

ASSOCIATIONS BETWEEN
COMPONENTS OF THE ATTENTION DEFICIT-HYPERACTIVITY SYNDROME
AND MEASURES OF AGGRESSION IN RELATIONSHIPS

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Table of Contents

	Page
List of Tables	vi
Abstract	vii
Acknowledgments.....	viii
Introduction	1
ADHD	3
ADHD and Co-morbid Disorders	7
ADHD and Conduct Disorder	10
ADHD and Language Disorders	13
ADHD in Adults	15
ADHD in the University Population	19
Summary	21
The Current Study	21
Method.....	24
Participants.....	24
Materials	24
Conflict Tactics Scale	24
Wender Utah Rating Scale.....	26
Adult Rating Scale	27
Pragmatic Language Inventory	28
Procedure	29
Results	29
ADHD Measures	29
Prevalence	29
Correlations between ADHD Measures	31
Conflict Tactics Measures	31

Prevalence	31
Correlations between CTS2 Scales.....	35
Relationships between ADHD Measures and CTS2 Scales.....	36
The Role of the Pragmatic Language Inventory	37
Discussion	41
References	53
Appendix A	62
Appendix B	66
Appendix C	73

List of Tables

1. Means, Standard Deviations, Maximum Possible Scores and Reliability Estimates for ADHD Measures	30
2. Means, Standard Deviations, Maximum Possible Scores and Reliability Estimates for CTS2 Scale Scores	33
3. Correlations between ADHD Measures and CTS2 Scale Scores	34
4a. Correlations between PLI Factor Scores and ADHD Measures	38
4b. Correlations between PLI Factor Scores and CTS2 Scale Scores	40

Abstract

This thesis examined relationships between several measures of components of Attention Deficit-Hyperactivity Disorder (ADHD) and measures of abusive behaviour in intimate relationships. Participants were 80 university students, who completed self-report measures on retrospective and current ADHD symptoms, a pragmatic language scale, and measures of the type of conflict resolution tactics they employed. Results indicated that there was no direct linear relationship between ADHD and abusive behaviour. The pragmatic language inventory was found to play an intermediary role between the two sets of variables. Abusive behaviour was found to be related to problems with the rules of conversation, while ADHD measures were related to problems with expressive and receptive language. Results are discussed in terms of the psychometrics of the measures used.

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Associations Between
Components of the Attention Deficit-Hyperactivity Syndrome
and Measures of Aggression in Relationships

The social movements of the past 30 years have, despite resistance on many fronts, resulted in numerous changes in Western culture. One of the most subtle but perhaps most important is the growing conviction that individuals are as responsible for their actions inside their families and other intimate relationships as they are in the wider community. This has resulted in a declining tolerance for abusive behaviour towards spouses, children, and others dependent upon what were traditionally figures of legitimate authority. The conviction that the abuse of intimates is no longer socially acceptable has also led to efforts to gain understanding of the causes and possible solutions to this ongoing problem. The incidence of violence among individuals who are closely related, either through familial or romantic ties, has been the subject of a rapidly growing body of research over this 30-year time span.

Explanations for this problematic behaviour have changed, partly in line with the state of knowledge on the subject, and partly in line with the theoretical structures most prevalent at the time the explanation was framed. Early views of violence towards intimates (in the sense of someone to whom the perpetrator is close) stressed the deviance of this behaviour and suggested that the perpetrator was, in the terms of classical psychodynamic thought, severely disturbed (Groth & Burgess, 1977). The emergence of the modern feminist movement radically altered the perceived causes of such violence. Feminists pointed out that the psychopathology argument ignored the cultural history of

woman abuse and rape (Dobash & Dobash, 1979) and that the real cause could be found in the socialization of men in a given culture (Bersoni & Chen, 1987; Brownmiller, 1975; Koski & Mangold, 1988; Mushanga, 1983).

A similarly global but competing theory developing at the same time suggested that the roots of such violence were grounded in evolutionary forces (Burgess & Draper, 1989; Buss, 1988; Daly & Wilson, 1988; Pines, 1992), the result of the reproductive success of males who jealously guarded sexual access to their mates. Both of these global theories, however, have a similar problem, in that they fail to explain variation in the levels of aggression against intimates in an adequate way. In the case of sociobiology, the large variation in men's behaviours among cultures presents difficulties; in the case of gender socialization, it is difficult to explain the variation among men inside a given culture. Especially in the latter case, this gap in explanatory power appears to point to a need for variables that work at the level of the individual, such as those that framed Groth and Burgess' earlier psychopathology theory.

More recently, variability among individuals is increasingly explained by reference to some neurological factor that would predispose an individual to aggression toward an intimate, rather than in terms of psychoanalytic theory. Such an explanation is evidence of another shift in theoretical thinking, because the predisposition concept reflects the growing prominence of neuropsychology in explaining behaviour. Also in line with recent thinking, any predisposing factor is seen to function as part of an environment that includes socio-cultural, relational and biological forces (Bowers-Andrews, 1994). One such systemic model sees violence against intimates as the end

result of a combination of social realities, relationship dynamics and psychological or neurological deficits (Walker, 1996). Included in the set of neurological deficits are the range of problems suffered by those with attention deficit hyperactivity disorder (ADHD).

Walker (1996) and her colleagues, after many years of treating couples in abusive relationships, have formed a strong clinical impression that the incidence of ADHD is abnormally high in their male clients. Specific components of the disorder may, they feel, act to predispose these men to becoming violent as a means of achieving their relationship goals. As yet, however, there exists almost no empirical research into the relationship between ADHD and aggression against intimates. As this introduction will show, ADHD is a complex group of cognitive and behavioural problems, often co-occurring with other psychopathologies, which may or may not predispose an individual to relationship aggression. The questions then become, can ADHD be isolated as an factor predictive of aggression against intimates? If so, what specific components of the disorder (impulse control, social skills deficits, language deficits) play the major role in this relationship? The current study will attempt to provide evidence that may help to answer these questions.

ADHD

Like theories of relationship aggression, ADHD has a conceptual history that reflects shifts in psychological thinking over the last hundred years (for reviews of classification and diagnostic issues, see Anastopoulos, Barkley, & Shelton, 1994; Carlson & Rapport, 1989; Henker & Whalen, 1989). The earliest model that attempts to explain

hyperactivity in children was that of a volitional inhibition of appropriate behaviour arising from defects in moral control. This notion, however, soon gave way to the idea of Minimal Brain Dysfunction, a model that focused on neurological problems, and in which motor restlessness played a major role. A later, competing view was the behaviourist idea of Hyperactive Child Syndrome, which downplayed any organic cause for the problem. More recent history has seen the emergence of Attention Deficit Disorder, which originated with DSM-III and focused on attention span. Included under the DSM-III category were two primary sub-categories, ADD/H, which included hyperactivity along with impulsiveness and inattentiveness as primary diagnostic elements, and ADD/WO, which included only the latter two components. Two factors led to a reorganization of these criteria in DSM-III-R. The first was the realization that attention deficits occurred in a number of psychopathologies, such as schizophrenia or mood disorders, and were not exclusively a feature of ADD. The second was research showing that problems in the inhibition of behaviour and similar executive functions were at the core of the syndrome, not attention deficit per se. This new knowledge resulted in a lessened emphasis on attention span and a more eclectic model for use in diagnosis. The current polythetic model (Goodyear & Hynd, 1992), which originated with DSM-III-R, allows a diagnosis of ADHD to be made if several symptoms of what are termed essential features are present (see Appendix A for current diagnostic criteria).

The rapid shifting of classification criteria in recent years has created some controversy, which, since it bears on measurement issues, should be briefly discussed. There appears to be little consensus concerning the validity of the ADD/H and ADD/WO

sub-categories. Goodyear and Hynd (1992) took exception to the homogenization of the disorder in DSM-III-R, which continues in DSM-IV, maintaining that recent empirical evidence supports the existence of the sub-groups that originally made up the DSM-III ADD classification. Carlson and Rapport (1989) pointed out that the DSM-III-R recombination may have been premature and is not supported by any empirical research. There even appears to be discrepancy on the subject between papers published by the same researchers. A five-year, longitudinal study of 150 children led Cantwell and Baker (1990) to conclude that the ADD/WO sub-category was very unstable and therefore an unreliable predictor of treatment response or outcome. Almost all of the children so classified subsequently developed hyperactivity. The same authors, using data from a sample that overlapped that of the earlier study, later claimed to have found a set of distinguishing symptoms and co-morbid problems that lend validity to the ADD/WO sub-category (Cantwell & Baker, 1992). They again stated, however, that the reliability of the diagnosis is very low over a follow-up period of 4-5 years. Given this latter finding, it would seem that the authors' earlier argument about low reliability invalidating the ADD/WO category should also apply to their own research. The later paper does not address this conflict.

The resolution of this particular controversy may lie in the nature of the differences said to exist between ADD/H and ADD/WO children (Cantwell & Baker, 1992; Goodyear & Hynd, 1992). These typically take the form of the lack of a particular symptom in the ADD/WO subgroup, the most obvious being substantially reduced levels of hyperactivity itself. There is also a reported reduction in problems with social

behaviour, which are often categorized as Oppositional Behaviour or Conduct Disorders. Cantwell and Baker reported a significant increase in learning and speech disorders in their ADD/H sample as well. Finally, there appears to be evidence of a greater incidence of attention disorder, as well as other psychological problems, in the families of ADD/H children.

The issues of conduct disorders and speech and learning disabilities will be addressed in more detail in later sections of this paper. The evidence above, however, suggests that what separated the DSM-III ADD/H and ADD/WO classifications may be a quantitative rather than qualitative difference. This hypothesis may help explain the instability of the ADD/WO category, lends support to the current approach evident in DSM-IV, and is in keeping with the recent centering of attention on problems with executive, cognitive functions such as self-inhibition as the likeliest root cause of the ADD complex (Aronowitz et al., 1994; Henker & Whalen, 1989; McBurnett, Harris, Swanson, Pfiffner, Tamm, & Freeland, 1993). Children categorized as ADD/H under DSM-III criteria may simply have been suffering from a greater degree of dysfunction of their executive capacities. The resultant differences in activity levels, behavioural problems and other dysfunctions could then be seen as an interaction between the level of the child's disability and external variables, including levels of psychopathology in the child's family of origin.

Using this working hypothesis, then, the remainder of this paper will treat ADHD as a continuous rather than a categorical variable. This approach implies that scores on measures of ADHD reflect varying levels of dysfunction in executive capacities and that

cutoffs representing diagnostic categories are artifactual. Low levels of severity may be evident only in subtle learning or speech disorders and impulsivity, whereas more severely affected individuals may show the full range of problematic behaviours illustrated in the DSM criteria.

ADHD and Co-morbid Disorders

Another area of ongoing controversy in ADHD research, one that complicates any prediction of the behaviour of individuals with ADHD, is that the so-called core features (impulsiveness, attentional dysfunction, hyperactivity) rarely occur without the presence of other behavioural, cognitive and emotional disturbances. If ADHD is to play a role as a predictor of aggression against intimates, it becomes necessary to isolate the disorder from other factors that could also be seen as predisposing an individual to aggressive behaviour. This section will first look briefly at empirical findings with regard to co-morbidity rates, and then examine the issue of the independence of various factors that typically co-occur.

In one reasonably large ($n = 236$) sample of children from six to sixteen years of age who had been screened for the presence of ADHD symptoms (Bird, Gould, & Staghezza-Jaramillo, 1994), "pure" ADHD occurred in only four individuals. Much more common in this (approximately 65% of cases) and in other similar studies (Kashani, Deuser, & Reid, 1990; Pihl & Peterson, 1991) was the finding of considerable overlap between the incidence of ADHD and the set of aggressive or antisocial behaviours that are collectively referred to as Oppositional Disorder (OD) or Conduct Disorder (CD).

Another frequent area of overlap with ADHD is learning and language problems (Benasich, Curtiss, & Tallal, 1993; Gidden, 1991; Kaplan & Shachter, 1991).

There is considerable disagreement among researchers about the model that best fits these very common findings. The question repeatedly asked is, are the various disorders independent but co-morbid, or are they different phenotypic manifestations of the same underlying problem? The resolution of this quandary has been complicated by the frequent shifts in ADHD diagnostic criteria, as well as problems with sampling and other areas of the research effort itself (Beiderman, 1991; Fletcher, Morris, & Francis, 1991; Hinshaw, 1987).

In regard to sampling, it has been suggested that the common use of strictly clinical samples may lead to a biased overestimate of the relationship between ADHD and other disorders (Beiderman, 1991). This implies that individuals with “pure” ADHD are less apt to be referred to mental health facilities, and hence, will not be included in research. The Bird et al. (1994) study, however, which showed such a low incidence of ADHD in isolation, used a community sample, suggesting that the findings of high levels of co-morbidity are not artifactual.

Similarly, a review of the literature addressing the overlap of language disorders (LD) and ADHD (Baker & Cantwell, 1992) suggested that co-morbidity rates between ADHD and LD diagnoses are higher in clinical samples (40-75%) than in community samples, but that the incidence of ADHD in unreferred samples of language-disabled children (20-50%) is several times that of the population in general (approximately 3%). Beiderman’s (1991) review of the literature respecting ADHD and CD found analogous

rates of incidence between clinical and community samples in that area. Cantwell and Baker's own research (1990, 1992), which showed a consistent pattern of co-morbidity among ADHD, LD, and behavioural problems, was based on a large sample of individuals initially referred for their language disabilities, not problems with attention or behaviour. All of these findings suggest that there is a range of co-morbidity between ADHD and other specific disorders that may be more evident when using clinical samples in research, but is not wholly accounted for by this methodological factor.

Perhaps more difficult to dismiss is Hinshaw's (1987) and Fletcher et al.'s (1991) criticism of measurement scales which, they have suggested, confound symptoms of ADHD and other disorders. This is an important issue for the current study, because answering the central question about the role of ADHD in relationship aggression will require that various factors be examined in isolation. Hinshaw points to early factor analytic studies that found no distinguishing features between ADHD and CD individuals; he then goes on to suggest that this result is a consequence of the use of scales that did not contain enough core ADHD items for a factor to emerge. While it is true that later factor analytic studies, using balanced scales, have usually found factors typically labeled aggression and hyperactivity, they also consistently found that the two factors were moderately to highly correlated, typically sharing half of their variance. Hinshaw points out that this correlation could be the result of shared error variance, but does not discuss whether the levels of error variance in the studies referred to are consistent with this hypothesis. Of particular interest in Hinshaw's detailed review is a study that attempted to isolate items tapping hyperactivity/inattention from those tapping

aggression, and which resulted in the IOWA (inattention-overactivity with aggression) Conners Scale (Loney & Milich, 1982, as cited in Hinshaw, 1987). Surprisingly, correlations between these supposedly independent factors still averaged .63. Hinshaw refers to this finding as an inherent association between these two dimensions, and suggests that this may be one cause of inconsistent findings in subsequent attempts to validate these two factors by searching for unique patterns of correlations with such criterion measures as classroom behaviour and peer evaluations. This ongoing controversy is evident in the more detailed discussions of ADHD and Conduct Disorder and ADHD and language dysfunction that follow.

ADHD and Conduct Disorder. Pihl and Peterson (1991) have suggested that both ADHD and CD are characterized by noncompliance with the social contract, that is, established rules governing social behaviour. The two are distinguished on the basis of the internal versus external focus of noncompliant behaviour. In the case of pure ADHD, the rights of others are typically not infringed upon. Examples include inability to be quiet, to sit down, and to pay attention. In cases of CD, the rights of others are actively interfered with. This latter noncompliance can take a variety of forms, from defiance of authority to acts of cruelty and destruction. Current DSM-IV diagnostic criteria for CD can be found in Appendix A.

The CD domain includes relatively non-aggressive behaviours, which are sometimes categorized as Oppositional Disorder (OD). Again, the validity of these subdivisions is in question. Hinshaw (1987) suggests that the OD classification lacks empirical support; Cantwell and Baker (1990) report that the CD diagnosis is unstable,

relative to the OD diagnosis, over a period of four to five years. The situation bears a strong resemblance to the controversy over the ADD and ADD/WO categories described above. As in that case, for the purposes of the current study the two sets of behaviours will be treated as quantitatively different only and discussed together under the CD label.

As the research cited above has shown, CD is often found to co-occur with ADHD. Estimates of co-morbidity range from 29% (Burket & Myers, 1995) to 73 % (Aronowitz et al., 1994), and average around 40-50% in children (Pihl & Peterson, 1991). Also of note is that Aronowitz et al., and others (McBurnett et al., 1993) have taken Hinshaw's (1987) warning about confounded self-report scales to heart and have introduced a number of neuropsychological and medical measures designed to find evidence of convergent and divergent validity for the CD/ADHD distinction. Even with this multi-measure approach, however, the overlap between groups remains.

The stated purpose of each of these studies, and many of those cited in Hinshaw's (1987) review, was to differentiate ADHD and CD groups. Despite the degree of overlap, most report some degree of success, typically in the form of differentially correlated criterion measures, such as performance on sustained attention or memory tasks, on which the ADHD or co-morbid groups perform more poorly than so-called pure CD groups. Other common criteria are outcome variables such as the incidence of substance abuse or the development of personality disorders. Most results show that a CD-only diagnosis will lead to different outcomes than a diagnosis of ADHD only or a dual diagnoses. Typically, the poorest performances or outcomes are on the part of the co-

morbid groups. The question is, does this indicate a high level of independence and validity for the CD category?

The lack of stability of CD, as indicated by Cantwell and Baker (1990), as well as substantial overlaps with a number of psychopathologies other than ADHD, has led some researchers to conclude that CD is a behavioural pattern that results as a consequence of other, more deeply rooted pathology (Burket & Myers, 1995). Disordered conduct and aggression could result from anxiety (Kashani et al., 1990), from depression or substance abuse, as in the Burket and Myers study, or from a number of socio-cultural causes. Of central importance to the current study, however, is the strong evidence that CD is often associated with the presence of ADHD, perhaps in interaction with environmental variables. Hinshaw (1987) concluded at the end of his detailed review that the best negative predictor of CD is the absence of ADHD symptoms. Milich, Widiger and Landau (1987) reported that the probability of a diagnosis of ADHD given a diagnosis of CD is .67, and that the absence of the ADHD symptoms of the inability to listen, impulsivity, and the inability to sit still, strongly indicate the absence of CD.

A central question to be answered, if ADHD is to function as a viable predictor of aggression in relationships, is whether antisocial or disordered conduct is an integral part of the ADHD complex or, alternatively, is an independent but co-morbid problem. To summarize the results of research to date, it is likely that ADHD and CD are independent to the extent that there are individuals whose CD arises from some other source than ADHD. For individuals with ADHD, however, the two disorders are likely much less independent. This implies that any aggression against intimates by those with ADHD

should be viewed in the context of the predisposing effects of ADHD itself, rather than as a co-morbid set of behaviours.

ADHD and Language Disorders. An area attracting a growing level of attention in ADHD research, and one that could theoretically play a role in the development of antisocial behaviour in individuals with ADHD, is the co-occurrence of ADHD and language disorders (LD). This is in part a consequence of the shift in focus away from the attention deficit/hyperactivity complex towards deficits in self-inhibition and other executive cognitive functions, many of which have a linguistic component. Westby and Cutler (1994) have pointed out that many of the DSM-IV criteria for ADHD can be viewed as problems with language-dependent, rule-governed behaviours, such as turn-taking, not butting into conversations, and paying attention when spoken to.

This conceptualization suggests that there should be a substantial overlap in the incidence of ADHD and LD, and empirical evidence tends to support this view. Estimates of co-morbidity are consistently high. Cohen, Davine, Horodezky, Lipsett and Issacson (1993) report that 34% of a sample of Toronto children referred for psychiatric problems had unsuspected LD. These were typically the children with ADHD. Another Canadian study (Love & Thompson, 1988) reported that of 116 children similarly referred, 65% had LD and an overlapping 75% had ADHD. The incidence of dual diagnosis was 48.3%. A report on a sample of boys committed for persistent antisocial behaviour (Warr-Leeper, Wright, & Mack, 1994) indicated that 80% had ADHD. When tested for their language skill levels, it was found that these boys scored significantly below the norms on all subscales of two standardized language tests. Particular problems

were expressive and receptive vocabulary, understanding ambiguous sentences and making inferences. The last two items listed are less like the semantic function of vocabulary, and more like the various functions that make up the areas of linkage between language and behaviour that are termed pragmatics (Watzlawick, Beavin-Bavelas, & Jackson, 1967).

Donahue, Cole, and Hartis (1994) more narrowly define pragmatics as the social uses of language in communicative contexts, and list examples such as requesting, informing, questioning and turn-taking. Love and Thompson (1988) add behaviours such as a sense of timing in a conversation (when to change the topic; when to start and stop), appropriate eye contact and adapting a message to the listener. This set of skills is distinguishable from other areas of language competency (vocabulary, grammar) by the inclusion of many extra-linguistic variables (Bishop & Adams, 1991), especially in the area of social skills development (Gerber, 1991). Several of these authors have suggested that a close relationship exists between the incidence of deficits in pragmatic language skills and ADHD, and as well, that there may be a common etiology. There is also evidence that this pattern of dysfunction can be distinguished from other language disorders. A literature review of studies in this area (Baker & Cantwell, 1992) concluded that the conversation of ADHD children is not less complex than that of normal children, but is less effective. The authors suggested that there may be separate patterns of LD in ADHD children but do not address the question of pragmatics directly. Hynd, Morgan, Edmonds, Black, Riccio and Lombardino (1995) reported little co-morbidity between a group of reading disabled children and a group of ADHD children. Benasich et al. (1993)

reported similar findings for ADHD and learning disabilities in the phonetics and semantics areas of language.

Despite problems in the measurement of pragmatic behaviours, which will be discussed along with other measurement issues later in this paper, the consensus among the researchers cited above is that ADHD individuals suffer from particular deficits in this area. Links are being drawn among such pragmatic abilities as “self-talk”, in which individuals internally rehearse rule-guided behaviour and a skill which ADHD children conspicuously lack (Gidden, 1991), the behaviours themselves, and cognitive deficits preventing the learning of such pragmatic skills (Love & Thompson, 1988). This conceptualization may go some way towards explaining problems with both language and social interaction that are experienced by those with ADHD.

ADHD in Adults

Almost all of the research cited above deals with ADHD in children. Beginning in the 1970s, however, empirical evidence began to build towards the acceptance among researchers and clinicians that ADHD was not only a childhood disorder (Beiderman, 1991; Hechtman, 1989). The most convincing evidence has come from a number of prospective longitudinal studies that followed ADHD children into their adolescence and adulthood (Claude & Firestone, 1995; Gittleman, Manuzza, Shenker, & Bonagura, 1985; Manuzza, Klein, Bessler, Malloy, & LaPadula, 1993). In these studies, significant numbers (between 11 and 50%) of young adults diagnosed with ADHD as children still had clinical levels of the disorder. Rates of persistence into adolescence have typically been found to be substantially higher, but even low estimates of clinical levels of the

disorder in adulthood are comparable to rates of incidence of other important psychological disorders such as depression (Shaffer, 1994). This has led to suggestions that yet another diagnostic classification, ADHD-residual type, be created (Denckla, 1991).

Like most issues surrounding about ADHD, the reported psychological profiles of ADHD adults vary substantially. There are, however, some consistent findings. The typical ADHD adult is no longer overtly hyperactive. The other core symptoms of inability to concentrate attention and impulsiveness, however, are still very much in evidence (Barkley, Murphy, & Kwasnik, 1996; Buchsbaum et al., 1991; Weyandt, Linterman, & Rice, 1995). There is also a typical pattern of so-called co-morbid disorders. Commonly, ADHD adults have ongoing problems with oppositional or antisocial conduct, abuse alcohol and other drugs, and suffer higher rates of depression and anxiety disorders than controls (Barkley et al., 1996; Beiderman, Faraone, Spencer, Wilens, Mick, & Lapey, 1994; Eystone & Howell, 1994; Manuzza et al., 1993). Perhaps because of these overlapping cognitive and behavioural problems, ADHD adults also suffer from a range of personality and social dysfunctions, from low self-esteem through reduced educational and economic attainment to disturbed interpersonal relationships (Hechtman, 1989; Kaplan & Shachter, 1991). A common second diagnosis in these individuals is antisocial personality disorder (ASPD). Denckla describes such people as unstable, underachieving and over-impulsive.

The debate in the literature about the independence of adult ADHD and what in adults tends to be called ASPD parallels that in the children's literature on ADHD and

CD (Shaffer, 1994). Some researchers have pointed out that ASPD or disordered conduct in adulthood is typically preceded by childhood CD (Lilienfeld & Waldman, 1990; Zoccolillo, Pickles, Quinton, & Rutter, 1992) and have suggested that such a link is independent of adult ADHD. Lilienfeld and Waldman argued that most studies linking disordered conduct and ADHD, both in children and adults, confound their results by including individuals with symptoms of CD in their ADHD samples-- the issue of "pure" ADHD once again. The implication is that any item in a measure of ADHD that does not target motor hyperactivity, attention deficit, or impulsivity is measuring something other than ADHD. Their conclusion, apparently based on the heterogeneity of the measures, is that ADHD (but not CD) may arise from a number of root causes. These are basically the same arguments made in the literature on childhood CD discussed above, and the counter-arguments are the same as well. The evidence of the poor stability over time of the CD diagnosis, as well as the evidence that the incidence of CD in ADHD sufferers is linked to the severity of ADHD symptoms, suggests instead that it is disordered conduct that is heterogeneous, but that in ADHD sufferers, CD/ASPD is a common and predictable behavioural consequence of the core cognitive deficits of ADHD.

There is some empirical support for this idea. Gittleman et al.'s (1985) longitudinal study found that subjects who had been classified as having ADHD as children, but who could not be so classified at follow-up as adolescents or adults, did not differ from controls in the incidence of antisocial or substance abuse disorders. As was the case in the research on CD in children, in this study the greatest risk factor in the

development of ASPD or substance abuse was the continuation of ADHD symptoms. Further, Lilienfeld and Waldman's (1990) review of studies of the psychoneurology of adults with ASPD suggested that these individuals often suffer from pre-frontal lobe dysfunctions such as perseveration, deficient self-awareness and concrete attitudes. These problems are highly similar to the executive and pragmatic dysfunctions described elsewhere in this paper as indicative of ADHD. Again, as in the case of children, it seems likely that, for those with ADHD, adult antisocial behaviour cannot be seen as independent of ADHD itself.

Perhaps because this new area of research has focused on classification issues and base rates of incidence of ADHD, there is very little evidence of how adults with ADHD function in their daily lives. There are vague references to adults with ADHD being hot tempered and suffering disrupted relationships, but little more. One exception is the study by Kashani et al. (1990) that examines the effect of several forms of psychopathology, including ADHD, on rates of aggression in an adolescent sample. The study uses Straus's Conflict Tactics Scales (CTS; Straus, 1979) to determine what behaviours are used to deal with conflict in interpersonal relationships. In this sample, levels of verbal and physical aggression could be predicted on the basis of levels of anxiety and CD. ADHD predicted levels of physical aggression but not verbal aggression. Since the Kashani et al. study compares means between groups, and does not examine the relationships among the measures of ADHD, CD and anxiety, it cannot be determined if these factors are acting independently to produce aggression, or if the factors are confounded. To resolve this potential confound, it would be necessary to

assess the role of ADHD with CD controlled, or vice-versa. Given the questions about the independence of ADHD itself and aggressive behaviour in those with ADHD, this distinction becomes an important one.

ADHD in the University Population. Because this study will rely primarily on a university sample, the issue of the incidence of ADHD in the university population needs to be addressed. Although a common finding in adult outcome studies is that those with ADHD attend school for fewer years than controls (Hechtman, 1989; Manuzza et al., 1993) there is also evidence that many individuals with ADHD, a substantial number of them undiagnosed as children, do attend university. Manuzza et al. (1993) reported that 12% of their clinical sample had completed at least two years of university. An early study in this area (Buchsbaum et al., 1985) screened a large university sample for symptoms of attention deficit and found evidence of what was termed an attention dysfunction syndrome. Unfortunately, only the top and bottom five percent of the distribution on the screening measure were compared, which does not yield an estimate of overall incidence. More recent studies (Shaw & Giamba, 1993; Weyandt et al., 1995), using general unreferral university samples, found rates of incidence comparable to those in the general population. Many of these individuals had not previously been diagnosed. It may be that the high drop-out rates reported in the Manuzza et al. and similar longitudinal studies are a result of the more severe symptomatology in the clinical samples being followed. This possible floor effect is similar to that noted in the studies of co-morbidity in clinical samples mentioned earlier (Beiderman, 1991; Fletcher et al., 1991; Hinshaw, 1987). ADHD individuals who, perhaps because of a lessened level of

severity, are not diagnosed (and therefore not studied) may achieve higher levels of education than clinical populations. Kaplan and Shachter (1991) described a 34-year-old woman who, despite what was subsequently diagnosed as substantial problems with ADHD, graduated cum laude from her university. Results such as these have caused student service administrators to include students with ADHD among the special populations that require additional services at their universities (Javorsky & Gussin, 1994).

The clinical vignette mentioned above (Kaplan & Shachter, 1991) also brings up the question of gender in selecting a sample for study in this area of research. Beiderman et al. (1994) point out that females are over-represented in clinical samples of adults with ADHD, as composed to samples of children. This, they feel, may be the result of a gender-based bias in which children are referred for screening. The bias occurs because of the fact that ADHD boys typically exhibit more of the acting-out, disruptive behaviours that attracts the attention of adults, than do girls. It appears that these differences tend to disappear in adulthood, since the authors' examination of an adult sample (61% male) found few gender differences in a wide range of measures of psychological and social problems. Shaw and Giamba (1993) found that male and female college students screened for ADHD performed similarly on a number of cognitive and performance tests.

Since the current study examines relationships between ADHD and aggression, the issue of women and violence also needs to be addressed. Numerous studies using self-report data (Follingstad, Wright, Lloyd, & Sebastian, 1991; Jouriles, & O'Leary,

1985; Straus, Hamby, Boney-McCoy, & Sugarman, 1996, Szinovacz, 1983) have found that women report violence directed against their partners at levels at least on par with the male members of the same samples.

Summary

An overview of the literature cited above indicates that ADHD can best be conceptualized as a variable dysfunction of executive cognitive functions centered in the frontal lobes of the brain. This may result in varying levels of the core symptoms of impulsivity, attention deficit and motor hyperactivity. The same underlying dysfunction can also result in varying types of language disorders, in antisocial or disordered behaviour and in problems with social interaction. Research has also shown that ADHD is not only a disorder of childhood, but is most likely a problem across the life-span of an individual. In adult samples, men and women tend to report similar problems and to perform similarly.

The Current Study

Much of the literature on adults with ADHD has centered on classification and the development of general profiles of psychological status. Perhaps because this area of research is relatively new, there is little evidence on how these descriptive profiles are correlated with specific behaviours. One theoretically relevant behavioural area is that of conflict resolution. Given that those with ADHD have been shown to suffer deficits in impulse control, social skills, and the pragmatic use of language, it seems likely that ADHD could act to reduce the range of conflict resolution tactics available to such an individual, and make verbal and physical aggression more likely. The high correlation

between ADHD and CD or ASPD suggests that these individuals are prone to aggressiveness. Further, the lack of social skills common to these individuals may make it difficult for them to use non-aggressive means of resolving conflict. The problems with pragmatic language use illustrated above may play a key role here.

The current study is designed to provide evidence for this theoretical model. Like the Kashani et al. (1990) study, the dependent measure was an assessment of the type of tactics used by an individual to resolve conflict in intimate relationships. Straus et al. (1996) have recently published a revised Conflict Tactics Scales (CTS2) which was adopted for this study. The design of the CTS and the CTS2 allows for the separate analysis of non-aggressive reasoning, verbal aggression and violence, labeled Negotiation, Psychological Aggression and Physical Assault in the CTS2; the CTS2 has also added a Sexual Coercion factor. I predicted that each of these factors, which are discussed in more detail in the Methods section, would reflect the influence of the cognitive, behavioural and language-based components of ADHD to somewhat different degrees. CTS2 scores would be correlated with scores on several measures of psychopathology that contain items targeting the core ADHD symptoms of hyperactivity, impulsivity and attention deficit, items tapping conduct disorder or antisocial behaviour, and items about the pragmatic use of language. Unlike the Kashani et al. study, the current study attempted to separate the effects of each of these factors on CTS2 scores.

The overall hypothesis followed the arguments made earlier, that is, that aggression and abusive behaviour in individuals with ADHD are not independent of ADHD itself. At the bivariate level, it was hypothesized that the core elements of

ADHD-- attention deficit, impulsiveness, and hyperactivity-- would have a moderately strong negative relationship with scores on the CTS2 Negotiation scale, and a moderately positive relationship with the Psychological and Physical Assault scales. In other words, it was predicted that an individual's use of negotiation as a conflict resolution tactic would decline, and his or her use of psychological and physical aggression would increase, as scores on the ADHD measures increase. It was further hypothesized that scores on CD items will be more strongly negatively related to CTS2 Negotiation scores, moderately positively related to Psychological Aggression and strongly positively related to Physical Assault. I predicted that those reporting increased levels of disordered conduct would be less likely to use negotiation as a tactic, compared to those reporting only ADHD, and more likely to resort to physical violence. CD was expected to be somewhat less predictive of psychological aggression. The pragmatic language disability factor was hypothesized to be strongly negatively related to the CTS2 Negotiation scale and moderately positively related to Psychological and Physical Assault. Increased problems in this area were predicted to be a strong negative indicator of the use of the negotiation tactic, but less indicative of the likelihood of resorting to abusive behaviours. At the multivariate level, the key hypothesis in determining the dependence or independence of the various components of ADHD was that, even with the CD factor controlled, ADHD was hypothesized to make an additional significant contribution to predicting CTS2 scores.

Method

Participants

The study's sample (58 women and 22 men, mean age 19.5 years) was drawn from the Introductory Psychology Research Participants Pool at Acadia University. Participants volunteered to take part in exchange for extra credit toward their course grade. Data collected from individuals who reported that they had not been part of an intimate relationship in the twelve previous months were not used in the analysis.

Materials

Conflict Tactics Scale. The dependent variable, the type of tactics used in conflict between intimates, was assessed via the Revised Conflict Tactics Scales (Straus et al., 1996), an updated version of the measure used in the Kashani et al. (1990) study examining aggression and ADHD in adolescents. Straus originally conceptualized the CTS as representing three primary conflict resolution tactics: reasoning, verbal aggression and violence, making up three subscales. This model was subsequently confirmed via factor analysis (Straus, 1979). Many studies have replicated these results (Caulfield & Riggs, 1992; TenVergert, Klingma, & Gillespie, 1990), although one study (Barling, O'Leary, Jouriles, & Vivian, 1987) reported results that collapsed the reasoning and verbal aggression factors into one. The revised CTS2 has added items where necessary to strengthen the original factor structure, especially the reasoning subscale, now called Negotiation. This latter subscale was a weak element in the original measure, accounting perhaps for the results of the Barling et al. study. The other revised scales, Psychological Aggression (formerly verbal aggression) and Physical Assault (formerly

violence), are quite similar to the originals. Two new scales, Injury and Sexual Coercion, have been added to the CTS2. In each case, respondents are asked to indicate how many times they have engaged in the specific behaviours described in the scale's items in the past year. Recorded scores represent the midpoints of incidence categories. Midpoints are the same as the respondent's raw score for categories 0,1, and 2. For category 3 (3-5 times) the midpoint is 4, for category 4 (6-10 times) it is 8, for category 5 (11-20 times) it is 15 and for category 6 (more than 20 times) it is 25. A response in category 7 ("not in the last 12 months but it did happen before") was scored in the current study as a 1, indicating that the behaviour had occurred in the relationship (see Appendix B).

Data for psychometric analysis of the CTS2 were derived from a sample of university students in dating relationships (n = 317) (Straus et al., 1996). Alpha coefficients for the CTS2 subscales were reported to be good, ranging from .79 for the Psychological Aggression scale to .95 for the Injury scale. Straus et al.'s (1996) preliminary estimates of validity are also reasonable, but at this point primarily consist of construct validity estimates internal to the scale. For instance, Psychological Aggression and Physical Assault scores are significantly more correlated with Sexual Coercion scores for men than for women, as hypothesized. Similarly, evidence of discriminant validity is claimed for results showing no relationship between the Negotiation scale and the Injury and Sexual Coercion scales.

Despite the newness of the CTS2 and the resultant lack of external validity studies, the revised scales are similar enough to the original CTS to sustain the

assumption that they yield similar results. The strengthened Negotiation scale has double the number of items from three to six, thus increasing reliability and content validity.

Wender Utah Rating Scale. The Wender Utah Rating Scale (WURS) is a retrospective self-report measure of childhood ADHD (Ward, Wender, & Reimherr, 1993). A 25-item subscale was found to distinguish a group of individuals clinically diagnosed as having ADHD as adults (those scoring above 45 on the scale) from a group of individuals with anxiety disorders, and from a normal control group. WURS scores were also reported to predict the response of individuals to methylphenidate treatment, with high scorers responding better than low scorers, consistent with the findings of drug treatment studies.

WURS items are self-descriptive statements with a five-point response scale (see Appendix B). Good reliability has been demonstrated, both in terms of internal consistency and test-retest reliability (Rossini & O'Conner, 1995; Stein, Sandoval, Szumowski, & Roizen, 1995; Ward et al., 1993; Weyandt et al., 1995). The Stein et al. study also analyzed the factor structure of the WURS, an important issue for the current study. Results showed a five-factor solution. For males, factors were referred to as conduct problems, learning problems, stress intolerance, attention problems, and poor social skills. These factors accounted for 72 percent of the variance. For unexplained reasons, factors containing basically the same items were labeled differently for women; stress intolerance became anxiety, poor social skills became unpopular. Since there was no rationale for these differences in interpretation, the gendered breakdown of WURS scores was abandoned in the current study. WURS factor scores were combinations of

the male and female factors in the Stein et al. study. In the large majority of cases, items loaded significantly on both genders' factors and were automatically included. There were isolated cases where a given item loaded significantly on only one gender's factor. These items were also included in the combined factors, if their factor loading was over .40.

Overall, the factor structure of the WURS appears to represent rather well the types of problems referred to in the literature on adult as well as childhood ADHD. The factor structure outlined also maps well onto the goals of the current study. CD items will be isolated from those representing attention and learning problems, anxiety, etc., and each subset used as independent predictors of CTS scores.

As mentioned, Ward et al. (1993) identified a 25- item subscale that was used to differentiate between groups of individuals. Since this clinical subscale may prove more reliable than the smaller factors, and has already shown some evidence of discriminant validity, it was also included in the current study's analysis as a measure of overall ADHD symptomatology in childhood.

Adult Rating Scale. The Weyandt et al. (1995) study also assessed the psychometric properties of the Adult Rating Scale (ARS), which contains items on the current functioning of adults, and covers the core areas of attention, impulsivity and hyperactivity, as well as some items that appear to tap disordered conduct. Scoring is consistent with the other self-report measures used, except that the ARS uses a four point, rather than a five point, scale. The purpose of the ARS in the current study was to assess the level of ADHD symptoms at the time of measurement, and to act as a cross-validating

tool for the WURS. Weyandt et al. reported acceptable levels of reliability for the ARS (internal consistency = .87; test-retest = .80). The ARS was also found to be significantly more correlated to the WURS ($r = .54$) than to a general measure of psychopathology. No analysis of the factor structure of the ARS is yet available.

Pragmatic Language Inventory. Although the WURS contains items tapping learning disabilities, they are of a general nature and do not specifically address the pragmatic language problems the literature suggests are common in those with ADHD. A literature search indicated that, although some studies have reported the results of structured interviews in this area, there is no published self-report measure of pragmatic language difficulties. The same literature suggests that such problems might play a important role in predicting CTS scores. For this reason, the Pragmatic Language Inventory (PLI) was designed for the current study. The PLI (see Appendix B) consists of 26 items, consistent in scoring with the other measures to be used in the study, and derived from the literature in this area of ADHD research. Pilot testing of the PLI was conducted by the current author using a sample of Introductory Psychology students ($n = 94$; 56 females, 38 males; mean age = 19.7 years). A subset of this sample ($n = 39$) completed the PLI twice, with a two-week interval between testing sessions. Reliability analyses indicated acceptable levels of internal and test-retest consistency (Cronbach's $\alpha = .76$; test-retest $r = .86$).

The results of the current study will provide some evidence of the validity of the PLI. Hypothetically, the PLI should be positively correlated with both WURS and ARS scores, but negatively correlated with the negotiation scale of the CTS2.

Procedure

The sample was recruited from Introductory Psychology classes through the psychology department's student research pool. Participants who agreed to take part in the study were asked to sign a consent form, which provided information on the nature of the study, the tasks they would be asked to perform and the eventual uses of the information to be gathered (see Appendix B). This information was repeated orally before the participants received the self-report scales. It was stressed that data collection had been arranged so as to be anonymous, that their participation was voluntary, and that they could withdraw at any time. It was suggested that if they wished to withdraw, they could place their incomplete questionnaire into an envelope when other participants began to leave the room. The self-report forms were completed by groups of individuals in short sessions. To preclude the occurrence of an order effect, the various scales were presented in randomized order.

Results

ADHD Measures

Prevalence. A total of 92 questionnaires were collected. Of this number, 12 were not included in the analysis, either because of missing data (items or pages appeared to be inadvertently skipped; there was no evidence that any participant made a conscious choice not to complete the questionnaire) or because the participants had indicated that they had not been involved in a romantic relationship in the last 12 months. None of the 22 men and 58 women in the sample reported having been diagnosed as having ADHD.

Comparison of mean scores by gender, done via MANOVA, found no significant

differences on ARS, WURS or PLI total scores, or on any of the CTS2 scale scores.

Subsequent analyses were done on the sample as a whole.

Scores were calculated for the WURS factors mentioned above. As well, a score was calculated for the WURS 25-item clinical subscale. The means, standard deviations and maximum possible scores for each of these is shown in Table 1, along with similar statistics for the other ADHD measures. Ward et al. (1993) reported two clinically significant cutoff scores for the clinical subscale. A score over 36 differentiated 86% of those known to have ADHD from a group of normal participants. A score of 45 further differentiated 90% of those with ADHD from a group with anxiety disorders. When applied to the current sample, it was found that 10 individuals scored over the lower cutoff (12%) and four individuals scored over the higher cutoff (5%). These estimates are in line with studies using general samples (Cantwell & Baker, 1992) as well as those using university samples (Javorsky & Gussin, 1994; Shaw & Giamba, 1993).

Table 1

Means, Standard Deviations, Maximum Possible Scores and Reliability Estimates for ADHD Measures

Scale	Mean	S.D.	Maximum	Reliability
Adult Rating Scale	19.51	9.48	75	.84
Pragmatic Language Inventory	29.61	9.10	104	.72
WURS ADHD Factor	10.50	6.00	40	.76
WURS CD Factor	9.81	4.60	60	.59
WURS LD Factor	4.67	4.60	28	.72
WURS Clinical Subscale Score	20.87	14.08	100	.90

Note. Reliability estimates based on Cronbach's Alpha.

Given this, it is important to note that the large majority of the sample reported few symptoms of ADHD, CD, or related problems, as would be expected.

Correlations between ADHD Measures. Also as would be expected, there was a significant correlation between WURS clinical subscale scores and total scores on the ARS ($r = .63, p < .001$), suggesting that childhood ADHD symptoms have continued into adulthood for the current sample (see Table 3 for r values and significance levels of correlations between measures of interest). The various factors of the WURS were also intercorrelated, with the ADHD-CD relationship being stronger than either the relationship between ADHD and LD or CD and LD. As suggested by the majority of the studies cited earlier, those with ADHD symptoms also have problems with disordered conduct. All three factors were significantly correlated with the total WURS clinical subscale score and with the total score on the ARS.

This pattern of correlations between the group of ADHD measures, each of which shows reasonable to good levels of reliability, can be argued to provide evidence of convergent validity for the group of measures as a whole. The pattern is very much as would be expected, with retrospective and current measures highly correlated, a strong degree of overlap between measures of the “core” elements of ADHD and a measure of CD, and a smaller but still significant association between ADHD and LD.

Conflict Tactic Measures

Prevalence. Straus and his co-workers (1996) report the incidence of each conflict tactic in their sample in two ways: prevalence, which is the percentage of the sample who reported one or more instances of the acts in each scale, and chronicity, which indicates

how often the set of acts measured by each scale occurred in the previous 12 months. This second figure is recorded only for those who have reported one or more instances of those behaviours being tapped by a given scale (i.e. prevalence > 0). The authors argue that this is the only way of arriving at a meaningful estimate of the number of violent or sexually coercive acts which occur inside abusive relationships. Otherwise, with the large majority of non-violent individuals making up the sample included in the analysis, the average number of violent acts would be near zero. This method has been adopted for the purpose of describing the current sample.

Every member of the current sample reported using one or more of the tactics which make up the Negotiation scale, as was the case for all but 2% of the sample in the Straus et al. (1996) study. The mean number of such occurrences in the previous 12 months was 79.00 (SD = 41.50). For Psychological Aggression, prevalence was also 100%, as compared to 79% in the Straus study. The mean occurrence of these behaviours was 35.40 (SD = 33.10). Prevalence for Physical Assault dropped steeply, to 37% (versus 47% in the Straus sample). The mean number of occurrences in this category was 8.00 (SD = 11.10). A lower number of individuals (26%) reported having injured their partner (chronicity estimate M = 7.66, SD = 12.71). Contrary to the Physical Assault results, prevalence on the Injury scale was higher in the current sample than in Straus' sample (26% vs. 12 %). Finally, 12 % of the current sample reported being sexually coercive in their relationships (chronicity estimate M = 14.4, SD = 16.31) versus over 30% in the Straus sample. The relative proportions of men and women in the samples (28% male in the current sample versus 36% in Straus') are roughly similar. Although

variations in prevalence do occur, the levels of endorsement for the CTS2 scales are similar to Straus' study, suggesting that the current sample is not an unusual one for the university population.

For the Physical Assault, Injury and Sexual Coercion scales, the effect of Straus et al.'s (1996) operationalization of chronicity can be determined by examining Table 2 which contains mean scores and standard deviations for each scale which include the entire current sample. As an example, the mean number of physically aggressive acts for the whole sample is 3.00 (SD = 7.77), as opposed to a mean of 8.00 for those who indicated that they were indeed physically aggressive. Because Straus et al. do not report these overall means, no comparisons can be made on this statistic.

Table 2

Means, Standard Deviations, Maximum Possible Scores and Reliability Estimates for CTS2 Scale Scores

Scale	Mean	S.D.	Maximum	Reliability
CTS2 Negotiation Scale	79.04	41.47	150	.84
CTS2 Psyc. Aggression Scale	35.41	33.09	200	.62
CTS2 Physical Assault Scale	3.00	7.77	300	.63
CTS2 Injury Scale	.58	3.79	100	.41
CTS2 Sexual Coercion Scale	1.80	7.29	175	.33

Note. Reliability estimates based on Cronbach's Alpha.

As a preliminary step before further data analysis, the distributions of scores for each scale or factor to be correlated were examined. While the ADHD measures were, within acceptable boundaries, normally distributed, this was not true of some of the CTS2 scales. The Negotiation and Psychological Aggression scores approximated normal

distributions, while the Physical Assault (skewness = 4.88), Sexual Coercion (skewness = 4.98) and Injury (skewness = 8.24) scores did not. Straus et al. (1996) also report what they term “extremely skewed distributions” for these variables, but have circumvented the issue by operationalizing chronicity as described above. Distributions of these variables become much more normal if the large numbers of scores equal to zero are eliminated.

Table 3

Correlations between ADHD Measures and CTS2 Scale Scores

	1	2	3	4	5	6	7	8	9	10	11
1		.63***	.29**	.69***	.55***	.44***	-.08	.13	.20+	.02	.14
2			.51***	.71***	.69***	.41***	-.03	.09	.09	-.09	.05
3				.46***	.34*	.03	-.05	.03	.02	-.06	.11
4					.51***	.41***	-.03	.11	.03	.09	.07
5						.22*	-.18	.02	.003	-.10	.13
6							-.03	.22*	.36***	.22*	.21+
7								.64***	.26*	-.16	.25*
8									.61***	.09	.18
9										.37***	.19+
10											.05
11											

Note. + p < .10 *p < .05. **p < .01. ***p < .001

1. Adult Rating Scale
2. WURS-clinical subscale
3. WURS LD factor score
4. WURS ADHD factor score
5. WURS CD factor score
6. Pragmatic Language Inventory

7. CTS2 Negotiation Scale
8. CTS2 Psyc. Aggression Scale
9. CTS2 Physical Assault Scale
10. CTS2 Injury Scale
11. CTS2 Sexual Coercion Scale

While Straus et al.'s method of dealing with skewed distributions serves well in describing a given sample or in comparing two groups on chronicity, it is inappropriate for the analysis planned for the current study. If a relationship between two continuous variables is to be estimated, it does not make sense to truncate the distribution of one or both of the variables. However, badly skewed distributions have the same basic effect, that of underestimating the variance of a variable and thus of reducing any correlation with other variables (Tabachnick & Fidell, 1996). Following suggestions made by Tabachnick and Fidell, those variables that departed substantially from normality were transformed to reduce the skewness of the distribution. The Physical Assault, Injury and Sexual Coercion scales, all of which were severely positively skewed, were transformed using the formula $\text{New } X = 1/(X + C)$, where New X is the transformed score, X is the untransformed score and C is a constant (in this case, $C = 1$) added to eliminate the possibility of having to calculate the inverse of 0. In every case, this transformation resulted in a less skewed distribution (for Physical Assault skewness = -.74, for Injury skewness = -3.78 and for Sexual Coercion skewness = -2.59). It is also important to note that the transformed variables are in effect inverses of the originals. This has the effect of reversing the signs of correlations between these transformed variables and others. For reasons of clarity in interpretation, Table 3 and Tables 4a and 4b, which show such correlations, reflect the direction of correlations that would occur if the variables were untransformed.

Correlations between CTS2 Scales. There were several significant correlations found between the CTS2 scales. Contrary to expectations, and to the findings of the

Straus et al.(1996) article, the Negotiation scale was not independent of the Psychological Aggression scale or of the Physical Assault scale, but was significantly and positively correlated to each. Negotiation was also positively correlated to the Sexual Coercion Scale. It would appear that, in the present sample, those who are psychologically, sexually and/or physically abusive also negotiate more than their non-abusive peers. More predictably, the Physical Assault Scale was related to the Psychological Aggression Scale and to the Injury Scale. The Sexual Coercion scale was positively correlated with the Injury and the Psychological Aggression scale, but not to the Physical Assault scale.

With the exception of the Negotiation scale, the CTS2 scales are related to each other as would be expected. It should be noted, however, that reliability estimates for several of the scales are rather low (see Table 2).

Relationships between ADHD Measures and CTS2 Scales

The impression of the data so far is that of two groups of measures, each of which contains several intercorrelated components. The central question of the current study, however, is whether and how these two groups are related. Before attempting the regression analyses that are at the center of the current study, bivariate correlations between each of the variables were calculated. These are shown in Table 3.

These zero-order correlations provide little evidence that ADHD per se or even CD is directly related to or predictive of CTS2 scale scores. None of the WURS factor scores or the WURS clinical subscale score were significantly correlated with any CTS2 scale score. This was generally true of the ARS as well, although ARS scores were marginally correlated with CTS2 Physical Assault scores. Despite small zero-order

correlations, the ADHD measures were entered into a series of regression analyses with each CTS2 scale score as the dependent variable (a total of five regressions) in order to assess the possibility that there was some multivariate combination of measures which would function as a predictor. In each case, no such evidence was found. As a precaution, the same regressions were run with untransformed CTS2 scale scores as dependent variables, with very similar results. In summary, there is no evidence from the current study to support the hypotheses regarding the ability of ADHD or CD symptoms to predict the use of aggressive conflict resolution tactics.

The Role of the Pragmatic Language Inventory

Despite the failure of the ADHD measures to predict CTS2 scores, evidence was found that the two sets of variables may be indirectly related. As predicted, the Pragmatic Language Inventory was found to be positively correlated with several of the ADHD measures ($r = .44$, $p < .001$ for the ARS and $r = .41$, $p < .001$ for the WURS clinical subscale), which suggests that pragmatic language problems are relatively more common for those reporting ADHD symptoms. PLI scores were also positively correlated with ADHD factor scores ($r = .41$, $p < .001$) and with CD factor scores ($r = .22$, $p < .05$) but not with LD factor scores, suggesting that the PLI is measuring something other than traditional learning disabilities.

As shown in Table 3, PLI scores were also significantly correlated with the CTS2 Physical Assault Scale ($r = .36$, $p < .001$), with the Injury Scale ($r = .22$, $p < .05$), and with the Psychological Aggression scale ($r = .22$, $p < .05$). Correlation with the Sexual Coercion Scale was in the same range, but was not significant at the .05 level.

Increasing problems with pragmatic language can be seen to be associated with an increase in the incidence of a wide range of abusive behaviours. The expected negative correlation between the PLI and the CTS2 Negotiation Scale was not significant.

Table 4a.

Correlations Between PLI Factor Scores and ADHD Measures

	1	2	3	4	5	6	7	8	9	10
1		.28**	.36***	.13	.72***	.35**	.19	.19	.14	-.12
2			.42***	-.26*	.76***	.33**	.49***	.50***	.20+	.18
3				-.10	.63***	.27*	.20+	.19+	.02	-.00
4					.11	.04	-.01	-.08	-.02	-.11
5						.44***	.41***	.41***	.22*	.03
6							.63***	.69***	.55***	.29***
7								.71***	.69***	.51***
8									.51***	.46***
9										.34**

Note. + p < .10 * p < .05. ** p < .01. ***p < .001

- | | |
|-----------------------------------|---------------------------|
| 1. PLI Rules factor | 6. Adult Rating Scale |
| 2. PLI Expressive language factor | 7. WURS clinical subscale |
| 3. PLI Receptive language factor | 8. WURS ADHD factor |
| 4. PLI Self-talk factor | 9. WURS CD factor |
| 5. PLI Total score | 10. WURS LD factor |

In order to investigate this pattern of relationships further, a factor analysis of the PLI was conducted, following suggestions in Dzuiban and Shirkey (1974) and in Tabachnick and Fidell (1996). The first principal components (PC) analysis yielded nine factors, a number that was felt to be too high for interpretability and for use in subsequent

analysis. Examination of the Eigenvalues suggested that the nine factors could reasonably be reduced to less than five. The original nine-factor solution was then collapsed into hypothetical five-, four-, and three-factor solutions, using the factor loadings given in the original PC. A series of confirmatory factor analyses, which specified a given number of factors, found that the four-factor solution most closely matched the hypothesized model. This four factor-solution was chosen for further analysis, as best balancing statistical considerations and the necessity of interpretability (see Appendix C). A given item was included in a specific factor if its loading value was above .40. Factor 1 was made up of five items having to do with knowing and practicing the rules of conversation, for instance, "I'll interrupt someone who is speaking if I think of something interesting to say." Factor 2 included seven items tapping expressive language, and especially the expression of emotion. An example of these items is "I get flustered or lost for words". Factor 3 was made up of five items centered on receptive language skills (eg. "I misinterpret the gestures and other body language of the person I'm speaking to"). Finally, factor 4 contained two items about self-talk, the habit of rehearsing communication to oneself before attempting to talk to another, as in "When I have a difficult task to do, I talk my way through it inside my head."

Factor scores were calculated for each of the four factors. These scores were then correlated with total ARS and WURS clinical subscale scores, and with scores on each of the WURS factors already mentioned. These correlations are shown in Table 4a. The PLI factor scores were also correlated with CTS2 scale scores. These results are shown in Table 4b.

Significant correlations were found between the expressive language factor and the WURS ADHD factor as well as the WURS clinical subscale score (row 2 in table 4a). None of the other PLI factors correlated significantly with any of the WURS factors or with the WURS clinical subscale score. As indicated in column 6, there were significant correlations between the PLI expressive language, receptive language and rules factors, and total ARS scores.

Table 4b.

Correlations Between PLI Factor Scores and CTS2 Scale Scores

	1	2	3	4	5	6	7	8	9	10
1		.28**	.36***	.13	.72***	.05	.29**	.44***	.25*	.28**
2			.42***	-.26*	.76***	-.05	.08	.15	.07	.04
3				-.10	.63***	-.22*	-.04	.15	.16	.11
4					.11	.21	.09	.07	.04	.18
5						-.03	.22*	.36***	.22*	.21
6							.64***	.26*	.02	.25*
7								.61***	.09	.18
8									.37***	.19
9										.05

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

1. PLI Rules factor
2. PLI Expressive language factor
3. PLI Receptive language factor
4. PLI Self-talk factor
5. PLI Total score

6. CTS2 Negotiation Scale
7. CTS2 Psych. Aggression Scale
8. CTS2 Physical Assault Scale
9. CTS2 Injury Scale
10. CTS2 Sexual Coercion Scale

An examination of row 1 in Table 4b indicates that the PLI rules factor was positively correlated with the CTS2 Psychological Aggression, Physical Assault, Injury and Sexual Coercion scales. The PLI receptive language factor is negatively correlated with the CTS2 negotiation scale. The PLI expressive language and self-talk factors are not significantly related to any CTS2 score.

When examined in this way, the indirect relationship between the ADHD measures on the one hand and the CTS2 scales on the other becomes even more distant. Problems with expressive and/or receptive language are associated with retrospective reports of ADHD and CD symptoms, but not problems with the rules of conversation. Increases in the levels of abusive behaviours are associated with problems with the rules of conversation, but not with expressive or receptive language difficulties. The only measure associated with both sets of PLI factors is the ARS.

Discussion

The current study's findings show incidence rates for ADHD in the current sample very much in line with estimates of incidence for the general public (Cantwell & Baker, 1992; Goodyear & Hynd, 1992) and with estimates in other university samples (Javorsky & Gussin, 1994; Shaw & Giamba, 1993). While it is important to note that the measures used in the present study do not justify a diagnosis of ADHD in any member of the sample, they do indicate that some individuals are attending university in spite of subjectively perceived problems with attention, impulsivity and attendant behavioural issues. Similarly, estimates of prevalence for abusive behaviours are in line with those of Straus et al. (1996). Generally speaking, the current sample reports levels of both sets of

variables that are in line with other samples drawn from the same population. It would seem, then, that if there is a relationship to be found between ADHD and abusive behaviour in the university population, the current sample is likely to provide valid evidence of it.

It is also interesting to compare the current sample to that of the Kashani et al. (1991) study, which found evidence of relationships between ADHD, CD and CTS scores. In that group of 8-17 year olds, 84% reported moderate to high levels of verbal aggression and 50% reported moderate to high levels of physical aggression (scale scores over 10). In contrast, only 9 (11%) of the current sample reported physical aggression scores in this range. Also of interest is the finding in the Kashani study of significant gender differences on physical aggression scores (males more aggressive). Gender comparisons in the current sample found no significant differences on any measure. Methodological differences between the current study and the Kashani study make more meaningful comparisons difficult. For instance, the authors refer to the CTS as measuring aggression “used within the family”. It is unclear if scores represent aggression against a single individual, as in the current sample, or against several individuals. It must also be recognized that the dynamics of aggression are quite different for an eight-year-old than they are in an adult relationship. CTS scores are not presented by age, making it impossible to determine if the third of the sample that is 17 years of age is more similar to the current sample. Finally, the report does not provide information on the proportion of the sample reporting symptoms of ADHD or CD. Differences in

reported levels of aggressive behaviour could therefore be related to age, to differences in the incidence of ADHD or to differences in how aggression is measured.

Overall, analysis of the current sample's scores were not supportive of the study's central hypotheses. As is the case in almost all reports that examine ADHD and CD, the two variables are significantly correlated (see Hinshaw's 1987 review). However, neither reported symptoms of childhood ADHD or CD, nor current symptoms, correlated with reported use of abusive conflict resolution tactics as an adult. Under these conditions, the question posed about the relative predictive ability of these two variables becomes moot.

The current study has not been able to answer directly the question of the independence of CD and ADHD, as was intended. through the use of differential correlations with CTS2 scales. There may be, however, some indirect evidence. The independence argument would predict that, regardless of an individual's ADHD levels, increased CD scores should be related to increased use of abusive conflict resolution tactics. The current sample's scores do not this support this prediction. Since the WURS item content and the DSM-IV criteria for CD often describe the same behaviours, it is difficult to conclude that the items do not measure CD. If the WURS CD factor is a valid measure of childhood CD, what else could explain the lack of CD-CTS2 scale correlations, and thus support the independence argument? One possibility is that the retrospective nature of the WURS may invalidate it as a measure of current disordered conduct in adults. Perhaps, as Cantwell and Baker (1992) have argued, the CD diagnosis in childhood is unstable. The WURS and the ARS, a measure of current behaviours, are

strongly correlated ($r = .63$), however, and the ARS-CD factor correlation is almost as strong ($r = .55$). As noted, the obvious CD content of the ARS is very small, and would not seem to support such a sizeable correlation. The reasonable conclusion is that those reporting disordered conduct as children, also report symptoms of ADHD as adults. This result can be seen as another argument against the CD-ADHD independence theory. Those reporting childhood ADHD symptoms also report childhood CD symptoms ($r = .51$); however, by the time they have reached university, only the ADHD symptoms remain. This finding is supportive of the literature that suggests that ADHD is, in some form, a lifelong disability (Barkley et al., 1996; Buchsbaum et al., 1985; Denckla, 1991; Weyandt et al., 1995). The current study's other findings are less supportive of the common finding that adults with ADHD also suffer from co-morbid oppositional or antisocial conduct disorders (Barkley, 1996; Beiderman et al., 1994; Eystone & Howell, 1994; Manuzza et al., 1993), if relationship violence can be seen as a measure of antisocial conduct.

The findings of these last authors leads to consideration of the measure of antisocial conduct in the current study, the CTS2. If the WURS and ARS are valid measures of ADHD and CD, could the lack of correlations with the CTS2 be a result of validity problems with that scale itself? Results from the current study, which indicate sizable positive correlations between the Negotiation scale and the Psychological Aggression, Physical Assault and Sexual Coercion scales, cast doubt on the factor structure reported by Straus et al. (1996). In the current sample at least, negotiation is not something one does instead of more aggressive behaviours, it is something that one does

along with or perhaps after behaving abusively. These unexpected correlations may in part explain the failure of the PLI to correlate negatively with the Negotiation scale, as hypothesized. These findings may also give a different interpretation to the Barling et al. (1987) study that failed to find an independent reasoning scale in the original CTS2.

Perhaps of greater importance to the present study is the validity of the other CTS2 scales. For the present sample, estimates of scale reliability (see Table 1) are substantially lower in some cases than those reported in Straus et al. (1996). Low reliability, of course, precludes high validity. The reasons for these low reliability estimates are not readily apparent. The items have high face validity, in that they describe specific behaviours. It is difficult to argue that a university student could misinterpret such statements as “I slammed my partner against a wall”. It has been argued, however, that such statements can be, and often are, denied. DeKeseredy and Hinch (1991), in their book on the abuse of woman, are critical of the original CTS on several scores. One of these is the hypothetical predisposition of abusive men to under-report their violent behaviours, a form of social desirability, often yielding results similar to those of the present study, in which women report using violence against their partners as often as men. Conjecture that such findings may be invalid is partially supported by empirical studies (Jouriles & O’Leary, 1985; Szinovacz, 1983) in which comparison of CTS reports by each partner of the other’s use of violence were found to be consistently discrepant. In both studies, men significantly under-reported their own violence in comparison to the reports of their spouses. Although it cannot be determined on the basis of the data presented, men are seen as the likeliest source of mis-reporting, since their

motivation to underreport is thought to be significantly greater than women's motivation to over-report.

The CTS2 is not the same instrument as the original CTS. Straus et al. (1996), however, did not address this criticism of the earlier scale, by, for instance, including a validity scale that would estimate underreporting. The CTS2, as a consequence, is as open to criticisms of this kind as the original. The current study attempts to control for this problem with social desirability by reducing the respondent's motivation to underreport. Substantial care was taken to ensure that the data were collected in an anonymous fashion, and that the respondents were aware of this. Even so, it is impossible to estimate to what extent social desirability has acted to reduce reports of violence, a source of possible error in the current study. Distributions of scores for the CTS2 Physical Assault, Injury and Sexual Coercion scales are severely skewed towards the low end in the present sample, as they were in the Straus et al. (1996) study. It is possible that the current sample has underreported, and that if they had been completely honest, increased variability in the CTS2 scale scores might have revealed the hypothesized relationships with the ADHD measures. It is also possible that a variable motivation to report socially desirable behaviour, depending on the content of the item (mild vs. severe violence) could account for the moderate to low reliabilities of the CTS2 scales in the present sample.

There is one other limitation inherent in the current study that should be considered here. The introductory section of this paper argues that ADHD and its components are best considered to be continuous variables, and that non-clinical samples

would contain sufficient variation on these measures to reveal correlations between them and other variables of interest. It is also argued that CD, in those with ADHD, is a behavioural outcome of the presence of the underlying ADHD itself. In the present case, this argument would suggest that it is not necessary for ADHD or CD scores to be very high for a correlation with aggression to emerge. It is of course possible that even if the premises of the argument are reasonable, the conclusion is in error.

In the current study, distributions of the ADHD measures, as well as that of the PLI, approximate normal distributions, but, as shown in Table 1, the mean scores tend to be low relative to the measures' maximum score. Despite the fact that the current sample is very similar to others from this population, as described in the Results section, relatively few respondents report clinical levels of ADHD, and in no case are ADHD scores extreme. It was suggested earlier in the Introduction that symptoms such as hyperactivity are not independent of other ADHD symptoms but may only emerge with higher levels of dysfunction of the brains' executive capacities. If CD (or antisocial conduct in adults) is another such symptom, then CD, as well as any correlation with CTS2 scores, may not be evident in those with low to moderate levels of ADHD. It is also possible that individuals with appreciable levels of CD have suffered academic failure before reaching university, or alternately, do not make themselves available for study even if they are on campus.

Despite these attempts to explain the seeming lack of a correlation between ADHD and relationship violence, which implies that there is one, it is possible that the current results are an accurate reflection of reality. This would mean that Walker's

(1996) clinical impressions, discussed earlier, are incorrect. It may be that the indications of ADHD observed in abusive men were actually some other disorder masquerading as Attention Deficit-Hyperactivity Disorder. One likely candidate is chronic anxiety, the outward symptoms of which are so similar to those of ADHD that the WURS is designed in part to differentiate children in each of these groups (Ward et al., 1993). Another possibility is that some abusive men may display difficulties with following the rules of conversation by, for example, interrupting their spouse in therapy or by blurting out their own ideas or opinions. Such behaviours may be seen as being indicative of ADHD. The PLI results from this study, however, suggest such an interpretation to be too simplistic.

Pragmatic language problems do correlate with ADHD symptoms, both current and retrospective. Levels of pragmatic language problems also increase along with levels of abusive behaviours. The current results indicate, however, that pragmatic language is not a homogeneous variable. The PLI is made up of items tapping expressive, receptive and rules-based skills at communication as well as the ability to pre-plan conversations. Even this multi-factored model leaves a substantial proportion of the variability in the measure unexplained, creating uncertainty when attempting to interpret relationships with other variables. Given this caution, it would appear that the correlations between the PLI and the ADHD measures on one side and those with CTS2 scores on the others, tap largely different components of the variability in the PLI itself. Those who blurt out their thoughts and interrupt conversations are, in fact, more likely to be aggressive; however, such behaviours are not associated with “core” ADHD symptomatology. Instead,

attention deficit problems seem to be associated with being tongue-tied in conversations, unable to express one's thoughts clearly, especially when emotional.

When examined more closely, it appears that the only unambiguous connection between any ADHD measure and the CTS2 takes a roundabout route from the ARS through the PLI rules factor to the CTS2 Psychological and Physical Assault scales. This may explain the finding that the ARS score itself approaches significance in its zero-order correlation with the CTS2 Physical Assault score. The ARS/ CTS2 relationship would also suggest, given its high correlation with the WURS, that the variability in the ARS that is unaccounted for by this correlation is the portion that is predictive of CTS2 scores. The item content of the ARS is somehow different than that of the WURS. However, when examining the two scales (see Appendix B) it is easier to see the similarities than the differences. Many items tap the same behaviours: motor restlessness, daydreaming, the inability to complete a task. As mentioned above, there are very few items that could be interpreted as representing CD, reducing the probability that the ARS is actually a measure of disordered conduct. It is difficult to determine what items could meaningfully separate the ARS from the WURS, unless one considers those few that seem to reflect the same item content as the PLI rules of conversation item. This would include such items as "Often interrupts others" and perhaps "Does not appear to listen to others when spoken to". This item content, which does not appear in the WURS, is the item content in the PLI that is predictive of psychological, physical and sexual abuse of an individual's partner. It is tempting to conclude that problems with these particular rule-governed

behaviours arise from some other source than problems reported in the areas of attention deficit, impulsivity or hyperactivity.

This discussion has dealt with several limitations in the current study: the complex of intercorrelations that makes interpretation difficult, the unreliability of some of the dependent measures and the problem of variable underreporting that may underlie it, and the restricted range of the predictor variables in the current sample. Each of these has implications for future research in this area. It would be important in future studies to develop measures that yield a more unambiguous result. The PLI, for instance, requires substantially more development before a better understanding can be reached of the role that pragmatic language plays in mediating aggressive behaviour. The psychometrics of the current scale suggest that the measure could be enhanced by expansion to include a wider range of language-based and non-verbal communication and attendant social skills. It would also be valuable to develop cross-validating measures that would not be dependent on self-report data.

It would be also be useful to avoid or to supplement the use of self-report measures of other variables where possible. In adult populations, some retrospective measure of childhood symptoms is necessary before one can even begin to speak about ADHD (due to DSM criteria). The current study suggests that current symptom levels may be more predictive of aggressive behaviours, however. Therefore, a variety of measures of current ADHD should be combined to lend convergent validity to eventual results. One useful tool might be the Conners Continuous Performance Task (Conners & Staff of Multi-Health Systems Inc., 1995), a performance measure that provides

substantial information about the individual and does not share the same threats to validity suffered by self-report measures.

In light of the criticisms of the CTS and CTS2 discussed above, it would also be useful to find more defensible means of measuring relationship violence than a single self-report. The use of couple data, as in the Jouriles and O'Leary (1985) and the Szinovacz (1983) studies, provides one model, but there would still be the necessity of a rather subjective weighting of each individual's self and spousal reports to arrive at an aggregate score that could be related to ADHD scores. Another possible source of data would be via narrative methodologies, with narratives provided by individuals in treatment for abusive behaviour. Social desirability would still be an issue in this population and there are additional problems in gaining access and in establishing rapport. Once rapport is established, however, the social desirability problem may be reduced. Such a methodology would also avoid DeKeseredy and Hinch's (1991) other criticism of the CTS by providing the social context in which the violence took place.

Combining these methods would provide data that avoid validity problems inherent in any one. The process of design and data collection, however, would be long and difficult. Despite this, the issue of whether or not ADHD is a predictor of relationship violence may be of sufficient practical importance to justify such an effort. More than just being a piece in a theoretical model of individual level predictors of aggression, ADHD is, in many cases, a treatable disorder. If ADHD is a significant factor in the incidence of violence in a given relationship, then there is a reasonable likelihood that this predisposing factor can be reduced, if not eliminated. Given the profoundly

damaging effects of relationship violence, especially that directed at women and children, any effort which may result in a better understanding of this complex problem, and offers hope of reductions in incidence, is worthwhile.

References

- Anastopoulos, A. D., Barkley, R. A., & Shelton, T. L. (1994). The history and diagnosis of attention-deficit/hyperactivity disorder. Therapeutic Care and Education, 3, 96-110.
- Aronowitz, B., Liebowitz, M. R., Hollander, E., Fazzini, E., Durlach-Misteli, C., Frenkel, M., Mosovich, S., Garfinkle, R., Saoud, J., DelBene, D., Cohen, L., Jaeger, A., & Rubin, A. L. (1994). Neuropsychiatric and neuropsychological findings in conduct disorder and attention-deficit hyperactivity disorder. Journal of Neuropsychiatry and Clinical Neurosciences, 6, 245-249.
- Baker, L. & Cantwell, D. P. (1992). Attention deficit disorder and speech/language disorders. Comprehensive Mental Health Care, 2, 3-16.
- Barkley, R. A., Murphy, K., & Kwasnik, D. (1996). Psychological adjustment and adaptive impairments in young adults with ADHD. Journal of Attention Disorders, 1, 41-54.
- Barling, J., O'Leary, K. D., Jouriles, E. N., & Vivian, D. (1987). Factor similarity of the Conflict Tactics Scale across samples, spouses and sites: Issues and implications. Journal of Family Violence, 2, 37-54.
- Beiderman, J. (1991). Attention deficit hyperactivity disorder (ADHD). Annals of Clinical Psychiatry, 3, 9-22.
- Beiderman, J., Faraone, S. V., Spencer, T., Wilens, T., E., Mick, E., & Lapey, K. A. (1994). Gender differences in a sample of adults with attention deficit hyperactivity disorder. Psychiatry Research, 53, 13-29.

Benasich, A. A., Curtiss, S., & Tallal, P. (1993). Language, learning, and behavioural disturbance in childhood: A longitudinal perspective. Journal of the American Academy of Child and Adolescent Psychiatry, 32, 585-594.

Bersoni, C. A. & Chen, H. T. (1987). Sociological perspectives in family violence. In A. S. Bellack, M. Hersen, R. L. Morrison & V. B. Van Hasselt (Eds.), Handbook of family violence (pp.57-84). New York: Plenum Press.

Bird, H. R., Gould, M. S., & Staghezza-Jaramillo, B. M. (1994). The comorbidity of ADHD in a community sample of children aged 6 through 16 years. Journal of Child and Family Studies, 3, 365-378.

Bishop, D. V. M. & Adams, C. (1991). What do referential communication tasks measure? A study of children with specific language impairments. Applied Psycholinguistics, 12, 199-215.

Bowers-Andrews, A. (1994). Developing community systems for the primary prevention of family violence. Family and Community Health, 16, 1-9.

Brownmiller, S. (1975). Against our will: Men, women and rape. New York: Simon and Shuster.

Buchsbaum, M. S., Haier, R. J., Sostek, A. J., Weingartner, H., Zahn, T. P., Siever, L. J., Murphy, D., L., & Brody, L. (1985). Attention dysfunction and psychopathology in college men. Archives of General Psychiatry, 42, 354-360.

Burgess, R. L. & Draper, P. (1989). The explanation of family violence: The role of biological, behavioural and cultural selection. In L. Ohlin & M. Tonry (Eds.), Family violence (pp.59-117). Chicago: The University of Chicago Press.

Burket, R. C. & Myers, W. C. (1995). Axis I and personality co-morbidity in adolescents with conduct disorder. Bulletin of the American Academy of Psychiatry and the Law, *23*, 73-82.

Buss, D. M. (1988). From vigilance to violence: Tactics of mate retention in American undergraduates. Ethology and Sociobiology, *9*, 291-317.

Cantwell, D. P. & Baker, L. (1990). Stability and natural history of DSM-III childhood diagnosis. Annual Progress in Child Psychiatry and Child Development, *1990*, 311-332.

Cantwell, D. P. & Baker, L. (1992). Attention deficit disorder with and without hyperactivity: A review and comparison of matched groups. Journal of the American Academy of Child and Adolescent Psychiatry, *31*, 432-438.

Carlson, G. A. & Rapport, M. D. (1989). Diagnostic classification issues in attention deficit hyperactivity disorders. Psychiatric Annals, *19*, 576-583.

Caulfield, M. B. & Riggs, D. S. (1992). The assessment of dating aggression: Empirical evaluation of the Conflict Tactics Scale. Journal of Interpersonal Violence, *7*, 549-558.

Claude, D. & Firestone, P. (1995). The development of ADHD boys: A 12-year follow-up. Canadian Journal of Behavioural Science, *27*, 226-249.

Cohen, N., Davine, M., Horodezky, N., Lipsett, L., & Issacson, L. (1993). Unsuspected language impairment in psychiatrically disturbed children: Prevalence and language and behavioural characteristics. Journal of the American Academy of Child and Adolescent Psychiatry, *32*, 595-603.

Conners, C. & Staff of Multi-Health Systems, Inc. (1995). The Conners Continuous Performance Test. [Computer software]. Los Angeles: Multi-Health Systems, Inc.

Daly, M. & Wilson, M. (1988). Evolutionary social psychology and family homicide. Science, 242, 519-524.

DeKeseredy, W. S. & Hinch, R. (1991). Woman abuse: Sociological perspectives. Toronto: Thompson Educational Publishing.

Denckla, M., B. (1991). Attention deficit hyperactivity disorder-residual type. Journal of Child Neurology, 6, 44-50.

Dobash, R. E. & Dobash, R. (1979). Violence against wives: A case against the patriarchy. New York: The Free Press.

Donahue, M., Cole, D., & Hartis, D. (1994). Links between language and emotional/behavioural disorders. Education and Treatment of Children, 17, 244-254.

Dziuban, C. D. & Shirkey, E. C. (1974). When is a correlation matrix appropriate for factor analysis? Some decision rules. Psychological Bulletin, 81, 358-361.

Eystone, L. L. & Howell, R. J. (1994). An epidemiological study of attention deficit hyperactivity disorder and major depression in a male prison population. Bulletin of the American Academy of Psychiatry and the Law, 22, 181-193.

Fletcher, J. M., Morris, R. D., & Francis, D. J. (1991). Methodological issues in the classification of attention-related disorders. Journal of Learning Disabilities, 24, 72-77.

Follingstad, D. R., Wright, S., Lloyd, S., & Sebastian, J. A. (1991). Sex differences in motivations and effects in dating violence. Family Relations, *40*, 51-57.

Gerber, S. (1991). Pragmatics in the 1990's: Perspective, retrospective, prospective. Journal of Childhood Communication Disorders, *14*, 1-21.

Gidden, J. J. (1991). Communication issues in attention deficit hyperactivity disorder. Child Psychiatry and Human Development, *22*, 45-51.

Gittleman, R., Manuzza, S., Shenker, R., & Bonagura, N. (1985). Hyperactive boys almost grown up. Archives of General Psychiatry, *42*, 937-947.

Goodyear, P. & Hynd, G. W. (1992). Attention-deficit disorder with (ADD/H) and without (ADD/WO) hyperactivity: Behavioural and neuropsychological differentiation. Journal of Clinical Child Psychology, *21*, 273-305.

Groth, A. N. & Burgess, A. W. (1977). Rape: A sexual deviation. American Journal of Orthopsychiatry, *47*, 400-406.

Hechtman, L. (1989). Attention-deficit hyperactivity disorder in adolescence and adulthood: An updated follow-up. Psychiatric Annals, *19*, 597-603.

Henker, B. & Whalen, C. K. (1989). Hyperactivity and attention deficits. American Psychologist, *44*, 216.

Hinshaw, S. P. (1987). On the distinction between attentional deficits/hyperactivity and conduct problems/aggression in child psychopathology. Psychological Bulletin, *101*, 443-463.

Hynd, G. W., Morgan, A. E., Edmonds, J. E., Black, K., Riccio, C. A., & Lombardino, L. (1995). Reading disabilities, co-morbid psychopathology, and the specificity of neurolinguistic deficits. Developmental Neuropsychology, *11*, 311-322.

Javorsky, J. & Gussin, B. (1994). College students with attention deficit hyperactivity disorder: An overview and description of services. Journal of College Student Development, *35*, 170-177.

Jouriles, E. N. & O'Leary, K. D. (1985). Interspousal reliability of reports of marital violence. Journal of Consulting and Clinical Psychology, *53*, 419-421.

Kaplan, C. P. & Shachter, E. (1991). Adults with undiagnosed learning disabilities: Practice considerations. Families in Society: The Journal of Contemporary Human Services, 195-201.

Kashani, J. H., Deuser, W., & Reid, J. C. (1990). Aggression and anxiety: A new look at an old problem. Journal of the American Academy of Child and Adolescent Psychiatry, *30*, 218-223.

Koski, P. R. & Mangold, W. D. (1988). Gender effects in attitudes about family violence. Journal of Family Violence, *3*, 225-237.

Lilienfeld, S. O. & Waldman, I. D. (1990). The relation between childhood attention-deficit hyperactivity disorder and adult antisocial behaviour reexamined: The problem of heterogeneity. Clinical Psychology Review, *10*, 699-725.

Love, A. J. & Thompson, M. G. G. (1988). Language disorders and attention deficit disorders in young children referred for psychiatric services: Analysis of prevalence and a conceptual synthesis. American Journal of Orthopsychiatry, *58*, 52-64.

Manuzza, S., Klein, R. G., Bessler, A., Malloy, P., & LaPadula, M. (1993). Adult outcome of hyperactive boys. Archives of General Psychiatry, *50*, 565-576.

McBurnett, K., Harris, S. M., Swanson, J. M., Pfiffner, L. J., Tamm, L., & Freeland, D. (1993). Neuropsychological and psychophysiological differentiation of inattention/overactivity and aggression/defiance symptom groups. Journal of Clinical Child Psychology, *22*, 165-171.

Milich, R., Widiger, T. A., & Landau, S. (1987). Differential diagnosis of attention deficit and conduct disorders using conditional probabilities. Journal of Counseling and Clinical Psychology, *55*, 762-767.

Mushanga, T. (1983). Wife victimization in East and Central Africa. In R. J. Gelles (Ed.), International Perspectives on Family Violence. (pp.158-173). Lexington, Mass.: Lexington Books.

Pihl, R. O. & Peterson, J. B. (1991). Attention-deficit hyperactivity disorder, childhood conduct disorder and alcoholism: Is there an association? Alcohol Health and Research World, *15*, 25-31.

Pines, A. (1992). Romantic jealousy: Five perspectives and an integrated approach. Psychotherapy, *29*, 675-683.

Rossini, E. D. & O'Conner, M. A. (1995). Retrospective self-reported symptoms of attention-deficit hyperactivity disorder: Reliability of the Wender Utah Rating Scale. Psychological Reports, *77*, 751-754.

Shaffer, D. (1994). Attention deficit hyperactivity disorder in adults. American Journal of Psychiatry, *151*, 633-638.

Shaw, G. & Giamba, L. (1993). Task unrelated thoughts of college students diagnosed as hyperactive in childhood. Developmental Neuropsychology, *9*, 17-30.

Stein, M. A., Sandoval, R., Szumowski, E., & Roizen, N. (1995). Psychometric characteristics of the Wender Utah Rating Scale (WURS): Reliability and factor structure for men and women. Psychopharmacology Bulletin, *31*, 425-433.

Straus, M. A. (1979). Measuring intrafamily conflict and violence: The conflict tactics (CT) scales. Journal of Marriage and the Family, *41*, 75-88.

Straus, M. A., Hamby, S. L., Boney-McCoy, S., & Sugarman, D. B. (1996). The revised Conflict Tactics Scales (CTS2). Journal of Family Issues, *17*, 283-316.

Szinovacz, M. E. (1983). Using couple data as a methodological tool: The case of marital violence. Journal of Marriage and the Family, *45*, 633-645.

Tabachnick, B. G. & Fidell, L. S. (1996). Using multivariate statistics. New York: Harper Collins.

TenVergert, E., Klingma, J., & Gillespie, M. W. (1990). Dichotomous items and extreme item difficulties: Factor analysis of the Conflict Tactics Scale. Methodika, *4*, 47-57.

Walker, G. (1996, May). Disempowering violence: Strategies for intervening in abusive relationships. Symposium presented at Acadia University, Wolfville, Nova Scotia.

Ward, M. F., Wender, P. H., & Reimherr, F. W. (1993). The Wender Utah Rating Scale: An aid in the retrospective diagnosis of childhood attention deficit hyperactivity disorder. American Journal of Psychiatry, *150*, 885-890.

Warr-Leeper, G., Wright, N. A., & Mack, A. (1994). Language disabilities of antisocial boys in residential treatment. Behavioural Disorders, 19, 159-169.

Watzlawick, P., Beavin-Bavelas, J., & Jackson, D. D. (1967). Pragmatics of human communication: A study of interactional patterns, pathologies, and paradoxes. New York: W. W. Norton & Company.

Westby, C. E. & Cutler, S. K. (1994). Language and ADHD: Understanding the bases and treatment of self-regulatory deficits. Topics in Language Disorders, 14, 58-76.

Weyandt, L. L., Linterman, I., & Rice, J. A. (1995). Reported prevalence of attentional difficulties in a general sample of college students. Journal of Psychopathology and Behavioural Assessment, 17, 293-304.

Zoccolillo, M., Pickles, A., Quinton, D., & Rutter, M. (1992). The outcome of childhood conduct disorder: Implications for defining adult personality disorder and conduct disorder. Psychological Medicine, 22, 971-986.

Appendix A

DSM-IV Diagnostic Criteria for ADHD

A. Either (1) or (2)

- (1) six (or more) of the following symptoms of **inattention** have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level.

Inattention

- (a) often fails to give close attention to details or makes careless mistakes in schoolwork, work or other activities.
- (b) often has difficulty sustaining attention in tasks or play activities.
- (c) often does not seem to listen when spoken to directly.
- (d) often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behaviour or failure to understand instructions).
- (e) often has difficulty organizing tasks and activities.
- (f) often avoids, dislikes or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework).
- (g) often loses things necessary for tasks or activities (e.g., toys, school assignments, pencils, books or tools).
- (h) is often easily distracted by extraneous stimuli.
- (I) is often forgetful in daily activities.

- (2) six (or more) of the following symptoms of **hyperactivity-impulsivity** have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level.

Hyperactivity

- (a) often fidgets with hands or feet or squirms in seat.
- (b) often leaves seat in classroom or in other situations in which remaining seated is expected.
- (c) often runs about or climbs excessively in situations in which is inappropriate (in adolescents or adults, may be limited to subjective feelings of restlessness).
- (d) often had difficulty playing or engaging in leisure activities quietly.
- (e) is often “on the go” or often acts as if “driven by a motor”.
- (f) often talks excessively.

Impulsivity

- (g) often blurts out answers before questions have been completed.
 - (h) often has difficulty awaiting turn.
 - (l) often interrupts or intrudes on others (e.g., butts into conversations or games).
- B. Some hyperactive-impulsive or inattentive symptoms that caused impairment were present before age 7.
- C. Some impairment from the symptoms is present in two or more settings (e.g., at school [or work] and at home).

- D. There must be clear evidence of clinically significant impairments in social, academic or occupational functioning.
- E. The symptoms do not occur exclusively during the course of a Pervasive Developmental Disorder, Schizophrenia, or other Psychotic Disorder and are not better accounted for by another mental disorder (e.g., Mood Disorder, Anxiety Disorder, Dissociative Disorder, or a Personality Disorder).

Conduct Disorder

- A. A repetitive and persistent pattern of behaviour in which the basic rights of others or major age-appropriate societal norms or rules are violated, as manifested by the presence of three (or more) of the following criteria in the past 6 months.

Aggression to people and animals

- (1) often bullies, threatens or intimidates others.
- (2) often initiates physical fights.
- (3) has used a weapon that can cause serious harm to others (e.g., a bat, brick, broken bottle, knife, gun.)
- (4) has been physically cruel to people.
- (5) has been physically cruel to animals.
- (6) has stolen while confronting a victim (e.g., mugging, purse snatching, extortion, armed robbery).
- (7) has forced someone into sexual activity.

Destruction of Property

- (8) has deliberately engaged in fire setting with the intention of causing serious harm.
- (9) had deliberately destroyed other's property (other than by fire setting).

Deceitfulness or theft

- (10) has broken into someone else's house, building or car.
- (11) often lies to obtain goods or favors or to avoid obligations (i.e., "cons" others).
- (12) has stolen items of nontrivial value without confronting a victim (e.g., shoplifting, but without breaking and entering, forgery).

Serious violations of rules

- (13) often stays out at night despite parental prohibitions, beginning before age 13 years.
- (14) has run away from home overnight at least twice while living in parental or parental surrogate home (or once without returning for a lengthy period).
- (15) often truant from school, beginning before age 13 years.

- B. The disturbance's behaviour causes clinically significant impairment in social, academic or occupational functioning.
- C. If the individual is 18 years or older, criteria are not met for Antisocial Personality Disorder.

Appendix B

Adult Rating Scale

Below is a list of behaviours or problems that some people have. To the right of each item indicate, in your opinion, how much of a problem each one is for you. *Please be sure to provide an answer to each question.*

	Not At all	Just a little	Pretty much	Very much
1. Physical restlessness, excessive fidgeting				
2. Difficulty concentrating				
3. Easily distracted				
4. Impatient				
5. "Hot" or explosive temper				
6. Unpredictable behaviour				
7. Shift often from one uncompleted task to another				
8. Difficulty completing tasks				
9. Impulsive				
10. Talk excessively				
11. Often interrupt others				
12. Often lose things				
13. Forget to do things				
14. Engage in physically daring activities, reckless				
15. Always on the go, difficulty sitting still				
16. Does not appear to listen to others when spoken to				
17. Difficulty sustaining attention				
18. Difficulty doing things alone				
19. Frequently get into trouble with the law				
20. Difficulty delaying gratification				
21. Lack of organization skills				
22. Inconsistent school/work performance				
23. Inability to establish and maintain a routine				
24. Performance below level of competence in school/work				
25. Overexcitability				

RELATIONSHIP BEHAVIOURS

No matter how well a couple gets along, there are times when they disagree, get annoyed with the other person, want different things from each other, or just have spats or fights because they are in a bad mood, are tired, or for some other reason. Couples also have many different ways of trying to settle their differences. This is a list of things that might happen when you have differences. Please circle how many times you did each of these things in the last year. If you did not do one of these things in the past year, but it happened before that, circle "7".

How often did this happen?

1 = Once in the past year

2 = Twice in the past year

3 = 3-5 times in the past year

4 = 6-10 times in the past year

5 = 11-20 times in the past year

6 = More than 20 times in the past year

7 = Not in the past year, but it has happened

0 = This has never happened

1. I showed my partner I cared even though we disagreed.	1	2	3	4	5	6	7	0
2. I explained my side of a disagreement to my partner.	1	2	3	4	5	6	7	0
3. I insulted or swore at my partner.	1	2	3	4	5	6	7	0
4. I threw something at my partner that could hurt.	1	2	3	4	5	6	7	0
5. I twisted my partner's arm or hair.	1	2	3	4	5	6	7	0
6. My partner had a sprain, bruise, or small cut because of a fight with me.	1	2	3	4	5	6	7	0
7. I showed respect for my partner's feelings about an issue.	1	2	3	4	5	6	7	0
8. I made my partner have sex without a condom.	1	2	3	4	5	6	7	0
9. I pushed or shoved my partner.	1	2	3	4	5	6	7	0
10. I used force (like hitting, holding down, or using a weapon) to make my partner have oral or anal sex.	1	2	3	4	5	6	7	0
11. I used a knife or a gun on my partner.	1	2	3	4	5	6	7	0
12. My partner passed out from being hit on the head in a fight with me.	1	2	3	4	5	6	7	0
13. I called my partner fat or ugly.	1	2	3	4	5	6	7	0
14. I punched or hit my partner with something that could hurt.	1	2	3	4	5	6	7	0
15. I destroyed something belonging to my partner.	1	2	3	4	5	6	7	0
16. My partner went to a doctor because of a fight with me.	1	2	3	4	5	6	7	0
17. I choked my partner.	1	2	3	4	5	6	7	0
18. I shouted or yelled at my partner.	1	2	3	4	5	6	7	0
19. I slammed my partner against a wall.	1	2	3	4	5	6	7	0
20. I said I was sure we could work out a problem.	1	2	3	4	5	6	7	0

21. My partner needed to see a doctor because of a fight with me but didn't.	1	2	3	4	5	6	7	0
22. I beat up my partner.	1	2	3	4	5	6	7	0
23. I grabbed my partner.	1	2	3	4	5	6	7	0
24. I used force (like hitting, holding down, or using a weapon) to make my partner have sex.	1	2	3	4	5	6	7	0
25. I stomped out of the room or house or yard during a disagreement.	1	2	3	4	5	6	7	0
26. I insisted on sex when my partner did not want to (but did not use physical force).	1	2	3	4	5	6	7	0
27. I slapped my partner.	1	2	3	4	5	6	7	0
28. My partner had a broken bone from a fight with me.	1	2	3	4	5	6	7	0
29. I used threats to make my partner have oral or anal sex.	1	2	3	4	5	6	7	0
30. I suggested a compromise to an argument.	1	2	3	4	5	6	7	0
31. I burned or scalded my partner on purpose.	1	2	3	4	5	6	7	0
32. I insisted my partner have oral or anal sex (but did not use physical force).	1	2	3	4	5	6	7	0
33. I accused my partner of being a lousy lover.	1	2	3	4	5	6	7	0
34. I did something to spite my partner.	1	2	3	4	5	6	7	0
35. I threatened to hit or throw something at my partner.	1	2	3	4	5	6	7	0
36. My partner felt physical pain that still hurt the next day because of a fight with me.	1	2	3	4	5	6	7	0
37. I kicked my partner.	1	2	3	4	5	6	7	0
38. I used threats to make my partner have sex.	1	2	3	4	5	6	7	0
39. I agreed to try a solution to a disagreement my partner suggested.	1	2	3	4	5	6	7	0

Pragmatic Language Inventory

An individual's ability to communicate effectively depends on their skills as a listener and a speaker, and involves nonverbal types of communication as well. Each of us has different strengths and weaknesses as a communicator. The statements below describe such strengths and weaknesses. Please read each item carefully and think about how well the statement describes you as a communicator. For instance, if you rarely have a problem with expressing emotions, as in Item 1, check "Never or rarely". If expressing emotion effectively is a very common problem for you, check "Always or almost always".

	Never or Rarely	Sometimes	As Often as Not	Most of the Time	Always or almost always
1. I find it hard to express my emotions in words.					
2. I have trouble getting my point across.					
3. I get anxious and impatient listening to someone else speak.					
4. My emotions get in the way of what I'm trying to say.					
5. If I'm arguing with someone they become impatient and won't let me explain myself.					
6. I feel that trying to talk a problem out is a waste of time.					
7. Arguing with someone makes me so frustrated that I get tongue-tied.					
8. It's easy for me to understand how the person I'm talking to feels about the issue being discussed.					
9. I get flustered or lost for words.					
10. Maintaining eye contact during a conversation is a problem for me.					
11. I'll interrupt someone who is speaking if I think of something interesting to say.					
12. I find that people are sending mixed or ambiguous messages in conversations.					
13. People I'm speaking to take so long to say what they mean that I'll finish their thought for them.					
14. I read just for enjoyment.					
15. I have trouble remembering the meanings of words.					

	Never or Rarely	Sometimes	As Often as Not	Most of the Time	Always or almost always
16. I misinterpret the gestures and other body language of the person I'm talking to.					
17. Even though a conversation might remind me of something interesting, I'll wait for a pause before I change the subject.					
18. I have a problem with losing track of what someone is saying.					
19. I have to ask people to explain or repeat something they have just said.					
20. If a conversation stops, I feel a strong urge to say something that will get it started again.					
21. If someone stands too close or touches me while speaking, I get anxious.					
22. When I have a difficult task to do, I talk my way through it inside my head.					
23. People criticize me for butting in when they are speaking.					
24. I can tell how someone I'm talking to is feeling just by watching their facial expression.					
25. I rehearse important conversations to make sure that what I really want to say gets said.					
26. It's hard for me to tell when the person I'm talking to is uncomfortable with the topic being discussed.					

Wender Utah Rating Scale

Ward, Wender & Reimherr, 1993

As a child I was (or had)	Not at all or very slightly	Mildly	Moderately	Quite a bit	Very much
1. Active, restless, always on the go					
2. Afraid of things					
3. Concentration problems, easily distracted					
4. Anxious, worrying					
5. Nervous, fidgety					
6. Inattentive, daydreaming					
7. Hot or short-tempered, low boiling point					
8. Shy, sensitive					
9. Temper outbursts, tantrums					
10. Trouble with stick-to-it-tiveness, not following through, failing to finish things started					
11. Stubborn, strong-willed					
12. Sad or blue, depressed, unhappy					
13. Incautious, dare-devilish, involved in pranks					
14. Not getting a kick out of things, dissatisfied with life					
15. Disobedient with parents, rebellious, sassy					
16. Low opinion of myself					
17. Irritable					
18. Outgoing, friendly, enjoyed company of people					
19. Sloppy, disorganized					
20. Moody, ups and downs					
21. Angry					
22. Friends, popular					
23. Well organized, tidy, neat					
24. Acting without thinking, impulsive					
25. Tendency to be immature					
26. Guilty feelings, regretful					
27. Losing control of myself					
28. Tendency to be or act irrational					

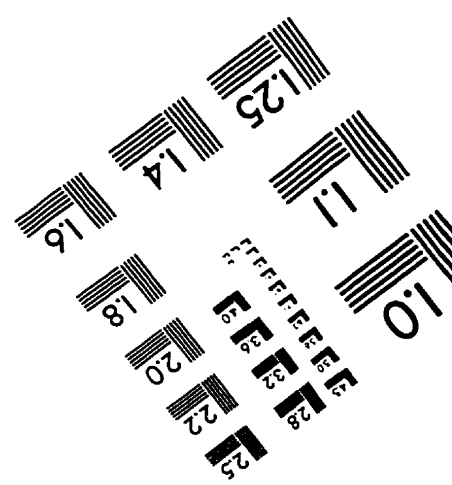
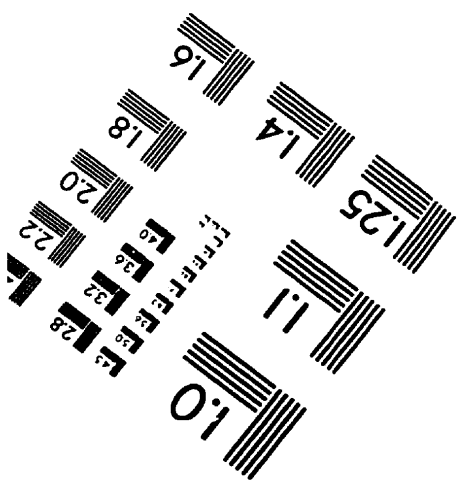
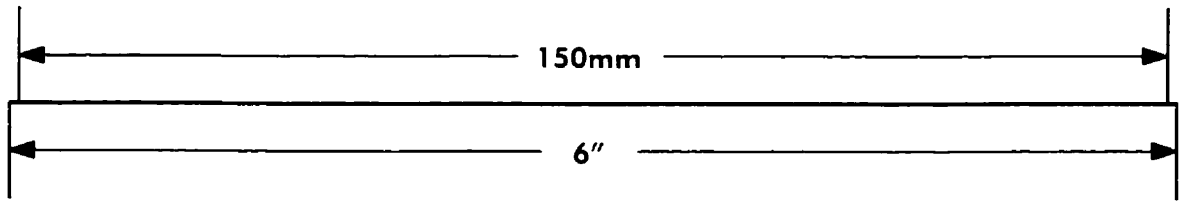
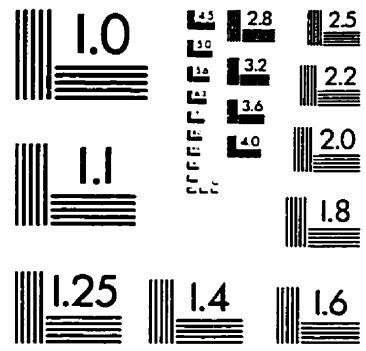
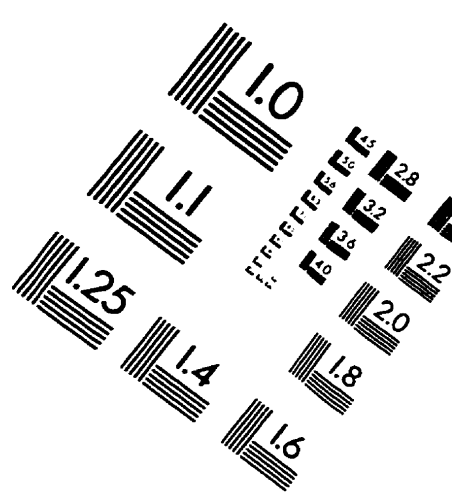
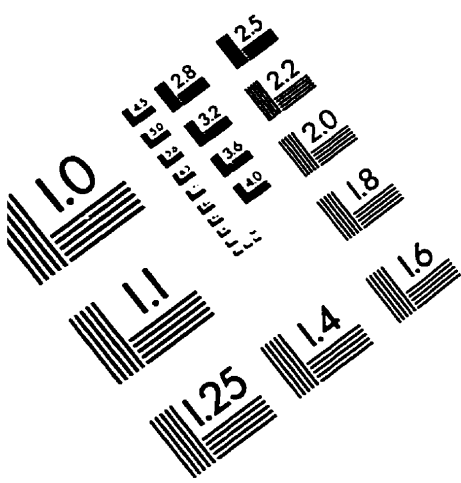
29. Unpopular with other children, didn't keep friends for long, didn't get along with other children					
30. Poorly coordinated, did not participate in sports					
31. Afraid of losing control of self					
32. Well coordinated, picked first in games					
33. Tomboyish (for women only)					
34. Running away from home					
35. Getting into fights					
36. Teasing other children					
37. Leader, bossy					
38. Difficulty getting awake					
39. Follower, led around too much					
40. Trouble seeing things from someone else's point of view					
41. Trouble with authorities, trouble with school, visits to principal's office					
42. Trouble with police, arrested, convicted					
Medical problems as a child					
43. Headaches					
44. Stomachaches					
45. Constipation					
46. Diarrhea					
47. Food allergies					
48. Other allergies					
49. Bedwetting					
As a child in school, I was (or had)					
50. Overall a good student, fast					
51. Overall a poor student, slow learner					
52. Slow in learning to read					
53. Slow reader					
54. Trouble reversing numbers					
55. Trouble with spelling					
56. Trouble with mathematics or numbers					
57. Bad handwriting					
58. Able to read pretty well but never really enjoyed reading					
59. Not achieving up to potential					
60. Repeated grades (which grades?) _____					
61. Suspended or expelled (which grades?) _____					

Appendix C

Factor Structure of the Pragmatic Language Inventory

Item Number	Factor Loadings			
	Rules of Conversation	Expressive Language	Receptive Language	Self-talk
1	-.06675	.56059	-.02454	.02538
2	.17636	.73522	.02941	.02380
3	.046010	.03702	-.00028	.16235
4	.06485	.40298	.35685	.09575
5	.35295	.49298	.11802	.09164
6	-.03598	.24196	.04770	-.04759
7	-.01532	.48757	.19287	.09648
8	-.06341	.18624	-.07144	-.25391
9	.10720	.63378	.32555	.00233
10	.29390	.45766	-.05169	.17408
11	.69242	.06501	.01801	.05047
12	.57319	.06986	.23098	.37299
13	.75093	.21174	.10320	-.04551
14	.26697	.26038	-.44294	.22362
15	.02295	.14655	.51986	.03066
16	.40062	.10927	.08712	.20570
17	.37455	-.11133	.06679	-.15380
18	.07931	.17535	.73865	.13816
19	.23789	.08093	.54102	.11950
20	.20519	.02911	-.02316	.55399
21	.27429	.29682	-.13285	.25834
22	-.04934	-.10233	-.13345	-.61973
23	.77791	-.08183	.16052	.01620
24	.00243	.21506	-.24569	-.22644
25	.19341	-.27439	-.07546	-.38503
26	.19501	.09707	.42760	.02266

IMAGE EVALUATION TEST TARGET (QA-3)



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