PARENTING IN MOTHERS WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER

by

CANDICE MURRAY

B.A., McGill University, 1992
B.A., Concordia University, 1995
M.A., University of British Columbia, 1999

A THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

in

THE FACULTY OF GRADUATE STUDIES (Department of Psychology)

We accept this thesis as conforming to the required standard

THE UNIVERSITY OF BRITISH COLUMBIA
July 2004
© Candice Murray, 2004
Abstract

A limited number of controlled research studies indicate that inattentive and hyperactive/impulsive behaviour in parents may interfere with their ability to manage their children's behaviour. The goal of this dissertation was to examine the impact of maternal Attention-Deficit/Hyperactivity Disorder (ADHD) on important parenting behaviours. Sixty mothers between the ages of 31 and 50 with ($n=30$) and without ($n=30$) ADHD and their 8 to 14 year-old children with ADHD completed a series of self-report and laboratory measures designed to measure maternal monitoring of child behavior, consistency in parenting, and parenting problem-solving abilities. These parenting behaviours were selected because of their established links to the development of child behaviour problems. As predicted, mothers with ADHD were found to be poorer at monitoring child behaviour and less consistent disciplinarians compared to mothers without ADHD. There was some evidence to support the prediction that mothers with ADHD were less effective at problem-solving about child-rearing issues than control mothers. The differences found between the two groups of mothers persisted after child oppositional and conduct disordered behaviour were controlled. These results indicate that parenting is an area of functioning that requires more attention in adult ADHD research. Future studies are needed to investigate areas of challenge, and strength, among parents with ADHD.
Table of Contents

Abstract ......................................................... ii
Table of Contents ................................................ iii
List of Tables ..................................................... iv
Introduction ....................................................... 1
Method .............................................................. 38
Results ............................................................. 52
Discussion ......................................................... 64
References ......................................................... 76
List of Tables

Table 1. Demographic Characteristics of the Sample...............................39
Table 2. Means, Standard Deviations, Probability Levels, and Effect Sizes for Maternal Monitoring.................................53
Table 3. Means, Standard Deviations, Probability Levels, and Effect Sizes for Maternal Inconsistency...............................54
Table 4. Means, Standard Deviations, Probability Levels, and Effect Sizes for Maternal Problem Solving...............................56
Table 5. Means, Standard Deviations, Probability Levels, and Effect Sizes for Positive Parenting...............................56
Attention-deficit/hyperactivity disorder (ADHD) is a chronic and pervasive condition characterized by developmentally inappropriate levels of inattention, hyperactivity, and impulsivity (American Psychiatric Association, Diagnostic and Statistical Manual of Mental Disorders, 4th edition, 1994). The prevalence of ADHD in children is approximately 3 to 5% (APA, 1994) and is estimated at 1 to 3% in adults (Shekim, Asarnow, Hess, Zaucha, & Wheeler, 1990). In the DSM-IV, the symptoms of ADHD are organized into two clusters: nine inattentive symptoms and nine hyperactive/impulsive symptoms. If an individual exhibits at least six of the nine symptoms of inattention, they may be diagnosed with ADHD-Inattentive subtype. Similarly, exhibiting at least six of the nine hyperactive/impulsive symptoms may result in a diagnosis of ADHD-Hyperactive/Impulsive subtype. When individuals meet the symptom criteria for both the Inattentive and Hyperactive/Impulsive subtypes of ADHD, they may be diagnosed with ADHD-Combined subtype. Meeting full DSM-IV diagnostic criteria for any of the ADHD subtypes involves evidence of early onset, chronicity and pervasiveness of symptoms, and impaired functioning resulting from the symptoms.

Until the late 1980s, ADHD was conceptualized as a childhood disorder that was outgrown before or during adolescence (Murphy & Gordon, 1998). Research studies using child-identified (Barkley, 1998; Fischer, Barkley, Smallish, & Fletcher, 2002; Mannuzza, Klein, Bessler, Malloy, & LaPadula, 1993; Weiss, Hechtman, Milroy, & Perlman, 1985) and adult-identified (Barkley, Murphy, & Kwasnik, 1996; Biederman et al., 1993; Heiligenstein, Conyers, Berns, & Smith, 1998; Hesslinger van Elst, Mochan, Ebert, 2003; Minde et al., 2003; Murphy, Barkley, & Bush, 2002; Roy-Byrne et al., 1997; Rucklidge & Kaplan, 1997; Young, Toone, & Tyson, 2003) samples of adults with ADHD published in the past 15 years
have altered this view. ADHD is now recognized as a disorder that continues into adulthood, causing impairment in multiple realms of living (Barkley et al., 1996; Biederman et al., 1993; Fischer et al., 2002; Johnston, 2002; Minde et al., 2003; Murphy & Barkley, 1996; Murphy et al., 2002; Roy-Byrne et al., 1997; Young et al., 2003). Despite the recent proliferation of published research on ADHD in adults, much remains unknown about this population. In particular, there is a paucity of empirical research on the challenges in parenting faced by adults with ADHD.

An aim of this dissertation is to contribute new knowledge on parental functioning and impairments in mothers with ADHD. This dissertation will begin with a review of the evidence indicating that ADHD is a disorder that persists into adulthood. Once this literature has been reviewed, criteria for an adult diagnosis of ADHD will be outlined, followed by a discussion of the particular difficulties encountered by individuals diagnosed with ADHD in adulthood. Research examining psychological, academic, occupational and social functioning in adults with ADHD will be presented and from this review, family functioning, or parenting more specifically, will emerge as an area that has been neglected in the adult ADHD literature. Drawing from a broad and well-established literature on the importance of parenting in child development, a case will be made for exploring how adults with ADHD function in the realm of parenting. The goal of this dissertation is to demonstrate that adult ADHD is likely to affect key parenting behaviours that have been linked to child behaviour problems.

The Persistence of ADHD into Adulthood

One of the most well-known, controlled, prospective studies on children with ADHD was initiated in the 1960s by a group of researchers at the Montreal Children's Hospital.
Weiss and Hechtman (1993) monitored the progress of 104 children diagnosed with ADHD between the ages of 6 and 12 years old when they reached the mean ages of 14, 19, and 25 years old. Given that the onset of the study predated the existence of DSM-III criteria, children were originally evaluated based on the DSM-II (APA, 1968) conceptualization of ADHD, called “hyperkinetic reaction of childhood disorder.” The DSM-II definition consisted of one descriptive sentence emphasizing the symptoms of hyperactivity and inattention. With the publication of DSM-III (APA, 1980), the sample of children was retrospectively assessed as having ADHD according to these criteria, with varying degrees of conduct problems (Weiss et al., 1985).

When participants were a mean age of 25 years, approximately 59% of the original sample was successfully re-evaluated (Weiss et al., 1985). The findings of this follow-up study indicated that 66% of the adults who had been diagnosed with ADHD in childhood and only 7% of a comparison group matched on age, IQ, socio-economic status, and gender reported having at least one moderately to severely disabling symptom of ADHD. Sixty-four percent of the ADHD sample complained of feelings of restlessness compared to 29% of the matched controls, and clinicians rated 44% of the ADHD sample as appearing restless during the interview compared to only 10% of the matched controls. All of these group differences were statistically significant.

The second controlled prospective study that followed ADHD children into adulthood was reported by Mannuzza et al. (1993). The original sample consisted of 103 clinic-referred boys between the ages of 6 to 12 years who were re-assessed at mean ages of 18 (Gittelman, Mannuzza, Shenker & Bonagura, 1985) and 26 years (Mannuzza et al., 1993). A comparison group of boys matched to the ADHD sample for ethnicity, gender, and age and with no
reported history of school behaviour problems was followed from adolescence to adulthood. Similar to Weiss et al. (1985), the boys were originally diagnosed using DSM-II criteria for hyperkinetic reaction of childhood but retrospective evaluations of the diagnostic criteria suggest that the boys would have met current DSM criteria for ADHD (Mannuzza et al., 1998).

At the adult follow-up, 88% of the child-identified ADHD sample and 95% of controls were re-assessed. Results of this study indicated that at 25 years of age 8% of the child-identified ADHD sample met full DSM-III-R criteria for ADHD and an additional 3% did not meet diagnostic criteria but reported ADHD symptoms that were impairing. Only 1% of controls met criteria for ADHD in adulthood.

In summary, data from these prospective studies suggest that, at least in some cases, ADHD is a chronic disorder that persists beyond childhood and into adulthood. In the Weiss et al. (1985) study, more than half of the children who had been diagnosed with ADHD in childhood continued to display symptoms in adulthood that caused mild to severe impairment, and in the Mannuzza et al. (1993) study 11% of the adults either continued to meet diagnostic criteria or experienced impairment from ADHD symptoms.

Attempts to explain the discrepancy between the Mannuzza et al. (1993) and Weiss et al. (1985) studies with regard to the rate at which ADHD symptoms continue into adulthood have centered on methodological differences between the two studies. Weiss et al. (1985) assessed ADHD in adulthood by measuring impairment from one or more symptoms of ADHD regardless of the quantity of symptoms endorsed, whereas Mannuzza et al. (1993) focused on the quantity of symptoms endorsed by the ADHD sample (i.e., using diagnostic cut-off scores). In addition, Weiss et al. (1985) did not use raters who were blind to
diagnostic status and included children with aggression (who tend to have worse adult outcomes). Mannuzza et al. (1993) used blind raters and required that the adults report childhood impairment in order to meet a diagnosis for adult ADHD.

Beyond the discrepant rates of adult ADHD found in the Weiss et al. (1985) and Mannuzza et al. (1993) studies, the diagnostic procedure used in the initial assessments may have resulted in an overall underestimation of the persistence of ADHD into adulthood in these samples (Barkley, Fischer, Edelbrock, & Smallish, 1990). The initial ADHD groups were formed without the use of standardized lists for inattentive and hyperactive/impulsive symptoms. Therefore, the ADHD samples likely represented heterogeneous, non-pure ADHD groups. Related to this point, because normative data were not used to establish deviance, there is no guarantee that the children who had ADHD symptoms experienced them at clinically significant levels. Given this, an unknown portion of the samples may not have had ADHD even in childhood and therefore they would not be expected to have ADHD in adulthood (Barkley et al., 1990).

To date, there is one prospective study that has employed standardized diagnostic measures with normative data and statistical cut-off scores for both the initial assessment of ADHD and the follow-up assessments. Barkley et al. (1990) followed 158 children with ADHD diagnosed between the ages of 4 and 12 years and 81 normal children. To be included in the ADHD group, children had to receive scores that were two standard deviations above the mean on the Hyperactivity Index of the Revised Conners Parent Rating Scale and the Werry-Weiss-Peters Activity Rating Scale, and score above the 93rd percentile on a measure of functional impairment within the home. At the adolescent follow-up, 78% of the ADHD group and 81% of the controls were successfully re-assessed. Results
indicated that 72% of the assessed ADHD sample continued to meet DSM-III-R criteria for ADHD compared to 3% in the control group. The percentage in the ADHD group increased to 83% when the DSM cut-off for diagnosis was adjusted to 6 out of 14 symptoms, equivalent to two standard deviations above the mean for nonproblem adolescents (i.e., an age-corrected norm). Barkley (1998) and Fischer et al. (2002) reported adult outcome data on this sample. Results indicate that 91% of the original sample was successfully re-assessed at a mean age of 21 years. Forty-two percent of the sample continued to meet DSM-IV criteria for ADHD, but this figure increased to 68% when the DSM-IV symptom cut-off was adjusted to an age-appropriate criterion (i.e., 1.5 standard deviations above the mean for the control group).

In summary, although the prospective research reports perseverance rates of adult ADHD ranging from 8% to 68%, Barkley (1998) has provided evidence to indicate that when the initial diagnosis is based on empirically derived cut-off scores and outcome measures use appropriate norms for adults, symptoms of the disorder remain stable over time for approximately two thirds of adults diagnosed with ADHD in childhood (Barkley et al., 1990).

Assessing Adults for ADHD

With the growing recognition among researchers, clinicians, and the general public that adult ADHD is a valid disorder, the demand for assessment guidelines and measures has heightened. Current guidelines suggest using a modified version of the DSM-IV criteria for ADHD (American Academy of Child and Adolescent Psychiatry, 1997; Murphy & Gordon, 1998). Therefore, a diagnosis of ADHD in adulthood includes the presence of clinically
significant levels of inattentive and hyperactive/impulsive symptoms that are chronic, pervasive and cause functional impairment.

*DSM-IV Symptoms.* The rationale for using the DSM-IV symptom list to assess ADHD in adults is based on the notion that the adult symptoms of the disorder mirror the child symptoms. Preliminary research supports this premise. Conners et al. (1999) developed items to assess ADHD in adulthood based on the DSM-IV symptoms, items from well-established child ADHD rating scales, and anecdotal information from clinical work with ADHD adults. From the initial pool of 93 items covering nine general categories of symptoms, factor analyses performed on scores from normal adults and adults referred for ADHD assessments revealed a four factor model: (1) inattention/memory problems, (2) hyperactivity/restlessness, (3) impulsivity/emotional lability, and (4) problems with self-concept. Three of these four dimensions reflect the categories of symptoms characteristic of children with ADHD (Lahey et al., 1994). In addition, research by Biederman et al. (1993) comparing clinic-referred adults and children with ADHD has indicated that the clinical presentation is similar in both groups.

Given the similarities in symptom presentation of adults and children with ADHD, it is recommended that the DSM-IV symptom list for ADHD be modified relatively little when used to assess adults for ADHD (American Academy of Child and Adolescent Psychiatry, 1997). The only modification that is made to adult ADHD rating scales is that the wording is changed to the first person and references to school, homework, playing games, and toys are omitted (Conners et al., 1999). For children, the DSM-IV symptoms are expressed in third person because parents or teachers typically complete ratings for children.
The cut-off scores for the number of ADHD symptoms required for a diagnosis in the DSM-IV (i.e., 6 of 9 symptoms) are based on field trials of children between the ages of 4 to 16 years (Applegate et al., 1995; Lahey et al., 1994). This has raised concerns about the developmental appropriateness of using the same cut-off scores for adults. An alternative approach to using the DSM-IV cut-offs for adults is to use ratings scales that employ norm-based thresholds, the method used in the prospective study by Barkley (1998) described earlier. For example, the Conners' Adult ADHD Rating Scale (CAARS; 1999) is a self-report questionnaire developed to assess ADHD in adults which includes the 18 ADHD items from the DSM-IV and uses the statistical criterion of 1.5 standard deviations from mean (a T-score of 65) to determine clinical significance of scores. Research using cross-sectional samples indicates that the frequency of ADHD symptoms decreases with age (Conners et al., 1999; Heilingstein et al., 1998; Murphy & Barkley, 1996) and that men report more symptoms than women (Conners et al., 1999). Therefore, using a rating scale with age and gender based norms is recommended for determining the adult diagnosis of adult ADHD.

Using age-based norms to establish clinical significance is a method that is used when levels of a behaviour of interest change with age. For example, age-based norms are used to measure cognitive abilities on standardized tests of intelligence. Although this practice differs from standard methods used to establish adult psychopathology, it is consistent with a developmental psychopathology perspective on disorders.

Chronicity. Having clinically significant levels of DSM-IV symptoms of ADHD does not, on its own, warrant a diagnosis of ADHD. An important component to an adult diagnosis of ADHD is establishing chronicity, defined in the DSM-IV as the onset of symptoms prior to age 7. Thus, in addition to measuring the adult’s current symptoms,
childhood symptoms need to be assessed. Despite the consensus that establishing a childhood
history of the disorder is a vital component of the assessment, there has been some
controversy about the specificity of the age-of-onset criterion. Barkley and Biederman (1997)
argue that retrospective reports of symptom presence prior to age 7 are likely to be
inaccurate. In addition, whereas childhood onset of ADHD symptoms is important for
establishing a diagnosis of adult ADHD, the precise age of 7 years is not founded on
empirically derived knowledge about ADHD (Barkley & Biederman, 1997). A recent study
by Hesslinger et al. (2003) examined the importance of the age of onset criterion. Adults with
ADHD were separated into three groups: Childhood onset of ADHD symptoms between the
ages of 6-10 years, 11-14 years, or 15-18 years. No differences were found between the
groups on demographic variables, current ADHD symptom levels, or comorbid disorders.
Given the lack of empirical basis for requiring an onset of ADHD prior to age 7, it is
generally recommended that the age of onset criterion for diagnosing adults with ADHD be
relaxed to an onset of symptoms causing impairment prior to age 12 years (Murphy &

Some experts have raised concerns about whether adults with ADHD can provide
accurate reports of their childhood ADHD symptoms and recommend using a collateral
reporter (e.g., parent, sibling) or archival records (e.g., school report cards) to obtain
information about child symptoms (Murphy & Gordon, 1998; Silver, 2000). However,
recent research suggests that adults can provide reasonably accurate accounts of their
childhood ADHD symptoms. Studies employing the Wender Utah Rating Scale,
a DSM-III-R based rating scale measuring retrospective child ADHD symptoms, have found
moderate to high levels of agreement between self-reports and informant reports (Fossati et
Murphy and Schachar (2000) examined the concordance between adult self-reports and collateral raters' reports of childhood (and current) ADHD symptoms using a DSM-IV based rating scale and found acceptable levels of consistency between raters. Consistent with these findings, Zucker, Morris, Ingram, Morris, and Bakeman (2002) found moderate levels of agreement between self and informant ratings of child (and current) DSM-IV ADHD symptoms among college students, with evidence that women have higher concordant rates with informants than men. Mannuzza et al. (2002) used blind interviewers to assess the retrospective recall of child ADHD symptoms among adults who had been diagnosed with ADHD in childhood. On the basis of the adults' reports of their child ADHD symptoms, 78% of adults who had been diagnosed with child ADHD were correctly identified by interviewers as meeting the criteria for childhood ADHD. The sensitivity for retrospective recall was .78 and the specificity was .89. In summary, preliminary research using both clinical and nonclinical samples suggests that adults can retrospectively recall their childhood ADHD symptoms at acceptable levels of accuracy.

Pervasiveness and Impairment. The DSM-IV criteria for ADHD stipulate that the symptoms of the disorder must result in impairment in at least two situations. Unfortunately, a standardized measure of impairment with strong psychometric properties does not exist for the assessment of adult ADHD. Impairment is often determined by asking individuals about their functioning in different settings (e.g., work, home, school) and a clinical decision is based on subjective factors. Perhaps research on the functioning of adults with ADHD in various domains, reviewed below, will create more interest on this topic and consequently increase the demand for appropriate ways to assess the quality of their functioning in multiple settings or situations.
Functioning in Adults Diagnosed with ADHD in Adulthood

The development of guidelines for diagnosing ADHD in adulthood has given researchers the opportunity to investigate the functioning of individuals identified with ADHD in adulthood (Barkley et al., 1996; Biederman et al., 1993; Hesslinger et al., 2003; Minde et al., 2003; Murphy & Barkley, 1996; Murphy et al., 2002; Roy-Byrne et al., 1997; Rucklidge & Kaplan, 1997; Shekim et al., 1990; Young et al., 2003). Specifically, information is beginning to accumulate regarding the psychological, academic, occupational, and social functioning of adults with ADHD.

In the realm of comorbid disorders and psychological functioning, Barkley et al. (1996) and Roy-Byrne et al. (1997) found that, besides having ADHD, there were no significant differences between ADHD and control groups in rates of DSM-IV diagnoses. However, both of these studies need to be interpreted with a degree of caution. Barkley et al. (1996) acknowledged that group differences in this study may not have been detected due to low power. In the Roy-Byrne et al. (1997) study, the comparison group consisted of individuals who had self-referred for an ADHD assessment but failed to meet full diagnostic criteria. This suggests that members of the comparison group were experiencing some level of ADHD symptomatology or psychopathology and therefore would have higher rates of problems compared to a nonproblem control group. Other studies have found higher rates of antisocial personality disorder and anxiety disorders among adults with ADHD compared to controls (Biederman et al., 1993; Murphy & Barkley, 1996). Shekim et al. (1990) found that clinic-referred adults with ADHD had high levels of generalized anxiety disorder (53%), dysthymia (25%) and cyclothymia (25%), but did not include a control group in their study. Similarly, Hesslinger et al. (2003) found that clinic-referred adults with ADHD had higher
levels of depressive and anxiety disorders than expected in the general population, but did not include a control group. Murphy et al. (2002) and Minde et al. (2003) both included control groups in their studies and found higher rates of dysthymia and anxiety disorders, respectively, among adults with ADHD compared to the community control group. Young et al. (2003) did not assess rates of disorders but examined symptom levels and found higher rates of depressive and anxiety symptoms among clinic-referred adults with ADHD compared to a control group. Similarly, Rucklidge and Kaplan (1997) examined psychological functioning in women diagnosed with ADHD and found higher levels of depressive and anxiety symptoms compared to a control group. Finally, Barkley et al. (1996), Murphy and Barkley (1996), and Murphy et al. (2002) used the Symptom Checklist 90-Revised (SCL-90-R) to measure psychological distress and interpersonal difficulties and found that adults with ADHD scored significantly higher than a non-ADHD group. Given the high rate of comorbidity between adult ADHD and other psychological disorders, questions arise as to the specific effect of ADHD symptoms on daily functioning. For example, impairments observed in adults with ADHD may result from comorbid anxiety or depressive symptoms. In this study secondary analyses will be performed to investigate this issue.

In addition to current disorders, Biederman et al. (1993), Murphy and Barkley (1996), and Minde et al. (2003) assessed the lifetime prevalence of various disorders and found a higher incidence of oppositional defiant disorder (ODD) and conduct disorder (CD) in their ADHD groups compared to controls. Young et al. (2003) also found higher rates of conduct problems and police contact in childhood among clinic-referred adults with ADHD compared to both a clinical control group and a normal control group.
Patterns of substance use have been examined in samples of adults with ADHD. Barkley et al. (1996) and Roy-Byrne et al. (1997) assessed alcohol and drug use and did not find group differences in rates of abuse/dependence or on the specific use behaviours that were measured (e.g., frequency of drinks consumed per week). In contrast, other studies have found higher rates of alcohol and drug abuse/dependence or illicit drug use in adults with ADHD compared to controls (Biederman et al., 1993; Murphy & Barkley, 1996). Recently, Minde et al. (2003) found higher rates of alcohol abuse/dependence in adults with ADHD compared to a control group. Murphy et al. (2002) reported a higher prevalence of alcohol and cannabis dependence/abuse among adults with ADHD compared to a control group. Young et al. (2003) also found that adults with ADHD reported higher levels of drug use during childhood, in the past year, and over their general life compared to a control group. Finally, Flory, Milich, Lynam, Leukefeld, and Clayton (2003) examined substance use and dependence in adults diagnosed with ADHD and comorbid conduct disorder. Results indicated that adults with high levels of both ADHD and conduct disorder together were most at-risk for the development of cannabis dependence and hard drug use/dependence.

In terms of academic history and functioning, adults with ADHD have more school-related difficulties at present and in the past compared to controls (Biederman et al., 1993; Murphy & Barkley, 1996; Murphy et al., 2002; Roy-Byrne et al., 1997; Young et al. 2003). Both Biederman et al. (1993) and Roy-Byrne et al. (1997) reported that adults with ADHD had higher rates of repeating a grade in school and being placed in a special class than controls. Murphy et al. (2002) reported that adults with ADHD are more likely to have received special education and are less likely to graduate from college compared to a community control group. Adults with ADHD have also been labelled as underachievers in
school more frequently than controls (Biederman et al., 1993; Murphy & Barkley, 1996).

Murphy and Barkley (1996) reported that adults with ADHD had lower grades in school, more school fights, were suspended more frequently, and dropped out of college at a higher rate. Similarly, the ADHD group examined by Roy-Byrne et al. (1997) scored higher on school-related difficulties (e.g., problems with reading and math, learning disorders) than the comparison group. Young et al. (2003) found that adults with ADHD were more likely to have attended special schools for children with behavioural/learning problems and had more school problems (e.g., suspensions/expulsions, academic problems, quitting school) compared to both a normal and a clinical control group. On the other hand, Barkley et al. (1996) reported no academic differences between adults with and without ADHD, but as mentioned above, low power may have hindered the detection of significant group differences in this study.

Barkley et al. (1996), Murphy and Barkley (1996), and Young et al. (2003) reported work related problems in adults with ADHD. Barkley et al. (1996) found that adults with ADHD reported more symptom-related difficulties at work (e.g., poor concentration, impulsivity) and held jobs for shorter periods of time than adults in the control group. There were no group differences in whether or not the participants were currently working, the number of hours worked per week, income level, job status, or history of having been fired, laid off, or quit work. Using a slightly different measure, Murphy and Barkley (1996) found that adults with ADHD had higher rates of impulsively quitting or being fired from their jobs and had held more jobs than controls. Young et al. (2003) found higher rates of unemployment and general occupational problems (e.g., changing occupations, shorter length of employment, longest period of unemployment) among adults with ADHD compared to a
control group, but not a clinical control group. Roy-Byrne et al. (1997) used a broad measure of occupational functioning and found that the ADHD group scored in the moderately impaired range, but their scores did not differ from a comparison group. As noted previously, the comparison group in this study could be viewed as a clinical control group rather than nonproblem control group.

Another area of functioning that has received attention by researchers and clinicians is driving impairments among adults with ADHD. Barkley, Murphy, and Kwasnik (1996) examined driving skills in 25 adults with ADHD and 23 adults without ADHD. Official records indicated that adults with ADHD received more speeding tickets, were more likely to have their licenses revoked, and had more serious car accidents compared to nonADHD adults. During a computer-simulated driving task, adults with ADHD also had more accidents compared to controls. Interestingly, there was no difference between the groups when driving knowledge was assessed, suggesting a performance rather than a knowledge deficit. The difficulties that adults with ADHD have within the realm of driving a motor vehicle have been replicated in numerous studies (Barkley et al., 1993; Murphy & Barkley, 1996; Weiss et al., 1979). Suggesting the specificity of these deficits to ADHD, Murphy and Barkley (1996) included a clinical control group of adults with mood and/or anxiety disorders and found that adults with ADHD had a greater number of speeding tickets, accidents and driving license suspensions compared to the clinical control group.

Social functioning is assessed less frequently in the research on adult ADHD and the measures used range widely. Young et al. (2003) used a measure of social functioning that combined items measuring the number of friends, the longest friendship held, ease at making friends, and the amount of serious conflict with friends. An aggregate score was formed from
these items and results indicated that adults with ADHD reported more problems on this measure of social relationships compared to a control group. Barkley et al. (1996) examined social functioning by examining antisocial behaviour and found that adults with ADHD reported higher levels of non-violent (e.g., stealing) but not violent acts (e.g., assaults) than controls. Both Murphy et al. (2002) and Young et al. (2003) also reported higher levels of antisocial behaviour among adults with ADHD compared to a community control group. Roy-Byrne et al. (1997) used a broad measure of social functioning, and similar to their results on occupational functioning, they reported that the ADHD group scored in the impaired range of functioning but that their scores were no worse than the comparison group. As mentioned earlier, the comparison group in this study was not a typical control group which may explain why the results are inconsistent with other studies.

Relevant to social functioning, and to this dissertation, is family functioning in adults with ADHD. Interestingly, only four studies have looked at family functioning in adults with ADHD, and all four have focused solely on marital relations. Barkley et al. (1996), Minde et al. (2003), and Murphy and Barkley (1996) did not find differences in current marital status between an ADHD and a control group. Murphy and Barkley (1996) included a more comprehensive measure of marital functioning and found that adults with ADHD tended to report lower ratings of marital satisfaction, higher rates of divorce, and more re-marriages than controls. Biederman et al. (1993) also found higher rates of divorce and separation in adults with ADHD compared to controls. Minde et al. (2003) measured marital adjustment in adults with and without ADHD and reported higher levels of maladjustment in the adult ADHD group, regardless of the gender of the parent with ADHD. The levels of maladjustment were more likely to be in the clinically impaired range in the adult ADHD
group. Minde et al. (2003) also compared psychological adjustment in spouses of adults with ADHD and spouses of nonADHD adults and found higher rates of psychological difficulties among the spouses of adults with ADHD, particularly male spouses of ADHD women.

In summary, although comparisons of the results are challenging due to methodological differences (e.g., different methods of assessment, outcome measures, control groups) and limitations (e.g., low statistical power, not all clinicians were blind when performing assessments), there are consistencies across the studies reviewed. Most notable is the evidence of academic and occupational impairments in adults with ADHD. Having difficulties at school and work seems a probable outcome for a group of individuals who tend to make careless mistakes, blurt out comments, or have difficulties with organization and time management (APA, 1994). There also appear to be consistent deficits in the social functioning of adults with ADHD. Although there appears to be a higher risk for having a comorbid disorder among adults with ADHD, the results across studies are less consistent in terms of which disorders co-occur. This is an area that requires clarification in future research. Within the realm of family functioning, marital relations appear to be strained when one spouse has ADHD. To illustrate how all of these impairments may manifest, Taylor and Keltner (2002) published a quote offered by a mother with ADHD which describes a day in her life:

There’s so much in my head, so many ideas, but they’re just a jumbled mess. I can’t seem to turn them into anything productive. I’m constantly losing things. I have trouble remembering to do the laundry, remembering to pay the bills, balancing my checkbook, taking my son to baseball practice. My house is a trail through books and piles of just about everything else. When my husband comes home from work, I have
nothing tangible to answer the question, 'What have you been doing all day?' And of course, my purse is always such a mess, and I wonder if that reflects my state of mind. I wish I could be one of those neat purse girls. (p. 69).

**ADHD in Adulthood and Parenting**

Among the studies examining impairments in various realms of functioning, there is a notable paucity of research on parenting in adults with ADHD. This is surprising given that there are clinical and preliminary empirical grounds to suspect that having chronic and pervasive symptoms of inattention, impulsivity, and hyperactivity will interfere with a person's ability to raise a child.

Clinicians working with parents with ADHD have written about the parenting difficulties faced by their clients. Dixon (1995) anecdotally reports that in her practice, the most significant problems faced by parents with ADHD are managing child behaviour, setting limits, providing consistent discipline, and dealing with routines such as meals or bedtime. Weiss, Hechtman, and Weiss (2000) identify being consistent, monitoring their child's activities (homework, playing in the park), and disengaging from escalating situations as areas of difficulty for parents with ADHD.

Beyond anecdotal reports, to date there are five published studies that support clinical reports of parenting difficulties in adults with ADHD. Arnold, O'Leary, and Edwards (1997) examined the relationship between father involvement, self-reported parenting practices, and paternal ADHD symptoms in 71 fathers of children with ADHD. Parenting practices were measured using the Parenting Scale (Arnold, O'Leary, Wolff & Acker, 1993). A post hoc, unplanned analysis indicated that more paternal involvement was related to over-reactive or authoritarian discipline strategies only if fathers had high levels of ADHD symptoms.
Specifically, fathers with ADHD symptoms tended to be overly critical or negative in response to child behaviour. In fathers with low levels of ADHD symptoms, paternal involvement was not associated with critical or negative parenting behaviour. Thus, the quality of the fathers' involvement depended on the paternal levels of ADHD. The authors speculated that ADHD symptoms (such as impulsivity) may cause impatience that interferes with fathers' ability to implement effective parenting strategies.

Daly and Fritsch (1995) reported a case study that investigated failure to thrive in a 2-month-old infant. The child had been hospitalized at 4 and 8 weeks post-birth because an acceptable weight was not being maintained. This prompted a thorough medical consultation. At 8 weeks, when the medical tests failed to reveal an organic cause for the child's low weight, the case was referred to psychiatry. The psychiatric evaluation involved a videotape of the mother feeding her son, which revealed that high levels of distractible, inattentive, and hyperactive behaviour in the mother were interfering with her ability to feed the child properly. An evaluation of the mother's current and past functioning revealed that she met diagnostic criteria for ADHD. It was concluded that the impaired growth and development in the infant was closely related to maternal symptoms of ADHD. Treatment of the mother using stimulant medication improved her symptoms, and the child subsequently gained weight. The quality of mother-child interactions also significantly improved.

Two studies examined the impact of maternal ADHD on the effectiveness of parent training programs. Evans, Vallano, and Pelham (1994) presented the case of a mother who participated in a parent training program to help manage her 6-year-old son's ADHD behaviour. Clinicians working with the mother noted that she had significant difficulty with treatment tasks such as monitoring her child's behaviour and consistently implementing
behavioural techniques. It also was noted that she was distractible and fidgeted throughout treatment sessions. Consistent with the Daly and Fritsch (1995) case, an assessment revealed that the mother met diagnostic criteria for ADHD. A double-blind, placebo-controlled trial of methylphenidate was initiated. Findings indicated that compared to placebo, the mother's ability to monitor her child's behaviour and follow the training program consistently improved on medication. There was also an improvement on self-reported parenting skills on medication days. Sonuga-Barke, Daley, and Thompson (2002) compared the effectiveness of an 8-week parent training program among mothers with low ($n = 27$), medium ($n = 29$), and high ($n = 27$) levels of ADHD symptoms. Immediately post-treatment and at 15-weeks follow-up, problematic behaviours among the children of the mothers with the highest levels of ADHD symptoms were not reduced. In contrast, children of the mothers with low and medium levels of ADHD experienced significant reductions in child behaviour problems. These effects remained when child (e.g., severity of ADHD, comorbid problems) and mother (e.g., depression, sense of efficacy) characteristics were controlled.

Finally, Minde et al. (2003) examined rates of psychiatric disorders and social adjustment among children of parents with and without ADHD. Their sample included 15 children with ADHD whose parents had ADHD, 18 children without ADHD whose parents had ADHD, and 26 children where neither the child nor the parents were diagnosed with ADHD. The children with ADHD who had a parent with ADHD were more likely to have a psychiatric disorder (i.e., mood, anxiety, disruptive behaviour disorder) and poorer psychological and social functioning compared to the other two groups, regardless of who completed the ratings of child psychopathology (i.e., parent, teacher) or the gender of the
ADHD parent. The results suggest that families consisting of a child and parent with ADHD increase the risk of child maladjustment.

These studies support clinical reports indicating that inattentive, impulsive, and hyperactive behaviour in parents may interfere with their ability to manage their child's behaviour or impact child adjustment. In addition to the problems that the core symptoms of ADHD might present, the Evans et al. (1994), Sonuga-Barke et al. (2002), and Minde et al., (2003) studies highlight a complicating factor: Many parents with ADHD are raising a child who also has ADHD (Biederman et al., 1995). Minde et al. (2003) reported that, in total, 43% of the children of ADHD parents in their sample met DSM-IV criteria for ADHD. Biederman et al. (1995) conducted telephone interviews with parents diagnosed with ADHD to assess rates of ADHD among their children and found that 57% of these parents had a child with ADHD. Recent evidence indicates that these high rates of family aggregation cannot be attributed to biased self-reports of ADHD symptoms among parents who have been exposed to an ADHD child (Faraone, Biederman, Feighner, & Monuteaux, 2000) nor biased reports about child ADHD symptoms by parents with ADHD (Minde et al., 2003).

Despite their intriguing promise, the existing studies examining parenting in adults with ADHD are limited by post-hoc analyses, a lack of control groups, indirect measures of parenting, and a focus on the level of adult ADHD symptoms rather than complete diagnostic criteria for adult ADHD. Nevertheless, preliminary evidence suggests that parents with ADHD have difficulty managing the role of parenting. Compounded with this possibility is the fact that many of these parents are raising ADHD children, who are known to be more challenging (e.g., noncompliant, aggressive) than nonproblem children (Danforth, Barkley, & Stokes, 1991; Lahey et al., 1987; Mash & Johnston, 1982). The importance of investigating
parenting among adults with ADHD is highlighted by research demonstrating the impact of parenting on child development.

The Importance of Parenting

Contemporary scholars of socialization acknowledge that there are many factors that influence children's social, emotional, and personality development (Bornstein, 1995). Potential sources of influence include but are not limited to genetics, hormones, socioeconomic environment, peers, child temperament, and parenting (Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000). Of these variables, some critics have argued that too much value has been placed on parenting as a component of child development and not enough emphasis has been placed on factors such as genetics and peer relationships (Lytton, 1990; Harris, 1995; Rowe, 1994). However, a recent review of parenting research by Collins et al. (2000) concedes that whereas the relationship between child and parental behaviour may have been overstated in the past, parenting has been reaffirmed as having a substantial influence on child development based on more recent, well-designed studies. Specifically, longitudinal studies have shown that even when child characteristics at baseline are controlled, parenting affects later child adjustment. The relationship between parenting and child functioning persists when key variables such as genes or socioeconomic status are controlled.

Adoption or cross-fostering studies have shown that in both nonhuman and human animals, difficult infant temperaments or biological risk factors can be altered by placing infants with nurturing caregivers (Collins et al., 2000). Suomi (1997) demonstrated that Rhesus monkeys varied from each other in terms of their reaction to stressful situations (i.e., ranging from easily distressed to calm) and that this reactivity pattern was associated with a
particular neuroendocrine profile. Rhesus monkeys who were identified as easily distressed in infancy and raised by maternal Rhesus monkeys identified as having a calm reactivity pattern displayed higher levels of social competence compared to easily distressed Rhesus monkeys raised by easily distressed mothers. In humans, Tiernari et al. (1994) conducted a study that examined the incidence of psychopathology among adopted children of biological parents with schizophrenia. Results indicated that children who were adopted by nurturing parents were no more likely to develop a psychiatric disorder than adopted children without a genetic risk for schizophrenia. Collins et al. (2000) reviewed several natural experiments, such as children adopted from Romanian orphanages, and found that at-risk children raised by well-functioning parents showed resilience despite their early social and physical deprivation. Finally, focusing on children with clinically significant problems, Kazdin (1997), McMahon and Wells (1998), and Serketich and Dumas (1996) reviewed parent training research and concluded that modifying parental behaviour results in reductions in deviant (e.g., noncompliant, aggressive) child behaviour. For example, Serketich and Dumas (1996) included 26 controlled studies in their review of behavioural parent training. All studies focused on child externalizing behaviours as the target for treatment, involved training parents to implement consistent consequences for both positive and negative child behaviour as a minimum requirement, included a control group and a minimum of five subjects per group, and included at least one outcome measure of child externalizing behaviour. Overall, the results indicated that changing parental behaviour significantly reduced child externalizing behaviour problems at home as well as school.

Within research on parenting and the socialization of children, Darling and Steinberg (1993) identify psychoanalytic and behavioural theories as catalysts for scientific interest in
the relationship between parent behaviour and child development. Whereas behaviourism emphasized the impact of environmental factors (e.g., parent behaviour) in shaping individual behaviour (e.g., child development), psychoanalytic theory emphasized the impact of biology, which interacts with environmental pressures, on child development. Both theoretical perspectives acknowledged that parenting behaviours influenced child development and originally perceived this relationship as unidirectional. Researchers with a behavioural orientation focused on the construct of control and their research examined several specific parenting behaviours, considered individually (e.g., harsh punishment, consistent rule enforcement), and their impact on child behavior. Researchers with a psychoanalytic or psychodynamic orientation focused on the emotional relationship between the parent and child (or nurturance) and used a constellation of parental affective states and behaviours to define parenting styles. Thus, from behavioural and psychodynamic theories two traditions of examining parenting behaviour have emerged: the study of specific parenting practices and the study of general parenting styles (Darling & Steinberg, 1993).

General parenting styles incorporate a number of discrete parenting behaviours (e.g., affect, disciplinary techniques) into broad categories. Diana Baumrind (1967, 1968) was a pioneer in research on parenting styles who focused on the concept of control and incorporated nurturance into this concept. Rather than conceptualizing control as a style that varied quantitatively (i.e., low versus high levels), she viewed control as a construct that varied qualitatively among parents. Within the domain of control, she identified authoritative, authoritarian, and permissive styles of parenting. Authoritative parents are warm and nurturing, encouraging their child’s independence while setting appropriate limitations and control. Authoritarian parents have a style that is negative, overly strict, and punitive, with
low levels of warmth and responsiveness. Finally, permissive parents can be tend to be inconsistent with their children, oscillating between failing to set clear limits or being overly controlling when their children misbehave. Whereas earlier theorists had conceptualized the influence of parents on children as unidirectional, Baumrind recognized that child behaviour influences parenting. Early work linking these parenting styles to child development indicated that authoritative parenting was associated with socially competent behaviour (e.g., compliance, emotional stability) in children and authoritarian behaviour was associated with less adaptive behaviour in children (e.g., fearfulness, shyness). Research examining more diverse ethnic and socioeconomic samples has shown that this relationship between parenting styles and child behaviour varies with the cultural context of the family (Deater-Deckard, Dodge, Bates, & Pettit, 1996).

The general parenting styles described above are composed of a variety of specific behaviours, such as praise, synchrony, physical punishment, commands, rewards, warmth and criticisms (O'Leary, Slep, & Reid, 1999; Rothbaum & Weisz, 1994). Research over the past 30 years has accumulated to suggest that problems with these more specific parenting behaviours (as well as general parenting styles) also are associated with child behaviour problems. Rothbaum and Weisz (1994) conducted a review of 47 studies that assessed the relationship between parenting variables and child externalizing behaviour (e.g., aggression, hostility, non-compliance). The authors selected six parental behaviours to target based on prior research: Approval, guidance, motivational strategies, synchrony, coercive control, and restrictiveness. Approval is defined as parents’ encouragement of appropriate behaviour by verbal (e.g., praise) or nonverbal (e.g., smiling) reinforcement. Guidance is defined as clear and consistent explanations or assistance provided by parents to encourage children’s
understanding of events. Motivational strategies refer to the use of positive (e.g., earning rewards) rather than negative (e.g., threats) incentives for appropriate child behaviour. 

Synchrony refers to parents’ ability to adapt their behaviour to their children’s behaviour. Coercive control occurs when parents use force (e.g., physical, harsh commands) to influence child behaviour. Finally, restrictiveness refers to the number of limitations placed on children’s behaviour. Based on a review of factor analytic studies, Rothbaum and Weisz (1994) summarized these parenting behaviours into a restrictiveness factor and an acceptance-responsiveness factor (which included the five remaining parent behaviours). The results indicated that all individual parenting behaviours, except for restrictiveness, were significantly related child externalizing problems with effect sizes ranging from small (e.g., approval) to large (e.g., synchrony). When individual parenting behaviours were amalgamated into a single factor (i.e., acceptance-responsiveness), the effect size for the relationship between acceptance-responsiveness and child externalizing behaviour was large. This study demonstrated that both individual parenting behaviours and parenting styles are associated with problematic child behaviours.

Rothbaum and Weisz (1994) focused mostly on nurturing aspects of parenting. Other researchers interested in the relationship between individual parenting behaviours and child behaviour problems have examined parent behaviours more closely aligned with control, such as poor monitoring of child behavior, inconsistent discipline, and problem-solving deficits in parents (Kendziora & O’Leary, 1993; Patterson, 1982; Patterson, DeBaryshe, & Ramsey, 1989). These specific behaviours are of interest in this dissertation because (1) they are linked to child behaviour problems and (2) they require skills that may be deficient in parents with ADHD.
Parenting Behaviours and Child Dysfunction

Monitoring. Parental monitoring involves paying attention to and tracking where a child is and what they are doing (Dishion & McMahon, 1998). Monitoring is relevant to situations ranging from supervising a toddler while he or she takes a bath to knowing what a 16-year-old is doing on a Saturday night. With pre-schoolers, monitoring research has focused on safety and prevention of injury, with research indicating that low parental monitoring is associated with a variety of accidents for young children including accidental poisoning, exposure to household safety hazards, playground accidents, and handling dangerous materials in grocery stores (Dishion & McMahon, 1998).

Glik, Greaves, Kronenfeld, and Jackson (1993) interviewed 230 mothers of preschoolers about home safety hazards and maternal supervision. Results indicated that low maternal supervisory style was an important predictor of all types of household hazards (e.g., burns, poisoning, falls). Similarly, Brayden, MacLean, Bonfiglio, and Altemeier (1993) interviewed 39 mothers of preschool-aged children who had phoned a poisoning hotline centre. Improper child monitoring was identified as one of the most frequent parenting behaviours preceding children’s ingestion of poisons.

In school-aged children and adolescents, poor parental monitoring or supervision has been consistently linked to child behaviour problems (Loeber & Dishion, 1983; Patterson, Reid, & Dishion, 1992; Patterson & Stouthamer-Loeber, 1984). Crouter, MacDermid, McHale, and Perry-Jenkins (1990) examined monitoring in 152 parents of 9- to 12-year-old children. Monitoring was assessed by phone interviews with the families on seven different nights. Information about the child’s activities that day was collected separately from each family member and paternal, maternal and child reports were compared. Results indicated
that boys who received less supervision from their parents had more conduct and learning problems than boys who were monitored to a higher degree. A limitation of this study is that it is correlational, and therefore does not address the direction of the effect: parents who monitor less may provide more opportunities for child misbehavior, or alternatively, children with behavioural problems may be more secretive about their activities and resist disclosing information about themselves to their parents. Consistent with this second interpretation, Stattin and Kerr (2000) have argued that voluntary disclosure of information by the child is an important variable to consider when measuring parental monitoring.

Longitudinal studies offer indirect evidence regarding the direction of the parental monitoring/child behaviour problem effects by controlling for initial levels of child behaviour problems. Ary, Duncan, Duncan, and Hops (1999) assessed 204 adolescents and their parents over a 2-year period. They found that poor parental monitoring was a strong predictor of the development of adolescent problem behaviours (i.e., antisocial behaviour, substance use, learning problems, risky sexual behaviour), even after controlling for initial problem levels. Similarly, Dishion, Patterson, Stoolmiller, and Skinner (1991) assessed a sample of 206 boys and their families when the boys were 10 and 12 years old and found that poor parental monitoring at age 10 was related to the boys’ involvement with antisocial peers at age 12 even after controlling for antisocial behavior at age 10. Finally, Ary, Duncan, Biglan, Metzler, Noell, and Smolkowski (1999) reported longitudinal data from 523 adolescents and their families at an 18-month follow-up. Consistent with previous research, when initial behaviour problems were controlled, low parental monitoring remained related to associating with antisocial peers, a strong predictor of child externalizing behaviour problems.
In summary, low parental monitoring has been linked to poor child outcomes across a wide range of ages. In young children, a parent’s lack of supervision has been associated with child accidents and injuries, and in older children, low supervision is associated with antisocial behaviour, substance use, learning problems, and risky sexual behaviour. The association between low parental monitoring and problematic child outcomes is robust as it has been replicated using different samples, definitions, and modes of measurement (Dishion & McMahon, 1998). Longitudinal studies suggest that that poor parental monitoring precedes the development of child behaviour problems. For these reasons, parental monitoring is considered an important parenting skill.

**Inconsistent Parenting.** Inconsistent parenting behaviour has received considerable attention in the literature (Acker & O’Leary, 1996; Dumas & Wahler, 1985; Lindahl, 1998). Inconsistency in this context refers to variability in parents’ responses to child noncompliance; the parent oscillates between reinforcing the child’s noncompliance by laughing, being affectionate, approving, or giving in to the child, and punishing the child (Patterson et al., 1989; Patterson et al., 1992). A large body of research has demonstrated that intra-parent inconsistency in dealing with child misbehaviour is associated with more severe child behavioural problems (Danforth et al., 1991; Patterson, 1982; Patterson et al., 1992; Snyder, 1977; Wahler & Dumas, 1986). For example, Gardner (1989) has shown that mothers of children with behavioural problems are more inconsistent about following through with commands compared to mothers of children without behavioural problems. Stormshak, Bierman, McMahon, and Lengua (2000) investigated the link between parenting consistency and child behaviour problems in 631 kindergarten children with behavioural difficulties. Results indicated that inconsistent parenting, as measured by a self-report
questionnaire, was moderately associated with higher levels of oppositional, aggressive, hyperactive, and internalizing child behaviours. More recently, inconsistent parenting was linked to child behaviour problems in a group of children aged 5 to 12 years (Harvey, Danforth, Ulaszek, & Eberhardt, 2001) using parents' self-reports of their consistency of rule enforcement. Results indicated that parents of children rated high on aggression and delinquent behaviours were less consistent in following through with discipline than parents of nonproblem children. An experimental demonstration of the impact of inconsistent parenting was provided by Acker and O'Leary (1996). In this study, the consistency of reprimands was manipulated in a sample of 68 mothers and their nonproblem 18 to 32 month old children. Results indicated that the children who received inconsistent reprimands for misbehaviour made significantly more demands and showed more negative affect than children in other groups. This research demonstrates that indiscriminate variability in parental rule enforcement is more characteristic of families of children with externalizing disorders than in families of nonproblem children, and may play a causal role in the development of these child problems. Supporting the importance of this parenting skill, this relationship exists in families of preschoolers, middle-school aged children and young adolescents.

**Problem-Solving.** Parental problem-solving involves the ability to identify a problem, generate multiple solutions, evaluate the advantages and disadvantages of each course of action, select the best solution, implement it, and monitor the consequences of the action taken (Tisdelle & St. Lawrence, 1986; Webster-Stratton & Herbert, 1993). Although problem-solving skills are often discussed as important to managing child behaviour, there has been little research examining parental problem-solving. The research that has been
conducted has mostly been in the area of child maltreatment.

Azar, Robinson, and Hekimian (1984) presented 20 maltreating and 10 nonmaltreating mothers with a measure of problem solving and found that abusive and neglectful mothers generated fewer solutions to childrearing problems and elaborated less on the solutions they gave compared to the nonabusive mothers. In a similar study, Hansen, Pallota, Tishelman, Conaway, and MacMillan (1989) found that parents with a history of child maltreatment produced fewer solutions to child-rearing problems and had lower effectiveness ratings for their solutions compared to a control group. These findings were replicated in a later study (Hansen, Pallotta, Christopher, Conaway, & Lundquist, 1995). Dawson, de Armas, and McGrath (1986) used a multiple baseline design to assess problem-solving in three mothers who had been reported to child protection services for child neglect. Problem-solving abilities were assessed at multiple baseline assessments and after participation in a treatment program designed to enhance problem-solving skills. Ratings at pre-treatment indicated that mothers generated few solutions to child-rearing problems and the solutions were rated as low in effectiveness. At post-treatment, mothers provided substantially more solutions that were rated much higher in effectiveness (Dawson et al., 1986).

The fact that parents who maltreat their children tend to exhibit problem-solving deficits related to parenting suggests that an inability to generate a large number of effective solutions to child-rearing problems is problematic. Additional evidence to support the importance of problem-solving is research that associates poor parental problem-solving with externalizing child behaviour problems. Klein, Forehand, Armistead, and Long (1997) monitored 132 adolescents and their families for 6 years. The adolescents were 13 years at
the initial assessment and 19 years at follow-up. Maternal problem-solving was assessed by coding maternal behaviour during a videotaped mother-adolescent interaction where the dyad discussed two high-conflict issues. Analyses revealed that deficits in maternal problem-solving when their children were 13 years old predicted higher rates of delinquency and criminal behaviour when the adolescents reached adulthood, controlling for initial levels of child problems. Thus, although this is an area of parenting that has not been researched to the same extent as monitoring and consistency, sufficient evidence exists to indicate that deficits in parenting problem-solving are associated with excessively harsh parenting and child conduct problems.

*Modifying Parental Monitoring, Consistency, and Problem Solving*

Strengthening the argument for the importance of parenting behaviours such as monitoring, being consistent, and good problem-solving is empirical research showing that modifying these parenting behaviours leads to improvements in child behaviours (Kazdin, 1997; Patterson, Chamberland, & Reid, 1982; Serketich & Dumas, 1996; Spaccarelli, Cotler, & Penman, 1992). Treatment outcome research in this area has centred on behavioural parent training programs.

Parent training interventions have been developed based on the research reviewed above that links particular parenting behaviours to problematic child behaviours. Thus, in parent training programs, parents typically are taught to increase monitoring of both positive and negative child behaviour and to consistently implement rewards and punishment contingent on child compliance and noncompliance respectively (Briesmeister & Schaefer, 1998; Webster-Stratton & Herbert, 1993). Reviews of the parent training research consistently find beneficial effects on child behaviour of modifying these specific parenting
behaviours. Consistent with Patterson et al. (1982), Kazdin noted that the improvements were clinically significant (i.e., most children functioned at nonclinical levels at post-treatment) and were shown to generalize across time and behaviours. Similarly, Serketich and Dumas (1996) performed a meta-analysis on 26 controlled treatment outcome studies of parent training programs and found support for the short-term efficacy of parent training to modify child antisocial behaviour. Improvements also generalized to other situations (e.g., school) and problems (e.g., parental adjustment). These reviews demonstrated that parent training programs are successful in changing parenting behaviours (e.g., increased monitoring of child behaviour, higher levels of intra-parent consistency) and that this change in parent behaviour produced decreased levels of oppositional and antisocial behaviour in children.

Improved problem-solving abilities, although often not specifically targeted in parent training programs, are usually a welcome side effect of the programs (Webster-Stratton & Herbert, 1993). Spaccarelli, Cotler, and Penman (1992) investigated the effectiveness of specifically adding problem-solving training to a parenting-skills program. Results indicated that child behaviour problems decreased in the parent-training group with and without the specific problem-solving training component. However, parents participating in the group with the extra problem-solving component reported improvements in a wider range of child behaviour problems, parental attitudes about the child, and parents’ views of themselves compared to the standard parent-training group. Forgatch and DeGarmo (1997), Pfiffner et al. (1990), and Webster-Stratton (1994) also reported beneficial effects (e.g., reductions in externalizing child behaviour problems, increases in prosocial behaviours) from adding a problem-solving component to parent training.

In summary, parenting research indicates that inadequate parental monitoring,
inconsistent disciplinary techniques, and poor problem-solving are associated with behaviour problems in children, and child behaviour can be improved by training parents to change these behaviours. Hallmark symptoms of ADHD, such as inattention, hyperactivity and impulsivity, appear to be in conflict with the skills necessary for these parenting behaviours. Thus, although raising a child can be demanding for any parent, the symptoms associated with adult ADHD may make these aspects of childrearing particularly challenging. A review of the symptoms manifested in adults with ADHD illustrates this point.

**Impact of ADHD Symptoms in Adults on Parenting Variables**

A parent with ADHD may have difficulty paying attention to his or her child and may be distracted by extraneous stimuli (APA, 1994). High levels of inattention would likely result in a parent’s decreased ability to listen to or watch their children, a tendency to leave situations before they are resolved, poor organizational skills, and avoidance of activities that require mental effort, such as helping their child with their homework.

Hyperactive/impulsive symptoms may cause a parent with ADHD to talk excessively at inappropriate times (e.g., to their child during “time out”), interrupt when their child is talking, struggle with activities where they should be seated (e.g., sitting at the dinner table, reading a bedtime story), and lack patience. It makes sense that the core symptoms of ADHD would pose a challenge to a parent’s ability to monitor, discipline consistently, and problem-solve. For example, meal times are typically situations when events of the children’s day are discussed in families (e.g., what happened in school, upcoming projects or social activities). For a parent with ADHD who has difficulty listening and remaining seated (e.g., gets up from the table multiple times) this information, important for monitoring, may be lost. Enforcing household rules in a consistent fashion may also be a struggle for a parent
who acts impulsively or who becomes so absorbed with an activity that they do not notice that their child has left the "time out" corner. Finally, the skills required for effective problem solving involve the ability to inhibit responses, be patient, plan and pay attention throughout the process. Individuals with ADHD, who are marked by a tendency to not listen, blurt out responses without thinking, interrupt, be impatient, talk too much, and have low frustration levels, would clearly struggle with the skills required for parental problem-solving.

It is important to acknowledge that although parent behaviour influences children's development and behaviour, this relationship is not unidirectional. Researchers who study parent-child relationships emphasize the reciprocal nature of interactions between parents and their children (Darling & Steinberg, 1993; Kuczynski et al., 1987; Patterson, 1982). Numerous studies have demonstrated that children, particularly those with behavioural problems such as ADHD, present more parenting challenges compared to nonproblem children (Danforth, Barkley, & Stokes, 1991; Lahey et al., 1987; Mash & Johnston, 1982). For example, children with ADHD move around more than other children, have greater fluctuations in their ability to pay attention, and can be very impulsive in their actions and verbalization. A child's ADHD symptoms may make it more difficult for parents to monitor, be consistent, and problem-solve with their child. To control for the effects of child behaviour problems on these parenting variables, all children participating in the study were required to meet diagnostic criteria for ADHD.

Most of the parenting research reviewed above examined samples of mothers rather than fathers. The emphasis on mothers likely results from data indicating that, despite the fact that women are increasingly working outside of the home, they are still responsible for a
larger majority of child-rearing compared to fathers (Deutsch, Lussier, & Servis, 1993; Holden, 1988; Lamb et al., 1987; Pleck et al., 1997; Wood & Repetti, 2004). Wood and Repetti (2004) conducted a longitudinal study of parent involvement in 132 two-parent, mostly middle and upper class, households over a 3-year period. Results indicated that mothers were responsible for 57% of child-care duties of school aged children whereas fathers were responsible for 32% of child-care duties, on average, over the 3 year period. This lower relative percentage of father involvement compared to mother involvement in child-rearing is likely an overestimate because fathers in the study were mostly professionals with flexible work hours. Deutsch et al. (1993) conducted a longitudinal study that followed 66 families and found that on a scale ranging from 0 (no participation) to 5 (performed all tasks) fathers were significantly less involved in childrearing and household functioning compared to mothers. In addition to data indicating that fathers are less involved in childrearing compared to mothers, research has shown that fathers’ involvement decreases more with the presence of child behaviour problems. Flouri and Buchanan (2003) examined data from the British National Child Development Study and found that father involvement was negatively correlated with behavioural problems (e.g., non-compliance at home, aggressive behaviour, hyperactivity, impulsivity) in school-aged children. The fact that fathers are less likely to be involved in parenting this group of children compared to mothers, coupled with the financial and time constraints that would accompany gathering a larger sample, resulted in the decision to focus on mothers in the current study.

**Summary and Predictions**

Low monitoring, inconsistent rule-enforcement, and problem-solving deficits are parenting behaviours that have been linked to child behaviour problems. Although the
symptoms of ADHD would seem to interfere with the successful performance of these parenting behaviours, this area of family functioning has been neglected in the research on adults with ADHD. The lack of attention to parenting in this population may be attributed to the relatively new recognition of adult ADHD as a valid disorder. Indeed, the research on adult ADHD is in its infancy, with demands for information exceeding current knowledge. Due to the potentially serious consequences of inept parenting indicated by the research literature and the hypothesized difficulties that adults with ADHD may have with specific parenting skills, this dissertation investigated parenting behaviours in adults with ADHD. It was predicted that mothers with ADHD would (1) exhibit impaired monitoring of their child's behaviour (2) report higher levels of inconsistent parenting and (3) have more difficulty problem-solving about child behaviour problems compared to mothers without ADHD.

Importantly, this is the first known study to examine the relationship between adult ADHD and parenting using a clearly identified sample (i.e., mothers meeting full DSM-IV diagnostic criteria for ADHD), including a control group, controlling for child ADHD, making a priori predictions, and employing outcome measures with demonstrated clinical and theoretical significance.
Method

Participants

Sixty mothers with \((n = 30)\) and without \((n = 30)\) ADHD participated in this study. All mothers had at least one child with ADHD between the ages of 8 and 14 years. The mothers’ ages ranged from 31 to 50 years \((M = 41.1 \text{ years}, SD = 4.74)\). Demographic characteristics for both groups are summarized separately in Table 1. Mothers with ADHD were more likely than mothers without ADHD to be single parents, \(\chi^2 (1, N = 60) = 4.59, p = .03\) and to have less education, \(t(58) = 3.07, p = .003\). There were no differences in maternal age, ethnicity, number of children, age of children, or gender of children between the two groups. Children of mothers with ADHD had higher levels of Oppositional Defiant Disorder symptoms, \(t(58) = 2.13, p = .037\), and Conduct Disorder symptoms, \(t(58) = 2.98, p = .005\), compared to children of mothers without ADHD (see Table 1 for means). Seventy-seven percent of the children were given medication to treat their ADHD and 45% of children were medicated during their participation in the study. There were no group differences in medication rates for the children. Of the ADHD mothers, 50% met criteria for ADHD-Combined subtype, 37% met criteria for ADHD-Inattentive subtype and 13% met diagnostic criteria for ADHD-Hyperactive/Impulsive subtype.

Mothers were recruited using notices in community centres, schools, libraries, newspaper announcements, hospitals, and local support groups for ADHD such as Children and Adults with Attention-Deficit/Hyperactivity (ChADD). As mentioned earlier, only mothers, and not fathers, were recruited because despite increased paternal involvement in child-rearing over the past few decades (Pleck, 1997), mothers continue to be responsible for the majority of child-rearing duties. Financial, time, and personnel constraints also had an
### Table 1

**Demographic Characteristics of the Sample**

<table>
<thead>
<tr>
<th>Demographic variables</th>
<th>Group</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control ((n = 30))</td>
<td>ADHD ((n = 30))</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mothers' age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(M)</td>
<td>41.40</td>
<td>40.80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(SD)</td>
<td>4.83</td>
<td>4.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother's ethnicity (% Caucasian/White)</td>
<td>86.67%</td>
<td>93.33%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mothers' level of education</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(M)</td>
<td>3.40</td>
<td>2.63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(SD)</td>
<td>.81</td>
<td>1.10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marital status (% single mothers)</td>
<td>23%</td>
<td>50%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mothers taking psychiatric medication (%)</td>
<td>10%</td>
<td>53.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(M)</td>
<td>10.83</td>
<td>10.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(SD)</td>
<td>1.90</td>
<td>1.86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of children</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(M)</td>
<td>2.47</td>
<td>2.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(SD)</td>
<td>1.07</td>
<td>.85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender of children (% boys)</td>
<td>80%</td>
<td>67%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child ADHD subtypes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inattentive</td>
<td>20%</td>
<td>30%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hyperactive/Impulsive</td>
<td>7%</td>
<td>3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combined</td>
<td>73%</td>
<td>67%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child ODD symptoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(M)</td>
<td>1.53</td>
<td>1.96</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(SD)</td>
<td>.79</td>
<td>.76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child CD symptoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(M)</td>
<td>.11</td>
<td>.30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(SD)</td>
<td>.16</td>
<td>.31</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* For mothers' level of education, 1 = high school not complete, 2 = high school graduate, 3 = partial university or specialized training completed, 4 = university degree completed. ADHD = Attention Deficit Hyperactivity Disorder; ODD = Oppositional Defiant Disorder; CD = Conduct Disorder.
impact in this decision. Although including fathers with ADHD would have been ideal, focusing solely on mothers helped to decrease the variability of the sample and thereby increase statistical power.

Procedure

Mothers who expressed interest in the study were contacted by telephone and the research procedures were explained. If mothers were between the ages of 22 and 60 years-old and had a child who had been diagnosed with ADHD by a physician or psychologist, they advanced to the next phase of the study which involved the choice of either the mother-child dyad making a conjoint visit to the Parenting Laboratory at UBC or the researchers visiting the mother-child dyad at their home.

During the lab or home-visit, the purpose of the study was explained. Informed consent was obtained from the mothers and assent was obtained from the children. All mothers were given a self-report rating scale to measure ADHD symptoms. In both groups of mothers, the presence of mood, anxiety, substance use, and psychotic disorders was assessed using a structured clinical interview. Inclusion criteria for ADHD and nonADHD mothers are described below. In addition to reporting about their own symptoms, all mothers completed a rating scale and brief interview to confirm the diagnosis of ADHD in their children. Finally, all participants (mothers and children) completed a series of measures of parenting behaviour, administered in a counterbalanced order to reduce order effects. All participating families received a $20 honorarium and a UBC t-shirt for the child.

Mothers with ADHD: Assessment Protocol and Inclusion/Exclusion Criteria

After the initial telephone contact, mothers who identified themselves as having ADHD engaged in a 15-minute telephone screening interview. During the screening
interview, mothers were asked to indicate the presence or absence (i.e., yes/no) of each of the 18 ADHD symptoms from the DSM-IV (APA, 1994), based on their current functioning (in the previous 6 months) and on their recollection of their childhood functioning. For the childhood ADHD symptoms, although the DSM-IV criterion stipulates that symptoms must be present before age 7, Applegate et al. (1995) and Hesslinger et al. (2003) demonstrated that there was no difference in the presentation of children with an onset of ADHD symptoms prior to age 7 and prior to age 12. Therefore, mothers were asked to report on their experience of ADHD symptoms when they were 12 years or younger. For both the current and retrospective childhood symptoms of ADHD, a stringent criterion of endorsing six of the nine DSM-IV (APA, 1994) Inattentive and/or Hyperactive-Impulsive symptoms for ADHD was set as the minimum requirement for inclusion in the ADHD parent group.

In addition to the above criteria, mothers were required to have a score of 1.5 standard deviations above the norm (a T score of at least 65) on the inattention and/or hyperactive/impulsive subscales of the CAARS-S: SV (Conners, Erhardt, & Sparrow, 1999). Beyond requiring clinically significant levels of ADHD symptoms, the DSM-IV criteria for a diagnosis of ADHD include the existence of chronicity, pervasiveness, and functional impairment (APA, 1994). For evidence of chronicity, the data collected for the retrospective recall of childhood ADHD symptoms during the telephone screening interview were used. The pervasiveness of ADHD symptoms and functional impairment were assessed using a rating scale that queried the extent to which mothers perceived that ADHD symptoms interfered with their ability to function across multiple domains of living. Mothers who reported that their ADHD symptoms interfered in at least two domains were included in the study.
In summary, inclusion criteria for mothers with ADHD involved a score of 1.5 standard deviations above the mean on the CAARS-S: SV for current functioning, a positive endorsement of at least six of the nine inattentive and/or hyperactive-impulsive DSM-IV ADHD symptoms for both current and childhood functioning, and evidence of impairment across situations. Thirty percent of mothers who contacted the Parenting Laboratory and identified themselves as having ADHD were excluded from the study because they did not meet these inclusion criteria. Due to the stringent criteria used to assess mothers’ level of childhood and current ADHD symptoms, only one of the excluded mothers was eliminated from the study for having a score below the clinical threshold on the CAARS-S: SV.

Control Mothers: Inclusion/Exclusion Criteria

Only mothers who scored less than one standard deviation above the mean (i.e., a T-score below 60) on the CAARS-S:SV were included in the control group. In addition, control mothers who identified a significant impairment in one or more of the domains of living were excluded from the study. One mother was excluded from the study based on a T-score greater than 60 on the CAARS-S: SV. No other exclusion criteria were used. In both groups of mothers, participants were not excluded for having anxiety, mood, or substance abuse disorders because the goal was to have rates of psychopathology that were consistent with a normal and a clinical sample.

Assessment of ADHD in the Children

The child’s diagnosis of ADHD was assessed using mothers’ reports on the ADHD-IV Rating Scale (DuPaul, Power, Anastopoulos, & Reid, 1998). The ADHD-IV Rating Scale is a 4-point, Likert type rating scale ranging from 0 to 3 that contains the 18 ADHD symptoms from the DSM-IV. A score of 2 or 3 was counted as a positive symptom.
endorsement and, consistent with DSM-IV criteria, children who were reported to have six of the nine inattentive and/or hyperactive/impulsive symptoms, in combination with the mother’s report of the child’s diagnosis by the health care professional, were assessed as having ADHD. Data from three participants were excluded based on these criteria. The ADHD-IV Rating Scale has a test-retest reliability of .85 and an internal consistency of .92 (DuPaul et al., 1998). Seventy-percent of the child sample met diagnostic criteria for the combined subtype of ADHD, 25% met diagnostic criteria for the inattentive subtype, and 5% met diagnostic criteria for the hyperactive/impulsive subtype. There were no differences in the frequency of child ADHD subtypes between the two groups (see Table 1). Mothers were asked to rate their child’s behaviour when they were not on medication, which was feasible because all children who were taking stimulant medication were on the short-acting type.¹

Measure of Child Disruptive Behaviour

Children’s level of ODD and CD behaviours was assessed by mother report using the same format as the ADHD-IV Rating Scale (i.e., a 4-point Likert rating scale ranging from 0 to 3). The rating scale contains the 8 ODD items and the 15 CD items from the DSM-IV. All participating mothers completed this measure of child behaviour problems. Although reliability and validity information are not published for this entire measure, the data are likely to be consistent with the ADHD-IV Rating Scale due to the similar format and content (i.e., child externalizing behaviours) of these measures. Johnston, Scoular, and Ohan (2004) reported an internal consistency of .81 for the ODD items using the same rating scale format. In the current study the ODD and CD rating scales demonstrated good reliability, with internal consistencies of .93 and .83 respectively.

¹ At the time of this study, long-acting forms of stimulant medication (e.g., Concerta) were not available in Canada.
Measures of Maternal Psychopathology

Maternal ADHD. The CAARS is a 30 item, 4-point, Likert style rating scale with scores for each item ranging from 0 (not at all/never) to 3 (very much/very frequently). The CAARS-S: SV items include the 18 DSM-IV symptoms for ADHD and empirically derived, age and gender based thresholds for ADHD symptoms are provided. The CAARS-S: SV has good psychometric properties, with an internal consistency of .95 for mothers on the DSM-IV Inattention subscale, and .93 for mothers on the DSM-IV Hyperactive/Impulsive subscale in this study. Factor analysis of a longer version of the CAARS-S scale produced a four-factor solution that included inattention/memory, hyperactivity/restlessness, impulsivity/emotional lability, and problems with self-concept factors. The inattention, hyperactivity, and impulsivity factors contain items from the relevant DSM-IV symptom clusters, and their 1-month test-retest reliabilities are .88 for the inattention/memory items, .90 for the hyperactivity/restlessness items and .80 for the impulsivity/emotional lability items (Conners et al., 1999). The CAARS has been shown to discriminate between adults with and without ADHD and to correlate with other measures of adult ADHD (Erhardt et al., 1999).

Maternal functional impairment. Mothers completed a brief 4-point rating scale that asked about their functioning in the areas of home living, work, social interactions, dealings in the community, educational activities, dating/marital relationships, money management, recreational activities, daily responsibilities, and operating a motor vehicle (Barkley & Murphy, 1998). The scale ranged from 0 (never), 1 (sometimes), 2 (often), to 3 (very often). Mothers who reported that their ADHD symptoms interfered “often” or “very often” in at least two domains were included in the study.
Maternal psychopathology. The presence of mood, anxiety, psychotic and substance use disorders was assessed in all participating mothers using relevant modules from the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I; First, Spitzer, Gibbon, Williams, 1997). The SCID-I is a semi-structured clinical interview designed to assess Axis I disorders using the full diagnostic criteria from the DSM-IV. In the interview, Axis I symptoms are reviewed with the participant and, based on the responses provided, a decision is made regarding whether the participant met diagnostic criteria for a given disorder. Although the SCID-I is designed to assess both the existence of disorders throughout the individual’s lifetime and current disorders, only current disorders were assessed in this dissertation. The test-retest reliability of the SCID-I ranges from kappas of .70 to 1.00 (First et al. 1997; Segal et al., 1993). Kranzler et al. (1995) demonstrated that using the SCID-I to make diagnoses has superior validity compared to standard clinical interviews. The SCID was administered by a senior doctoral student in clinical psychology and the interviews were audiotaped for reliability assessment purposes. Twenty percent of the SCID interviews were coded by an independent rater, a senior doctoral student in clinical psychology, and the kappa was .87 for the anxiety disorders (i.e., Social Phobia and Generalized Anxiety Disorder), .90 for Major Depressive Disorder, and 1.00 for the remaining disorders (i.e., substance abuse, psychotic disorders). Although the original interviewer was not blind to the study hypotheses or group membership of mothers, the reliability interviewer was blind to this information. Measures of parenting

Monitoring. Maternal monitoring was assessed using child and parent self-report measures and a semi-structured interview. The Alabama Parenting Questionnaire (APQ; Shelton, Frick, & Wootton, 1996) was used as the self-report measure. The APQ is a 42 item,
5-point Likert type rating scale designed to assess parenting practices in families of children between the ages of 6 and 13 years. For this study, the scale consisted of 40 items because two of the more severe corporal punishment items were excluded. There are parent and child versions of the rating scale, and both include a 10-item subscale that measures parental monitoring. Examples of items are “Your child is at home without adult supervision” (parent question) and “You are at home without adult supervision” (child question) to which the parent or child respond on a scale ranging from 0 (never) to 4 (always). For both mothers and children, raw scores on the monitoring subscale of the APQ were summed for a possible range of 0 to 40. The questionnaire was read aloud to child participants by a research assistant to control for reading level among the children. The internal consistency for the 10-item monitoring subscale was .86 on the parent version and .82 on the child version in this study. As evidence of its validity, the 10-item monitoring subscale of the APQ has been found to differentiate clinic-referred and nonproblem families in past research (Shelton et al., 1996).

A second measure of monitoring involved asking the mother and child a series of questions that were developed by Crouter et al. (1990). The child and parent questions are identical and involve specific events that occurred the previous day, such as “Did you have any homework yesterday?” (child question) or “Did your child have any homework yesterday?” (parent question). The dyad was interviewed separately to ensure that responses were independent. Parent and child responses were compared and answers that matched received a score of 1, whereas answers that did not match received a score of 0. The number of non-matching responses was divided by the total number of questions asked to derive a percentage score for unmatched responses (or level of poor monitoring). This measure of
parental monitoring has been used in previous research and differentiates children with and without child conduct problems (Crouter et al., 1990; Kerns, Aspelmeier, Gentzler, & Grabill, 2001).

A final measure of monitoring was adapted from the Family Routine Inventory (FRI; Jensen, James, Boyce, & Hartnett, 1983). The FRI is a 28-item, 4-point parental rating scale with scores ranging from 0 (almost never) to 3 (always; everyday) that measures routines or the amount of structure in the home and was completed by mothers. The FRI was included because it has been argued that structuring a child’s environment facilitates supervision (Dishion & McMahon, 1998). Thus, in addition to tracking the child’s behaviour, structure within the home is considered to be an important component of parental monitoring (Dishion, Patterson, Stoolmiller, & Skinner, 1991). As recommended by the scale authors (Jensen et al., 1983), scores were summed for a possible range of scores from 0 to 84. The internal consistency for the FRI was .85 in this study. The 30-day test-retest reliability of the FRI is .79 (Jensen et al., 1983). The FRI has been shown to correlate with other measures of family routines or organization and to discriminate between families of children with and without behavioural problems (Jensen et al., 1983).

Consistency. The Parenting Scale (PS; Arnold, O'Leary, Wolff, & Acker, 1993) and the Alabama Parenting Questionnaire were used to assess intra-parent consistency of rule enforcement. The PS is a 30-item, 7-point self-report questionnaire designed to assess disciplinary practices of parents and was completed by mothers. The laxness subscale, which measures parental consistency, consists of 15 items (Harvey et al., 2001). Parents are presented with two statements for each question and they must use a Likert scale to indicate which statement is most similar to their parenting style. For example, which of the following
statements describes them best: “When my child does something I don’t like, I often let it go” or “I do something about it every time it happens”. Raw scores were summed for a possible range of 0 to 105. The internal consistency for the laxness scale was .89 in this study. Previous research has reported a test re-test reliability of .83 (with a 2 week interval) (Arnold et al., 1993). As evidence of validity, the laxness subscale has been shown to distinguish clinic-referred parents from non-referred parents and to correlate with measures of child problems (Arnold et al., 1993; Harvey et al., 2001).

The Alabama Parenting Questionnaire, described above, contains a 6-item, 5-point subscale that measures parents’ inconsistent use of discipline (Shelton et al. 1996). Both mothers and their children completed the APQ in this study. Examples of items on the parent questionnaire are “The punishment you give your child depends on your mood” or “Your child talks you out of being punished after he/she has done something wrong.” The parent must then rate the how frequently the statement describes them, ranging from “never” to “always.” The APQ raw scores from the six items were summed for a possible range of 0 to 24. Consistent with previous research, the Inconsistent Discipline scale had an internal consistency of .66 for parents and .40 for children in this sample. The test-retest reliability for the Inconsistent Discipline scale is .85 for parents and .83 for children (Shelton et al., 1996). Similar to the Poor Monitoring subscale of the APQ, the Inconsistent Discipline subscale has been found to differentiate between clinic-referred and nonproblem families (Shelton et al., 1996).

Problem-Solving. A computer task called the Cry Problem that was developed by Holden (1985) was used to assess parental problem-solving. The computer task involves investigating why a baby is crying. The mother is given a list of nine possible reasons why
the baby could be crying (e.g., hungry, sick, tired, bored) and must select information from the computer to uncover the real reason. The mother can select an explanation for the crying at any time, with the caveat that they should select the fewest pieces of information possible and avoid “wild guessing.” After mothers choose an explanation, they are asked to rate their confidence level in their choice on a 5-point rating scale ranging from 1 (not very sure at all) to 5 (very sure). Once a choice is made and the confidence level indicated, the mother is given feedback (e.g. correct or incorrect choice) and the opportunity to continue gathering information if she was incorrect or to terminate the task. The number of information pieces requested before making the correct choice, mothers’ confidence level in the accuracy of their guesses, and the number of incorrect guesses are measured. Although reliability information has not been presented, the measure of parental problem-solving has been shown to distinguish parents with high and low levels of child-care experience on all three outcome variables (Holden, 1988).

The second measure of problem-solving was a modified version of the Parental Problem-Solving Measure (PPSM; Hansen et al., 1995). The PPSM is an instrument that consists of 15 problematic situations, 3 in each of the following areas: child management problems, anger and stress, financial problems, child-care resource problems, and interpersonal problems. To shorten the administration time of this measure, mothers were presented with the three child management problems instead of all 15 problematic situations and asked to discuss how they would solve the problem. An example of a child management problem is: “Your child’s teacher calls you and says that your child is misbehaving at school. Your child teases other children, is disruptive in the classroom, and gets in fights on the playground. The teacher is very upset and says you must do something.” Maternal
responses were audiotaped and coded using procedures developed by Hansen et al. (1995) for (1) the number of solutions offered, (2) the effectiveness of the solution(s), and (3) the level of planning indicated. The quality of each solution was rated on a 7-point Likert scale ranging from 1 (very ineffective) to 7 (very effective). The level of planning was determined by coding the mothers' responses for: sensitivity to consequences, anticipation of obstacles, acknowledgement of social rules, ability to set goals, providing a detailed solution, presenting a realistic plan, and offering a solution in a logical sequence. For each planning strategy, mothers' responses were assessed for whether or not they used each strategy. If mothers used only one of the seven strategies, they received a score of 1, if mothers used two strategies, they received a score of 2, etc. In other words, the number of strategies used was summed so that planning scores ranged from 0 to 7. The manual developed by Hansen et al. (1995) was used to train coders who met on a weekly basis until acceptable levels of agreement were reached. Thirty percent of the audiotapes were coded by two independent coders who were blind to the study hypotheses and the inter-rater reliability was .89 for the number of solutions, .86 for the effectiveness of the solutions, and .88 for the level of planning. The PPSM has been found to discriminate between maltreating and non-maltreating parents (Hansen et al., 1995).

Positive Parenting. To evaluate whether there were differences between mothers with and without ADHD in terms of positive parenting behaviour (e.g., affection, praise), mothers’ and children’s responses on the 6-item Positive Parenting subscale from the Alabama Parenting Questionnaire were evaluated (Shelton et al. 1996). An example of a parent item on this subscale is “You compliment your child when he/she does something well.” An example of a child item on this subscale is “My mother compliments me when I
do something well.” The APQ raw scores from the six items were summed for a possible range of 0 to 24. The Positive Parenting subscale had an internal consistency of .82 for parents and .76 for children in this sample, which is consistent with previous findings (Shelton et al., 1996). The test-retest reliability for the Positive Parenting subscale is .88 for parents and .81 for children (Shelton et al., 1996). The Positive Parenting subscale is negatively correlated with child age, which is consistent with research indicating that positive parenting practices decrease as children age (Shelton et al., 1996).
Results

Demographics and Psychiatric Comorbidities

As mentioned in the previous section, no significant differences were found for maternal age, ethnicity, number of children, or age of children between the two groups. Differences were found such that mothers with ADHD were more likely to be single parents, have fewer years of formal education, and have a comorbid anxiety and/or depressive disorder compared to mothers without ADHD. In terms of comorbid psychiatric disorders, 70% of mothers with ADHD had a comorbid anxiety and/or depressive disorder compared to 23% of nonADHD mothers, $\chi^2 (1, N = 60) = 13.13, p < .001$. There were no significant differences between the groups for the presence of psychotic, alcohol abuse/dependence, or substance abuse/dependence disorders. Mothers with ADHD were more likely to be taking psychiatric medication (53%) compared to nonADHD mothers (10%), $\chi^2 (1, N = 60) = 13.01, p < .001$. Of the 16 ADHD mothers taking medication, 15 were taking anti-depressant or anti-anxiety medication and only one mother was taking stimulant medication. The three control mothers on medication were taking anti-depressants.

To test the hypotheses outlined in this dissertation, family-wise comparisons were conducted for each of the three primary constructs in this study: maternal monitoring, consistency, and problem-solving scores. Independent sample t-tests were used to investigate group differences and the family-wise error rate was set at .05 and the Bonferroni correction was used to protect against Type I error in all analyses.

Maternal Monitoring

To minimize Type I error, significance was set by dividing .05 by the number of measures analyzed within a given family of outcomes. For maternal monitoring, significance
was set at .016 (.05/3) because three t-test analyses were performed to investigate whether mothers with ADHD monitored their children less than mothers without ADHD. As predicted, an analysis of the monitoring scale from the APQ indicated that mothers with ADHD monitored their children less than mothers without ADHD, \( t(58) = 2.85, p = .007 \). Similarly, t-tests on maternal self-reports of family structure and routines, as measured by the FRI, indicated that mothers with ADHD had fewer routines (and therefore less opportunity to acquire knowledge or supervise their children) compared to mothers without ADHD, \( t(58) = 5.22, p < .001 \). In addition to results yielded from self-report data, a consistency score from the mother and child monitoring interview indicated that mothers with ADHD were less aware of their children's activities in the past 24 hours compared to mothers without ADHD, \( t(58) = 5.49, p < .001 \). Means, standard deviations, probability levels, and effect sizes for the monitoring data are presented in Table 2.

Table 2

| Monitoring measures | Group | | | | |
|---------------------|-------|---|---|---|
| | Control (n = 30) | ADHD (n = 30) | \( p \) value | Cohen's \( d \) |
| **Alabama Parenting Questionnaire (APQ)** | | | | |
| (Poor Monitoring subscale – mother report) | | | | |
| \( M \) | 4.73 | 9.00 | .007 | .74 |
| \( SD \) | 3.96 | 7.17 | | |
| **Family Routine Inventory (FRI) – mother report** | | | | |
| \( M \) | 2.06 | 1.49 | <.001 | 1.35 |
| \( SD \) | .34 | .49 | | |
| **Mother/Child Monitoring Interview** | | | | |
| (% inconsistency between mother and child) | | | | |
| \( M \) | 18.64 | 36.87 | <.001 | 1.42 |
| \( SD \) | 9.17 | 15.73 | | |

*Note.* On the APQ, higher scores indicate poorer monitoring. On the FRI, lower scores indicate fewer routines. ADHD = Attention Deficit Hyperactivity Disorder.
Maternal Inconsistency

To minimize Type I error for maternal consistency, alpha was set at .016 (.05/3) as three t-tests were performed to determine whether mothers with ADHD were less consistent in their parenting compared to mothers without ADHD. As predicted, mothers with ADHD were significantly less consistent than nonADHD mothers on both the Inconsistent Discipline scale of the APQ, \( t(58) = 4.56, p < .001 \), and the Laxness scale of the PS, \( t(58) = 4.13, p < .001 \). Contrary to predictions, although means were in the expected direction, no statistically significant group differences were found in children’s reports of their mothers’ consistency on the Inconsistent Discipline scale from the APQ. Means, standard deviations, probability levels, and effect sizes for maternal inconsistency are presented in Table 3.

Table 3

Means, Standard Deviations, Probability Levels, and Effect Sizes for Maternal Inconsistency

<table>
<thead>
<tr>
<th>Inconsistency measures</th>
<th>Group</th>
<th>Control (n = 30)</th>
<th>ADHD (n = 30)</th>
<th>p</th>
<th>Cohen’s d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parenting Scale (PS)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Laxness subscale – Mother report)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( M )</td>
<td></td>
<td>2.74</td>
<td>3.76</td>
<td>&lt;.001</td>
<td>1.08</td>
</tr>
<tr>
<td>( SD )</td>
<td></td>
<td>.69</td>
<td>1.15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alabama Parenting Questionnaire (APQ)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Inconsistent Discipline subscale – Mother report)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( M )</td>
<td></td>
<td>6.97</td>
<td>11.83</td>
<td>&lt;.001</td>
<td>1.17</td>
</tr>
<tr>
<td>( SD )</td>
<td></td>
<td>3.81</td>
<td>4.44</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APQ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Inconsistent Discipline subscale) – Child report</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( M )</td>
<td></td>
<td>8.43</td>
<td>8.97</td>
<td>.66</td>
<td>.12</td>
</tr>
<tr>
<td>( SD )</td>
<td></td>
<td>4.58</td>
<td>4.54</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. On all scales, higher scores indicate higher levels of inconsistent parenting. ADHD = Attention Deficit Hyperactivity Disorder.
Maternal Problem-Solving

Maternal problem-solving was assessed using six independent t-tests with an alpha of .008 (.05/6) to minimize Type I error. For the Holden (1985) Cry Problem computer task, there were no statistically significant differences between mothers with and without ADHD on the three outcome measures (i.e., the number of information pieces requested, mothers’ confidence level in their selections, the number of incorrect guesses made). For the PPSM, three t-tests were used to compare the number of solutions, the effectiveness of the solutions, and the level of planning offered by mothers with and without ADHD. Although no statistically significant differences were found for the number of solutions generated for the problems, the quality of the solutions offered differed significantly between groups. As predicted, the effectiveness or quality of the solutions generated by mothers with ADHD was lower compared to mothers without ADHD, \( t (58) = 7.21, p < .001 \). In addition, the level of planning involved in the solutions was lower for ADHD mothers compared to mothers without ADHD, \( t (58) = 5.86, p < .001 \). Means, standard deviations, probability levels, and effect sizes for the problem-solving data are presented in Table 4.

Positive Parenting

To minimize Type I error for positive parenting, alpha was set at .03 (.05/2). T-tests were used to compare the amount of positive parenting behaviours in mothers with and without ADHD. Results indicated that by mother, \( t (58) = 1.58, p = 0.13 \), and child, \( t (58) = 1.00, p = 0.32 \), report, there was no statistically significant difference between groups for the amount of positive parenting techniques used. Means, standard deviations, probability levels, and effect sizes are presented in Table 5.
Table 4

*Means, Standard Deviations, Probability Levels, and Effect Sizes for Maternal Problem Solving*

<table>
<thead>
<tr>
<th>Problem solving measures</th>
<th>Group</th>
<th></th>
<th></th>
<th>( p ) value</th>
<th>Cohen's ( d )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control ((n = 30))</td>
<td>ADHD ((n = 30))</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cry Problem (number of information pieces requested)</td>
<td></td>
<td></td>
<td>.61</td>
<td>.19</td>
<td></td>
</tr>
<tr>
<td>( M )</td>
<td>10.40</td>
<td>9.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( SD )</td>
<td>7.87</td>
<td>7.14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cry Problem (mean confidence level in all guesses)</td>
<td></td>
<td></td>
<td>.22</td>
<td>.33</td>
<td></td>
</tr>
<tr>
<td>( M )</td>
<td>3.57</td>
<td>3.33</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( SD )</td>
<td>.62</td>
<td>.84</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cry Problem (number of incorrect guesses)</td>
<td></td>
<td></td>
<td>.22</td>
<td>.34</td>
<td></td>
</tr>
<tr>
<td>( M )</td>
<td>.87</td>
<td>1.43</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( SD )</td>
<td>1.14</td>
<td>2.03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPSM (number of solutions offered)</td>
<td></td>
<td></td>
<td>.78</td>
<td>.07</td>
<td></td>
</tr>
<tr>
<td>( M )</td>
<td>2.56</td>
<td>2.49</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( SD )</td>
<td>.86</td>
<td>1.01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPSM (quality of solutions offered)</td>
<td></td>
<td></td>
<td>&lt;.001</td>
<td>1.84</td>
<td></td>
</tr>
<tr>
<td>( M )</td>
<td>4.88</td>
<td>3.70</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( SD )</td>
<td>.66</td>
<td>.62</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPSM (overall planning)</td>
<td></td>
<td></td>
<td>&lt;.001</td>
<td>1.52</td>
<td></td>
</tr>
<tr>
<td>( M )</td>
<td>3.07</td>
<td>1.13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( SD )</td>
<td>1.54</td>
<td>.95</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* PPSM = Parenting Problem-Solving Measure. ADHD = Attention Deficit Hyperactivity Disorder.

Table 5

*Means, Standard Deviations, Probability Levels, and Effect Sizes for Positive Parenting*

<table>
<thead>
<tr>
<th>Positive Parenting</th>
<th>Group</th>
<th></th>
<th></th>
<th>( p ) value</th>
<th>Cohen's ( d )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control ((n = 30))</td>
<td>ADHD ((n = 30))</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alabama Parenting Questionnaire (APQ)</td>
<td></td>
<td></td>
<td>.13</td>
<td>.41</td>
<td></td>
</tr>
<tr>
<td>(Positive Parenting subscale – Mother report)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( M )</td>
<td>19.03</td>
<td>17.53</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( SD )</td>
<td>3.59</td>
<td>3.79</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APQ (Positive Parenting subscale) – Child report</td>
<td></td>
<td></td>
<td>.32</td>
<td>.26</td>
<td></td>
</tr>
<tr>
<td>( M )</td>
<td>16.93</td>
<td>15.90</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( SD )</td>
<td>4.14</td>
<td>3.83</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* On all scales, higher scores indicate higher levels of positive parenting. ADHD = Attention Deficit Hyperactivity Disorder.
Secondary Analyses

Although it has been common practice to control for group differences on demographic or other variables using an analysis of variance (ANCOVA), there are strong arguments against this practice in psychopathology research. Miller and Chapman (2001) argue that controlling for pre-existing group differences in a non-random design is inappropriate because it violates a core assumption of the ANCOVA: covariates must be statistically independent from the “treatment” or diagnostic category. If the covariates are not independent, the regression adjustment of the ANCOVA may remove variability that is essential to the pre-existing condition. Given that the group differences found (e.g., lower educational achievement in mothers with ADHD) likely reflect attributes that are germane to maternal ADHD, employing an ANCOVA to control for such characteristics would violate the assumption of independence and is therefore considered inappropriate. In other words, lower educational achievement, single-parenthood, and comorbid mood/anxiety disorders may be important components of maternal ADHD and trying to eliminate these aspects does not make sense statistically or clinically. Yet despite strong methodological and practical rationales for not controlling these variables in the analyses, it is compelling from a theoretical perspective to investigate whether the relationship between parenting variables and maternal ADHD remains when the variability introduced by these variables is removed.

Analyses with marital status controlled. All single-parent families were removed from the analyses and independent t-tests were performed comparing monitoring, consistency, problem-solving, and positive parenting in mothers with and without ADHD. Removing single-parent families reduced the sample to 23 nonADHD mothers and 15 ADHD mothers.
For maternal monitoring, t-tests revealed that predicted differences remained between the two groups on the Family Routine Inventory, \( t(36) = 3.74, p = .001 \) and the Monitoring Interview, \( t(36) = 3.30, p = .004 \). There was a trend in the predicted direction on the Alabama Parenting Questionnaire – Poor Monitoring subscale, \( t(36) = 1.67, p = .11 \).

For maternal inconsistency, mothers with ADHD were less consistent compared to nonADHD mothers based on self-report as measured by the Alabama Parenting Questionnaire – Inconsistent Discipline subscale, \( t(36) = 2.97, p = .005 \) and the Parenting Scale – Laxness subscale, \( t(36) = 3.77, p = .001 \). Consistent with the primary analysis, there was no statistically significant difference between ADHD and control mothers for consistency based on child report using the Alabama Parenting Questionnaire - Inconsistent Discipline subscale, \( t(36) = 1.51, p = .15 \).

In terms of problem-solving, there were no statistically significant differences on the outcome measures of the Cry Problem task between mothers with and without ADHD. Mothers with ADHD showed statistically similar levels of information pieces requested, \( t(36) = .24, p = .81 \), number of incorrect guesses, \( t(36) = .48, p = .64 \), and confidence levels in their guesses, \( t(36) = .22, p = .83 \), compared to control mothers. On the Parenting Problem-Solving Measure mothers with and without ADHD were statistically similar to control mothers in the number of solutions offered, \( t(36) = .54, p = .78 \), but demonstrated lower quality solutions, \( t(36) = 5.01, p < .001 \), and less effective planning, \( t(36) = 4.32, p < .001 \), than control mothers.

For Positive Parenting there was no statistically significant difference between mothers with and without ADHD by mother report, \( t(36) = .42, p = .68 \), and child report,
\( t(36) = .68, p = .50 \), according to the Alabama Parenting Questionnaire – Positive Parenting subscale.

In summary, with the exception of one monitoring measure that indicated a group difference only at the trend level (i.e., Alabama Parenting Questionnaire – Poor Monitoring subscale) the analyses using only two-parent families were consistent with the primary analyses using the entire sample.

**Analyses with educational level controlled.** Mothers with and without ADHD were matched on educational level. With a sample size of 19 mothers in each group, findings from the primary analyses were supported with one exception.

For maternal monitoring, mothers with ADHD monitored their children less compared to nonADHD mothers, as measured by the Monitoring Interview, \( t(36) = 3.09, p = .004 \), and the Family Routine Inventory, \( t(36) = 3.48, p = .001 \). There was no statistically significant difference between groups on the Alabama Parenting Questionnaire – Poor Monitoring subscale, \( t(36) = 1.20, p = .24 \), although the means were in the predicted direction.

For maternal consistency, mothers with ADHD were less consistent compared to control mothers as measured by the Alabama Parenting Questionnaire – Inconsistent Discipline subscale, \( t(36) = 3.13, p = .003 \), and the Parenting Scale – Laxness subscale, \( t(36) = 2.60, p = .01 \). Similar to the analysis using the entire sample of mothers, there was no statistically significant difference between mothers with and without ADHD on the child report of the Alabama Parenting Questionnaire – Inconsistent Discipline subscale, \( t(36) = .37, p = .72 \).
On the Cry Problem measure of problem-solving, there were no statistically significant differences between mothers with and without ADHD for the number of information pieces requested, $t(36) = .67, p = .51$, the number of incorrect guesses made, $t(36) = .55, p = .59$, or the mothers' confidence levels in their guesses, $t(36) = .92, p = .36$. On the Parental Problem-Solving Measure, there was no statistically significant group difference in the number of solutions offered by mothers, $t(36) = .73, p = .47$, but mothers with ADHD provided solutions that were lower in quality, $t(36) = 5.04, p < .001$, and planning effectiveness, $t(36) = 3.12, p = .003$, compared to nonADHD mothers.

For positive parenting, there were no statistically significant differences between mothers with and without ADHD by mother report, $t(36) = .29, p = .78$, or child report, $t(36) = .98, p = .33$, on the Alabama Parenting Questionnaire – Positive Parenting subscale.

Analyses with child oppositional/conduct disorder controlled. The primary analyses were performed with the exclusion of all children with high levels of ODD and CD. Specifically, all children with ODD and CD symptom ratings that were at or above clinically significant levels were excluded from the analyses. Clinical significance was determined using the DSM-IV symptom cut-off guidelines for disruptive behaviour disorders: Children who were rated as having at least 4 of the 8 ODD symptoms and/or 3 of the 15 CD symptoms either “often” or “very often” by their mothers were excluded. After these children were removed from the sample there remained only 8 children in the group of mothers with ADHD and 13 in the nonADHD group. With the exception of one outcome measure (i.e., overall planning for problem-solving), mothers with ADHD continued to show significantly more impairment than mothers without ADHD on most of the parenting measures that had revealed differences in the whole sample or there was a trend in this direction.
For monitoring, mothers with ADHD supervised their children significantly less than nonADHD mothers according to the Monitoring Interview, $t(19) = 4.92, p < .001$, and the Family Routine Inventory, $t(19) = 3.97, p = .001$. There was a trend for ADHD mothers to monitor their children less than control mothers as measured by the Alabama Parenting Questionnaire, $t(19) = 1.74, p = .09$.

In terms of consistency, mothers with ADHD were significantly more inconsistent than nonADHD mothers as measured by the Alabama Parenting Questionnaire – Inconsistent Discipline subscale, $t(19) = 2.26, p = .03$, and there was a trend in this direction on the Parenting Scale – Laxness subscale, $t(19) = 1.78, p = .09$. Similar to the analysis using the entire sample, there was no statistically significant difference in maternal consistency between the groups according to child report on the Alabama Parenting Questionnaire – Inconsistent Discipline subscale, $t(19) = .31, p = .76$.

On the Cry Problem measure of problem-solving, there were no group differences on the number of pieces of information requested, $t(19) = .32, p = .75$, the number of incorrect guesses, $t(19) = .88, p = .39$, or the mothers’ confidence levels of their guesses, $t(19) = .23, p = .82$. On the Parental Problem-Solving Measure there were no statistically significant group differences in the number of solutions offered by mothers, $t(19) = .77, p = .45$ or the planning effectiveness of the solutions offered, $t(19) = 1.08, p = .29$. Mothers with ADHD offered higher quality solutions compared to nonADHD mothers, $t(19) = 2.29, p = .03$.

For positive parenting mothers with and without ADHD did not differ in the amount of positive behaviour as measured by mother report, $t(19) = .81, p = .43$, and child report, $t(19) = .34, p = .74$, on the Positive Parenting subscale of the Alabama Parenting Questionnaire.
Analyses with comorbid maternal psychopathology controlled. All mothers with a comorbid mood and/or anxiety disorder were removed from the sample to examine the specificity of the impact of maternal ADHD symptoms on maternal monitoring, consistency, problem solving, and positive parenting. The remaining sample consisted of 23 control mothers and 9 mothers with ADHD. Even with this small sample size, many of the predicted differences between the two groups remained.

In terms of maternal monitoring, predicted differences remained on the Family Routine Inventory, \( t(30) = 2.16, p = .04 \), and the Monitoring Interview, \( t(30) = 3.47, p = .002 \), but not the Alabama Parenting Questionnaire – Poor Monitoring subscale, \( t(30) = .58, p = .57 \).

For maternal consistency, means for both maternal self-reports measures were in the expected direction, but were not statistically different from each other. The Alabama Parenting Scale – Inconsistent Discipline subscale indicated a trend, \( t(30) = 1.63, p = .11 \) for ADHD mothers to be less consistent compared to nonADHD mothers. Means between groups on the Parenting Scale - Laxness subscale did not differ significantly from each other, \( t(30) = .42, p = .71 \). Consistent with the primary analysis, there was no statistically significant group difference by child report, \( t(30) = .47, p = .64 \).

For problem-solving the results were consistent with the primary analyses. On the Cry Problem measure mothers with ADHD did not ask for more information, \( t(30) = 1.17, p = .25 \), or make more incorrect guesses, \( t(30) = .19, p = .85 \), compared to control mothers. With the comorbid mothers removed, mothers with ADHD did have lower confidence ratings in their guesses compared to nonADHD mothers, \( t(30) = 2.58, p = .02 \). Mothers with ADHD had lower scores on the Parental Problem Solving Measure for the quality of their solutions,
\[ t (30) = 5.47, p < .001, \] and the effectiveness of planning score, \[ t (30) = 3.13, p = .004, \]
compared to control mothers. There was no statistically significant difference in the number of solution offered by mothers with and without ADHD, \( t(30) = .28, p = .78. \)

**Analyses of maternal ADHD subtypes.** When the analyses were performed comparing nonADHD mothers \( (n = 30) \) and mothers with the Inattentive subtype of ADHD \( (n = 11) \), the results were identical to when the entire sample was analyzed and likewise when the analysis was performed comparing the nonADHD mothers and the mothers with the Combined subtype of ADHD \( (n = 15) \). Mothers with the Hyperactive/Impulsive subtype of ADHD were not analyzed separately due to the low sample size \( (n = 4) \). These analyses suggest that the effects of ADHD symptoms on parenting are broad, and not restricted to one subtype of symptoms. Comparing mothers in the Inattentive and Combined subtypes indicated differences between these groups. Mothers with the Inattentive subtype of ADHD had lower scores on two measures of maternal monitoring. They reported having fewer family routines, \( t (24) = 4.22, p < .001, \) and reported monitoring their children less, \( t (24) = 4.13, p < .001, \) compared to mothers with the Combined subtype of ADHD. On the Laxness subscale of the Parenting Scale mothers with the Inattentive subtype of ADHD reported that they were less consistent than mothers with the Combined subtype of ADHD, \( t (24) = 2.35, p = .028. \) There were no significant differences on measures of problem-solving, although there was a trend for the Inattentive mothers with ADHD to generate solutions that were lower in quality on the PPSM, \( t (24) = 1.97, p = .06. \) Mothers with the Combined subtype of ADHD reported higher levels of positive parenting, \( t (24) = 3.74, p = .001, \) compared to the Combined subtype of mothers.
Discussion

Many of the expected differences in parenting behaviour between mothers with and without ADHD were supported in this dissertation. Controlling for child ADHD, mothers with ADHD reported and displayed significant impairments in important parenting behaviours compared to mothers without ADHD.

As predicted, mothers with ADHD scored lower than mothers without ADHD on all three measures of monitoring or maternal knowledge about their child’s activities. These measures included not only self-reports, but also a task that assessed monitoring by comparing mothers’ reports of their children’s behaviour in a set time period against their child’s report. Although previous research has linked general maternal psychopathology to lower levels of monitoring their children’s behaviour (Chilcoat, Breslau, & Anthony, 1996), this is the first empirical study that specifically links maternal ADHD to lower parental monitoring. Theoretically and clinically, it makes sense that mothers who struggle with paying attention to their surroundings and being organized would have more difficulty keeping track of what their children are doing. In addition to the core symptoms of ADHD affecting their ability to monitor their child’s behaviour, fewer routines in the homes of mothers with ADHD may translate into fewer opportunities to speak with their children about daily events and gather information. Due to the established link between poor parental monitoring and the development of child behaviour problems, this association is of clinical interest and concern as it may indicate one way in which children of mothers with ADHD are at higher risk for developing additional behavior problems (Ary et al., 1999).

Although the consistency of the results across the three outcome measures makes a convincing case for lower monitoring in mothers with ADHD, as noted previously, Stattin
and Kerr (2000) have raised concerns about the measurement of parental monitoring. They argue that poor monitoring may not result from the parent’s inability or unwillingness to track what their child is doing, but rather, parents may not be aware of their children’s activities because certain children are more secretive about their activities and deliberately withhold information or lie. Thus, what is conceptualized as “poor maternal monitoring” may actually be child-driven or “poor child disclosure.” Granted, this concern is generally reserved for adolescents, whose increased autonomy from their parents naturally translates into less direct parental supervision and a higher reliance on child disclosure (e.g., who they spend their time with after school, what activities they engage in with peers). The majority of the children in the present study were pre-adolescent where higher levels of direct parental involvement are more normative and appropriate (e.g., checking homework completion, driving children to extracurricular activities). The young age of the children who participated in this study reduces the chances that poor child disclosure could account for the maternal monitoring results. Nevertheless, future studies will be needed to investigate the construct of monitoring more closely to determine the impact of child disclosure on parental monitoring and, if there is an impact, whether child age plays a role.

In terms of maternal parenting consistency, as predicted, both maternal self-report measures indicated that mothers with ADHD were less consistent in their parenting compared to mothers without ADHD. These results suggest that it is difficult to implement consequences for children’s non-compliance in a consistent way when a parent struggles with their own impulsive and distractible behaviour. Similar to monitoring, this finding is significant because intra-parent inconsistency has been linked to problematic behaviours in children (Acker & O’Leary, 1996). In contrast to predictions, the child report of maternal
consistency showed no statistically significant differences between mothers with and without ADHD. There are several possible explanations for these conflicting findings. One possibility is that self-reports of mothers with ADHD are inaccurate and negatively biased. In other words, mothers with ADHD may falsely view themselves as less consistent in their parenting compared to other mothers. An alternative explanation is that child reports of parenting may be less accurate than reports made by adults. Previous research has found that child reports are often incongruent with parent reports, whereas gathering information from another parent or teacher yields greater consistency with parent reports (Achenbach, McConaughy, & Howell, 1987). Shelton et al. (1996) called for caution when interpreting child reports of parenting practices. In their analyses of the psychometric properties of the APQ, child reports of parenting practices did not distinguish between clinical and non-clinical samples whereas the reports of other raters did. The poor internal consistency of the child-completed Inconsistent Discipline subscale found in this study (i.e., .40) certainly raises concerns about the reliability, and therefore validity, of this source of information. Given these factors, it seems reasonable to weigh the child report less heavily than the evidence provided by maternal self-reports. Future studies would benefit from employing observational measures of consistency that can be coded by independent raters or having another informant (e.g., fathers) provide information about the consistency of maternal rule enforcement.

Finally, there was mixed evidence for impaired problem-solving among mothers with ADHD. On the Cry Problem computer task, mothers with ADHD performed as well as mothers without ADHD on all three outcome measures. On the PPSM, there was no statistically significant difference in the number of solutions provided by mothers with and
without ADHD. However, the quality and planning of the solutions offered by nonADHD mothers were both superior to those offered by mothers with ADHD. An explanation for the discrepancy in these findings may be found in the qualitative differences between these measures of problem-solving. In the Cry Problem computer task, mothers were given a specific problem, offered nine possible explanations for the problem, and could choose from 25 pieces of information before guessing the cause of the problem. In the PPSM task, mothers were verbally presented with a child-rearing problem and asked to provide a solution, without any guidance or structure. It may be that the high level of structure offered in the Cry Problem computer task placed fewer organizational demands on the ADHD mothers, therefore enhancing their performance. In addition, it has been documented in children with ADHD that their performance is optimal on tasks that are novel and stimulating (Zentall, 1985). Most of the mothers in this study seemed to enjoy the computer task and perceived it as a game (e.g., some mothers asked for a copy to share with their friends). Thus, this aspect of the task may have obscured group differences on this task. It should be noted, however, that there was no evidence of a ceiling effect that would explain the lack of difference in the two groups. Another strength of the PPSM is that it has greater ecological validity compared to the Cry Problem task: in real life, parents are faced with parenting dilemmas and must generate their own questions and solutions without the benefit of immediate feedback. The PPSM also inquired about a few different child-rearing situations whereas the Cry Problem focused on one problem. Adding more child-rearing problems to computer tasks such as the Cry Problem may help contribute toward establishing the validity of this measure. In summary, the mixed evidence for problem-solving deficits among mothers with ADHD may be contaminated by the Cry Problem task, which appears to be an
inferior measure of problem-solving compared to the PPSM. Future research using problem-solving measures with established external and internal validity will help clarify whether mothers with ADHD have impaired problem-solving abilities.

Overall, the findings from this dissertation provide support for the existence of lower monitoring, intra-parent consistency, and problem-solving abilities in mothers with ADHD. These findings have important theoretical and clinical implications. Theoretically, the results add validity to the construct of adult ADHD by demonstrating that mothers with ADHD have specific deficits in the realm of parenting. This lends support to the functional impairment caused by high levels of inattention, restlessness, and impulsivity in adults. These findings also contribute to our knowledge of parenting processes by affirming that parental monitoring, consistency, and problem-solving behaviours vary among different parent populations, and specifically, are affected by psychopathology in parents. Clinically, it is well-established that deficits in monitoring, consistency, and problem solving in parenting are associated with deleterious effects on child development (Acker & O'Leary, 1996; Ary et al., 1999; Klein et al., 1997). It is possible that the children of mothers with ADHD may be at higher risk for the development of psychopathology as a result of these parenting deficits. For example, given the link between poor parental monitoring and substance use or risky sexual behaviour in adolescents, it is concerning that mothers with ADHD are not supervising their children as closely as nonADHD mothers, especially since many of these mothers are raising children with ADHD, who tend to act impulsively. The possibility of higher levels of psychopathology among children and adolescents of mothers with ADHD needs to be investigated further by researchers and monitored by clinicians.

Of particular concern to clinicians, these results may have implications for the
success of both pharmacological and psychosocial treatments for child ADHD when a parent also has the disorder. For example, stimulant medication is typically administered on a daily basis to children with ADHD to reduce the core symptoms. If mothers with ADHD are less likely to supervise their child’s activities or have regular routines, consistently administering the medication or verifying that children have taken the medication may present significant challenges. In terms of psychosocial treatments, Parent Management Training is often recommended to reduce behavioural problems among children with ADHD. The focus of these programs is on encouraging parents to monitor their children’s behaviour, choose a specific behavioural strategy depending on the situation, and employ strategies consistently. Although these behaviours can be difficult for many parents to adopt, this study suggests that mothers with ADHD may face significant challenges. In other words, mothers with ADHD may have inherent struggles with basic skills needed for success in these programs. Sonuga-Barke et al. (2002) suggest that parents with ADHD may require treatment before participating in Parent Management Training and programs may need to be modified for these parents (e.g., teach organizational skills, reduce length of sessions). Mothers with ADHD also may benefit from being paired with a nonADHD parent in the program to offer support and guidance when child-rearing problems arise. In summary, managing the parents’ ADHD symptoms may increase the effectiveness of child ADHD treatments and ultimately help reduce the frequency of child behaviour problems and parental stress.

It should be noted that despite the evidence presented here that mothers with ADHD are experiencing difficulties in their parenting role, an analysis of the Positive Parenting subscale of the APQ revealed encouraging information. Mothers and their children reported that mothers with and without ADHD use similar amounts of positive reinforcement (e.g.,
praise, tangible rewards, physical affection) to reward their children. This finding indicates that mothers with ADHD are not more impaired than nonADHD mothers across all parenting realms and that they are able to engage in prosocial behaviours with their children. It is important to acknowledge this strength among mothers with ADHD in context of the challenges they face. Other strengths, such as greater understanding of and empathy with their ADHD child's struggles compared to mothers who do not have ADHD may also surface in future studies.

Secondary analyses performed in this study sought to remove the potentially confounding influence of maternal educational level, marital status, child externalizing behaviour problems, and maternal psychopathology on the observed group differences. Even when samples sizes were reduced to 8 (i.e., removing mothers of children with comorbid ODD/CD) or 9 (i.e., removing mothers with comorbid anxiety and/or depression) mothers in a group, most of the results found using the entire sample remained. In the cases where statistically significant group differences disappeared, mean differences were in the expected direction with ADHD mothers being more impaired in their ability to monitor, be consistent, and problem-solve. Low power becomes a reasonable explanation for not detecting group differences when sample sizes are reduced significantly. These results suggest that maternal ADHD interferes with important parenting behaviours, independent of the effects of single-parenthood, lower education levels, comorbid anxiety/depression, or child oppositionality/aggression.

When parenting behaviours were compared between maternal ADHD subtypes (i.e., Inattentive, Combined) and nonADHD mothers, the pattern of primary results reported above was the same regardless of the ADHD subtype. When parenting behaviours were compared
between the Inattentive and the Combined group of mothers with ADHD, results showed that mothers with the Inattentive subtype of ADHD may be more impaired compared to mothers with the Combined subtype. Mothers with the Inattentive subtype of ADHD had significantly lower scores on both self-reports of monitoring (i.e., Family Routine Inventory, Alabama Parenting Questionnaire – Poor Monitoring subscale), the Laxness subscale of the Parenting Scale, and the quality of planning outcome from the Parental Problem-Solving Measure compared to mothers with the Combined subtype of ADHD. In addition, the primarily Inattentive mothers reported lower levels of positive parenting compared to mothers with the Combined subtype of ADHD. These results seem counter-intuitive as one would expect that, if anything, mothers with both high levels of inattention and hyperactivity/impulsivity would be more impaired than mothers with only high levels of inattention. It may be that high levels of activity or energy compensate for difficulties with paying attention by allowing mothers to be more involved in their children’s lives (e.g., sports and leisure activities). Thus, although mothers with the Combined subtype of ADHD may monitor their children less compared to nonADHD mothers, their high activity levels may provide more opportunities to spend time with (and supervise) their children compared to primarily Inattentive mothers. Increased maternal activity levels and impulsivity may also explain the higher levels of positive parenting, as these mothers may spontaneously show affection towards their children more frequently. An alternative explanation for these findings is that mothers with the Combined subtype of ADHD incorrectly perceive themselves as more involved, more consistent, and affectionate with their children compared to primarily Inattentive mothers. Evidence to support this hypothesis is provided by the fact that mothers with the Combined subtype of ADHD scored higher than the Inattentive mothers only on self-report measures, not on the
more objective measures. At this time the results presented on ADHD subtypes are preliminary and explanations are speculative. Future research is needed to investigate the relationship between ADHD subtype and parenting behaviours more thoroughly.

There are several limitations in this dissertation. Importantly, causation in terms of the relation between parenting and child behavior cannot be determined from the design of this study. It is possible that the decreased monitoring, increased inconsistency, and problem-solving deficits found among mothers with ADHD have resulted in higher levels of Oppositional Defiant Disorder and Conduct Disorder in their children. However, it is also possible that children with higher levels of Oppositional Defiant Disorder and Conduct Disorder present with behaviours that make it more difficult for their mothers to be consistent, monitor, and effectively problem-solve. The analyses performed with the exclusion of all children with high levels of ODD and CD, which found that mothers with ADHD continued to show significantly more impairment than mothers without ADHD on almost all of the parenting measures, makes it unlikely that, at least in the current sample, concurrent levels of child ODD and/or CD can account for all of the impairments in consistency, monitoring, and problem-solving among mothers with ADHD. Studies involving a longitudinal design may shed additional insight into the sequelae or causal factors in this process. In the meantime there is evidence that mothers with ADHD demonstrate the aforementioned difficulties and have children who are more likely to have ODD/CD behaviours. It is encouraging that, regardless of the etiology, it is known that modifying these parent behaviours decreases oppositional behaviour in children (Cunningham, Bremner, & Secord-Gilbert, 1993; Forgatch & DeGarmo, 1997; Kazdin, 1997; Serketich & Dumas, 1996).
Another limitation of this dissertation is that the primary researcher, who administered all instruments to the mothers, was not blind to their diagnostic status. The potential bias introduced by this is less likely to have influenced the results of the self-report measures and laboratory tasks than the interviews (i.e., SCID-I, PPSM). Although the acceptable rates of inter-rater reliability found on these measures reduces this concern to some extent, future studies should ensure that all research assistants are blind to the diagnostic status of the participants. Objective measures of parenting were incorporated wherever possible. However, this was not feasible for measuring maternal consistency in this study. As mentioned earlier, future studies should include an observational task or, at the very least, a reliable informant who is familiar with the mothers’ parenting style.

It is also important to include fathers with ADHD in future studies to examine their strengths and challenges. Research indicates that fathers have become more involved in child-rearing over the past three decades (Pleck, 1997) and this trend is likely to continue as traditional gender roles shift. Studies on fathering demonstrate that children benefit from more involvement with their fathers both academically (Cooksey & Fondell, 1996) and socially (Bernadett-Shapiro & Ehrensaft, 1996). Additionally, Bagner and Eyberg (2003) found that children whose fathers were more involved in behavioural parent training made more long-term gains compared to children whose fathers were less involved. This research suggests that fathers not only have a significant impact on their children, but may offer buffering effects when mothers are struggling with parenting skills. On the other hand, Arnold et al. (1997) found that more father involvement was related to harsh parenting among fathers with high levels of ADHD symptoms. Clearly, this is an important issue that future research needs to address.
Finally, this study was not designed to examine the specificity of ADHD and its impact on parenting. Studies including a clinical control group (e.g., depressed mothers) would be useful to explore whether any type of parent psychopathology would interfere with consistency, monitoring, and problem-solving or whether deficits in these areas are specific to parents with ADHD. Including a clinical control group of mothers who have anxiety or depression without ADHD is preferable to controlling for these disorders in the current sample because when these variables were controlled, the remaining sample no longer reflected a realistic (i.e., ecologically valid) group of mothers with ADHD. As discussed earlier, the sample size was also significantly reduced when potential confounds were controlled, raising concerns about Type II error.

Beyond the limitations of this dissertation, there are numerous strengths. These findings contribute to the growing research literature on adults with ADHD by showing that there are significant differences between mothers with and without ADHD. Previous research has documented that adults with ADHD have higher rates of anxiety and mood disorder symptoms compared to control groups (Minde et al. 2003; Murphy et al., 2002; Rucklidge & Kaplan, 1997; Young et al., 2003). The current study supports this literature by showing that mothers with ADHD have higher levels of anxiety and/or mood disorders compared to mothers without ADHD. In addition, mothers with ADHD were more likely to be single parents, have fewer years of formal education, and were more likely to be taking psychiatric medication compared to nonADHD mothers. Information published on the demographic and comorbid differences found between adults with and without ADHD will increase our understanding of adult ADHD and the struggles this population face. A methodological strength of this study is that measures of parenting constructs were selected based on their
strong psychometric properties whenever possible and multiple methods of assessment were employed (e.g., self reports, child reports, interviews, laboratory tasks). Another strength of this study is that the impact of child ADHD on parenting behaviours was controlled by requiring that all participating children be diagnosed with ADHD. This increases our confidence that symptoms of maternal ADHD, not child ADHD behaviours, are responsible for the parenting deficits found in this study. It will be interesting to see whether ADHD parents who have non-ADHD children will share the same pattern of impairments. Finally, to our knowledge this is the first study to systematically examine parenting variables in mothers with ADHD using stringent diagnostic criteria. The results will likely generate more research on this topic, increasing knowledge and awareness among clinicians working with ADHD families. We hope that future research findings in this area will ultimately translate into the development of strategies that improve the daily lives of parents with ADHD and their children.
References


*Adolescence, 32, 61-80.*


