

Running head: CHILDHOOD TRAUMA AND ADULT ADHD

Retrospective reports of childhood trauma in adults with ADHD

Deborah L. Brown and Susan Crawford

Alberta Children's Hospital, Calgary, Alberta

Julia J. Rucklidge

University of Canterbury, Christchurch, New Zealand

Bonnie J. Kaplan

Alberta Children's Hospital, and University of Calgary, Calgary, Alberta, Canada

Abstract

While studies have documented higher prevalence of abuse in children with ADHD, no studies have investigated childhood reports of abuse in adults identified with ADHD in adulthood. Forty women with ADHD, 17 males with ADHD, 17 female controls and 40 male controls completed the Childhood Trauma Questionnaire and other measures of psychosocial functioning. Emotional abuse and emotional neglect were significantly more common among men and women with ADHD, compared to male and female controls. Sexual abuse and physical neglect were more commonly reported by females with ADHD. Although abuse during childhood was significantly correlated with depression and anxiety in adulthood, having ADHD was a better predictor of psychosocial functioning in adulthood. Clinicians should be aware that patients with ADHD symptoms may have a high probability of having a history of child abuse. Although there appears to be a strong relationship between ADHD symptomatology and child abuse, the direction of the relationship is not yet apparent.

Historically, Attention-Deficit/Hyperactivity Disorder (ADHD) has been primarily considered a disorder of childhood (American Psychiatric Association, 1994); however, there is now clear evidence that ADHD symptoms do not disappear with the onset of adulthood. Numerous prospective and retrospective studies of children diagnosed with ADHD followed into adulthood have demonstrated that from 50% to 80% of individuals continue to experience significant ADHD symptoms and associated impairments into their adult lives (Weiss & Hechtman, 1993; Wender, 1995). It has been established that approximately 5% of children are known to be affected by this disorder; thus, it is thought that 2% of adults suffer from ADHD, making it an underdiagnosed adult psychiatric disorder (Shekim, Asarnow, Hess, Zaucha, & Wheeler, 1990). Research confirms that in adulthood, individuals diagnosed with ADHD in childhood have ongoing difficulties such as poor academic and job performance, lower socioeconomic status (Satterfield, Hoppe, & Schell, 1982; Weiss & Hechtman, 1993), higher incidence of divorce, job and residence changes, and automobile accidents than people without ADHD (Fargason & Ford, 1994).

Despite the advances in recent years in identifying ADHD symptoms and the recognition that the disorder can exist in adults, there are still many adults being diagnosed who were not identified as children (Wender, 1995). Very little research has focused on this group, but some findings have suggested that many of the psychiatric and cognitive features that the adults display are similar to those found in children with ADHD. Consistent findings include high rates of antisocial, major depressive, and anxiety disorders with similar levels of concurrent symptoms seen in children and

adolescents with the disorder (Biederman, Newcorn, & Sprich, 1991; Shekim et al., 1990), low self-esteem, self-loathing, and underachievement (Ratey, Greenberg, Bemporad, & Lindem, 1992). While it is fairly well established that adults identified with ADHD have many psychosocial and psychiatric problems as well as a more negative recall of their childhoods (Rucklidge & Kaplan, 2000), the assumption has been that these associated difficulties are likely directly related to the presence of ADHD. Another possible mechanism leading to psychosocial problems in adulthood may actually be the result of other factors, one being the presence of early childhood abuse. The goal of the present study was to extend previous work on recall of childhood experiences in order to investigate prevalence rates of childhood trauma in a population of adults with ADHD. In addition, the relative impact of ADHD and abuse on psychosocial functioning was evaluated.

Sedlack and Broadhurst (1996) reported that physical, sexual and emotional abuse affect 18 out of every 1000 children in the United States. However, incidence rates have often been criticized as being underestimates as they only account for the reported cases. Lifetime prevalence estimates of childhood maltreatment are derived by asking adults about their childhood experiences. For example, MacMillan and colleagues (1997) asked 10,000 Ontario residents 15 years and older about both physical and sexual abuse in childhood. A history of child physical abuse was reported more often by males (31.2%) than females (21.1%), while sexual abuse was more commonly reported by females (12.8%) than males (4.3%).

A handful of studies have investigated the relationship between ADHD and childhood abuse, all of which used child populations. There is a high degree of overlap

between the symptoms of ADHD and post-traumatic stress disorder (PTSD), including inattention, restlessness, irritability and impulsivity (Weinstein, Staffelbach, & Biaggio, 2000). For example, inattention, one of the cardinal symptoms of ADHD, may result from re-experiencing trauma, hypervigilance, and/or avoidance of stimuli as a result of trauma (Weinstein et al., 2000). Similarly, hyperarousal could be misconstrued as hyperactivity (Glod & Teicher, 1996). If the trauma has been left unidentified, it is possible that these symptoms could become chronic. It is worth noting that assessments of ADHD do not systematically include an assessment of trauma. Indeed, the DSM-IV does not include PTSD as a differential diagnosis. Further, none of the assessment instruments commonly used to evaluate for the presence/absence of ADHD includes questions of trauma (Weinstein et al., 2000).

Research has indicated that a history of abuse does serve as a risk factor for future psychopathology (Fergusson, Horwood, & Lynskey, 1996). The psychological sequelae of childhood abuse are well documented to include depression, anxiety, behavioural problems, sleep and somatic complaints, aggression, PTSD, and ADHD (see Weinstein et al., 2000 for a review). Those studies that have investigated the prevalence of ADHD in a population of abused children have found a high overlap between ADHD and PTSD. Merry and Andrews (1994) found an unexpectedly high rate of ADHD, double that found in the community population, in their sample of sexually abused children 12 months after disclosure of the abuse. McLeer and colleagues determined that 46% of their sample of children with a history of sexual abuse met ADHD criteria (McLeer, Callaghan, Henry, & Wallen, 1994). They also determined that 23% of the sexually abused children met criteria for both ADHD and PTSD, a clustering of symptoms that was not noted in the

psychiatric outpatient comparison group. Glod and Teicher (1996) not only found an ADHD prevalence rate of 21% in their sample of abused children but also that abused children with PTSD show activity levels as measured by an actigraph similar to children with ADHD.

Very little research has been done investigating the rate of trauma exposure in an ADHD population. While Ford and colleagues (1999) found that a significant number of their children with ADHD had a history of both victimization (32%) and non-victimization trauma (53%), ODD, rather than ADHD, was found to be associated with an increased likelihood of exposure to trauma. A 4 year prospective study determined that children identified as ADHD were not at higher risk for a traumatic experience than the comparison group, with 12% of the ADHD group reporting a trauma at the follow up period (Wozniak et al., 1999). ADHD was not found to be a risk factor for trauma in boys.

The literature to date indicates that there appears to be a relationship between ADHD, trauma and PTSD in children. What has not been investigated is whether a population of adults identified with ADHD is more likely to report a childhood history of abuse. We expected that in a sample of adults with ADHD there would be a significantly higher prevalence of past reports of abuse than in adults without the disorder. Further, while it has been well documented elsewhere that adults with ADHD have more psychosocial problems as compared with adults without ADHD (Rucklidge & Kaplan, 1997), what has not been investigated is whether abuse and/or presence of ADHD is accounting for more of the problems in adulthood. As such, predictors of psychosocial functioning were also investigated.

Method

Subjects:

This project combined data from two separate studies of adults with ADHD (Brown, 2003; Rucklidge & Kaplan, 2000). In total, there were 114 participants: 17 men with ADHD, 40 women with ADHD, 17 women without ADHD, and 40 men without ADHD. Both studies were approved by the Conjoint Health Research Ethics Board in the Faculty of Medicine at the University of Calgary.

The initial results on perceived abuse in childhood reported by Brown and colleagues (Brown, Crawford, & Kaplan, 2003) prompted the research team to send out the Childhood Trauma Questionnaire (CTQ; Bernstein & Fink, 1998) to all participants in that study, as well as to those who participated in the earlier study by Rucklidge and colleagues (2000), despite the fact that, over that time frame, a number of subjects had moved and were unreachable. The CTQ had been published after Brown et al. had collected data for the study, but given the initial findings, ethics approval was obtained to recontact all subjects in both studies to further explore this realm.

For the men and women with ADHD, only adults who believed they had attentional difficulties but were not diagnosed with ADHD in childhood were invited to participate. Both groups without ADHD had at least one child diagnosed with ADHD. Recruitment was carried out via a database of participants who had volunteered for previous studies, through word of mouth, particularly friends of earlier participants, through the local chapter of Children and Adults with Attention Deficit Disorder (CH.A.D.D.), and through advertisements posted in psychiatrists' and psychologists' offices. Over half of the subjects came from the database of participants volunteering for

previous studies, and the remaining subjects most frequently had heard of the study either by word of mouth or through CH.A.D.D.

Measures

Attention-Deficit/Hyperactivity Disorder: The Conners' Adult ADHD Rating Scale - Self Report: Short Version (CAARS-S:S; Conners, Erhardt, & Sparrow, 1999) was used to measure ADHD symptomatology for the men with ADHD and also for half of the women with ADHD. The CAARS-S:S is a 26-item scale that assesses the core symptoms of ADHD, as well as related problem areas. Coefficient alphas for the CAARS ranged from .86 to .92, with median test-retest reliabilities of .89 (Conners et al., 1999).

For the remainder of the sample, ADHD symptomatology was examined using the Attention Deficit Disorder Checklist (Kaplan & Humphreys, 1995). This 25-item checklist was based on the DSM-IV criteria for ADHD, each scored on a scale from 0 to 3. Probability codes are generated from the total scores obtained, indicating the likelihood that the subjects were affected or unaffected by ADHD symptomatology.

Child Abuse: The Childhood Trauma Questionnaire (Bernstein & Fink, 1998) was used as a measure of childhood or adolescent abuse. This 28 item self-report retrospective questionnaire asks the subject to respond on a 5-point Likert scale ranging from “never true” to “very often true”. Emotional, physical neglect and abuse, as well as sexual abuse are measured, while other traumatic events that may occur during childhood such as the death of a parent or a major illness are not assessed. All factors, with the exception of physical neglect, demonstrated good internal consistency and test-retest reliability (Paivio & Cramer, 2004).

Self-Esteem: Self-esteem was measured using the Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1979). For this 10-item self-report scale, participants rate the extent to which they strongly agreed, agreed, disagreed, or strongly disagreed that a series of statements applied to them. Higher scores on the RSE are considered to be indicative of lower levels of self-esteem. The RSE has good internal consistency (Cronbach's alpha .92) and test-retest reliability (.85 to .88) (Rosenberg, 1979).

Childhood Dissatisfaction: Childhood dissatisfaction was measured using the 9-item self-report Perceptions of Childhood Dissatisfaction Scale (PCD; Hojat, Borenstein, & Shapurian, 1990); (Rucklidge & Kaplan, 2000). Participants were asked to reflect back on their childhood and to indicate on a Likert scale from 1 ("strongly agree") to 7 ("strongly disagree") their dissatisfaction with parents, perceptions of peer relationships, and perceptions of critical evaluations received from school. Three subscale scores and a total score were generated, with higher scores indicating higher levels of dissatisfaction. Test-retest reliability for questions about dissatisfaction with parents was found to be .81 with an internal consistency was .76, while the questions about dissatisfaction with peers had a test-retest reliability of .76 and an internal consistency of .84 (Hojat et al., 1990).

Anxiety: Anxiety was measured using the Beck Anxiety Inventory (BAI; Beck & Steer, 1990). The BAI is a 21-item self-report inventory that assesses the somatic, psychological, and physiological aspects of anxiety in the previous seven days. Higher scores are indicative of higher anxiety. The psychometric properties of the BAI are excellent, with internal consistency estimates ranging from .91 upwards, and test-retest reliability at .75 (Bordon, Peterson, & Jackson, 1991).

Depression: The Center for Epidemiologic Studies of Depression Scale was used (CES-D; Radloff, 1977). This 20 item self-report scale was designed to measure depressive symptomatology in the general population. Higher scores are associated with higher levels of depression. Studies have found good reliability, as well as support for the construct validity of the total and subscale scores from this measure (Radloff, 1977)

Current Attributional Style: Attributional styles were measured using the short form of the Expanded Attributional Style Questionnaire (EASQ; Peterson & Villanova, 1988; Whitley, 1991). This questionnaire asks participants to vividly imagine themselves in 12 hypothetical negative events. Participants are subsequently asked to consider the most likely reason that event would have happened to them. Participants were asked to rate each event from 1 (“totally due to other circumstances”) to 7 (“totally due to me”) to indicate the extent they believed they had control over the event. They were also asked to indicate from 1 (“never present”) to 7 (“always present”), the extent to which they believed that the cause was likely to occur again in the future. Finally, all participants were asked to indicate from 1 (“just this situation”) to 7 (“all situations”) the extent that they believed this cause influences their lives. The EASQ administration was modified by Rucklidge (2000) who added one additional question following each hypothetical scenario, measuring the extent that the individual feels he or she has control over the identified “cause.” From scores on the EASQ, subjects were classified as “low” or “high” on controllability and internality. Those high on the controllability scale were labeled “controllables.” Those low on both the internality and controllability scales were labeled “external-uncontrollables.” Finally, those that scored high on internality, but low on

controllability were labeled "internal uncontrollables". Internal consistency for the EASQ was found to be .88 for globality (Peterson & Villanova, 1988).

Socioeconomic Status: As one measure of socioeconomic status (SES), participants were asked to report the highest level of education that they had completed. The Blishen Index (Blishen, Carroll, & Moore, 1987) was used as another indicator of SES based on the participant's occupation.

Procedure

Individuals were first contacted by phone to invite them to participate in the project. Those who agreed were scheduled for an interview that ranged from 90-120 minutes. Given the high co-occurrence of learning disorders with ADHD, at the interview the participants were asked whether they wanted to complete the questionnaires themselves or have the investigator complete the questionnaires with them. Two participants asked the investigator to assist them in completing the questionnaires by reading the questions aloud. Those being recontacted were mailed the CTQ to complete and return.

All the participants were administered the full interview and subsequent questionnaires in the same order. If any concerns were raised or identified during the interview (e.g., the possible presence of an anxiety or depressive disorder), the issue was discussed with the participant and they were given information on how to obtain help and support regarding their difficulties.

Statistical Analyses

The majority of the analyses involved conducting multiple analyses of variance (MANOVAs) with covariates when appropriate (i.e., MANCOVAs). Post-hoc group

comparisons used the Scheffe test. For those demographic factors showing significant between-group differences, correlations were used to determine which variables were significantly correlated with anxiety, depression, self esteem, childhood dissatisfaction, and abuse as a child. Group comparisons for categorical variables were examined using chi square tests of association. The final set of analyses used a multiple regression approach to examine the utility of ADHD status and abuse as a child as predictors of symptoms related to depression, anxiety, problems with self esteem, attributional styles, and childhood dissatisfaction. Only those results significant at $p < .05$ are discussed.

Results

Demographic Factors:

A MANOVA was conducted comparing the four groups on the subject's age, highest level of education, and SES (see Table 1). The overall effect for group was significant (Wilk's Lambda $F(9, 263) = 3.57, p < .001; ES = .09$). Univariate analyses showed significant group differences for SES ($F(3, 110) = 9.95, p < .001; ES = .21$). Post-hoc group comparisons revealed that men with ADHD had significantly lower SES than the other three groups.

Another MANOVA was conducted comparing the four groups on the number of children, number of children with ADHD, and the mean age of the children (see Table 1). There was a significant overall effect for group (Wilk's Lambda $F(9, 226) = 3.29, p < .01; ES = .10$). Univariate analyses showed significant group differences on the number of children with ADHD ($F(3, 95) = 4.00, p < .05; ES = .11$), and the mean age of the children ($F(3, 95) = 5.63, p < .01; ES = .15$). Post-hoc group comparisons revealed that women with ADHD had significantly more children afflicted with ADHD than male

controls, and that male controls had significantly younger children than females with ADHD or males with ADHD.

Results showed a significant association between group and having a partner with ADHD ($X^2(3, N = 93) = 22.31, p < .001$). For the control females, 78.6% had a partner with ADHD, and 36.0% of women with ADHD had a partner with ADHD. For males, only 12.8 % of controls and 20% of those with ADHD had a partner with ADHD. There was also a significant association between group and marital status ($X^2(6, N = 114) = 18.08, p < .01$), with 90% of control men and 82.4% of control women being married compared to 76.5% and 62.5% of men and women with ADHD respectively.

A series of correlations was conducted to determine whether any of the demographic variables mentioned above were significantly correlated with scores on the CTQ. The only variable that was significantly correlated with this measure was SES: total score from the CTQ ($r = -.279, p < .01$). Thus, SES was used as a covariate for subsequent analyses.

Abuse as a Child

To investigate between-group differences in reported abuse, an ANCOVA was conducted (controlling for SES) to compare the four groups on the total score for the Childhood Trauma Questionnaire (CTQ). Results revealed a significant group difference ($F(3, 109) = 6.49, p < .001; ES = .15$), and post-hoc group comparisons revealed that

both men and women with ADHD had significantly higher scores for childhood trauma than control females or control males.

Given the significant group difference on the total score, all four groups were compared on each of the CTQ items using chi square tests of association. Each item on the CTQ was recoded into a binary variable, so that a negative response included never true or rarely true, and a positive response included sometimes true, often true, or very often true. As shown in Table 2, significant associations emerged for 18 of the 28 items in the questionnaire. As shown at the bottom of Table 2, prevalence rates for moderate to severe abuse and neglect were also compared among groups using cutoffs for each CTQ subscale suggested in the manual (Bernstein & Fink, 1998). In each case whether individual CTQ items or subscales, it was the subjects with ADHD who showed more evidence of childhood trauma.

Between-group differences for scores on the five subscales of the CTQ were also examined. When controlling for SES, significant group differences emerged for emotional abuse ($F(3,107) = 8.92, p < .001; ES = .28$), and sexual abuse ($F(3,107) = 3.52, p < .05; ES = .09$), but not for physical abuse. In terms of neglect, results showed significant group differences for emotional neglect ($F(3,107) = 6.22, p < .01; ES = .15$), and for physical neglect ($F(3,107) = 4.10, p < .01; ES = .10$). Post-hoc group comparisons revealed that for emotional abuse, both men and women with ADHD had significantly higher scores than control females or control males. For sexual abuse, females with ADHD had significantly higher scores than the other three groups. Females and males with ADHD also had significantly higher scores for emotional neglect

compared to both control groups. Females with ADHD had significantly higher scores for physical neglect compared to both control groups.

Predictors of Psychosocial Functioning

The next set of analyses involved conducting three multiple regressions predicting scores for psychosocial functioning (i.e., depression on the CDI, anxiety on the BAI, self esteem on the RSE) using two variables as predictors: CTQ total scores, as well as whether or not the subject had ADHD. For predicting CDI scores, the overall regression was significant ($R^2 = .231$, $F(2,110) = 6.54$, $p < .001$), and the only significant predictor was having ADHD ($p < .001$). The overall regression predicting BAI scores was also significant ($R^2 = .247$, $F(2,107) = 17.52$, $p < .001$). Higher scores for anxiety-related symptoms were associated with having ADHD ($p < .001$). Significant findings also emerged for the regression predicting RSE scores ($R^2 = .062$, $F(2,111) = 3.65$, $p < .05$). Once again, having ADHD was the only significant predictor of more problems with self esteem ($p < .01$). Scores on the CTQ were significantly correlated with scores for depression, anxiety, and ADHD status, but ADHD status was more highly correlated with these scores. In contrast, self esteem scores were not significantly correlated with CTQ scores, but were significantly correlated with ADHD status. Thus, having ADHD was the only significant predictor of increased psychosocial symptoms in adulthood whether related to depression, anxiety or problems with self-esteem.

These three regressions were repeated, expanding the predictors to include the five subscale scores on the CTQ along with ADHD status. The regression predicting CDI scores was still significant ($R^2 = .230$, $F(1,109) = 32.64$, $p < .001$). Once again, ADHD status was the only significant predictor of depressive symptoms ($p < .001$). For

the regression predicting scores on the BAI, there were two significant predictors ($R^2 = .257$, $F(2,105) = 18.15$, $p < .001$): ADHD status ($p < .001$) and emotional abuse during childhood ($p < .05$). Higher scores on the BAI were associated with having ADHD and reporting emotional abuse during childhood. In terms of self esteem, the overall regression failed to remain significant when the five CTQ subscale scores were included as predictors, along with ADHD status.

Predictors of Childhood Dissatisfaction and Attributional Styles

As expected, there was a significant association between current attributional styles (controllable, external uncontrollable, and internal uncontrollable) and group ($X^2(6, n=113) = 17.58$, $p = .007$). Both females and males with ADHD more often showed internal uncontrollable attributional styles compared to both control groups (46.2% females with ADHD, 47.1% males with ADHD, 17.6% female controls, 12.5% male controls).

The final set of analyses involved conducting another set of multiple regressions using CTQ total scores and ADHD status to predict scores for attributional style as well as total scores for childhood dissatisfaction on the PCD. For predicting attributional styles, the overall regression was significant ($R^2 = .103$, $F(2,110) = 6.34$, $p < .01$), and the only significant predictor was having ADHD ($p < .01$). Thus, the more internal uncontrollable the subject's attributional style, the more likely the subject had ADHD. The overall regression predicting PCD scores was also significant ($R^2 = .425$, $F(2,111) = 40.98$, $p < .001$). Higher scores for childhood dissatisfaction were associated with having ADHD ($p < .01$) and with more abuse as a child ($p < .001$).

These two regressions were repeated using the five subscale scores on the CTQ along with ADHD status as predictors. The regression predicting scores for attributional style was still significant ($R^2 = .131$, $F(6,104) = 2.62$, $p < .05$). Once again, ADHD status was the only significant predictor of a more internal uncontrollable attributional style ($p < .001$). For the regression predicting scores for PCD, there were two significant predictors ($R^2 = .472$, $F(6,105) = 15.68$, $p < .001$): ADHD status ($p < .01$) and emotional neglect during childhood ($p < .01$). Higher scores for childhood dissatisfaction were associated with having ADHD and with being emotionally neglected during childhood.

Discussion

The purpose of this study was to explore the prevalence of childhood abuse in a population of adults identified with ADHD in adulthood as an extension of previous work that has found high rates of retrospective reports of childhood dissatisfaction in women with ADHD (Rucklidge & Kaplan, 1997). We wondered whether this dissatisfaction was an artifact of ADHD or whether there were other factors contributing to these reports. Both men and women with and without ADHD were included. For men and women with ADHD, 56% reported moderate to severe abuse/neglect of some form during childhood. These findings were unexpected, as they are much higher than previously reported prevalence rates for the general population and higher than the controls in the study with 18% of the female controls and 20% of the male controls reporting moderate to severe abuse/neglect. However, despite these high prevalence rates, presence of ADHD was a better predictor of current psychosocial functioning than past abuse.

The higher rate of reported abuse in this cohort of individuals with ADHD is consistent with some previous research (e.g., (McLeer et al., 1994; Merry & Andrews,

1994) although other researchers have not found an association between ADHD and trauma after controlling for other factors (Ford et al., 1999). What cannot be determined from this study is what factors are involved in this finding. Does having ADHD place children at greater risk for exposing themselves to situations of abuse or do the sequelae of abuse mimic the symptoms of ADHD?

There is evidence from animal research that early exposure to stressful events, like trauma, can influence brain wiring and lead to hyperactivity, suggesting that trauma may serve as a risk factor for ADHD symptoms although whether the trauma produces an ADHD-like condition remains unclear (Glod & Teicher, 1996). Glod and Teicher also determined that abused children can have activity levels that are similar to those of children with ADHD. These results from animal studies along with the significant overlap in symptoms between PTSD and ADHD challenge the legitimacy of some diagnoses of ADHD in adults, particularly if excessive hyperactivity is present, although inattention is a cardinal feature of both disorders as well.

The important finding that has emerged from this research is that presence of ADHD is more likely to account for current depression/anxiety symptoms, lower self-esteem and a more internal-uncontrollable attributional style than past history of abuse. While it is well established that abuse impacts on psychiatric and psychosocial functioning (Fergusson, Lynskey, & Horwood, 1996) and could easily explain higher rates of depression and anxiety, this current research highlights the role ADHD plays in the current development of these problems. As elaborated by Rucklidge and Kaplan (2000), unidentified ADHD could have a significant impact on the development of

attributional styles for negative events, leading such individuals to attribute blame internally as well as view change as largely uncontrollable.

This current study implicates PTSD and childhood abuse as another important factor to consider in differential diagnosis. While both trauma and ADHD can co-exist, it is important to determine whether symptom presentation is best accounted for by one or both syndromes. Asking questions related to the onset of abuse and the onset of the ADHD symptoms may be helpful although depending on the age of the individual, such questions may be of limited use. On the other hand, early childhood abuse may be a possible etiological factor in the development of ADHD (Glod & Teicher, 1996) although research does suggest that the impact of abuse may not be as large and pervasive as sometimes believed (Fergusson, Horwood et al., 1996), a finding consistent with the current research that did not find a strong relationship between reports of abuse in childhood and adult psychosocial problems. ADHD may also serve as a risk factor for abuse given the difficulties associated with parenting these behaviors as well as the influence impulsivity may have on exposure to traumatic events. While Wozniak and colleagues (1999) did not find that ADHD served as a risk factor for trauma exposure in a longitudinal study, their study only followed boys with the disorder. Further research needs to confirm these findings with females.

Despite the recent advances that have been made in the assessment of ADHD in adults, the diagnosis still remains controversial, for many reasons other than the presence/absence of abuse. The diagnostic process is complicated by the fact that ADHD frequently co-occurs with other disorders in individuals of all ages. However, adults are especially prone to suffer from a wide range of other conditions, some of which are likely

secondary to the related frustration and failure that accompany years of having ADHD. Outcome studies have shown that individuals diagnosed with ADHD in childhood are at risk for developing other psychiatric conditions, including anxiety and affective disorders, substance abuse, and antisocial personality (Biederman et al., 1993; Weiss & Hechtman, 1993). Further, diagnosing ADHD in adults is often more difficult than diagnosing the same condition in children because adults, by virtue of their age, experience more stressful and/or traumatic life events. This is problematic in that divorce, grief, financial problems, health concerns, or other major life events can affect an individual's ability to concentrate. Thus, clinicians evaluating adults have a much broader range of disorders to rule out than those clinicians evaluating children. In addition, many of the psychiatric disorders that have late-onset symptoms may mimic ADHD characteristics. For instance, patients with borderline or other personality disorders, bipolar disorder, substance abuse, head injury and/or depression may endorse many DSM-IV symptoms of ADHD (Murphy & Gordon, 1998).

Gender Differences

It is interesting to note that gender differences emerged with respect to the prevalence of sexual abuse. As noted earlier, research suggests that approximately 13% of females and 4% of males have experienced child sexual abuse (MacMillan et al., 1997) or an overall rate of about 10% (Fergusson, Lynskey et al., 1996). In the present study, 23.1% of the ADHD women and 12.5% of the ADHD men reported experiencing moderate to severe sexual abuse as a child in comparison to 5.9% of the control women and 2.5% of the control men. The present results are consistent with previous research in that female subjects reported more sexual abuse than males. According to Wekerle and

Wolfe (1996), the ratio of female to male victims is between 2:1 to 6:1 depending on the age of the victim. For the present study the ratio is approximately 2:1.

Limitations

The limitations of the present study fall into two broad categories, those pertaining to the sample and those relating to the procedure. As for sample-related issues, not all of the participants were officially diagnosed with ADHD. Only half of the sample had been diagnosed by a qualified professional; the remaining subjects were categorized on the basis of self-report. This issue is further compounded by the fact that there is not yet a universally accepted diagnostic tool to evaluate ADHD in adulthood. All the systems developed to date are limited because of their heavy reliance on recall of symptoms that must have been present before the age of seven. Nevertheless, one of the self-report measures used in this study has been shown to have acceptable psychometric properties (Conners et al., 1999). Further, no statistical differences were detected on any of the measures between the professionally diagnosed group and the group diagnosed on the basis of self-report. Moreover, there is empirical evidence to suggest that self-report is a reliable way of identifying persons with ADHD (Murphy & Schachar, 2000).

Another subject-related limitation is that individuals who agreed to participate in the research project may not have been representative of the ADHD population in general. It is quite possible that the individuals who agreed to take part and who completed the required measures were subtly different from the “typical” individual with ADHD and represent a “less severe” group than the general ADHD population. Those with more severe forms of the disorder may have avoided participating because of the level of commitment and participation involved (e.g., scheduling appointments).

It should be noted, however, that the subjects in the present study frequently missed and rescheduled appointments. The very nature of ADHD makes it difficult for individuals with the disorder to make and keep appointments.

Another limitation was that some of the ratings were retrospective and subjective. Therefore, the ratings may not be an accurate reflection of the attitudes held and attributions made during childhood. Adult accounts of experiences from childhood may be affected by memory bias. On the other hand, all the information that is typically used to arrive at a clinical diagnosis of ADHD in adults is usually based on this type of retrospective report, so this may represent an unavoidable problem. A review published by Brewin, Andrew, and Gotlib (1993) concluded there was no convincing evidence that retrospective reports of childhood experiences are compromised by current psychiatric status. Some of the participants completed the questionnaires together while others completed the psychosocial questionnaires first and then were mailed the CTQ.

Clinical Implications

While this study suggests a strong relationship between the presence of ADHD symptomatology and child abuse, it is not clear whether children who display symptoms of ADHD are more likely to be abused or whether experiencing child abuse increases the likelihood of the development of ADHD symptoms. Regardless of the direction of this relationship, it is critical that clinicians be aware of the significant overlap and be cautious with implementing a treatment given that the interventions for ADHD and PTSD/abuse are distinct and could even be harmful if misdirected. For example, side effects of stimulants include sleeplessness and sometimes rebound agitation, effects that could exacerbate an already vulnerable individual should the symptoms be better

accounted for by exposure to trauma. Adults who have had abusive childhood experiences may benefit from interventions designed to help them work through unresolved childhood experiences rather than medications designed to mask the symptoms.

In order to be effective as a clinician, it is important to have a thorough understanding of the client's issues and how/why they came to develop. Such knowledge may be beneficial to clients as it may give them valuable insight regarding the current situation. For instance, the present study would suggest that a clinician should be cognizant that individuals presenting with ADHD symptoms have a high probability of having a history of child abuse. It is important that the clinician be aware of this and is comfortable in exploring this further. Indeed, routine inquiries about childhood abuse in cases of adult ADHD is strongly recommended. However, assumptions should not be made that current psychiatric problems are a result of abuse; this study implicates ADHD as playing a stronger role in predicting current psychiatric and psychosocial functioning.

Retrospective recall of abuse calls for longitudinal prospective studies investigating the rates of trauma in children affected with ADHD. There may be a high prevalence of child abuse with adults with ADHD symptomatology who were not identified in childhood. Although there appears to be a strong relationship between ADHD symptomatology and child abuse, the direction of the relationship is not yet apparent.

References

- American Psychiatric Association. (1994). *Diagnostic and Statistical Manual of Mental Disorders Fourth Edition* (4th ed.). Washington: American Psychiatric Association.
- Beck, A. T., & Steer, R. A. (1990). *Manual for the revised Beck Anxiety Inventory*. San Antonio: Psychological Corporation.
- Bernstein, D. P., & Fink, L. (1998). *Childhood Trauma Questionnaire Manual*. San Antonio: The Psychological Corporation.
- Biederman, J., Faraone, S. V., Spencer, T., Wilens, T., Norman, D., Lapey, K. A., et al. (1993). Patterns of psychiatric comorbidity, cognition, and psychosocial functioning in adults with attention deficit hyperactivity disorder. *American Journal of Psychiatry*, *150*, 1792-1798.
- Biederman, J., Newcorn, J., & Sprich, S. E. (1991). Comorbidity of attention-deficit hyperactivity disorder with conduct, depressive, anxiety, and other disorders. *American Journal of Psychiatry*, *148*, 564-577.
- Blishen, B. R., Carroll, W. K., & Moore, C. (1987). The 1981 socioeconomic index for occupations in Canada. *Canadian Review of Sociology and Anthropology*, *24*, 465-488.
- Bordon, B. R., Peterson, D. R., & Jackson, E. A. (1991). The Beck Anxiety Inventory in nonclinical samples: Initial psychometric properties. *Journal of Psychopathology and Behavioral Assessment*, *13*, 345-356.

- Brewin, C. R., Andrews, B., & Gotlib, I. H. (1993). Psychopathology and early experiences: The role of perceived control. *Journal of Personality and Social Psychology, 54*, 316-322.
- Brown, D. (2003). *Attachment and Attributional Styles in Men and Women with Symptoms of Attention-Deficit/Hyperactivity Disorder*: Unpublished doctoral dissertation.
- Brown, D., Crawford, S. G., & Kaplan, B. J. (2003). *Growing up with undiagnosed Attention Deficit Hyperactivity Disorder (AD/HD): Associated factors in childhood and adulthood*. Paper presented at the Ninth Annual Child Health Research Symposium, Alberta Children's Hospital, Calgary, Alberta.
- Conners, K., Erhardt, D., & Sparrow, E. (1999). *Conners' adult ADHD rating scales (CAARS) Technical manual*. Toronto: Multi-Health Systems Inc.
- Fargason, R. E., & Ford, C. V. (1994). Attention deficit hyperactivity disorder in adults: Diagnosis, treatment, and prognosis. *Southern Medical Journal, 87*, 302-309.
- Fergusson, D. M., Horwood, J., & Lynskey, M. T. (1996). Childhood sexual abuse and psychiatric disorder in young adulthood: II. Psychiatric outcomes of childhood sexual abuse. *Journal of the Academy of Child and Adolescent Psychiatry, 34*, 1365-1374.
- Fergusson, D. M., Lynskey, M. T., & Horwood, L. J. (1996). Childhood sexual abuse and psychiatric disorder in young adulthood: I. Prevalence of sexual abuse and factors associated with sexual abuse. *Journal of the American Academy of Child and Adolescent Psychiatry, 34*, 1355-1364.

- Ford, J. D., Racusin, R., Daviss, W. B., Ellis, C. G., Thomas, J., Rogers, K., et al. (1999). Trauma exposure among children with oppositional defiant disorder and attention deficit-hyperactivity disorder. *Journal of Consulting and Clinical Psychology, 67*, 786-789.
- Glod, C. A., & Teicher, M. H. (1996). Relationship between early abuse, posttraumatic stress disorder, and activity levels in prepubertal children. *Journal of the American Academy of Child and Adolescent Psychiatry, 35*, 1384-1393.
- Hojat, M., Borenstein, B. C., & Shapurian, R. (1990). Perception of childhood dissatisfaction with parents and selected personality traits in adulthood. *The Journal of General Psychology, 117*, 241-253.
- Kaplan, B. B., & Humphreys, R. (1995). Unpublished attention-deficit hyperactivity disorder checklist.
- MacMillan, H. L., Fleming, J. E., Trocme, N., Boyle, M. H., Wong, M., Racine, Y. A., et al. (1997). Prevalence of child physical and sexual abuse in the community: Results from the Ontario Health Supplement. *Journal of the American Medical Association, 278*, 131-135.
- McLeer, S. V., Callaghan, M., Henry, D., & Wallen, J. (1994). Psychiatric disorders in sexually abused children. *Journal of the American Academy of Child and Adolescent Psychiatry, 35*, 313-317.
- Merry, S. N., & Andrews, L. K. (1994). Psychiatric status of sexually abused children 12 months after disclosure of abuse. *Journal of the American Academy of Child and Adolescent Psychiatry, 33*, 939-946.

- Murphy, K. R., & Gordon, M. (1998). Assessment of adults with ADHD. In R. A. Barkley (Ed.), *Attention-Deficit Hyperactivity Disorder* (second ed., pp. 345-372). New York: Guildford Press.
- Murphy, P. M., & Schachar, R. (2000). Use of self-ratings in the assessment of symptoms of attention deficit hyperactivity disorder in adults. *American Journal of Psychiatry, 157*, 1156-1159.
- Paivio, S. C., & Cramer, K. M. (2004). Factor structure and reliability of the Childhood Trauma Questionnaire in a Canadian undergraduate student sample. *Child Abuse and Neglect, 28*, 889-904.
- Peterson, C., & Villanova, P. (1988). An expanded attributional style questionnaire. *Journal of Abnormal Psychology, 97*, 87-89.
- Radloff, L. S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measures, 1*, 385-401.
- Ratey, J. J., Greenberg, M. S., Bemporad, J. R., & Lindem, K. J. (1992). Unrecognized attention-deficit/hyperactivity disorder in adults presenting for outpatient psychotherapy. *Journal of Child and Adolescent Psychopharmacology, 2*, 267-275.
- Rosenberg, M. (1979). *Conceiving the Self*. New York: Basic Books.
- Rucklidge, J., & Kaplan, B. J. (1997). Psychological functioning in women identified in adulthood with ADHD. *Journal of Attention Disorders, 2*, 167-176.
- Rucklidge, J., & Kaplan, B. J. (2000). Attributions and perceptions of childhood in women with ADHD symptomatology. *Journal of Clinical Psychology, 56*, 711-722.

- Satterfield, J. H., Hoppe, C. M., & Schell, A. M. (1982). A prospective study of delinquency in 110 adolescent boys with attention-deficit/hyperactivity disorder and 88 normal adolescent boys. *American Journal of Psychiatry*, *139*, 795-798.
- Sedlack, A. J., & Broadhurst, D. D. (1996). *Third national incidence study of child abuse and neglect: Final report*. Washington, DC: U.S. Department of Health and Human Services.
- Shekim, W. O., Asarnow, R. F., Hess, E., Zaucha, K., & Wheeler, N. (1990). A clinical and demographic profile of a sample of adults with attention deficit hyperactivity disorder, residual state. *Comprehensive Psychiatry*, *31*, 416-425.
- Weinstein, D., Staffelbach, D., & Biaggio, M. (2000). Attention-deficit hyperactivity disorder and posttraumatic stress disorder: differential diagnosis in childhood sexual abuse. *Clinical Psychology Review*, *20*, 359-378.
- Weiss, G., & Hechtman, L. (1993). *Hyperactive Children Grown Up: ADHD in Children, Adolescents, and Adults* (2nd ed.). New York: Guilford Press.
- Wekerle, C., & Wolfe, D. A. (1996). Child maltreatment. In E. J. Mash & R. A. Barkley (Eds.), *Child Psychopathology*. New York: Guilford Press.
- Wender, P. H. (1995). *Attention-deficit/hyperactivity disorder in adults*. New York: Guilford Press.
- Whitley, B. E. (1991). A short form of the expanded attributional style questionnaire. *Journal of Personality Assessment*, *56*, 365-369.
- Wozniak, J., Crawford, M. H., Biederman, J., Faraone, S. V., Spencer, T. J., Taylor, A., et al. (1999). Antecedents and complications of trauma in boys with ADHD:

findings from a longitudinal study. *Journal of the American Academy of Child
Adolescent Psychiatry*, 38, 48-55.

Author Note

This research was supported by an Alberta Heritage Foundation for Medical Research Fellowship awarded to the first author; with also thank the Alberta Children's Hospital Foundation for their ongoing support.

Table 1

Demographic Variables by Group

Demographic Variables	Female Controls N = 17	Male Controls N = 40	Females with ADHD N = 40	Males with ADHD N = 17
Mean Age (years)	43.4	44.8	41.4	40.5
SD	(3.7)	(7.2)	(8.5)	(12.2)
Marital Status				
Single	0%	0%	22.5%	23.5%
Married	82.4%	85.0%	60.0%	52.9%
Separated/Divorced	17.6%	10.0%	15.0%	0%
Common-law	0%	5.0%	2.5%	23.5%
Education				
Some high school	0%	2.5%	5.0%	5.9%
High school	0%	10.0%	5.0%	5.9%
Some post-secondary	17.6%	10.0%	20.0%	29.4%
Post-secondary dipl.	29.4%	20.0%	27.5%	29.4%
University degree	52.9%	57.5%	42.5%	29.4%

Socioeconomic Status

Low SES	5.9%	7.5%	17.5%	64.7%
Middle SES	52.9%	60.0%	45.0%	35.3%
High SES	41.2%	32.5%	37.5%	0%
Mean # of children	2.4	2.3	2.3	1.5
(SD)	(0.9)	(0.9)	(1.6)	(1.3)
Mean age of children	11.9	11.4	15.1	16.7
(SD)	(3.2)	(4.7)	(5.8)	(10.2)
Mean # of children with	1.3	1.1	1.7	1.0
ADHD (SD)	(0.6)	(0.4)	(1.1)	(0.9)

Table 2

Positive Responses for Individual Items on the CTQ by Group

Item from CTQ	Female Controls N = 17	Male Controls N = 40	Females with ADHD N = 40	Males with ADHD N = 17	Test statistic
I knew that there was no one to take care of me and protect me.	0%	5%	23.1%	25.0%	($X^2(3, N = 112) = 10.07, p < .05$)
People in my family called me things like stupid, lazy or ugly.	11.8%	20.0%	48.7%	62.5%	($X^2(3, N = 112) = 16.57, p < .01$)
There was no one in the family who helped me feel I	17.6%	17.5%	38.5%	62.5%	($X^2(3, N = 112) = 13.20, p < .01$)

was important or special.					
I did not feel loved.	23.5%	5.0%	35.9%	75.0%	($X^2(3, N = 112) = 29.03, p < .001$)
I thought my parents wished I had never been born.	11.8%	5.0%	30.8%	37.5%	($X^2(3, N = 112) = 12.39, p < .01$)
People in my family never looked out for each other.	17.6%	15.0%	62.5%	38.5%	($X^2(3, N = 112) = 14.79, p < .01$)
People in my family said hurtful or insulting things to me.	17.6%	30.0%	64.1%	75.0%	($X^2(3, N = 112) = 20.15, p < .001$)
I believe I was physically abused.	11.8%	7.5%	30.8%	25.0%	($X^2(3, N = 112) = 7.98, p < .05$)
I did not have the perfect childhood.	41.2%	35.0%	71.8%	81.3%	($X^2(3, N = 112) = 16.70, p < .01$)
I felt that someone in my	11.8%	10.0%	28.2%	43.8%	($X^2(3, N = 112) =$

family hated me.					9.85, $p < .05$)
People in my family did not feel close to each other.	23.5%	22.5%	59.0%	68.8%	($X^2(3, N = 112) = 17.94, p < .001$)
Someone tried to touch me in a sexual way, or tried to make me touch them.	0%	2.5%	20.5%	6.3%	($X^2(3, N = 112) = 10.28, p < .05$)
I did not have the best family in the world.	41.2%	27.5%	61.5%	75.0%	($X^2(3, N = 112) = 14.58, p < .01$)
Someone molested me.	0%	5.0%	20.5%	6.3%	($X^2(3, N = 112) = 8.17, p < .05$)
I believe I was emotionally abused.	17.6%	12.5%	59.0%	56.3%	($X^2(3, N = 112) = 23.94, p < .001$)
There was no one to take me to the doctor if I needed it.	0%	0%	20.5%	12.5%	($X^2(3, N = 112) = 12.28, p < .01$)
I believe that I was sexually	0%	2.5%	17.9%	0%	($X^2(3, N = 112) =$

abused.					10.70, $p < .05$)
My family was not a source of strength and support.	29.4%	15.0%	51.3%	68.8%	($X^2(3, N = 112) = 18.94, p < .001$)
Moderate to Severe:					
Emotional abuse	11.8%	12.5%	43.6%	50.0%	($X^2(3, N = 112) = 15.33, p < .01$)
Physical abuse	11.8%	17.5%	33.3%	37.5%	n.s.
Sexual abuse	5.9%	2.5%	23.1%	12.5%	$X^2(3, N = 112) = 8.79, p < .05$)
Emotional neglect	5.9%	5.0%	30.8%	37.5%	$X^2(3, N = 112) = 14.20, p < .01$)
Physical neglect	5.9%	2.5%	20.5%	25.0%	$X^2(3, N = 112) = 18.94, p < .001$)
Moderate to severe abuse/neglect in ≥ 1 realm	17.6%	20.0%	56.4%	56.3%	$X^2(3, N = 112) = 16.44, p < .01$)