinical Child and Family Psychology Review*, 5, 173-195.
- Feinberg, M. (2003). The internal structure and ecological context of coparenting: A framework for research and intervention. *Parenting: Science and Practice*, 3, 95-131.
- Fivaz-Depeursinge, E., & Corboz-Warnery, A. (1999). *The primary triangle: A developmental systems view of mothers, fathers and infants*. New York: Basic Books.
- Flouri, E., & Buchanan, A. (2003). What predicts fathers' involvement with their children? A prospective study of intact families. *British Journal of Developmental Psychology*, 21, 81-97.
- Gable, S., Belsky, J., & Crnic, K. (1995). Coparenting during the child's second year: A descriptive account. *Journal of Marriage and the Family*, 57, 609-616.
- Gerdes, A. C., Hoza, B., & Pelham, W. E. (2003). Attention-deficit/hyperactivity disorder boys' relationships with their mothers and fathers: Child, mother and father perceptions.

- Development and Psychopathology*, 15, 363-382.
- Grusec, J. E. (2011). Socialization processes in the family: Social and emotional development. *Annual Review of Psychology*, 62, 243-269.
- Harper, S. E., & Fine, M. A. (2006). The effects of involved nonresidential fathers' distress, parenting behaviors, inter-parental conflict, and the quality of father-child relationships on children's wellbeing. *Fathering: A Journal of Theory, Research, & Practice about Men as Fathers*, 4, 286-311.
- Harvey, E., Danforth, J. S., Eberhad, T., McKee, T., Ulaszek, W. R., & Friedman, J. L. (2003). Parenting of children with attention-deficit/hyperactivity disorder (ADHD): The role of parental ADHD symptomatology. *Journal of Attention Disorders*, 7, 31-42.
- Harvey, E., Danforth, J. S., Ulaszek, W. R., & Eberhardt, T. L. (2001). Validity of the parenting scale for parents of children with attention-deficit/hyperactivity disorder. *Behaviour Research and Therapy*, 39, 731-743.
- Harvey, E. A. (2000). Parenting similarity and children with Attention-Deficit/Hyperactivity Disorder. *Child and Family Behaviour Therapy*, 22, 39-54.
- Hoza, B., Owens, J. S., Pelham, W. E., Swanson, J. M., Conners, C. K., Hinshaw, S. P.,... Kraemar, H. C. (2000). Parent cognitions as predictors of child treatment response in attention-deficit/hyperactivity disorder. *Journal of Abnormal Child Psychology*, 28, 569-583.
- Johnston, C. (1996). Parent characteristics and parent-child interactions in families of nonproblem children and ADHD children with higher and lower levels of oppositional-defiant behaviour. *Journal of Abnormal Child Psychology*, 24, 85-103.
- Johnston, C., & Behrenz, K. (1985). Childrearing discussions in families of nonproblem

- children and ADHD children with higher and lower levels of aggressive-defiant behavior. *Canadian Journal of School Psychology, 9*, 53-65.
- Johnston, C., & Mash, E. J. (2001). Families of children with Attention-Deficit/Hyperactivity Disorder: Review and recommendations for future research. *Clinical Child and Family Psychology Review, 4*, 183-207.
- Johnston, C., Murray, C., Hinshaw, S.P., Pelham, W.E., & Hoza, B. (2002). Responsiveness in interactions of mothers and sons with ADHD: Relations to maternal and child characteristics. *Journal of Abnormal Child Psychology, 30*, 77-88.
- Jouriles, E. N., & Farris, A. M (1992). The effect of marital conflict on subsequent parent-son interactions. *Behavior Therapy, 23*, 355-374.
- Jouriles, E. N., Murphy, C. M., Farris, A. M., Smith, D. A., Richters, J. E., & Waters, E. (1991). Marital adjustment, parental disagreements about child-rearing, and behavioral problems in boys: Increasing the specificity of the marital assessment. *Child Development, 62*, 1424-1433.
- Kashdan, T. B., Jacob, R. G., Pelham, W. E., Lang, A. R., Hoza, B., Blumenthal, J. D., & Gnagy, E. M. (2004). Depression and anxiety in parents of children with ADHD and varying levels of oppositional defiant behaviors: Modeling relationships with family functioning. *Journal of Clinical Child and Adolescent Psychology, 33*, 169-181.
- Keown, L. J., & Woodward, L. J. (2002). Early parent-child relations and family functioning of preschool boys with pervasive hyperactivity. *Journal of Abnormal Child Psychology, 30*, 541-553.
- Lamb, M. E. (2010). How do fathers influence children's development? Let me count the ways. *The Role of the father in child development, fifth edition* (pp. 1-26). Hoboken, NJ: Wiley.

- Lange, G., Sheerin, D., Carr, A., Dooley, B., Barton, V., Marshall, D., Mulligan, A., Lawlor, M., Belton, M., & Doyle, M. (2005). Family factors associated with attention deficit hyperactivity disorder and emotional disorders in children. *Journal of Family Therapy*, 27, 76–96.
- Lee, C. M., Beauregard, C., & Bax, K. A. (2005). Child-related disagreement, verbal aggression, and children's internalizing and externalizing problems. *Journal of Family Psychology*, 19, 237-245.
- Locke, L. M., & Prinz, R. J. (2002). Measurement of parental discipline and nurturance. *Clinical Psychology Review*, 22, 895-930.
- Luedemann, K., Lee, C. M., Johnston, C., Hunsley, J., Kuehn, S & Robaey, P. (2011) Psychopathology in Parents of Children with Attention-Deficit/Hyperactivity Disorder. Submitted to the Journal of Psychopathology & Behavioral Assessment.
- Mahoney, A., Jouriles, E. N., & Scavone, J. (1997). Marital adjustment, marital discord over childrearing, and child behavior problems: Moderating effects of child age. *Journal of Clinical Child Psychology*, 26, 415-423.
- Margolin, G., Gordis, E., and John, R. S. (2001). Coparenting: A link between marital conflict and parenting in two-parent families. *Journal of Family Psychology*, 15, 3-21.
- McBride, B. A. & Rane, T. R. (1998). Parenting alliance as a predictor of father involvement: An exploratory study. *Family Relations*, 47, 229-236.
- McConnell, M. C., & Kerig, P. K. (2002). Assessing coparenting in families of school age children: Validation of the Coparenting and Family Rating System. *Canadian Journal of Behavioural Science*, 34, 56-70.
- McHale, J. & Lindahl, K. (2011). *Coparenting: Theory, research, and clinical applications*.

- Washington, DC: American Psychological Association.
- McHale, J., Kazali, C., Rotman, T., Talbot, J., Carleton, M., & Lieberman, R. (2004). The transition to coparenthood: Parents' prebirth expectations and early coparental adjustment at three months postpartum. *Development and Psychopathology*, 16, 711-733.
- McHale, J. P., & Fivaz-Depeursinge, E. (1999). Understanding triadic and family group interaction during infancy and toddlerhood. *Clinical Child and Family Psychology Review*, 2, 107-127.
- McKee, T.E., Harvey, E., Danforth, J.S., Ulaszek, W.R., Friedman, J.L. (2004). The relation between parental coping styles and parent-child interactions before and after treatment for children with ADHD and oppositional behavior. *Journal of Clinical Child and Adolescent Psychology*, 33, 158-168.
- McLaughlin, D.P. & Harrison, C.A. (2006). Parenting practices of mothers of children with ADHD: The Role of Maternal and Child Factors. *Child and Adolescent Mental Health*, 11, 82-88.
- Neff, P. E. (2010). Fathering an ADHD Child: An examination of paternal well-being and social support. *Sociological Inquiry*, 80, 531-553.
- O'Leary, S. G., & Vidair, H. B. (2005). Marital adjustment, child-rearing disagreements, and overreactive parenting: Predicting child behavior problems. *Journal of Family Psychology*, 19, 208-216.
- Pfiffner, L.J., McBurnett, K., Rathouz, P.J., Judice, S. (2005). Family correlates of oppositional and conduct disorders in children with attention deficit/hyperactivity disorder. *Journal of Abnormal Child Psychology*, 33, 551-563.
- Phares, V., & Compas, B. E. (1992). The role of fathers in psychopathology: Make room for

- daddy. *Psychological Bulletin*, 111, 387-412.
- Phares, V., & Lum, J. J. (1997). Clinically referred children and adolescents: Fathers, family constellations, and other demographic factors. *Journal of Clinical Child Psychology*, 26, 216–223.
- Russell, A., & Russell, G. (1994). Coparenting early school-age children: An examination of mother-father interdependence within families. *Developmental Psychology*, 30, 757-770.
- Scheck, D., & Emerick, R. (1976). The young male adolescent's perception of early child-rearing behavior: The differential effects of socioeconomic status and family size. *Sociometry*, 39, 39-52.
- Schoppe, S., Mangelsdorf, S., & Frosch, C. (2001). Coparenting, family process, and family structure: Implications for preschoolers' externalizing behavior problems. *Journal of Family Psychology*, 15, 526–545.
- Schoppe-Sullivan, S. J., Weldon, A. H., Cook, C., Davis, E. F., & Buckley, C. K. (2009). Coparenting behavior moderates longitudinal relations between effortful control and preschool children's externalizing behavior. *Journal of Child Psychology and Psychiatry*, 50, 698-706.
- Schoppe-Sullivan, S. J., Mangelsdorf, S., Frosch, C., & McHale, J. (2004). Associations between coparenting and marital behavior from infancy to the preschool years. *Journal of Family Psychology*, 18, 194–207.
- Seipp, C., & Johnston, C. (2005). Mother-son interactions in families of boys with Attention Deficit/Hyperactivity Disorder with and without oppositional behavior. *Journal of Abnormal Child Psychology*, 33, 87-98.
- Shelton, K. K., Frick, P. J., & Wootton, J. (1996). Assessment of parenting practices in families

- of elementary school-age children. *Journal of Clinical Child Psychology*, 25, 317-329.
- Singh, I. (2003). Boys will be boys: Fathers' perspectives on ADHD symptoms, diagnosis, and drug treatment. *Harvard Review of Psychiatry*, 11, 308–316.
- Snyder, D. K., Klein, M. A., Gdowski, C. L., Faulstich, C., & LaCombe, J. (1988). Generalized dysfunction in clinic and nonclinic families: A comparative analysis. *Journal of Abnormal Child Psychology*, 16, 97-109.
- Sonuga-Barke, E. J. S., Daley, D., Thompson, M., Laver-Bradbury, C., & Weeks, A. (2001). Parent-based therapies for preschool attention-deficit/hyperactivity disorder: A randomized, controlled trial with a community sample. *Journal of the American Academy of Child & Adolescent Psychiatry*, 40, 402–408.
- Sonuga-Barke, E. J. S., Daley, D., & Thompson, M. (2002). Does maternal ADHD reduce the effectiveness of parent training for preschool children's ADHD? *Journal of the American Academy of Child and Adolescent Psychiatry*, 41, 696-702.
- Walter, M. (2000). Parental involvement of unwed, nonresident fathers. *Family Matters*, 57, 34–49.
- Webster-Stratton, C. H., Reid, M. J., & Beauchaine, T. (2011). Combining parent and child training for young children with ADHD. *Journal of Clinical Child and Adolescent Psychology*, 40, 191-203.
- Whalen, C. K., & Henker, B. (1998). Attention-deficit/hyperactivity disorders. In T. H. Ollendick & M. Hersen (Eds.), *Handbook of child psychopathology* (3rd ed., pp. 181-211). New York: Plenum.

Table 1

Parent T scores of Their Self-Ratings on Measures of Parenting and Coparenting

	Mother		Comparison		ADHD		Father	
	Comparison		ADHD		ADHD		ADHD	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>Alabama Parenting Questionnaire</i>								
Parental Involvement	50.80 ^a	10.5	50.92 ^a	6.9	47.16 ^b	8.8	46.36 ^b	6.3
<i>Parenting Scale</i>								
Laxness	2.51 ^a	0.6	2.94 ^a	0.7	-	2.48 ^b	2.51 ^b	0.7
Overreactivity	2.72 ^a	0.8	3.24 ^b	0.9	-	2.75 ^a	3.16 ^b	1.0
Child-Rearing Disagreements Scale	34.50 ^a	12.5	8.48 ^a	12.1	32.47 ^a	11.2	37.88 ^a	10.5
Parental Alliance Measure	84.85 ^a	15.1	81.56 ^a	13.4	90.75 ^a	7.9	85.36 ^a	11.3

Note. Means sharing subscripts are not significantly different.

Table 2

Correlation Matrix for Parenting and Coparenting

	1	2	3	4	5	6	7	8	9	10
1. Mother Parenting Scale: Laxness	---									
2. Mother Parenting Scale: Overreactivity	.28	---								
3. Mother Alabama Parenting Questionnaire total	-.11	-.34*	---							
4. Mother Child-Rearing Disagreements Scale total	.40**	.39**	-.33*	---						
5. Mother Parental Alliance Measure total	-.40**	-.25	.16	-.36*	---					
6. Father Parenting Scale: Laxness	.25	.38*	-.36*	.27	-.33*	---				
7. Father Parenting Scale: Overreactivity	-.04	.27	-.06	.21	-.06	.24	---			
8. Father Alabama Parenting Questionnaire total	-.22	-.16	.51**	-.27	.11	-.34*	-.14	---		
9. Father Child-Rearing Disagreements Scale total	.37*	.40**	-.36*	.64**	-.37*	.36*	.39**	-.27	---	
10. Father Parental Alliance Measure total	-.23	-.08	.27	-.34*	.48**	-.27	-.18	.28	-.58**	---

Note. * Correlation is significant at the 0.05 level (2 tailed)

** Correlation is significant at the 0.01 level (2 tailed)

Table 3

Correlations for Self-reported Parenting and Parental Psychopathology

	<u>Mother</u>			<u>Father</u>		
	Laxness	Overreactivity	Involvement	Laxness	Overreactivity	Involvement
<i>ASR T scores</i>						
Depression	.09	.16	.01	.22	-.13	.05
Anxiety	.16	.27	.06	.28	.03	-.05
Somatic problems	.26	.17	-.10	.28	-.01	-.05
Avoidant problems	---	---	---	.46*	-.05	-.25
ADHD problems	-.02	.03	-.03	.10	.01	-.09
Inattentive problems	-.04	.04	.00	.33	-.15	-.02
Hyperactive/Impulsive problems	-.00	-.02	.03	.14	.06	-.23
Antisocial problems	.06	.20	-.01	.25	.33	-.26

Note. * Correlation is significant at the 0.05 level (2 tailed)

Correlations not provided for mothers avoidant problems due to poor reliability of this scale for mothers

Table 4

Correlations for Self-reported Coparenting and Parental Psychopathology

	<u>Mother</u>		<u>Father</u>	
	Child-Rearing Disagreements	Parental Alliance	Child-Rearing Disagreements	Parental Alliance
<i>ASR T scores</i>				
Depression	.29	.05	.39	-.32
Anxiety	.24	.08	.44*	-.33
Somatic problems	.49*	-.30	.23	.04
Avoidant problems	---	---	.40*	-.50*
ADHD problems	.15	.18	.51**	-.26
Inattentive problems	.21	.24	.35	-.33
Hyperactive/Impulsive problems	.12	.16	.52**	-.19
Antisocial problems	.45*	-.06	.72**	-.44*

Note. ** Correlation is significant at the 0.01 level (2 tailed)

* Correlation is significant at the 0.05 level (2 tailed)

Correlations not provided for mothers avoidant problems due to poor reliability of this scale for mother

General Discussion

In the following section, the study context is explained and difficulties with recruitment are explored as the composition of the current sample has implications for interpretation of study findings. Diagnostic challenges are described. Results are presented in terms of their consistency with predictions and their fit with previous literature, as well as their methodological limitations. Findings that extend the literature are highlighted. Directions for future research are outlined and clinical implications presented.

Recruitment

The current study was designed to examine family factors related to childhood ADHD: parental psychopathology, parenting, and coparenting, with a special emphasis on the role of fathers. Two-parent families of children aged 6-12 years were recruited from the ADHD clinic at the Children's Hospital of Eastern Ontario (CHEO) and from the community. Mothers and fathers of children with ADHD and a comparison group of parents of children without ADHD completed measures of the child's problems, their own psychological problems, their parenting behaviours and the coparenting relationship. Families also participated in a recorded interaction session that is not part of this thesis. The current sample was homogeneous in terms of marital status, with the vast majority of parents (91%) being married. Almost all of the fathers were residential, with only three living away from their child (two in the ADHD group and one in the comparison group). All mothers and fathers were the child's biological parent. Due to recruitment challenges I was unable to obtain an adequate sample to permit the planned three group (ADHD, ADHD/ODD, nondisordered comparison) analysis, therefore, I included ODD as a covariate in all analyses to account for the effect of children's oppositional behaviour on the variables studied.

Recruitment for the study extended from December 2006 to August 2009. The initial plan to recruit 105-120 families included diverse strategies to reach families through professional, recreational, and personal networks. In addition, I mailed information about the study to local family physicians and pediatricians. I was given permission to engage in direct solicitation at pediatricians' offices. I placed an advertisement in the local newspaper. Teams of assistants recruited at a booth at parenting shows. Study notices were posted on campus, in community and recreation centres, and in arenas, and distributed through university-based and municipal summer camps, as well as on-line. Together with my supervisor, I provided information sessions about ADHD to an undergraduate class of student teachers, and conducted an information session to approximately 25 staff of a municipal summer camp. I described the study and distributed notices to the University of Ottawa undergraduate classes and handed out study notices through personal contacts.

I faced several challenges in recruitment. First, there were a significantly lower number of children referred from the CHEO ADHD clinic than had been predicted by the clinic director based on the clinics' past numbers. Of the 420 children seen through the CHEO ADHD clinic during the recruitment period, only 55 children (13% of clinic cases) were referred to the study. The reasons for the low referral rate include: a) falling outside the 6-12 year age range and b) not meeting diagnostic criteria for ADHD combined type. Furthermore, although the study was designed to recruit families at the intake stage, before they began receiving services, the clinic often took many months to reach a diagnosis and refer the family to the study. In the sample on which analyses were conducted, 56% of families with a disordered child had received some type of services and 52% were taking medication for their symptoms of ADHD. If it is assumed that mental health services have a beneficial effect on parenting, coparenting, and perhaps parental

psychological symptoms, this may have attenuated group differences on some of the dependent variables.

The challenges of recruiting two parents of school-age children to participate in a study were magnified in this population of high-needs families. Research assistants required between one and 14 phone calls to speak to a parent; on average four calls were made per family. For the purpose of this study only families where the mother and father were both willing to participate could be included. Anecdotally it appeared that asking parents to come in to a research session together was a test of the parental alliance as both parents had to agree to participate in the study. A total of 12 families were lost because fathers were not willing to participate, one family because the mother was not willing to participate and one family declined participation despite interest in the study because they were dealing with child custody difficulties.

Ninety three families began the study and full data were collected from: 73 mothers, 73 fathers, and 59 teachers. This is below the target recruitment numbers of 105-120 families established in my proposal. Complete data for a family requires measures completed by mothers, fathers and teachers. In total, 36 families of children with ADHD out of 55 referred families participated in the study. After removing cases that were in the borderline range in terms of whether or not the child met criteria for ADHD based on the Conners' Rating Scales, or where teacher information was missing, only 25 families with ADHD remained. It is not surprising that some families who initiated participation did not provide information from all three raters. Despite these challenges, the final sample included data from teachers, and both mothers and fathers which is often absent in research on children with ADHD. This is a major strength of the current study and although there are some limitations based on the smaller sample size there are also interesting and novel findings that can be obtained by having data from three separate

individuals. For future studies the most feasible way to get around the challenges of obtaining data from multiple sources would likely be to incorporate measures into the initial assessment battery that families receive during their visit to the clinic. In conclusion, the present study provides data on fathers which is often missing in studies of child psychopathology and extends the literature on parental psychopathology, parenting and coparenting in families of children with ADHD.

Diagnostic challenges. The diagnosis of ADHD is the subject of considerable debate (Pelham et al., 2005). Consistent with this, some children who had received a diagnosis of ADHD by a clinician at the hospital clinic did not meet the stringent inclusion criteria established in the study. To provide as scrupulous a test of the hypotheses as possible, I included in my analyses only those children who fully met study criteria. To ensure that the child's symptoms were present across settings (e.g., home and school) study inclusion criteria required that the teacher and at least one parent rated the child above the cut-off *T* score of 65. I excluded from analyses data on 13 families in which teacher or both parent Conners' scores were below the cut-off of a *T* score of 65. This stringent diagnostic criterion makes it certain that the current sample consists of children with ADHD combined type.

Partial data were gathered on 93 families and full data are available for 73 families, but after removing cases that did not have a teacher report ($N = 14$) and those cases that were in the borderline range of the CPRS ($N = 14$) only 45 families remained. The sample therefore fell far short of the number I planned to recruit. The small sample size made it impossible to compare families with a child with ADHD, those with families with a child with ADHD and comorbid ODD and comparison families. Furthermore, it was not possible to compare biological to nonbiological parents, or to examine differences between residential and nonresidential parents.

The small sample size will undoubtedly have reduced statistical power to detect differences.

Analyses were conducted using the G Power 3.1.3 statistics program with 45 participants. Power calculations revealed that the sample size was adequate to detect large effects. It is possible that some null findings are the result of inadequate statistical power to detect differences.

Nevertheless, it is striking that despite the small number of families, and therefore the low statistical power, that many significant group differences have been obtained. I believe that this reflects robust and meaningful effects. In interpreting findings it is essential to take into consideration the nature of the sample recruited. This is discussed in greater detail further on in the manuscript.

In conducting clinical research it is important to balance considerations of internal and external validity. External validity is the ability to generalize the results obtained from a small sample to a larger population. Internal validity refers to the extent to which we can accurately state that the independent variable produced the observed effect. In general as one type of validity increases, the other type typically decreases. As we implement more controls to reduce confounding variables and thus increase internal validity, we are affecting the generalizability of the results and external validity decreases. For the present study we opted to attempt to demonstrate an effect that was internally valid and then suggest that the study be replicated and extended to determine the external validity of the results. This is common in studies in clinical psychology where studies tend to have high internal validity and lower, or perhaps unknown, external validity (Taylor & Asmundson, 2008).

The design of the present study allowed us to be confident in the internal validity of the results. For example we can be confident that demographic variables do not differ across groups thus introducing a potentially confounding variable. We also provided precise specifications for

research assistants as to how study should be conducted, and a standardized procedure. In contrast, the conservative ethics protocol, the requirement that both parents participate and the length of the research session may have limited external validity. In order to confirm the external validity of the current results it would be important to replicate this research with a larger sample of families.

Parental Psychopathology

Parental psychopathology is a risk factor for adverse outcomes in children with ADHD (Johnston & Mash, 2001). In general, consistent with prior research, in this sample, mothers and fathers of children with ADHD reported more symptoms of psychopathology than did mothers and fathers of children without ADHD. A notable strength of the current study is the inclusion of data on father's reports of psychopathology as fathers are underrepresented in research examining parents of children with psychopathology (Cassano, Adrian, Veits, & Zeman, 2006). Overall, our data suggest that psychopathology in the fathers of children with ADHD has a profile similar to that of mothers.

A series of mixed model repeated measures ANCOVAs was carried out with ODD as the covariate, parent gender (mother, father) as the within subject factor and group (ADHD, comparison) as the between subject factor. It was hypothesized that both mothers and fathers of children with ADHD would report more ADHD symptoms than would mothers and fathers of children without ADHD. Based on the majority of previous studies, it was predicted that the rates of both depressive and anxiety symptoms would be higher for mothers of children with ADHD than mothers of children without ADHD, but would not differ significantly between the two groups of fathers. It was hypothesized that parents of children with ADHD would report greater somatic complaints than parents of children without ADHD. Based on previous studies, it

was hypothesized that mothers and fathers of children with ADHD would report higher rates of substance use than would parents of children without ADHD. It was hypothesized that parents of children with ADHD would report greater antisocial problems, but that this effect would be explained by co-occurring oppositional problems in the child. In general, we predicted that both mothers and fathers of children with ADHD would report significantly more psychopathology than would parents of children without ADHD, and subsequently, that children with ADHD would be more likely to have two parents with significant levels of psychopathology than would parents of children without ADHD.

ADHD. Results for parental ADHD problems were mixed and differed according to the assessment tool. Mothers' and fathers' responses to the screening version of the CAARS showed no differences between parents in the ADHD and comparison groups on any of the subscales. In contrast, both mothers' and fathers' responses to the ASR showed differences between the ADHD and comparison group in terms of AD/H problems, the ASR hyperactive/impulsive symptoms, and the ASR inattentive symptoms.

Findings in this study are not consistent with Epstein et al. (2000) who reported that biological parents of children with ADHD reported more symptoms on the CAARS than did biological parents of comparison children. A difference between this study and that of Epstein and colleagues (2000) is the version of the CAARS that was utilized. Epstein et al. used the 93 item full version of the CAARS whereas in the current study the 30 item screening version was used. The screening version of the CAARS was selected for this study, because studies have shown that like the long version, it has good discriminant validity (Conners, Erhardt, & Sparrow, 1999). This is the first study, to my knowledge that has examined symptoms of ADHD in both mothers and fathers of children with ADHD using the ASR. The results from the ASR are

consistent with findings reported using the CAARS (Epstein et al., 2000) and structured diagnostic interviews (Chronis et al., 2003; Faraone et al., 2000).

The discrepancy between the results obtained on the ASR and the CAARS-SV which is a specific measure of ADHD symptomatology was surprising. In both groups, there was less evidence of ADHD symptomatology reported on the CAARS-SV than on the ASR. One possible explanation is that it is possible that parents who were uncomfortable about their ADHD symptomatology may have found it easier to recognize that the CAARS-SV items refer to ADHD symptoms and hence been less willing to endorse these symptoms. Also, the ASR items were embedded in a larger set of items covering a range of psychological symptoms, whereas the CAARS-SV focuses solely on ADHD symptoms. Collett and colleagues (2003) found that scales that map onto DSM-IV criteria have high face validity, and it may not be difficult for a person to communicate an impression of having, or not having, ADHD symptoms. Several studies have also shown that individuals with ADHD tend to underreport their symptoms (Barkley, 1997; Jiang & Johnston, in press).

Internalizing Problems. Hypotheses were supported with respect to internalizing problems. For all three types of internalizing problems mothers and fathers of children with ADHD reported more problems than did mothers and fathers of comparison children. There were no significant interactions of group and parent gender and the covariate ODD was not significant for depression, anxiety, or somatic problems. Our results are consistent with previous studies (Johnston, 1996; Kashdan et al., 2004), which found that mothers of children with ADHD reported more depressive symptoms than did mothers of children without ADHD. In contrast to previous research (Johnston, 1996; Kashdan et al., 2004), the current study found that fathers of children with ADHD also differed significantly in terms of depressive symptoms from fathers of

children without ADHD. The discrepancy with previous studies may be partially explained by the fact that our depressive problems subscale was embedded in a global measure of psychopathology rather than a stand-alone depression measure such as the Beck Depression Inventory used by Kashdan and colleagues (2004). It appears as though differences may be detected using broad-band but not on narrowband measures of depression (Kashdan et al., 2004). This may be due to the fact that parents are less aware of what is being examined on a broadband measure as compared to a more specific measure. In addition, previous studies of fathers' symptoms of depression may be limited by the unequal and relatively small sample sizes relative to mothers (e.g., Kashdan et al., 2004 had 186 mothers, 66 fathers). Consistent with the findings reported by Nigg and Hinshaw (1998), elevated symptoms of anxiety were also found in mothers of children with ADHD compared to mothers of children without ADHD. However, in contrast to findings reported by Segenreich and colleagues (2009) who used stand alone measures of anxiety and depression (State-Trait Anxiety Inventory, the Beck Depression Inventory), fathers of children with ADHD also reported higher symptoms of anxiety than did fathers of comparison children. These group differences for fathers of children with ADHD are interesting findings as they suggest that fathers of children with ADHD may have similar symptoms of psychopathology as mothers of children with ADHD. Finally, a new finding in the current study is that mothers and fathers of children with ADHD reported more somatic complaints than did parents of children without ADHD. Although somatic complaints have not been studied in this population, it is not an altogether surprising finding given that children with ADHD report more somatic complaints than children without ADHD (Johnson et al., 2008). It is unknown whether these somatic complaints relate to poorer physical health, or are related to

stress. As this is a new cluster of symptoms to be examined in this population further research is needed to determine whether similar patterns are found in other populations.

Substance Use. There was partial support for hypotheses with respect to substance use with mothers and fathers in the ADHD group reporting smoking more than did mothers and fathers in the comparison group. This is consistent with previous studies that have shown increased tobacco use in mothers (Mick, Biederman, Faraone, Sayer, & Kleinman, 2002). The significant difference in smoking rates between parents of children with and without ADHD, if replicated, suggest that children with ADHD may be exposed to models of parental smoking and also to second-hand smoke. Exposure to second-hand smoke is a major concern as it can lead to many physical health consequences for children (e.g., acute respiratory infections, asthma) (Kabir et al., 2011). Furthermore, associations have been observed between prenatal tobacco smoke exposure and ADHD (Kotimaa et al, 2003) as well as the fact that children who are exposed to smoking postnatally have a twofold increased risk of ADHD (Herrmann, King, & Weitzman, 2008; Weitzman, Gortmaker, & Sobol, 1992).

Although there was a significant group by gender interaction for alcohol use there were no significant differences when post hoc testing was conducted. It is possible that the small sample size may account for this difference not reaching statistical significance. This difference may be more evident in a larger sample. Despite reports of increased substance use in the literature on parents of children with ADHD (McGough et al., 2005), this general finding of higher drug use was not replicated in the current study perhaps because our sample was comprised of relatively high functioning two-parent families.

Antisocial Problems. Contrary to hypotheses, there were no significant main effects, no parent gender effects and no interactions for antisocial problems, and ODD was not a significant

covariate for antisocial problems. These findings are not consistent with the findings reported by Pffiffer and colleagues (2001). A number of factors may explain the discrepancy. First, it is possible that the sample size was inadequate to detect a difference. Alternatively, the lack of evidence of antisocial problems in this sample may be a real one that is accounted for by the nature of the parents who participated in this study. Antisocial characteristics are highest in families in which fathers are absent (Pffiffer et al., 2001). Due to the study design, the present sample required that fathers attend the research session along with mothers, and therefore those fathers with antisocial traits are likely under-represented in the current sample.

Presence of borderline and clinical problems in both parents

Research suggests that psychological disturbance in both parents is associated with elevated levels of parental stress (Connell & Goodman, 2002). Previous studies examining the effect of having two parents with psychopathology suggest higher rates of externalizing disorders in children whose parents both exhibit mental health problems compared to children with only one affected parent (Dierker et al., 1999; Goodman, Brogan, Lynch, & Fielding, 1993; Reich, Earls, Frankel, & Shayka, 1993). Consistent with hypotheses, children with ADHD were more likely than comparison children to have two parents with clinically significant levels of psychopathology. The finding that many children with ADHD in the current study had two parents who reported difficulties in the borderline clinical or clinical is striking. This suggests that both parents of children of ADHD may be coping with their own psychological difficulties in addition to their child's ADHD. Although there were many filters involved in entering the study such as family cooperation and the fact that many children had received services before entering the study, it is noteworthy that there were high levels of symptoms in many parents of children with ADHD. It is also interesting to note that despite their own challenges parents of

children with ADHD did not have more child-rearing disagreements than did parents of children without ADHD and had a strong parental alliance. This suggests that these parents had found a way to work together despite their own psychological difficulties. Clinical implications of this finding will be discussed further below.

The current study is grounded in a transactional model in which parent characteristics and child characteristics have reciprocal effects on one another over time (Darling & Steinberg, 1993). Research suggests bi-directional influences between child and parental adjustment with the behavior of ADHD children influencing the behavior of their parents, which in turn exacerbate ADHD symptoms and potentiate the development of ODD and CD in the child (Danforth, Barkley, & Stokes, 1991). As ADHD may represent a shared genetic risk among family members it is important to consider the common genetic characteristics of parents and children (Biederman et al., 1995).

Parenting

Research has consistently underlined the importance of parents in the psychosocial development of children. Parenting is important as it is the major context in which child socialization occurs and specific parenting practices have been found to effect children's socialization (Grusec, 2011). Studies have shown that parenting is particularly important in children with disruptive behavior disorders such as ADHD and oppositional defiant disorder (ODD) (Harvey et al., 2001).

Contrary to my hypotheses, I did not find any group differences in positive involvement between parents of children with ADHD and parents of comparison children, but I found that across groups mothers reported higher positive involvement than did fathers. In terms of gender differences, past studies have found mixed results with regard to mothers' and fathers' positive

involvement with their children with ADHD, with some investigators reporting greater positive involvement by mothers (e.g., Pffner et al., 2005; Russell & Russell, 1994) and others finding greater positive involvement reported by fathers (e.g., Kashdan et al., 2004). Consistent with the findings reported by Pffner and colleagues (2005) mothers in both groups in the current study reported more positive involvement than did fathers. This may be explained by the common finding that mothers spend more time interacting with their children than do fathers even when both parents are present (e.g., Arnold et al., 1997). In this sample mothers reported working or going to school for 30 hours a week as compared to fathers who worked approximately 40 hours, which could have allowed mothers more time to be involved with their children.

Hypotheses with respect to ineffective discipline were only partially supported. Contrary to hypotheses, there were no significant differences between parents of children with and without ADHD in their self-reported laxness. This finding is not consistent with studies that have found more laxness in families of children with ADHD than in families of nondisordered children (Collett et al., 2001; Harvey et al., 2001; Seipp & Johnston, 2005). It is possible that this discrepancy may be explained by the fact that the majority of the families in the ADHD group had already received intervention which may have attenuated any possible group differences. There was however a significant main effect of parent gender for laxness, with mothers reporting more laxness than did fathers. The greater laxness in mothers' discipline techniques suggests a greater tendency for mothers to allow rules to go unenforced and avoid the stress associated with their child's misbehaviour (McKee et al., 2004). This could be explained by the fact that mothers in the sample spent more time with their children than fathers and perhaps as a result tended to overlook misbehaviour more often.

Consistent with predictions, mothers and fathers of children with ADHD reported higher overreactivity than did mothers and fathers of children without ADHD. There were no significant differences between mothers and fathers in terms of overreactivity. This replicates findings that mothers and fathers of children with ADHD report more problems with overreactivity than do mothers and fathers of nondisordered children (Collett et al., 2001; Harvey et al., 2001; Seipp & Johnston, 2005). The explanation that treatment may have attenuated some parenting problems does not explain group differences in overreactivity. One hypothesis is that it may be easier to alter laxness than it is to change overreactivity. It is possible that in response to clear commands and limits, children may initially respond with greater defiance, and this may provoke parental overreactivity.

I also examined links between the groups of mothers and fathers in terms of parenting. I found evidence for the similarity hypothesis with respect to positive involvement. It is possible that over the years they have adapted to the added challenges of raising a child with ADHD, and both exhibit positive involvement. There was partial support for the compensatory hypothesis with respect to ineffective discipline in that there was a significant correlation between mothers' self-reported overreactivity and the fathers' self-reported laxness. However there was no significant relationship for paternal overreactivity or for maternal laxness. This relationship between mothers' overreactivity and father laxness warrants further investigation. Although at low levels of intensity the pattern may not be problematic, at higher intensities there is a risk that it will exacerbate the child's behavior problems.

Coparenting

A strong coparental relationship provides parents with the resources to coordinate their parenting roles in ways that benefit their children (Behnke et al., 2008; Feinberg, 2002; Gable,

Belsky, & Crnic, 1992). Research has shown that parents who feel more secure about themselves and are less reactive are more likely to be able to work flexibly with their partner in coparenting and are less likely to critically undermine their partner (McHale & Lindhal, 2011). In the current study I did not find any evidence for problems in coparenting in families of children with ADHD. Parents of children with ADHD and comparison children did not differ in the extent to which they disagreed about child-rearing, or in the strength of the parental team. It is speculated that by asking both parents to take part in the study, I may have reached a subgroup of parents who cooperate well in parenting; in fact the levels of parental teamwork reported in both groups were high compared to normative samples. This sample is ideal in terms of their suitability for interventions requiring parental involvement as both parents were able to work well together in order to parent their child.

Disagreement over child-rearing is a common source of conflict between parents. Children have been found to be particularly sensitive to disagreements that related to them (Grych & Fincham, 1990). My hypothesis that there would be increased child-rearing disagreement among parents of children with ADHD as compared to comparison parents was not supported. This is contradictory to findings of Johnston and Behrenz (1993) who found that mothers and fathers of ADHD children exhibited less positive and more negative communications than did parents of non disordered children. A major difference between these two studies is the methodology; Johnston and Behrenz observed parent's discussions, rather than using a self-report therefore differences in the studies findings may reflect discrepancies between observer and self-report measures. Differences between observation and self-report have been found in other studies of conflict. It was suggested that self-reports of conflict strategies may differ from observations because people may not be aware of their behaviors, and their reports

may not reflect what they actually do as accurately as observations (Pietromonaco & Greenwood, 2004).

Parents who describe their parenting alliance as strong report that they engage in shared decision making and have respect for each other's parenting abilities (Frank, Butler-Hole, Jacobson, Justkowski, & Huyck, 1986). There were no significant differences in reported parental alliance between mothers and fathers of children with and without ADHD. In fact, the parental alliance in this sample was very strong for mothers and fathers of children with and without ADHD according to the normative data on the measure ($M = 80.8$, $SD = 13.6$). This is positive as parents' ability to value their child's other parent in their role as a parent has important implications, as disrupted parental alliance and low levels of respect for the other parent are associated with poor parenting practices and more negativity in interactions with children (Davies, Struge-Apple, & Cummings, 2004; Feinberg, Kan, & Hetherington, 2007). The current results for parental alliance were consistent with the data reported by Abidin and Konold, (1999) who indicated that the quality of the alliance in parents of ADHD children was similar to the parental alliance of the normative group. Abidin and Konold (1999) interpreted the strong parental alliance in families of children with ADHD as related to the fact that these parents had all agreed to participate in their child's treatment and had attended parent education classes. Many of the families in our sample had already received services to help the child which may have enhanced their alliance. Furthermore, the fact that the majority of parents in our sample are married may have impacted the results as studies have found that in both normative and clinical samples, married parents reported the more positive alliance, when compared to separated and divorced parents (Abidin & Konold, 1999). It has been suggested that good coparenting may promote a sense of security within the family and allows children to focus instead on controlling

their own emotions and behaviours (Schoppe-Sullivan, Weldon, Cook, Davis, & Buckley, 2009). It is likely that having a supportive family environment as well as parents who support one another and send the same messages to their children is helpful.

Parental Psychopathology and Parenting

In order to integrate the existing research on family systems within developmental psychopathology it is important to understand the relationship between coparenting, parenting, and parental psychopathology (Feinberg, Kan, & Hetherington, 2007). An area of both clinical and research interest is whether parents' symptoms of psychopathology are associated with their parenting. As the majority of studies linking parental psychopathology with parenting have investigated the impact of mothers' psychopathology on parental behaviour, in the current study I attempted to expand the literature to include the impact of psychopathology on father's parenting.

Overall, there was limited support for my predictions. There was no evidence that positive involvement was linked to parental depressive symptoms or to paternal avoidance. It is possible that there is a relationship which was not large enough to be detected in the current sample. Power calculations indicate that with a sample of 45 there was adequate power to detect a large effect size, but limited power to detect a smaller effect. Although I predicted links between all types of psychopathology and lax parenting, this was only found in terms of a significant correlation between fathers' self-reported avoidant personality problems and fathers' self-reported lax parenting. As individuals with avoidant problems tend to be sensitive to rejection and are reluctant to become involved with others (APA, 2000), it is possible that fathers who have avoidant symptoms would take a more lax approach to parenting to avoid rejection and interaction with their children. A connection between laxness and avoidance in fathers was

demonstrated in a study by McKee and colleagues (2004) which examined parenting before and after intervention and found that lax parenting measured after parent training was greater in fathers who used more avoidant–focused coping. The hypothesis that parental ADHD would be associated with overreactivity was not supported.

Parental Psychopathology and Coparenting

There was partial support for hypotheses linking psychopathology to child rearing disagreements. For mothers, ratings of child-rearing disagreements were significantly correlated with mothers' reports of somatic and antisocial problems. Paternal ratings of child-rearing disagreement were significantly correlated with fathers' self-reported anxiety, avoidance, ADHD, hyperactive/impulsive and antisocial problems. This preliminary evidence of an association between paternal psychopathology and child-rearing disagreement is an important contribution to the literature as it underlines the importance of examining fathers' symptoms and how they relate to coparenting.

I originally hypothesized an inverse link between parental antisocial problems and the parental alliance. However, parents in the ADHD group did not report greater antisocial problems than did parents in the comparison group. The restricted range for antisocial problems would likely attenuate any correlations with the parental alliance. Nevertheless, consistent with hypotheses there was an inverse relationship between fathers' antisocial problems and the parental alliance. There was no support for such an inverse relationship for mothers. Furthermore the hypothesis of an inverse relationship between paternal avoidance and the parental alliance was supported. These findings suggest that parental teamwork may be more challenging in families in which fathers have antisocial or avoidant problems.

Inclusion of Fathers

Currently there is less research on fathers in families of children with ADHD than there is on mothers. This is consistent with research in the field of parenting that has relied heavily on reports from mothers. This selective research focus has led to fathers' parenting being overlooked (Cowan & Cowan, 2002). A major contribution of the current study was the inclusion of paternal self-reported psychopathology, parenting and coparenting. Although recruitment was likely more difficult due to the requirement that both mothers and fathers were willing to participate, the inclusion of fathers allowed for the examination of patterns of psychopathology, parenting and coparenting in a sample of fathers of children with and without ADHD. As we know far less about fathers as a whole, the inclusion of fathers in the present study provided information about the similarities in self-reported psychopathology of fathers compared to mothers. The finding that fathers of children with ADHD also experience more symptoms of depression and anxiety contributes to the growing literature on the effects of paternal psychopathology on children. In addition, comparing groups of mothers and fathers according to their involvement, use of ineffective discipline and positive and negative aspects of coparenting reveals some similarities as well as differences between parents which is helpful information when attempting to intervene with these families. Although research to date has focused on paternal externalizing problems, results of this study suggest that they are not immune from internalizing problems. Preliminary findings suggest that paternal avoidance may be an important focus for future study, as it appears to be related to laxness in fathers, overreactivity in mothers, increased child-rearing disagreement and a poorer parental alliance.

Strengths and Limitations

A strength of the current study is the inclusion of both mother and father reports. The inclusion of direct father reports is absent from the majority of studies on families of children

with ADHD. Furthermore, the children's strict criteria for diagnosis of ADHD ensured that the children in the current study are in fact children who have ADHD. In addition, when examining the Conners' Parent and Teacher Rating Scales it becomes evident that this sample consists of children who are well above the threshold of a *T*-score of 65, with most *T*-scores being 70 or higher. This suggests that this is a sample of children with fairly severe symptoms of ADHD and therefore represents the population with the greatest treatment needs.

This study has several limitations, the most important of which is the small sample size. Although the original study design included three groups of 35-40 children (ADHD, ADHD/ODD and comparison) there were too few children who met the diagnostic criteria for ADHD alone ($N=10$) and comorbid ADHD/ODD ($N=15$) to form three distinct groups. Therefore children with ADHD and comorbid ODD had to be combined into one group and ODD used as a covariate in the analyses.

A second limitation was related to the sample of participants. Despite significant recruitment efforts, great difficulties were encountered with respect to participant recruitment. Through a variety of recruitment strategies, flexibility and persistence, data were obtained on a small sub-set of families with a child with ADHD. The additional challenges of including both parents, proved to be a significant barrier to research participation as it required not only willingness of each parent to participate, but also willingness to work together. This may also have yielded a higher-functioning subsample of the population. Therefore it is important to be cautious in generalizing results to the larger population. It is possible that this sample represents a resilient sub-group of families with a child with ADHD.

Although the study was designed to recruit families at the intake stage, before they began receiving services, it was difficult to do so, as the period required for diagnosis and referral to the

study often took many months. In the current sample, 56% of families with a disordered child had received some type of services (individual or family counselling, parenting program, support group, special help at school) and 56% had consulted with a professional about their child's behavioural difficulties (paediatrician, family physician, psychiatrist, psychologist, social worker, behavioural consultant). If it is assumed that mental health services have a beneficial effect on parenting, coparenting, and perhaps parental psychological symptoms, this could have attenuated group differences.

The ethnic composition of the current sample was primarily White (84%) and therefore it is unknown whether the findings may generalize to other ethnic groups. The low inclusion of ethnic minority children and families in all child psychopathology research is a major concern that needs to be addressed in future work, as the generalizability of findings to non-White children and families is unknown. It is noteworthy however that a study on Iranian children found elevated ADHD symptoms in fathers and mood and anxiety disorders in mothers (Ghanizadeh, Mohammadi, & Moini, 2008). Finally, this sample consisted of families who were from a higher socio-demographic group with a mean family income of \$80 000-\$89 000 CDN. It is possible that results may not be applicable to families from economically disadvantaged backgrounds.

Future Directions

The limitations of the current study suggest important directions for future work. Although families who agreed to participate found the study engaging and pleasant, it was very difficult to move parents from the stage of interest in the study, to actually scheduling and completing the procedure. Some families completed only the questionnaires, but even this seemed to be a challenge for many families. Based on the difficulties encountered in the current

study in recruiting this clinical population it is thought that these types of questions may be best addressed by fully integrating assessment measures into clinic procedures. Overall attempting to obtain data from two parents, teachers, and children with ADHD means that there is no perfect recruitment method. Each option has its strengths and limitations which need to be considered prior to designing future studies.

There are several potential consequences of using criteria for diagnosis of ADHD that are stricter than those used by local clinicians. Results from studies focusing on pure cases of disorders in children may be of limited generalizability to the general population of children experiencing problems (Connell & Goodman, 2002). In addition, stricter criteria make recruitment more challenging. On the other hand, the value of using stricter criteria is that it ensures that this is a sample of children who in fact meet DSM-IV-TR diagnostic criteria for ADHD.

The decision of whether to use of the screening version of the CAARS in future studies versus the full length scale is complicated. The CAARS:SV is a logical choice in studies where several measures are required of participants due to the limited time required to complete this measure. Studies using the CAARS:SV were able to discriminate 37 (6%) outpatients with ADHD from 538 (94%) who were not diagnosed with ADHD (Steer, Ranieri, Kumar, & Beck, 2003). In contrast, in a sample of psychiatric inpatients Kumar and colleagues (2011) found that the CAARS –S:SV Total Scale was most effective in screening psychiatric inpatients for whether they do not meet DSM -IV–TR criteria for ADHD. It is difficult to ascertain whether the lack of significant differences in the current sample is due to aspects of the measure itself or the small sample size which makes it difficult to detect group differences. As has been suggested by other researchers, it appears as though more research is needed to establish the utility of the CAARS

with adults (Murphy & Adler, 2004). Using the screening version of the CAARS in a larger sample of families of children with ADHD would contribute significantly to furthering research on this measure.

There are several potential benefits of using a broadband scale to measure a range of psychopathology rather than using a series of scale for specific problems. First, the ASR can be completed in 15-20 minutes and would be more time efficient than using a number of different scales. In addition, it is possible that when items are embedded in a questionnaire about different types of pathology participants may be less likely to under-report symptoms due to stigma about a particular type of problem.

The mean age of the children in the present study was 8.49 years. As the diagnostic criteria for ADHD requires that symptoms of ADHD be present before the age of seven (APA, 2000), it would have been interesting to recruit families with younger children who had not yet been diagnosed with ADHD. This likely would have reduced the number of families who were receiving or had completed treatment at the time of the study; however this would likely be a difficult sample to recruit.

The current sample of children with ADHD was restricted to the most common form, ADHD combined type. It would be interesting in future studies to investigate children with ADHD primarily inattentive type as well as children with ADHD hyperactive/impulsive type of ADHD and the links with parental psychopathology, parenting and coparenting to establish if similar trends are found. In addition, the present study focused on children with ADHD only due to a small number of children with comorbid diagnoses of ODD. However, research suggests that there may be differences between parental psychopathology in parents of children with both

ADHD and Oppositional Defiant Disorder (ODD). Future studies should attempt to include a larger group of children with comorbid ADHD/ODD.

Some possible reasons for parents' reluctance to participate in the current study could include the stigma about ADHD and also a worry that they will be blamed for their child's difficulties. It is apparent that parents do not participate in our research if they feel blamed or if they fear their children will be automatically medicated if they choose to come to a clinic. Future studies might be able to reach families through primary care sources or by having these questionnaires included in a cohort study. In the future it would be useful to include the parenting and coparenting measures as part of the routine battery of measures given to clients. This would likely increase the participation of families in similar studies and also ensure that information is received from families at the beginning stages of their assessment. Future studies would benefit from the inclusion of a more diverse sample of participants. Including homosexual couples would also allow researchers to determine if results vary from that of heterosexual couples. This diversity could include alternative family groups (e.g., divorced blended, single-parent families), residential status (resident, nonresident) and relation to child (biological, nonbiological). The current study included married (91%), common-law (2.2%), and separated (6.7%) mothers and fathers and therefore did not have a great deal of diversity. Only three of the fathers were nonresidential fathers and therefore it was not possible to compare results according to the residential status of the father. Future studies should attempt to reach a greater number of nonresidential fathers. It would also be interesting to examine the possibility of differences between single and dual parent families. Finally, expanding on the cultural and socio-economic diversity of participants would help improve the ability of these results to be generalized. Although the above mentioned suggestions might provide interesting

findings, it is likely not realistic to expect to recruit large samples of these populations. Analyses of recorded interactions gathered as part of this study, that were not part of the thesis found that parents with ADHD overreported their positive parenting and were more positive in their self-report than in recorded interactions. Therefore in future studies it would be advantageous to also include recorded interactions of parents as well as to assess parenting behaviours in more naturalistic settings. The possibility of examining parenting in more natural environments is made easier by technology such as cell phone cameras, online posting and digital prompts that allow researchers to obtain samples of parent-child interactions (Johnston, Mash, Miller, & Ninowski, 2012).

The present study was cross sectional in nature and therefore conclusions and causality could not be drawn. Given that child ADHD and parental psychopathology likely contribute to each other in a transactional manner, longitudinal studies that examine how child ADHD and parental psychopathology interact over time to contribute to the development of both parenting and coparenting behaviours are necessary.

Implications for Practice

Despite these limitations, the findings reported in current study clearly demonstrate a number of important clinical implications for the treatment of children with ADHD. First, because parents are required to implement treatment for their children, parent factors should not be considered secondary in clinical practice and treatment planning (Hoza et al., 2000). In addition, parental problems predict poor treatment compliance and less favorable treatment outcomes (Hoza et al., 2000). As self-reported symptoms of psychopathology assessed in the current study follow a persistent (e.g., ADHD) or recurrent course (e.g., depression), even associations with lifetime parental disorders may contribute to less optimal treatment outcomes.

Treatment strategies addressing parental psychopathology may be important for improving parent and family functioning and reducing child impairment (Harrison & Sofronoff, 2002). The findings from the present study that mother and fathers of children with ADHD reported more symptoms of ADHD and internalizing problems than parents of children without ADHD underscore the importance of evaluating family and parent needs when developing intervention strategies for children struggling with ADHD. This study has allowed us to recognize the necessity of implicating not only the child but also the parents in services to improve symptoms related to ADHD. Involving parents in children's treatment is supported by anecdotal evidence which suggests that maternal ADHD symptoms are related to treatment outcome for children with ADHD. Successful treatment of the mother's ADHD symptoms with methylphenidate yielded improvements in mother-child interaction in an infant (Daly & Fritsch, 1995) and in a child with ADHD (Evans, Vallano & Pelham, 1994). Moving beyond case studies, Sonuga-Barke, Daley and Thompson (2002) examined ADHD symptoms in a group of mothers receiving parent training to deal with their pre-school age children with ADHD. Mothers with high levels of ADHD symptomatology evidenced no improvement following training, whereas mothers with low or moderate ADHD symptoms demonstrated substantial improvement. There is a body of accumulating evidence that ADHD may be elevated among mothers and fathers of children with ADHD. Furthermore, ADHD symptoms may interfere with parenting tasks and with the ability to benefit from standard parent training. In addition, parental ADHD symptoms may be related to impairments in the co-parental relationship, as adult ADHD is associated with interpersonal difficulties (Fischer et al., 2002). Knowledge of recent research on parenting associated with child and adult disorders may allow clinicians to detect and pinpoint problematic parent behaviour (Berg-Nielsen, Vikan, & Dahl, 2002). It is important for clinicians

to be aware of parental psychopathology which can become a target for clinical interventions that may reduce the overall severity of disorder burden. An interesting finding is the fact that fathers with children with ADHD are also susceptible to higher depression and anxiety. Studies have shown this effect with mothers but the father's perspective was often absent from these studies.

Due to parent's self-reported difficulties, the examination of mothers and fathers symptoms as part of a child's comprehensive ADHD assessment seems warranted. It is important to consider assessment of the parental psychological aspects together with the assessment of ADHD children in developing a comprehensive treatment program. The results of this study help inform intervention programs at the parental level and provide information for modifying interventions. Understanding the factors that are associated with parents' use of dysfunctional discipline strategies may allow clinicians to increase the effectiveness of parent training programs (McKee et al., 2004). As it has been found that parents of children with ADHD experience more symptoms of ADHD, depression and anxiety, information about these difficulties may need to be included in parenting interventions. In addition, the traditional method of delivering parenting information in a group format may not be the most suitable for parents who may have difficulty paying attention in groups or for an extended period of time. Greater creativity with interventions may be needed to reach these families such as using online or videotaped interventions.

Parenting behaviours are of clinical significance because they can affect children's long-term development. Overreactive parenting has been found to contribute to the development of conduct problems (Patterson, 2002), and increased parental laxness has been associated with later mood and conduct problems as well as criminal behavior in teens (August et al., 1999; Kim et al., 2003). As we found a difference between overreactive parenting in parents of children

with and without ADHD this is an important consideration for parenting interventions. Self-reported overreactive parenting has been found to be associated with repeated, vague, and indirect instructions during subsequent observations (Guajardo, Snyder & Petersen, 2008) which may need to be addressed in families of children with ADHD. Furthermore, the negative consequences of ineffective parenting underscore the importance for clinicians to utilize parenting measures when working with families. Brief measures such as the Parenting Scale and Alabama Parenting Questionnaire could serve as useful tools for clinicians as they allow for the identification of problematic parenting with minimal time commitment. They could also guide professional advice in targeting specific ineffective parenting strategies such as the reduction of overreactive parenting and/or improving laxness by increasing monitoring and consistency (Freeman & DeCoursey, 2007).

If clinicians are aware of any existing psychopathology in the parents, these difficulties may also need to be targeted in clinical interventions. In addition, comorbidity in the parents, in particular comorbidity of ADHD and mood disorders, may lead to more complex cases associated with reduced therapeutic efficacy and a poorer ADHD outcome in children (Hoza et al., 2000; Wilens et al., 2002). Treatment strategies directed toward parental psychiatric diagnosis (e.g., parental ADHD, mood disorders, substance abuse) may also be important for improving parent and family functioning and reducing child impairment.

Conclusion

Despite difficulties with recruitment and a relatively small sample size, the current study sheds new light on some of the aspects of parental psychopathology, parenting and coparenting that have been overlooked. Given the small sample size these findings are preliminary. Notably, this study provides insight into fathers' symptoms of parental psychopathology and demonstrates

that in general fathers of children with ADHD report similar symptoms of psychopathology as mothers. These findings highlight the potential benefits of screening of parents and underscore the importance of supporting both mothers and fathers of children with ADHD, in addition to helping their children. Furthermore, the finding that paternal avoidant behaviour is significantly associated with paternal laxness in parenting is a novel and interesting finding. Finally, the fact that child-rearing disagreements in fathers are positively related to father self-reports of avoidant, ADHD and antisocial problems and that parental alliance is negatively associated with avoidant and antisocial problems provides new information on the effects of paternal psychopathology on coparenting.

References

- Abidin, R. R., & Brunner, J. F. (1995). Development of a Parenting Alliance Inventory. *Journal of Clinical Child Psychology, 24*, 31-40.
- Abidin, R. R., & Konold, T. (1999). *Parenting Alliance Measure - Professional Manual*. Odessa, FL: Psychological Assessment Resources.
- Achenbach, T. M., & Rescorla, L. A. (2003). *Manual for the ASEBA adult forms & profiles*. Burlington, VT: University of Vermont, Research Center for Children, Youth, & Families.
- Amato, P. R., & Gilbreth, J. G. (1999). Nonresident fathers and children's well-being: A meta-analysis. *Journal of Marriage and the Family, 61*, 557-573.
- American Psychiatric Association (2000). *Diagnostic and Statistical Manual of Mental Disorders, 4th edition-text revision*. Washington, DC: Author.
- Arnold, D. S., O'Leary, S. G., Wolff, L. S., & Acker, M. M. (1993). The Parenting Scale: A measure of dysfunctional parenting in discipline situations. *Psychological Assessment, 5*, 137-144.
- Arnold, E. H., O'Leary, S. G., & Edwards, G. H. (1997). Father involvement and self-reported parenting of children with Attention Deficit-Hyperactivity Disorder. *Journal of Consulting and Clinical Psychology, 65*, 337-342.
- August, G. J., Realmuto, G. M., MacDonald, A. W., Nugent, S. M., & Crosby, R. (1996). Prevalence of ADHD and comorbid disorders among elementary school children screened for disruptive behavior. *Journal of Abnormal Child Psychology, 24*, 571-596.
- August, G. J., Realmuto, G. M., Joyce, T., & Hektner, J. M. (1999). Persistence and desistance of

- oppositional defiant disorder in a community sample of children with ADHD. *Journal of the American Academy of Child and Adolescent Psychiatry*, 38, 1262–1270.
- Barkley, R. A. (1997). Age dependent decline in ADHD: True recovery or statistical illusion? *The ADHD Report*, 5, 1-5.
- Barkley, R. A. (2006). Primary symptoms, diagnostic criteria, prevalence, and gender differences. In R.A. Barkley (Ed.), *Attention-deficit hyperactivity disorder: A handbook for diagnosis and treatment* (3rd Ed.) (pp. 76-121). New York, NY: The Guilford Press.
- Barkley, R. A., Fischer, M., Smallish, L., & Fletcher, K. R. (2002). The persistence of attention deficit hyperactivity disorder into young adulthood as a function of reporting source and definition of disorder. *Journal of Abnormal Psychology*, 111, 279–289.
- Bearss, K., & Eyberg, S. (1998). A test of the parenting alliance theory. *Early Education and Development*, 9, 179–185.
- Behnke, A. O., MacDermid, S. M., Coltrane, S. L., Parke, R. D., Duffy, S., & Widaman, K. F. (2008). Family cohesion in the lives of Mexican American and European American parents. *Journal of Marriage and the Family*, 70, 1045-1059.
- Berg-Nielsen, T. S., Vikan, A., & Dahl, A. A. (2002). Parenting related to child and parental psychopathology: A descriptive review of the literature. *Clinical Child Psychology and Psychiatry*, 7, 529-552.
- Biederman, J., Faraone S. V., Keenan, K., Knee, D., & Tsuang, M. T. (1990). Family, genetic and psychosocial risk factors in DSM-III attention deficit disorder. *Journal of the American Academy of Child and Adolescent Psychiatry*, 29, 526-533.
- Biederman, J., Faraone, S. V., Mick, E., Spencer, T., Wilens, T., Kiely, K. et al., (1995). High

- risk for attention deficit hyperactivity disorder among children of parents with childhood onset of the disorder. *American Journal of Psychiatry*, 152, 431-435.
- Bouchard, G., Lee, C. M., Asgary, V., & Pelletier, L. G. (2007). Fathers' motivation for involvement with their children: A self-determination theory perspective. *Fathering*, 5, 25-41.
- Brennan, P. A., Hammen, C., Katz, A. R., & LaBrocque, R. M. (2002). Maternal depression, paternal psychopathology, and adolescent diagnostic outcomes. *Journal of Consulting and Clinical Psychology*, 70, 1075-1085.
- Bronfenbrenner, U. (1986). Ecology of the family as a context for human development: Research perspectives. *Developmental Psychology*, 22, 723-742.
- Brown, R. T., Freeman, W. S., Perrin, J. M., Stein, M. T., Amier, R. W., Feldman, H. M., Wolraich, M. L. (2001). Prevalence and assessment of attention-deficit/hyperactivity disorder in primary care settings. *Pediatrics*, 107, e43.
- Buhrmester, D., Camparo, L., Christensen, A., Gonzalez, L. S., & Hinshaw, S. P. (1992). Mothers and fathers interacting in dyads and triads with normal and hyperactive sons. *Developmental Psychology*, 28, 500-509.
- Buss, D. M. (1989). Sex differences in human mate preferences: Evolutionary hypotheses tested in 37 cultures. *Behavioral and Brain Sciences*, 12, 1-49.
- Campbell, S. B. (1994). Hard-to-manage preschool boys: Externalizing behavior, social competence, and family context at two year follow up. *Journal of Abnormal Child Psychology*, 22, 147-166.
- Campbell, S. B. (2000). Attention-Deficit/Hyperactivity Disorder: A developmental view. In

- A.J. Sameroff, M. Lewis, & S. M. Miller (Eds.), *Handbook of developmental psychopathology* (2nd ed., pp. 383-401). New York: Kluwer Academic/Plenum.
- Campbell, S. B., Breaux, A. M., Ewing, L. J., Szumowski, E. K., & Pierce, E. W. (1986). Correlates and predictors of hyperactivity and aggression: A longitudinal study of parent-referred problem preschoolers. *Journal of Abnormal Child Psychology*, 14, 217-234.
- Cassano, M., Adrian, M., Veits, G., & Zeman, J. (2006). The inclusion of fathers in the empirical investigation of child psychopathology: An update. *Journal of Clinical Child and Adolescent Psychology*, 35, 583-589.
- Chronis, A. M., Lahey, B. B., Pelham, W. E., Kipp, H. L., Baumann, B. L., & Lee, S. S. (2003). Psychopathology and substance abuse in parents of young children with Attention Deficit/Hyperactivity Disorder. *Journal of the American Academy of Child and Adolescent Psychiatry*, 42, 1424-1432.
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112, 155-159.
- Collett, B. R., Gimpel, G. A., Greenson, J. N., & Gunderson, T. L. (2001). Assessment of discipline styles among parents of preschool through school-age children. *Journal of Psychopathology and Behavioral Assessment*, 23, 163-169.
- Collett, B. R., Ohan, J., & Myers, K. (2003). Ten-year review of rating scales. V: Scales assessing Attention-Deficit/Hyperactivity Disorder. *Journal of the American Academy of Child and Adolescent Psychiatry*, 42, 1015-1037.
- Connell, A. M., & Goodman, S. H. (2002). The association between psychopathology in fathers versus mothers and children's internalizing and externalizing behavior problems: A meta-analysis. *Psychological Bulletin*, 128, 746-773.
- Conners, C. K., Erhardt, D., & Sparrow, E. (1999). *Conners' Adult ADHD Rating scales*

- (CAARS). North Tonawanda, NY. Multi-Health Systems.
- Contrada, R. J. (2011). Stress, Adaptation and Health. In R. J. Contrada & A. Baum (Eds), *The handbook of stress science: Biology, psychology, and health* (pp. 1-9). New York: Springer Publishing Company.
- Costigan, C., Floyd, F., Harter, K., & McClintock, J. (1997). Family process and adaptation to children with mental retardation: Disruption and resilience in family problem-solving interactions. *Journal of Family Psychology, 11*, 515–529.
- Cowan, P. A., & Cowan, C. P. (2002). Interventions as tests of family systems theories: Marital and family relationships in children's development and psychopathology. *Development and Psychopathology, 14*, 731-759.
- Cummings, E. M., Goeke-Morey, M. C., & Raymond, J. A. (2004). Fathers in family context: Effects of marital quality and marital conflict. In M. E. Lamb (Ed.), *The role of the father in child development, fourth edition*. (pp. 196-221). Hoboken, NJ: Wiley.
- Dadds, M. R., & Powell, M. B. (1991). The relationship of interparental conflict and global marital adjustment to aggression, anxiety, and immaturity in aggressive and nonclinic children. *Journal of Abnormal Child Psychology, 19*, 553-567.
- Daley, D. (2006). Attention deficit hyperactivity disorder: a review of the essential facts. *Child: care, health and development, 32*, 193-204.
- Daly, J. M., & Fritsch, S. L. (1995). Case study: Maternal residual Attention Deficit Disorder associated with failure to thrive in a two-month-old infant. *Journal of the Academy of Child and Adolescent Psychiatry, 34*, 55-57.
- Danforth, J.- S., Barkley, R. A., & Stokes, T. F. (1991). Observations of parent-child interactions

- with hyperactive children: Research and clinical implications. *Clinical Psychology Review*, 11, 703-727.
- Darling, N., & Steinberg, L. (1993). Parenting style as context: An integrative model. *Psychological Bulletin*, 113, 487-496.
- Davies, P. T., Sturge-Apple, M. L., & Cummings, E. M. (2004). Interdependence among interparental discord and parenting practices: The role of adult attributes and relationship characteristics. *Development and Psychopathology*, 16, 773-797.
- Dierker, L., Merikangas, K., & Szatmari, P. (1999). The influence of parental diagnostic concordance on risk for psychopathology in offspring. *Journal of the American Academy of Child and Adolescent Psychiatry*, 33, 280-288.
- Ellis, B., & Nigg, J.T. (2009). Parenting practices and Attention-Deficit/Hyperactivity Disorder: Partial specificity of effects. Ellis, B., Nigg, J.T. (2009). Parenting practices and Attention-Deficit/Hyperactivity Disorder: Partial specificity of effects. *Journal of the American Academy of Child and Adolescent Psychiatry*, 48, 146-154.
- Epstein, J. N., Conners, C. K., Erhardt, D., Arnold, L. E., Hechtman, L., Hinshaw, S. P., Hoza, B., Newcorn, J. H., Swanson, J. M., & Vitiello, B. (2000). Familial aggregation of ADHD characteristics. *Journal of Abnormal Child Psychology*, 28, 585-594.
- Evans, S. W., Vallano, G., & Pelham, W. (1994). Treatment of parenting behavior with a psychostimulant: A case study of an adult with Attention-Deficit/Hyperactivity Disorder. *Journal of Child and Adolescent Psychopharmacology*, 4, 63-69.
- Faraone, S.V. & Biederman, J. (2000). Nature, nurture, and attention deficit hyperactivity disorder. *Developmental Review*, 20, 568-581.
- Faraone, S. V., Biederman, J., Feighner, J. A., Monteaux, M. C. (2000). Assessing

- symptoms of attention deficit hyperactivity disorder in children and adults: Which is more valid? *Journal of Consulting and Clinical Psychology*, 68, 830-842.
- Faraone, S. V., Biederman, J., & Mick, E. (1997). Symptom reports by adults with attention deficit hyperactivity disorder: are they influenced by attention deficit hyperactivity disorder in their children? *Journal of Nervous and Mental Disease*, 185, 583-584.
- Feinberg, M. E. (2002). Coparenting and the transition to parenthood: A framework for prevention. *Clinical Child and Family Psychology Review*, 5, 173-195.
- Feinberg, M. E. (2003). The internal structure and ecological context of coparenting: A framework for research and intervention. *Parenting: Science and Practice*, 3, 95-131.
- Feinberg, M. E., Kan, M. L., & Hetherington, E. M. (2007). Longitudinal study of coparenting conflict on adolescent maladjustment. *Journal of Marriage and Family*, 69, 687-702.
- Fischer, M., Barkley, R. A., Smallish, L., & Fletcher, K. (2002). Young adult follow-up of hyperactive children: Self-reported psychiatric disorders, comorbidity, and the role of childhood conduct problems. *Journal of Abnormal Child Psychology*, 30, 463-475.
- Foley, D., Pickles, A., Simonoff, E., Maes, H., Silberg, J., Hewitt, J., & Eaves, L. (2001). Parental concordance and comorbidity for psychiatric symptoms and disorders in a community sample of juvenile twins. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 42, 381-394.
- Frank, S., Butler-Hole, C., Jacobson, S., Justkowski, R., & Huyck, M. (1986). Psychological predictors of parents' sense of confidence and control and self- versus child-focused gratifications. *Developmental Psychology*, 22, 348-355.
- Freeman, K. A., & DeCoursey, W. (2007). Further Analysis of the Discriminate Validity of the Parenting Scale. *Journal of Psychopathology and Behavioral Assessment*, 29, 169-176.

- Gable, S., Belsky, J., & Crnic, K. (1992). Marriage, parenting, and child development: Progress and prospects. *Journal of Family Psychology, 5*, 276-294.
- Gerdes, A. C., Hoza, B., & Pelham, W. E. (2003). Attention-deficit/hyperactivity disorder boys' relationships with their mothers and fathers: Child, mother and father perceptions. *Development and Psychopathology, 15*, 363-382.
- Ghanizadeh, A., Mohammadi, M. R. & Moini, R. (2008). Comorbidity of psychiatric disorders and parental psychiatric disorders in a sample of Iranian children With ADHD. *Journal of Attention Disorders, 12*, 149-155.
- Goodman, S., Brogan, D., Lynch, M., & Fielding, B. (1993). Social and emotional competence in children of depressed mothers. *Child Development, 64*, 516-531.
- Grusec, J. E. (2011). Socialization Processes in the Family: Social and Emotional Development. *Annual Review of Psychology, 62*, 243-269.
- Grych, J. H., & Fincham, F. D. (1990). Marital conflict and children's adjustment: A cognitive-contextual framework. *Psychological Bulletin, 108*, 267-290.
- Guajardo, N. R., Snyder, G., & Petersen, R. (2008). Relationships among parenting practices, parental stress, child behavior, and children's social-cognitive development. *Developmental Psychology, 18*, 37-60.
- Harpin, V. A. (2005). The effect of ADHD on the life of an individual, their family, and community from preschool to adult life. *Archives of Disease in Childhood, 90*, i2-i7.
- Harrison, C., & Sofronoff, K. (2002). ADHD and parental psychological distress: role of demographics, child behavioral characteristics, and parental cognitions. *Journal of the American Academy of Child and Adolescent Psychiatry, 41*, 703-11.
- Hartsough, C. S. & Lambert, N. M. (1985). Medical factors in hyperactive and normal

- children: prenatal, developmental, and health history findings. *Health & Behavioral Clinical Psychology*, 55, 190-201.
- Harvey, E. A. (2000). Parenting similarity and children with Attention-Deficit/Hyperactivity Disorder. *Child and Family Behaviour Therapy*, 22, 39-54.
- Harvey, E., Danforth, J. S., McKee, E., Ulaszek, W. R., & Friedman, J. L. (2003). Parenting of children with Attention-deficit/hyperactivity disorder (ADHD): The role of parental ADHD symptomatology. *Journal of Attention Disorders*, 7, 31–41.
- Harvey, E., Danforth, J. S., Ulaszek, W. R., & Eberhardt, T. L. (2001). Validity of the parenting scale for parents of children with attention-deficit/hyperactivity disorder. *Behaviour Research and Therapy*, 39, 731-743.
- Herrmann, M., King, K., Weitzman, M. (2008). Prenatal tobacco smoke and postnatal secondhand smoke exposure and child neurodevelopment. *Current Opinions in Pediatrics*, 20, 184–190.
- Hetherington, E. M., Cox, M., & Cox, R. (1982). Effects of divorce on parents and children. In M. Lamb (Ed.), *Nontraditional Families* (pp. 223-288). Hillsdale, N.J.: Erlbaum.
- Hinshaw, S. P., Zupan, B. A., Simmel, C., Nigg, J. T., & Melnick, S. (1997). Peer status in boys with and without ADHD: Predictions from overt and covert antisocial behavior, social isolation, and authoritative parenting beliefs. *Child Development*, 68, 880-896.
- Hoza, B., Owens, J. S., Pelham, W. E., Swanson, J. M., Conners, C. K., Hinshaw, S. P.,... Kraemar, H. C. (2000). Parent cognitions as predictors of child treatment response in attention-deficit/hyperactivity disorder. *Journal of Abnormal Child Psychology*, 28, 569-83.
- Jia, R., & Schoppe-Sullivan, S. J. (2011). Relations between coparenting and father

- involvement in families with preschool-age children. *Developmental Psychology*, 47, 106-118.
- Jiang, Y., & Johnston, C. (in press 2011). The relationship between ADHD symptoms and competence as reported by both self and others. *Journal of Attention Disorders*.
- Johnson, J. H., Alvarez, H. K., & Johnson, T. A. (2008). Comorbidity and symptom mimicry in Attention-Deficit/Hyperactivity Disorder: Implications for assessment and treatment. In Maria, B.L. (Ed.). *Current Management in Child Neurology* (pp. 225-230). Shelton, CT: People's Medical Publishing House.
- Johnston, C. (1996). Parent characteristics and parent-child interactions in families of nonproblem children and ADHD children with higher and lower levels of oppositional-defiant behaviour. *Journal of Abnormal Child Psychology*, 24, 85-103.
- Johnston, C., & Behrenz, K. (1985). Childrearing discussions in families of nonproblem children and ADHD children with higher and lower levels of aggressive-defiant behavior. *Canadian Journal of School Psychology*, 9, 53-65.
- Johnston, C., & Mah, J. W. T. (2008). Child Attention-Deficit/Hyperactivity Disorder. In John Hunsley & Eric J. Mash (Eds.), *A guide to assessments that work* (pp. 17-40). New York: Oxford University Press.
- Johnston, C., Mash, E. J., Miller, N., & Ninowski, J. E. (2012). Parenting in adults with attention-deficit/hyperactivity disorder (ADHD). *Clinical Psychology Review*, 32, 215-228.
- Johnston, C., & Mash, E. J. (2001). Families of children with Attention-Deficit/Hyperactivity Disorder: Review and recommendations for future research. *Clinical Child and Family Psychology Review*, 4, 183-207.

- Johnston, C., Murray, C., Hinshaw, S. P., Pelham, W.E., & Hoza, B. (2002). Responsiveness in interactions of mothers and sons with ADHD: Relations to maternal and child characteristics. *Journal of Abnormal Child Psychology*, 30, 77-88.
- Johnston, C., Scoular, D. J., & Ohan, J. L. (2004). Mothers' reports of parent and child behavior in families of children with Attention-Deficit/Hyperactivity Disorder: The influence of impression management. *Child and Family Behavior Therapy*, 26, 45-61.
- Jouriles, E. N., Murphy, C. M., Farris, A. M., Smith, D. A., Richters, J. E., & Waters, E. (1991). Marital adjustment, parental disagreements about child-rearing and behavioral problems in boys: Increasing the specificity of the marital assessment. *Child Development*, 62, 1424-1433.
- Kabir, Z., Connolly, G. N. & Alpert, H. R. (2011). Secondhand smoke exposure and neurobehavioral disorders among children in the United States. *Pediatrics*, 128, e1-e8.
- Kahn, R.S., Brandt, D. & Whitaker, R. C. (2004). Combined effect of mothers' and fathers' mental health symptoms on children's behavioral and emotional well-being. *Archives of Pediatrics and Adolescent Medicine*, 158, 721-729.
- Kashdan, T. B., Jacob, R. G., Pelham, W. E., Lang, A. R., Hoza, B., Blumenthal, J. D., & Gnagy, E. M. (2004). Depression and anxiety in parents of children with ADHD and varying levels of oppositional defiant behaviors: Modeling relationships with family functioning. *Journal of Clinical Child and Adolescent Psychology*, 33, 169-181.
- Keown, L. J., & Woodward, L. J. (2002). Early parent-child relations and family functioning of preschool boys with pervasive hyperactivity. *Journal of Abnormal Child Psychology*, 30, 541-553.
- Kim, I. J., Ge, X., Brody, G. H., Conger, R. D., Gibbons, F. X., & Simons, R. L. (2003).

- Parenting behaviors and the occurrence and co-occurrence of depressive symptoms and conduct problems among African American children. *Journal of Family Psychology*, 17, 571–583.
- Kotimaa, A.J., Moilanen, I., Taanila, A., et al. (2003). Maternal smoking and hyperactivity in 8-year old children. *Journal of the American Academy of Child and Adolescent Psychiatry*, 42, 826–833.
- Kumar, G., Faden, J., & Steer, R. A. (2011). Screening for Attention-Deficit/Hyperactivity Disorder in adult inpatients with psychiatric disorders. *Psychological Reports*, 108, 815–824.
- Kuntsi, J., & Stevenson, J. (2000). Hyperactivity in children: A focus on genetic research and psychological theories. *Clinical Child Family Psychology Review*, 3, 1-23.
- Lange, G., Sheerin, D., Carr, A., Dooley, B., Barton, V., Marshall, D., Mulligan, A., Lawlor, M., Belton, M., & Doyle, M. (2005). Family factors associated with attention deficit hyperactivity disorder and emotional disorders in children. *Journal of Family Therapy*, 27, 76–96.
- Lee, C. M., Beauregard, C., & Bax, K. A. (2005). Child-related disagreement, verbal aggression, and children's internalizing and externalizing problems. *Journal of Family Psychology*, 19, 237-245.
- Luedemann, K., Lee, C. M., Johnston, C., Hunsley, J., Kuehn, S. & Robaey, P. (2011). Psychopathology in Parents of Children with Attention-Deficit/Hyperactivity Disorder. Submitted to the *Journal of Psychopathology and Behavioral Assessment*.
- Mahoney, A., Jouriles, E. N., & Scavone, J. (1997). Marital adjustment, marital discord over childrearing, and child behavior problems: Moderating effects of child age. *Journal of*

- Clinical Child Psychology*, 26, 415-423.
- Marmorstein, N. R., Malone, S. M., & Iacono, W. G. (2004). Psychiatric disorders among offspring of depressed mothers: Associations with paternal psychopathology, *American Journal of Psychiatry*, 161, 1588-1594.
- Mash, E. J., & Johnston, C. (2005). *Attention-Deficit/Hyperactivity Disorder (ADHD) and the family: A developmental psychopathology perspective*. In J. Hudson & R. Rapee (Eds.), *Current thinking on psychopathology and the family* (pp95-126). New York, NY: Elsevier Science.
- McBride, B. A. & Rane, T. R. (1998). Parenting Alliance as a predictor of father involvement: An exploratory study. *Family Relations*, 47, 229-236.
- McGough, J. J., Smalley, S. L., McCracken, J. T., Yang, M., Del’Homme, M., Lynn, D. E., Loo, S. (2005). Psychiatric comorbidity in adult Attention Deficit Hyperactivity Disorder: findings from multiplex families. *The American Journal of Psychiatry*, 162, 1621-1627.
- McHale, J. & Lindahl, K. (2011). *Coparenting: Theory, research, and clinical applications*. Washington, DC: American Psychological Association.
- McHale, J. P., & Fivaz-Depeursinge, E. (1999). Understanding triadic and family group interaction during infancy and toddlerhood. *Clinical Child and Family Psychology Review*, 2, 107-127.
- McHale, J., Khazan, I., Erera, P., Rotman, T., DeCoursey, W., & McConnell, M. (2002). Coparenting in diverse family systems. In M. Bornstein (Ed.), *Handbook of Parenting, Second Edition*. New Jersey: Erlbaum (pp. 75-107).
- McHale, J. , Kuersten-Hogan, R., & Rao, N. (2004). Growing points in the study of coparenting

- relationships. *Journal of Adult Development*, 11, 221-235.
- McKee, T.E., Harvey, E., Danforth, J.S., Ulaszek, W.R., Friedman, J.L. (2004). The relation between parental coping styles and parent-child interactions before and after treatment for children with ADHD and oppositional behavior. *Journal of Clinical Child and Adolescent Psychology*, 33, 158-168.
- Mick, E., Biederman, J., Faraone, S. V., Sayer, J., & Kleinman, S. (2002). Case-Control Study of Attention-Deficit/Hyperactivity Disorder and Maternal Smoking, Alcohol Use, and Drug Use During Pregnancy. *Journal of the American Academy of Child and Adolescent Psychiatry*, 41, 378-385.
- Mick, E., Biederman, J., Santangelo, S., & Wypij, D. (2003). The influence of gender in the familial association between ADHD and major depression. *Journal of Nervous and Mental Disease*, 191, 699-705.
- Molina, B. S. G., Pelham, W. E., & Lang, A. R. (1997). Alcohol expectancies and drinking characteristics in parents of children with attention-deficit/ hyperactivity disorder. *Alcoholism: Clinical and Experimental Research*, 21, 557-566.
- Murphy, K. R., & Adler, L. A. (2004). Assessing attention-deficit/hyperactivity disorder in adults: Focus on rating scales. *Journal of Clinical Psychiatry*, 65, 12-17.
- Nigg, J. T., & Hinshaw, S. P. (1998). Parent personality traits and psychopathology associated with antisocial behaviours in childhood attention-deficit hyperactivity disorder. *Journal of Child Psychology and Psychiatry*, 39, 145-159.
- Patterson, G. R. (2002). Etiology and treatment of child and adolescent antisocial behavior. *The Behavior Analyst Today*, 3, 133-144.
- Pelham, W. E., Fabiano, G. A., & Massetti, G. M. (2005). Evidence-based assessment of

- Attention Deficit Hyperactivity Disorder in children and adolescents. *Journal of Clinical Child and Adolescent Psychology*, 34, 449–476.
- Pelham, W. E. & Lang, A. R. (1999). Can your children drive you to drink? Stress and parenting in adults interacting with children with ADHD. *Alcohol Research & Health*, 23, 292-298.
- Perrin, S., & Last, C. G. (1996). Relationship between ADHD and anxiety in boys: Results from a family study. *Journal of the American Academy of Child and Adolescent Psychiatry*, 35, 988–996.
- Pfiffner, L. J., McBurnett, K., Lahey, B. B., Loeber, R., Green, S., Frick, P. J., & Rathouz, P. J. (1999). Association of parental psychopathology to the comorbid disorders of boys with attention deficit-hyperactivity disorder. *Journal of Consulting and Clinical Psychology*, 67, 881-893.
- Pfiffner, L. J., McBurnett, K., Rathouz, P. J., & Judice, S. (2005). Family correlates of oppositional and conduct disorders in children with attention deficit/hyperactivity disorder. *Journal of Abnormal Child Psychology*, 33, 551-563.
- Phares, V., & Compas, B. E. (1992). The role of fathers in psychopathology: Make room for daddy. *Psychological Bulletin*, 111, 387-412.
- Phares, V., & Lum, J. J. (1997). Clinically referred children and adolescents: Fathers, family constellations, and other demographic factors. *Journal of Clinical Child Psychology*, 26, 216–223.
- Pietromonaco, P. R. & Greenwood, D. (2004). *Conflict in Adult Close Relationships: An Attachment Perspective*. In W. S. Rholes & J. A. Simpson (Eds.), *Adult attachment: New directions and emerging issues*. New York: Guilford.

- Podolski, C-L., & Nigg, J. T. (2001). Parent stress and coping in relation to child ADHD severity and associated child disruptive behavior problems. *Journal of Clinical Child Psychology, 30*, 503–513.
- Reich, W., Earls, F., Frankel, O., & Shayka, J. (1993). Psychopathology in children of alcoholics. *Journal of the American Academy of Child and Adolescent Psychiatry, 32*, 995–1002.
- Russell, A., & Russell, G. (1994). Coparenting early school-age children: An examination of mother-father interdependence within families. *Developmental Psychology, 30*, 757-770.
- Rutter, M. & Sroufe, L. A. (2000). Developmental psychopathology: Concepts and challenges. *Developmental Psychopathology, 12*, 265-295.
- Schoppe-Sullivan, S. J., Weldon, A. H., Cook, C., Davis, E. F., & Buckley, C. K. (2009). Coparenting behavior moderates longitudinal relations between effortful control and preschool children's externalizing behavior. *Journal of Child Psychology and Psychiatry, 50*, 698-706.
- Segenreich, D., Fortes, D., Coutinho, G., Pastura, G., & Mattos, P. (2009). Anxiety and depression in parents of a Brazilian non-clinical sample of attention-deficit/hyperactivity disorder (ADHD) students. *Brazilian Journal of Medical and Biological Research, 42*, 465-469.
- Seipp, C., & Johnston, C. (2005). Mother-son interactions in families of boys with Attention Deficit/Hyperactivity Disorder with and without oppositional behavior. *Journal of Abnormal Child Psychology, 33*, 87-98.
- Shelton, K. K., Frick, P. J., & Wootton, J. (1996). Assessment of parenting practices in families of elementary school-age children. *Journal of Clinical Child Psychology, 25*, 317-329.

- Snyder, D. K., Klein, M. A., Gdowski, C. L., Faulstich, C., & LaCombe (1988). Generalized dysfunction in clinic and nonclinic families: A comparative analysis. *Journal of Abnormal Child Psychology*, 16, 97-109.
- Soltanifar, A., Moharreri, F., & Soltanifar, A. (2009). Depressive and anxiety symptoms in mothers of children with ADHD compared to the control group. *Iranian Journal of Psychiatry*; 4, 112-115.
- Sonuga-Barke, E. J. S., Daley, D., & Thompson, M. (2002). Does maternal ADHD reduce the effectiveness of parent training for preschool children's ADHD? *Journal of the American Academy of Child and Adolescent Psychiatry*, 41, 696-702.
- Steer, R. A., Ranieri, W. F., Kumar, G., & Beck, A. T. (2003). Beck Depression Inventory-II items associated with self-reported symptoms of ADHD in adult psychiatric outpatients. *Journal of Personality Assessment*, 80, 58-63.
- Taylor, S., & Asmundson, G. J. G. (2008). Internal and external validity in clinical research. In D. McKay (Ed.), *Handbook of Research Methods in Abnormal and Clinical Psychology* (pp. 23-34). Thousand Oaks, CA: Sage.
- Taylor, E. (1999). Developmental neuropsychology of attention deficit and impulsiveness. *Development and Psychopathology*, 11, 607-628.
- Voeller, K. K. (2004). Attention-Deficit Hyperactivity Disorder. *Journal of Child Neurology*, 19, 798-814.
- Weissman, S., & Cohen, R. (1985). The parenting alliance and adolescence. *Annals of the American Society for Adolescent Psychiatry*, 12, 24-45.
- Weitzman, M., Gortmaker, S., & Sobol, A. (1992). Maternal smoking and behavior problems of children. *Pediatrics*, 90, 342-349.

Whalen, C. K., Henker, B., Jamner, L. D., Ishikawa, S. S., Floro, J. N., Swindle, R.,...

Johnston, J.A. (2006). Toward mapping daily challenges of living with ADHD: Maternal and child perspectives using electronic diaries. *Journal of Abnormal Child Psychology*, 34, 115-130.

Whalen, C. K., Odgers, C. L., Henker, B., & Reed, P. L. (2011). Dissecting daily distress in mothers of children with ADHD: An electronic diary study. *Journal of Family Psychology*, 25, 402–411.

Wilens, T. E., Biederman, J., & Spencer, T. J. (2002). Attention Deficit/Hyperactivity Disorder across the lifespan. *Annual Review of Medicine*, 53, 113–131.

Appendix A

Research Ethics Board Approvals

Université d'Ottawa Service de subventions de recherche et déontologie University of Ottawa
Research Grants and Ethics Services

**SOCIAL SCIENCES AND HUMANITIES RESEARCH ETHICS BOARD CERTIFICATION
OF ETHICAL APPROVAL**

This is to certify that the University of Ottawa Social Sciences and Humanities Research Ethics Board (REB) has examined the application for ethical approval for the research project Attention Deficit Hyperactivity Disorder and Oppositional Defiant Disorder: Examining Parental Psychopathology, Parenting and Coparenting submitted by Catherine Lee and John Hunsley of the School of Psychology, as well as Philippe Robaey, Sally Kuehn, Catharine Robertson of the MHPSU at CHEO and Charlotte Johnston of the University of British Columbia. The members of the REB found that the research project met appropriate ethical standards as outlined in the Tri-Council Policy Statement and in the Procedures of the University of Ottawa Research Ethics Boards, and accordingly gave the research project a Category 1a (Approval).

This certification is valid for one year from the date indicated below. November 23, 2006.

Catherine Paquet
Protocol Officer for Ethics in Research
For the Chair of the Social Sciences and Humanities REB

Appendix B

Measures of Parental Psychopathology, Parenting and Coparenting

Conners' Parent Rating Scale-Revised (S)

Below are a number of common problems that children have. Please rate each item according to your child's behavior in the last month. For each item, ask yourself, "How much of a problem has this been in the last month?", and circle the best answer for each one. If none, not at all, seldom, or very infrequently, you would circle 0. If very much true, or it occurs very often or frequently, you would circle 3. You would circle 1 or 2 for ratings in between. Please respond to each item.

1.	Inattentive, easily distracted	0	1	2	3
2.	Angry and resentful	0	1	2	3
3.	Difficulty doing or completing homework	0	1	2	3
4.	Is always "on the go" or acts as if driven by a motor	0	1	2	3
5.	Short attention span	0	1	2	3
6.	Argues with adults	0	1	2	3
7.	Fidgets with hands or feet or squirms in seat	0	1	2	3
8.	Fails to complete assignments	0	1	2	3
9.	Hard to control in malls or while grocery shopping	0	1	2	3
10.	Messy or disorganized at home or school	0	1	2	3
11.	Loses temper	0	1	2	3
12.	Needs close supervision to get through assignments	0	1	2	3
13.	Only attends if it is something he/she is very interested in	0	1	2	3
14.	Runs about or climbs excessively in situations where it is inappropriate ..	0	1	2	3
15.	Distractibility or attention span a problem	0	1	2	3
16.	Irritable	0	1	2	3
17.	Avoids, expresses reluctance about, or has difficulties engaging in tasks that require sustained mental effort (such as schoolwork or homework)	0	1	2	3
18.	Restless in the "squirmy" sense	0	1	2	3
19.	Gets distracted when given instructions to do something	0	1	2	3
20.	Actively defies or refuses to comply with adults' requests	0	1	2	3
21.	Has trouble concentrating in class	0	1	2	3
22.	Has difficulty waiting in lines or awaiting turn in games or group	0	1	2	3
23.	Leaves seat in classroom or in other situations in which remaining seated is expected	0	1	2	3
24.	Deliberately does things that annoy other people	0	1	2	3
25.	Does not follow through on instructions and fails to finish schoolwork, chores or duties in the workplace (not due to oppositional behavior or failure to understand instructions)	0	1	2	3
26.	Has difficulty playing or engaging in leisure activities quietly	0	1	2	3
27.	Easily frustrated in efforts	0	1	2	3

Conners' Teacher Rating Scale-Revised (S)

Below are a number of common problems that children have in school. Please rate each item according to how much of a problem it has been in the last month. For each item, ask yourself, "How much of a problem has this been in the last month?", and circle the best answer for each one. If none, not at all, seldom, or very infrequently, you would circle 0. If very much true, or it occurs very often or frequently, you would circle 3. You would circle 1 or 2 for ratings in between. Please respond to each item.

0 NOT TRUE AT ALL; NEVER SELDOM

1 JUST A LITTLE TRUE, OCCASIONALLY

2 PRETTY MUCH TRUE. OFTEN, QUITE A BIT

3 VERY MUCH TRUE, VERY OFTEN, VERY FREQUENTLY

1.	Inattentive, easily distracted	0	1	2	3
2.	Defiant	0	1	2	3
3.	Restless in the "squirmy" sense	0	1	2	3
4.	Forgets things he/she has already learned	0	1	2	3
5.	Disturbs other children	0	1	2	3
6.	Actively defies or refuses to comply with adults' requests	0	1	2	3
7.	Is always "on the go" or acts as if driven by a motor	0	1	2	3
8.	Poor in spelling	0	1	2	3
9.	Cannot remain still	0	1	2	3
10.	Spiteful or vindictive	0	1	2	3
11.	Leaves seat in classroom or in other situations in which remaining seated is expected	0	1	2	3
12.	Fidgets with hands or feet or squirms in seat	0	1	2	3
13.	Not reading up to par	0	1	2	3
14.	Short attention span	0	1	2	3
15.	Argues with adults	0	1	2	3
16.	Only pays attention to things he/she is really interested in	0	1	2	3
17.	Has difficulty waiting his/her turn	0	1	2	3
18.	Lacks interest in schoolwork	0	1	2	3
19.	Distractibility or attention span a problem	0	1	2	3
20.	Temper outbursts; explosive, unpredictable behavior	0	1	2	3
21.	Runs about or climbs excessively in situations where it is inappropriate	0	1	2	3
22.	Poor in arithmetic	0	1	2	3
23.	Interrupts or intrudes on others (e.g., butts into others' conversations or games)	0	1	2	3
24.	Has difficulty playing or engaging in leisure activities quietly	0	1	2	3
25.	Fails to finish things he/she starts	0	1	2	3
26.	Does not follow through on instructions and fails to finish schoolwork (not due to oppositional behavior or failure to understand instructions)	0	1	2	3
27.	Excitable, impulsive	0	1	2	3
28.	Restless, always up and on the go	0	1	2	3

Parenting Scale

At one time or another, all children misbehave or do things that could be harmful, that are "wrong," or that parents don't like. Examples include: hitting someone, throwing food, not picking up toys, having a tantrum, wanting a cookie before dinner, arguing back, whining, forgetting homework, lying, refusing to go to bed, running into the street, or coming home late.

Parents have many different ways or styles of dealing with these types of problems. Below are items that describe some styles of parenting. FOR EACH ITEM, FILL IN THE CIRCLE THAT BEST DESCRIBES YOUR STYLE OF PARENTING **IN THE PAST TWO MONTHS**.

Think of _____ as the child in each question.

SAMPLE ITEM:

At meal time ...

I let my child decide how much to eat 0--0--0--0--0--0 I decide how much my child eats

1. WHEN MY CHILD MISBEHAVES...

I do something right away 0--0--0--0--0--0--0 I do something about it later

2. BEFORE I DO SOMETHING ABOUT A PROBLEM...

I give my child several reminders or warnings	0--0--0--0--0--0--0--0	I use only one reminder or warning
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3. WHEN I'M UPSET OR UNDER STRESS...

I am picky and on my child's back 0--0--0--0--0--0 I am no more picky than usual

4. WHEN I TELL MY CHILD NOT TO DO SOMETHING...

I say very little 0--0--0--0--0--0--0 I say a lot

5. WHEN MY CHILD PESTERS ME...

I can ignore the pestering 0--0--0--0--0--0 I can't ignore the pestering

Below are items that describe some styles of parenting. FOR EACH ITEM, FILL IN THE CIRCLE THAT BEST DESCRIBES YOUR STYLE OF PARENTING **IN THE PAST TWO MONTHS**.

6. WHEN MY CHILD MISBEHAVES...

I usually get into a long argument with my child	0--0--0--0--0--0--0	I don't get into an argument
--	---------------------	------------------------------

7. I THREATEN TO DO THINGS THAT...

I am sure I can carry out	0--0--0--0--0--0--0	I know I won't actually do
---------------------------	---------------------	----------------------------

8. I AM THE KIND OF PARENT THAT...

Sets limits on what my child is allowed to do	0--0--0--0--0--0--0	Lets my child do whatever he/she wants
---	---------------------	--

9. WHEN MY CHILD MISBEHAVES...

I give my child a long lecture	0--0--0--0--0--0--0	I keep my talks short and to the point
--------------------------------	---------------------	--

10. WHEN MY CHILD MISBEHAVES...

I raise my voice or yell	0--0--0--0--0--0--0	I speak to my child calmly
--------------------------	---------------------	----------------------------

11. IF SAYING 'NO' DOESN'T WORK RIGHT AWAY...

I take some other kind of action	0--0--0--0--0--0--0	I keep talking and try to get through to my child
----------------------------------	---------------------	---

12. WHEN I WANT MY CHILD TO STOP DOING SOMETHING...

I firmly tell my child to stop	0--0--0--0--0--0--0	I coax or beg my child to stop
--------------------------------	---------------------	--------------------------------

13. WHEN MY CHILD IS OUT OF MY SIGHT...

I often don't know what my child is doing	0--0--0--0--0--0--0	I always have a good idea of idea of what my child is doing
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Below are items that describe some styles of parenting. FOR EACH ITEM, FILL IN THE CIRCLE THAT BEST DESCRIBES YOUR STYLE OF PARENTING **IN THE PAST TWO MONTHS**.

23. WHEN MY CHILD MISBEHAVES...

I make my child tell me why he/she did it 0--0--0--0--0--0 I say "No" or take some other action

24. IF MY CHILD MISBEHAVES AND THEN ACTS SORRY...

I handle the problem like I usually would 0--0--0--0--0--0 I let it go that time

25. WHEN MY CHILD MISBEHAVES...

I rarely use bad language or curse 0--0--0--0--0--0 I almost always use bad language

26. WHEN I SAY MY CHILD CAN'T DO SOMETHING...

I let my child do it anyway 0--0--0--0--0--0 I stick to what I said

27. WHEN I HAVE TO HANDLE A PROBLEM...

I tell my child I'm sorry about it 0--0--0--0--0--0 I don't say I'm sorry

28. WHEN MY CHILD DOES SOMETHING I DON'T LIKE, I INSULT MY CHILD, SAY MEAN THINGS, OR CALL MY CHILD NAMES...

Never or rarely 0--0--0--0--0--0 Most of the time

29. IF MY CHILD TALKS BACK OR COMPLAINS WHEN I HANDLE A PROBLEM...

I ignore the complaining and stick to what I said 0--0--0--0--0--0 I give my child a talk about talk about not complaining

30. IF MY CHILD GETS UPSET WHEN I SAY "NO"...

I back down and give in to my child 0--0--0--0--0--0 I stick to what I said

Alabama Parenting Questionnaire

The following are a number of statements about your family. Please read each one carefully and decide how often it occurred in your home in the **past 4 weeks**. Circle the number that represents your choice. Please do not mark between choices and be sure to answer every item. It is very important that you refer only to the past 4 weeks.

		Never	Almost never	Some times	Often	Always	Does not apply
1	You have a friendly talk with your child	0	1	2	3	4	N/A
2	You let your child know when he/she is doing a good job	0	1	2	3	4	N/A
3	You volunteer to help with special activities your child is involved in (such as sports, boy/girl scouts, church youth groups)	0	1	2	3	4	N/A
4	You reward or give something to your child for obeying you or behaving well	0	1	2	3	4	N/A
5	You play games or do other fun things with your child	0	1	2	3	4	N/A
6	You ask your child about his/her day in school	0	1	2	3	4	N/A
7	You help your child with his/her homework	0	1	2	3	4	N/A
8	You compliment your child when he/she does something well	0	1	2	3	4	N/A
9	You ask your child what his/her plans are for the coming day	0	1	2	3	4	N/A
10	You drive your child to a special activity	0	1	2	3	4	N/A
11	You praise your child for behaving well	0	1	2	3	4	N/A
12	You hug or kiss your child when he/she has done something well	0	1	2	3	4	N/A
13	You talk to your child about his/her friends	0	1	2	3	4	N/A
14	Your child helps plan family activities	0	1	2	3	4	N/A
15	You attend PTA meetings, parent/teacher conferences, or other meetings at your child's school	0	1	2	3	4	N/A
16	You tell your child that you like it when he/she helps out around the house	0	1	2	3	4	N/A

CAARS-Self-Report: Screening Version (CAARS-S:SV)

Instructions: Listed below are items concerning behaviours or problems sometimes experienced by adults. Read each item carefully and decide how much or how frequently each item describes you recently. Indicate your response for each item by circling the number that corresponds to your choice. Use the following scale: 0 = Not at all, never; 1 = Just a little, once in a while; 2 = Pretty much, often; and 3 = Very much, very frequently.

	Not at all, never	Just a little, once in a	Pretty much, often	Very much, very frequent
1. I lose things necessary for tasks or activities (e.g., to-do lists, pencils, books, or tools).	0	1	2	3
2. I talk too much.	0	1	2	3
3. I am always on the go as if driven by a motor.	0	1	2	3
4. I have trouble doing leisure activities quietly.	0	1	2	3
5. I have a short fuse/hot temper.	0	1	2	3
6. I leave my seat when I am not supposed to.	0	1	2	3
7. I still throw tantrums.	0	1	2	3
8. I have trouble waiting in line or taking turns with others.	0	1	2	3
9. I have trouble keeping my attention focused when working.	0	1	2	3
10. I avoid new challenges because I lack faith in my abilities.	0	1	2	3
11. I feel restless inside even if I am sitting still.	0	1	2	3
12. Things I hear or see distract me from what I'm doing.	0	1	2	3
13. I am forgetful in my daily activities.	0	1	2	3
14. I have trouble listening to what other people are saying.	0	1	2	3
15. I am an underachiever.	0	1	2	3
16. I am always on the go.	0	1	2	3
17. I can't get things done unless there's an absolute deadline.	0	1	2	3
18. I fidget (with my hands or feet) or squirm in my seat.	0	1	2	3
19. I make careless mistakes or have trouble paying close attention to detail.	0	1	2	3
20. I intrude on others' activities.	0	1	2	3
21. I don't like homework or job activities where I have to think a lot.	0	1	2	3
22. I am restless or overactive.	0	1	2	3
23. Sometimes my attention narrows so much that I'm oblivious to everything else; other times it's so broad that everything distracts me.	0	1	2	3
24. I can't keep my mind on something unless it's really interesting.	0	1	2	3
25. I give answers to questions before the questions have been completed.	0	1	2	3
26. I have trouble finishing job tasks or schoolwork.	0	1	2	3
27. I interrupt others when they are working or playing.	0	1	2	3
28. My past failures make it hard for me to believe in myself.	0	1	2	3
29. I am distracted when things are going on around me.	0	1	2	3
30. I have problems organizing my tasks and activities.	0	1	2	3

DEMOGRAPHICS

1. Please indicate your gender: Male ☐ Female ☐

2. What is your age? _____ YEARS
 What is your partner's age? _____ YEARS

3. Please describe your child/children:

	Age	Child's Gender	Living with you?
Child # 1	_____	Male ☐ Female ☐	Yes ☐ No ☐
Child # 2	_____	Male ☐ Female ☐	Yes ☐ No ☐
Child # 3	_____	Male ☐ Female ☐	Yes ☐ No ☐
Child # 4	_____	Male ☐ Female ☐	Yes ☐ No ☐
Child # 5	_____	Male ☐ Female ☐	Yes ☐ No ☐

4. Do any of your children have a chronic illness or disability?

Yes ☐ No ☐ If yes, please specify

5. How many years have you and your partner been together?

living together - not married	_____ YEARS	Not applicable ☐
married	_____ YEARS	Not applicable ☐
TOTAL	_____ YEARS	

6. Approximately how many **hours per week** do you currently work for pay or go to school?

7. Which of the following best describes your financial situation:

	Me	My partner	Total Family Income
Less than \$10,000	☐	☐	☐
\$10,000 to \$19,999	☐	☐	☐
\$20,000 to \$29,999	☐	☐	☐
\$30,000 to \$39,999	☐	☐	☐
\$40,000 to \$49,999	☐	☐	☐
\$50,000 to \$59,999	☐	☐	☐
\$60,000 to \$69,999	☐	☐	☐
\$70,000 to \$79,999	☐	☐	☐
\$80,000 to \$89,999	☐	☐	☐
\$90,000 to \$99,999	☐	☐	☐
\$100,000 or more	☐	☐	☐

8. Please identify your race:

- White ☐
- Aboriginal (Inuit, Metis, North American Indian) ☐
- Arab/West Asian (e.g. Armenian, Egyptian, Iranian, Lebanese) ☐
- Black (e.g. African, Haitian, Jamaican, Somali) ☐
- Asian (e.g. South-Asian, South-East Asian, Chinese, Filipino Japanese, Korean) ☐
- Latin American ☐
- Mixed Race ☐
- Other (please specify): _____ ☐

9. Please list any prescribed medications you are currently taking.

10. Please indicate the professionals you have consulted about your child's behavioural difficulties (please check all that apply):

- ☐ Pediatrician
- ☐ Family Physician
- ☐ Psychiatrist
- ☐ Psychologist
- ☐ Social worker

11. Please indicate any of the following services that you have received to deal with your child's behavioural difficulties (please check all that apply):

- ☐ Individual or family counselling
- ☐ Parenting program
- ☐ Support Group
- ☐ Special Help at School
- ☐ Other (describe): _____

Appendix C

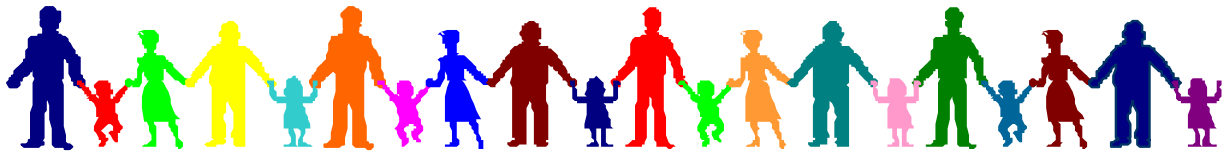
Notice of Study



uOttawa

Children's Hospital of Eastern Ontario
Centre hospitalier pour enfants de l'est de l'Ontario

Attention Deficit Hyperactivity Disorder (ADHD) and Oppositional Defiant Disorder (ODD): Exploring the Roles of Mothers and Fathers



1. Do you have a child aged 6-12 (with or without ADHD)?

2. Are you and your child's other parent willing to participate in a research study?

If you answer “yes” to both questions, then the researchers at the ADHD Network of Eastern Ontario, the Children’s Hospital of Eastern Ontario and the University of Ottawa need your help.

Purpose:

- The purpose of the study is to better understand parent and child interactions, the relationship between parents and the role of parents’ emotional and behavioural problems in children’s adjustment.

For this study:

- Parents will be asked to complete questionnaires and engage in a recorded parent-child interaction.
- Sessions will take place at the Provincial Centre of Excellence for Child and Youth Mental Health at CHEO at a time that is convenient to families.
- Each parent will receive \$20 for participating in the research session which should cover parking and other expenses.
- Your child will receive a U Ottawa T-Shirt.

For more information:

- Please leave a message for **the Research Coordinator** at The Family Psychology Lab, stating your name, your phone number and your child’s name. We will call you back with more details.

Appendix D

Consent Forms

PARENT CONSENT FORM: CHEO ADHD CLINIC RECRUITED FAMILIES

Attention Deficit Hyperactivity Disorder (ADHD) and Oppositional Defiant Disorder (ODD): Exploring the Roles of Mothers and Fathers

Principal Investigators:

Dr. Philippe Robaey MHPSU, CHEO

Dr. Sally Kuehn MHPSU, CHEO

Dr. Catherine Lee, School of Psychology, University of Ottawa

Dr. Catharine Robertson, MHPSU, CHEO

Dr. Charlotte Johnston, Department of Psychology, University of British Columbia

You are invited to take part in a research study that is being conducted by researchers from CHEO, the University of Ottawa, the University of British Columbia and the ADHD Network of Eastern Ontario.

Purpose of this research study

This study looks at families of children with Attention Deficit Hyperactivity Disorder (ADHD) and Oppositional Defiant Disorder (ODD), as well as families in which the child does not have any ADHD symptoms. We are interested in mothers' and fathers' parenting, the way mothers and fathers interact with their child, the way parents work together as a team, and each parent's psychological functioning. Through this research we hope to better understand ways to help families with a child with ADHD and ODD symptoms. We hope to recruit 95-120 families to participate in this study. You are free to choose to participate or not to participate. Your decision will not affect services that you receive at CHEO in any way.

Procedures

If you and your child's other parent agree to take part in the study, you will be asked to attend a 75 minute research session at the Provincial Centre of Excellence for Child and Youth Mental Health at CHEO which will be scheduled at your convenience. During this time each parent will be asked to complete two questionnaires about emotional and behavioural problems they might be experiencing. Each of you will also spend 30 minutes interacting with your child. You will be asked to play with your child, and to have your child complete some tasks, such as working on a puzzle, or putting toys away. The interaction will be recorded on a DVD so that it can be reviewed later by research team members based at the University of British Columbia who will study different styles of parenting. We realize that you can be recognized on a DVD recording, so the DVD would

be coded so that only the researchers can view it. Finally, with your consent, we will contact your child's teacher in order to ask him/her to complete a questionnaire about your child's behaviour in the classroom. This information is needed to determine whether or not your child meets our research criteria.

Your child's participation involves attending the research session, during which (s)he will spend half an hour interacting with each of you. Your child will be offered a healthy snack.

Subject description

A total of 95-120 families will participate in this study. Each parent is expected to complete the questionnaires separately. Each parent will receive \$20 for participating in the research session which should cover the cost of parking. Your child will receive a University of Ottawa t-shirt.

Are there any risks to participating in the research?

Parents may find it inconvenient to withhold medication on the morning of the research appointment. Some families may feel slight embarrassment at the idea of being recorded. Most families report that they quickly get used to the idea of being recorded. Some parents who are having psychological difficulties may be troubled by completing questionnaires about symptoms they may be experiencing.

Benefits

There are no direct benefits to you from participating in this study. We believe that the results of the study will help us to develop better services for families with a child with ADHD.

Withdrawing from the study

Participation is voluntary and you are free to withdraw at any time without any penalty to you or your child. If you are uncomfortable with any question on the questionnaires, you may leave it blank.

Limits of confidentiality

Your personal information will be kept strictly confidential, except as required or permitted by law. If the research assistant suspects possible child abuse or neglect, (s)he will contact Dr. Robaey, Robertson or Kuehn. One of them will be on call during appointments. If you or your child were to report suicidal ideas, this would be assessed further by the clinician on call so that your well-being is protected. If you tell us that you intend to harm other people, we will take steps to protect those people.

If you wish to have a summary of the results of the questionnaires about your child's adjustment sent to the mental health professional who referred you to the study, you

may sign a consent to disclosure form, allowing us to do that. If you wish you may receive an individual written summary of any emotional or behavioural problems you report. In addition, you have the opportunity to schedule an appointment with Dr. Lee should you wish to discuss your results in person. You will be provided with contact information for resources available for individuals with such difficulties within the region including information about how your physician can make a referral to the mental health outpatient services at CHEO.

In order to remain unidentified do *not* put your name on the questionnaires. A code number will identify the questionnaires and recordings. They will be locked in the researchers' lab, and only researchers involved with this project will have access to them. Any personal information about you that leaves the hospital will be coded so that you cannot be identified by name. You will not be identified in any publication or presentation of this study. There are two copies of this consent form, one that the researchers keep, and one for you to keep.

The Research Ethics Board (REB) is a group of people from scientific and non-scientific backgrounds who review research studies. Their goal is to ensure the protection of the rights and welfare of people involved in research. You may contact Dr. Carole Gentile, the Chair of the Research Ethics Board, for information regarding patients' rights in research studies.

I consent to participate in this study of parent-child interactions in families with a child with ADHD, ADHD/ODD, and children with no attention difficulties. I have received a copy of this consent form.

I allow the researchers to access my child's clinical record at CHEO to obtain information relevant to this study.

Please indicate whether your child has received any of the following medications this morning.

Ritalin	Yes ☐ No ☐
Methylin	Yes ☐ No ☐
Metadate	Yes ☐ No ☐
Concerta	Yes ☐ No ☐
Focalin	Yes ☐ No ☐
Dexedrine	Yes ☐ No ☐
Methylphenidate	Yes ☐ No ☐
Adderall	Yes ☐ No ☐

I have legal custody of my child and consent to allow my child to participate in this project.

PARTICIPANT'S SIGNATURE (as Participant and as Parent)

PRINTED NAME

DATE

RESEARCHER'S SIGNATURE

DATE

- ☐ Please check the box and enter the name of your child's teacher and the school address so that we can send the teacher questionnaire directly to him/her

- ☐ Please check the box and enter your mailing address below if you'd like to receive a summary of the results of the study when they are available.

- ☐ Please check the box and enter your mailing address below if you'd like to receive a summary of the results about your emotional and behavioural problems. If you do NOT want a copy of your individual results sent, then please leave the box empty.

PARENT CONSENT FORM (ADHD NEO recruited)

Attention Deficit Hyperactivity Disorder (ADHD) and Oppositional Defiant Disorder (ODD): Exploring the Roles of Mothers and Fathers

Principal Investigators:

Dr. Catharine Robertson, MHPSU, CHEO

Dr. Philippe Robaey, MHPSU, CHEO

Dr. Sally Kuehn, MHPSU, CHEO

Dr. Catherine Lee, School of Psychology, University of Ottawa

Dr. Charlotte Johnston, Department of Psychology, University of British Columbia

You are invited to take part in a research study that is being conducted by researchers from the ADHD Network of Eastern Ontario, CHEO, the University of Ottawa and the University of British Columbia

Purpose of this research study

This study looks at families of children with Attention Deficit Hyperactivity Disorder (ADHD) and Oppositional Defiant Disorder (ODD), as well as families in which the child does not have any ADHD symptoms. We are interested in mothers' and fathers' parenting, the way mothers and fathers interact with their child, the way parents work together as a team, and each parent's psychological functioning. Through this research we hope to better understand ways to help families with a child with ADHD and ODD symptoms. We hope to recruit 95-120 families to participate in this study. You are free to choose to participate or not to participate. Your decision will not affect services that you receive at CHEO in any way.

Procedures

If you and your child's other parent agree to take part in the study, you will be asked to participate in a semi-structured interview to determine whether your child meets criteria for a diagnosis of attention-deficit/hyperactivity disorder-combined type (ADHD-C), and whether s/he meets criteria for a diagnosis of oppositional defiant disorder (ODD). ADHD-C is the subtype of ADHD in which the child has significant problems with both inattention as well as with hyperactivity and impulsiveness. This interview will take about an hour and will be conducted at the Provincial Centre of Excellence for Child and Youth Mental Health at CHEO or at the University of Ottawa according to your preference and at your convenience. If your child meets diagnostic criteria for ADHD-C, you, your child's other parent and your child will be invited to attend a two to two and a half hour research session at the Provincial Centre of Excellence for Child and Youth Mental Health at CHEO at a time that is convenient to you. During this time each parent will be asked to complete questionnaires and to engage in an interaction with your child. The questionnaires include questions about how each parent sees the child's symptoms, the way s/he parents, how both parents work together in parenting your

child, parents' emotional and behavioural problems and background information. Each of you will also spend 30 minutes interacting with your child. You will be asked to play with your child, and to have your child complete some tasks, such as working on a puzzle, or putting toys away. The interaction will be recorded on a DVD so that it can be reviewed later by research team members based at the University of British Columbia who will study different styles of parenting. We realize that you can be recognized on a DVD recording, so the DVD would be encoded so that only the researchers can view it. Finally, with your consent, we will contact your child's teacher in order to ask him/her to complete a questionnaire about your child's behaviour in the classroom. This information is needed to determine whether or not your child meets our research criteria.

Your child's participation involves spending half an hour interacting with each parent. After the two interactions your child will be offered a healthy snack and will engage in fun activities with a research assistant while you complete other questionnaires.

Because some children may behave differently when on stimulant medication, we request that parents of children who have been prescribed a fast-acting stimulant such as Ritalin, Methylin, Metadate, Concerta, Focalin, Dexedrine, Methylphenidate, or Adderall do not give children their medication on the morning of the research appointment.

Subject description

A total of 95-120 families will participate in this study. Each parent is expected to complete the questionnaires separately. You will receive \$15 for participating in the parent interview. Each parent will receive \$20 for participating in the family research session which should cover your parking and other expenses. Your child will receive a University of Ottawa t-shirt.

Are there any risks to participating in the research?

Participants may find it inconvenient to schedule time for the semi-structured interview and the parent-child research session. Parents also face the inconvenience of not giving their children medication on the morning of the research appointment. Some families may feel slight embarrassment at the idea of being recorded. Most families report that they quickly get used to the idea of being recorded. Some parents who are having psychological difficulties may be troubled by completing questionnaires about symptoms they may be experiencing.

Benefits

We believe that the results of the study will help us to develop better services for families with a child with ADHD. There are no direct benefits to you from participating in this study, but some families may experience indirect benefits. For example, parents may request a summary of the results of the measures of emotional and behavioural

problems that they have completed about themselves; they may also request that a summary of the measures with respect to their child's symptoms be sent to the referring mental health professional. Summaries of parent symptoms and/or child diagnostic status will be provided by Dr. Catherine Lee who is a registered clinical psychologist.

Withdrawing from the study

Participation is voluntary and you are free to withdraw at any time without any penalty to you or your child. If you are uncomfortable with any question on the questionnaires, you may leave it blank.

Limits of confidentiality

Your personal information will be kept strictly confidential, except as required or permitted by law. If the research assistant suspects possible child abuse or neglect, (s)he will contact Dr. Robaey, Robertson or Kuehn. One of them will be on call during appointments. If you or your child were to report suicidal ideas, this would be assessed further by the clinician on call so that your well-being is protected. If you tell us that you intend to harm other people, we will take steps to protect those people.

If you wish to have a summary of the results of the questionnaires about your child's adjustment sent to the mental health professional who referred you to the study, you may sign a consent to disclosure form, allowing us to do that. If you wish you may receive an individual written summary of any emotional or behavioural problems you report. In addition, you have the opportunity to schedule an appointment with Dr. Lee should you wish to discuss your results in person. You will be provided with contact information for resources available for individuals with such difficulties within the region including information about how your physician can make a referral to the mental health outpatient services at CHEO.

In order not to be identified, do *not* put your name on the questionnaires. A code number will identify the questionnaires and recordings. They will be locked in the researchers' lab, and only researchers involved with this project will have access to them. Any personal information about you that leaves the hospital will be coded so that you cannot be identified by name. You will not be identified in any publication or presentation of this study. There are two copies of this consent form, one that the researchers keep, and one for you to keep.

The Research Ethics Board (REB) is a group of people from scientific and non-scientific backgrounds that review research studies. Their goal is to ensure the protection of the rights and welfare of people involved in research. You may contact the Chair of the Research Ethics Board, for information regarding patients' rights in research studies.

I have legal custody of my child: Yes ☐ No ☐

I consent to allow my child to participate in this project: Yes ☐ No ☐

I consent to participate in this study of parent-child interaction in families with a child with ADHD, ADHD/ODD, and children with no attention difficulties. I have received a copy of this consent form.

Please indicate whether your child has received any of the following medications this morning

Ritalin	Yes ☐ No ☐
Methylin	Yes ☐ No ☐
Metadate	Yes ☐ No ☐
Concerta	Yes ☐ No ☐
Focalin	Yes ☐ No ☐
Dexedrine	Yes ☐ No ☐
Methylphenidate	Yes ☐ No ☐
Adderall	Yes ☐ No ☐

PLEASE PRINT YOUR NAME

PLEASE SIGN YOUR NAME

DATE

RESEARCHER'S SIGNATURE

DATE

- ☐ Please check the box and enter the name of your child's teacher and the school address so that we can send the teacher questionnaire directly to him/her

- ☐ Please check the box and enter your mailing address below if you'd like to receive a summary of the results of the study when they are available.

- ☐ Please check the box and enter your mailing address below if you'd like to receive a summary of the results about your emotional and behavioural problems. If you do NOT want a copy of your individual results sent, then please leave the box empty.

- ☐ If you would like us to send a summary of your child's individual results to the mental health professional who referred you to the study, please check this box and provide the name and address of the referring professional. If you do NOT want a copy of individual results sent, then please leave the box empty.

PARENT CONSENT FORM (Paediatrician & family physician recruited)

Attention Deficit Hyperactivity Disorder (ADHD) and Oppositional Defiant Disorder (ODD): Exploring the Roles of Mothers and Fathers

Principal Investigators:

Dr. Catharine Robertson, MHPSU, CHEO

Dr. Philippe Robaey, MHPSU, CHEO

Dr. Sally Kuehn, MHPSU, CHEO

Dr. Catherine Lee, School of Psychology, University of Ottawa

Dr. Charlotte Johnston, Department of Psychology, University of British Columbia

You are invited to take part in a research study that is being conducted by researchers from the ADHD Network of Eastern Ontario, CHEO, the University of Ottawa and the University of British Columbia.

Purpose of this research study

This study looks at families of children with Attention Deficit Hyperactivity Disorder (ADHD) and Oppositional Defiant Disorder (ODD), as well as families in which the child does not have any ADHD symptoms. We are interested in mothers' and fathers' parenting, the way mothers and fathers interact with their child, the way parents work together as a team, and each parent's psychological functioning. Through this research we hope to better understand ways to help families with a child with ADHD and ODD symptoms. We hope to recruit 95-120 families to participate in this study. You are free to choose to participate or not to participate. Your decision will not affect services that you receive at CHEO in any way.

Procedures

If you and your child's other parent agree to take part in the study, you will be asked to attend a two to two and a half hour research session at the Provincial Centre of Excellence for Child and Youth Mental Health at CHEO which will be scheduled at your convenience. During this time each parent will be asked to complete questionnaires and to engage in an interaction with your child. The questionnaires include questions about problem behaviours in your child, the way you parent your child, how both parents work together in parenting your child, and emotional and behavioural problems you may be experiencing, in addition to some background information. Each of you will also spend 30 minutes interacting with your child. You will be asked to play with your child, and to have your child complete some tasks, such as working on a puzzle, or putting toys away. The interaction will be recorded on a DVD so that it can be reviewed later by research team

members based at the University of British Columbia who will study different styles of parenting. We realize that you can be recognized on a DVD recording, so the DVD would be coded so that only the researchers can view it. Finally, with your consent, we will contact your child's teacher in order to ask him/her to complete a questionnaire about your child's behaviour in the classroom. This information is needed to determine whether or not your child meets our research criteria.

Your child's participation involves spending half an hour interacting with each parent. After the two interactions your child will be offered a healthy snack and will engage in fun activities with a research assistant while you complete other questionnaires.

Subject description

A total of 95-120 families will participate in this study. Each parent is expected to complete the questionnaires separately. Each parent will receive \$20 for participating in the research session, which should cover the costs of parking. Your child would receive a University of Ottawa t-shirt.

Are there any risks to participating in the research?

Some parents find it inconvenient to find time to complete the questionnaires. Some families experience slight embarrassment at the idea of being recorded. Most families report that they quickly get used to the idea of being recorded. Some people also feel uncomfortable about answering questions about psychological difficulties.

Benefits

There are no direct benefits to you from participating in this study. We believe that the results of the study will help us to develop better services for families with a child with ADHD.

Withdrawing from the study

Participation is voluntary and you are free to withdraw at any time without any penalty to you or your child. If you are uncomfortable with any question on the questionnaires, you may leave it blank.

Limits of confidentiality

Your personal information will be kept strictly confidential, except as required or permitted by law. If the research assistant suspects possible child abuse or neglect, (s)he will contact Dr. Robaey, Robertson or Kuehn. One of them will be on call during appointments. If you or your child were to report suicidal ideas, this would be assessed further by the clinician on call so that your well-being is protected. If you tell us that you intend to harm other people, we will take steps to protect those people.

If you wish to have a summary of the results of the questionnaires about your child's adjustment sent to the mental health professional who referred you to the study, you

may sign a consent to disclosure form, allowing us to do that. If you wish you may receive an individual written summary of any emotional or behavioural problems you report. In addition, you have the opportunity to schedule an appointment with Dr. Lee should you wish to discuss your results in person. You will be provided with contact information for resources available for individuals with such difficulties within the region including information about how your physician can make a referral to the mental health outpatient services at CHEO.

To protect your privacy, do *not* put your name on the questionnaires. A code number will identify the questionnaires and recordings. They will be locked in the researchers' lab, and only researchers involved with this project will have access to them. Any personal information about you that leaves the hospital will be coded so that you cannot be identified by name. You will not be identified in any publication or presentation of this study. There are two copies of this consent form, one that the researchers keep, and one for you to keep.

The Research Ethics Board (REB) is a group of people from scientific and non-scientific backgrounds that review research studies. Their goal is to ensure the protection of the rights and welfare of people involved in research. You may contact the Chair of the Research Ethics Board, for information regarding patient's rights in research.

I consent to participate in this study of parent-child interaction in families with a child with ADHD, ADHD/ODD, and children with no attention difficulties. I have received a copy of this consent form.

I have legal custody of my child and consent to allow my child to participate in this project.

PARTICIPANT NAME (please print)

PARTICIPANT'S SIGNATURE (as Participant and as Parent)

DATE

RESEARCHER'S SIGNATURE

DATE

- ☐ Please check the box and enter the name of your child's teacher and the school address so that we can send the teacher questionnaire directly to him/her

- ☐ Please check the box and enter the name and address of your family physician or paediatrician if you would like us to send a summary of individual results about your child's adjustment to him/her.

- ☐ Please check the box and enter your mailing address below if you'd like to receive a summary of the results of the study when they are available.

- ☐ Please check the box and enter your mailing address below if you'd like to receive a summary of the results about your emotional and behavioural problems. If you do NOT want a copy of your individual results sent, then please leave the box empty.
