THE DIAGNOSIS OF ATTENTION DEFICIT/HYPERACTIVITY DISORDER (AD/HD): A SURVEY OF HOW PROFESSIONALS IN NEWFOUNDLAND MAKE THEIR DIAGNOSIS

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THE DIAGNOSIS OF ATTENTION DEFICIT/HYPERACTIVITY DISORDER (AD/HD): A SURVEY OF HOW PROFESSIONALS IN NEWFOUNDLAND MAKE THEIR DIAGNOSIS

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Abstract

The purpose of the study was to examine how children in Newfoundland are diagnosed with Attention Deficit/ Hyperactivity Disorder. Specifically, it will address professional perceptions of the definition, characteristics, causes, and the areas and methods of assessing AD/HD. Two hundred and nine questionnaires consisting of open and closed ended questions were sent out and 110 participants responded. Seventy surveys were used in the data analysis. Ten per cent of the neurologists, 29% of the paediatricians, 21% of the psychiatrists, and 38% of the psychologists responded. Results indicated that there is a general agreement among the different professionals regarding their perceptions of AD/HD. However, there are some discrepancies among the professionals' perceptions of assessing AD/HD and the reported practices. Although the return rate is reasonable, the sample may be biased by the higher number of psychologists that responded. The implications of these findings and suggestions for future research are discussed.

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Chapter I

Introduction

Attention Deficit/Hyperactivity Disorder (AD/HD) is among the most common psychological or behavioral disorders present in childhood (Shelton & Barkley, 1994). For simplicity, the term AD/HD will be used to represent the DSM-IV diagnosis and its predecessors in DSM-III-R, DSM-III, DSM-II, and other diagnostic systems. The DSM represents the Diagnostic and Statistical Manual of Mental Disorders. AD/HD affects children's interaction within all areas of their environment. They may experience difficulty with home and school behavior, peer interaction, academic achievement, and psychological adjustment. They are frequently a mystery and their unpredictable behavior creates stress for parents, teachers, and professionals involved (Goldstein & Goldstein, 1990).

The population prevalence of AD/HD is three to five percent among school-age children (Shelton & Barkley, 1994). It is suggested that an average of one child per class will be diagnosed with AD/HD (Kleitsch, 1994). Szatmari, Offord, and Boyle (1989), found that boys are six times more likely than are girls to have AD/HD; the ratio falls to three to one in population-based studies. Szatmari et al, (1989) reported that AD/HD is apparent in about three percent of

Canadian school-age girls and eight percent of school-age boys. Rutter (1983), found that AD/HD is 50 times more likely to be diagnosed in the United States than it is in Britain and France. In contrast to the United States, behaviors associated with AD/HD in Britain and France are viewed as conduct problems and AD/HD is rarely diagnosed (Taylor, 1989, as cited in Reid, Maag, & Vasa, 1993).

Statement of the Problem

Despite the high incidence of AD/HD, the criteria for defining and diagnosing it are often confusing, and too frequently, contradictory (Reeve, 1990). The field continues to be plagued by marked differences of opinion as to the definition, cause, and evaluation of AD/HD (Goldstein & Goldstein, 1990). Most of the judgments for AD/HD are implicit, based on vague and invalid assumptions about the disorder (Shaywitz, Fletcher, & Shaywitz, 1994). Some of the confusion regarding the literature on AD/HD may be attributed to several factors.

Firstly, the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) is a clinically derived classification system (Lyon, 1983). Although it is responsive to the contemporary research literature and clinical field trials, some decisions are based on professional consensus. Within this system, procedures for

determining whether a child meets the criteria of AD/HD are not stated, instead a threshold is determined for diagnosis based on the number of symptoms. Therefore, the determination of the severity of the disorder is an arbitrary, clinical decision based merely on the number of symptoms which a child presents rather than the extent or degree to which the symptoms are displayed (Montague, McKinney, & Hocutt, 1994).

In addition, the vocabulary used to describe AD/HD has undergone many changes. The field has shifted from a very narrow, medically based category to a much broader, more inclusive, and more subjective category. It is understandable then, that more children may be eligible for receiving a label that probably has less meaning. When using the DSM-IV diagnostic checklist for AD/HD, it is assumed that the description of the disorder will facilitate communication among professionals by enhancing their understanding and ability to intervene. However, with the identification of the causes and characteristics of AD/HD varying with professional orientation, we are presented with conflicting views of not only who these children are, but what causes their apparent variance (Goodman & Poillion, 1992). If research cannot make consistent and valid assumptions about who merits an AD/HD label, then it is impossible to generate and test hypotheses related to what

causes this disorder and how to prevent or treat it (Goodman & Poillion, 1992).

Other concerns which contribute to the controversy may be related to the heterogeneous nature of AD/HD, its complexity, and lack of definition. Research has indicated that the "true" effect of AD/HD is difficult to define and measure, especially with its relationship to other associated problems such as academic underachievement, disruptive behaviour, and poor social skills (Goodyear & Hynd, 1992). Also, the symptoms constituting AD/HD appear multidimensional rather than unitary, and research continues to be conflicting as to precisely which dimensions of attention (e.g., sustained or inhibition) are the most distinguishing of the disorder (Guevremont, DuPaul, & Barkley, 1990). AD/HD is called an "attention deficit disorder," but we do not know what aspect of attention is disordered in this syndrome, or if indeed, it should be conceptualized as an attention deficit disorder (Barkley, 1990). Finally, without a reliable classification system, it is unlikely that questions regarding the etiology of AD/HD will be answered. Without understanding the mechanisms underlying AD/HD, one wonders how effective services may be provided to children identified as having AD/HD (Shaywitz, Fletcher, & Shaywitz, 1994).

Purpose of the Study

The term AD/HD can be thought of as a descriptive label denoting a cluster of behaviors which commonly occur together. The task of the professional is to determine whether the child is displaying the behaviors characteristic of AD/HD at a developmentally inappropriate level and to a problematic or symptomatic degree (Mash & Terdal, 1988). If an individual has AD/HD, he or she might be hyperactive, distractible, and/or impulsive. Thus, it is possible that you might have a calm, underactive child who has been diagnosed with AD/HD because he or she is distractible and/or impulsive. By examining a child's specific problems, and understanding its antecedents and consequences, professionals can help children with AD/HD develop behaviors that will lead to academic and social success.

The process of evaluating whether a particular child has AD/HD may involve a variety of professionals such as psychiatrists, paediatricians, neurologists, and clinical and school psychologists. Each discipline involves a particular area of expertise with it's own terminology and diagnostic procedures. It is not the intent of this paper to criticize or evaluate past diagnosis or methods, but to understand and possibly formulate a consensus of how children are diagnosed with AD/HD. The purpose of the present study is to examine how children in Newfoundland are

diagnosed with AD/HD. Specifically, it will address how professionals define AD/HD; the characteristics associated with AD/HD, the causes of AD/HD, and the types of assessment and methods used to make the diagnosis.

Review of the Literature

Definition and Characteristics

Douglas (1985) and Douglas and Peters (1979, as cited in Goldstein & Goldstein, 1990) suggested that individuals with AD/HD are more likely to experience problems with attention, effort, and inhibitory control. They may have difficulty controlling their arousal and demonstrate a need to seek stimulation. Barkley (1990) suggested that the central deficit in AD/HD is behavioral disinhibition (i.e., the child is unable to delay responding when necessary). This is especially relevant in situations where consequences for such behaviors are delayed, weak, or nonexistent. Other working definitions such as that of Miller (1995), defined AD/HD as a disorder that is a member of the family of neurobiological disorders. It is a common but also complex disorder. It may have a chronic or variable cause and it could have a pervasive or variable impact. It has a strong genetic predisposition and it may involve the imbalance of specific neurotransmitters or the underfunctioning of

specific brain pathways. It is not caused by bad parenting or bad schools but can be exacerbated by these factors. It causes family stress due to behavior which is displayed inconsistently, in inappropriate amounts, and accompanied with other problems.

The DSM-IV criteria for Attention Deficit/Hyperactivity Disorder as indicated in the Diagnostic and Statistical Manual of Mental Disorders (1994) defined AD/HD as a persistent pattern of inattention and/or hyperactivity-impulsivity. Inattention may be manifested in academic, occupational, or social situations. Individuals with this disorder may fail to give close attention to details or may make careless mistakes in schoolwork, work, or other activities. They often have difficulty sustaining attention in tasks or play activities and often do not seem to listen when spoken to directly. They often do not follow through on instructions and fail to finish schoolwork, chores, or duties in the workplace (not due to oppositional behavior or failure to understand instructions). They often have difficulty organizing tasks and activities. They often avoid, dislike, or are reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework). They often lose things necessary for tasks or activities (e.g., toys, school assignments, pencils, books, or tools). They are often easily distracted by extraneous

stimuli and are often forgetful in daily activities.

Hyperactivity may be evident by fidgetiness with one's hands or feet. They often squirm or leave their seat in the classroom or in other situations in which remaining in their seat is expected. They often run about or climb excessively in situations when it is inappropriate (in adolescents or adults, this may be limited to subjective feelings of restlessness). They often have difficulty playing or engaging in leisure activities quietly. They are often "on the go" and act as if "driven by a motor" and talk excessively. Impulsivity may be evident as blurting out answers before questions have been completed. They often have difficulty awaiting their turn and interrupt or intrude on others (e.g., butt into conversations or games).

The words used to describe Attention Deficit/Hyperactivity Disorder may vary in relation to the definition and criterion used to explain this problem. Symptoms associated with AD/HD include short attention span, distractibility, poor listening, inability to finish business, impulsivity, poor organization, disruptiveness, body energy overflow, emotional overflow, insatiability, tendency to blame others, overreaction to criticism, and other associated problems (Miller, 1995).

AD/HD across age spans

Children with AD/HD at a young age are difficult to

rear and frequently experience excessive bedwetting, sleep problems, temper tantrums, and stubbornness (Aust, 1994). A tendency to withdraw from new stimulation, difficulty with changes in routine, and obstructive behavior when nursing or feeding is likely (Goldstein & Goldstein, 1990). Symptoms typically begin around the age of 2 or 3, in a range of settings, but may not be recognized until the child enters the classroom setting (Searight, Nahlik, & Campbell, 1995). When compared to the normal paediatric population, AD/HD children are more accident-prone, make more trips to the hospital, and more likely to sustain serious injury (Aust, 1994). They are generally described by their parents and preschool teachers as impulsive, non-compliant, and fearless. The irregularity of their behavior leads to a lack of predictability. Neither the threat of punishment nor the promise of reward seems to make much difference. A large number of AD/HD children experience speech and language problems. They have difficulty communicating with their peers and do not appear to have developed a system of internal language as a means of problem-solving. They also have difficulty changing from a tactile or touching means of dealing with the world to a visual or verbal means (Goldstein & Goldstein, 1990).

Children with AD/HD during the elementary school years appear to be a negative force in the classroom, frequently

eliciting negative reinforcement from the teacher. They may engage in off-task behaviors and demonstrate difficulty with achievement, and socialization. They may develop coexisting behavioral and emotional disorders that cause defiance, oppositional behaviors, verbal and physical aggression, depression, anxiety, and conduct problems such as lying, stealing, and truancy (Weiss, 1991). Some clinical investigators have noted that children with AD/HD perform normally in novel situations. Thus, they may not exhibit substantial problems during the first few weeks of the school year with a new teacher and classroom (Costello, Edelbrock, Costello, Dulcan, Burns, & Brent, 1988). Barkley (1990) outlined eight situations or tasks that have often been observed to affect symptom severity in AD/HD children. These include one-to-one versus group situations, father's versus mother's perceptions, novelty versus familiarity of the setting or task, frequent versus infrequent feedback, immediate versus delayed consequences, high versus low salience of consequences, early versus late in the day, and supervised versus unsupervised work. In each of these settings, children with AD/HD typically perform better or look more like their normal peers in the initial versus the later scenario.

Adolescents with AD/HD tend to begin alcohol and substance abuse at younger ages and they may abuse more

dangerous drugs than the non-AD/HD population. They have more car accidents, make more suicidal gestures (mostly in girls), experience more problems with the law (mostly in boys), and have more relationship problems than non-AD/HD peers (Aust, 1994). Studies have suggested that 30% to 40% of AD/HD children are involved in at least one anti-social behavior (Goldstein & Goldstein, 1990). They are likely to experience depression, poor self-esteem, and further difficulty with school such as suspension. It is believed that about one half of the number of children diagnosed as AD/HD will continue to exhibit symptoms over time (Mahoney, 1994).

Perhaps half of the children with AD/HD will exhibit some decrease in symptoms as they mature. Many, however, will continue to have problems as adults with inattention (persistence of effort and motivation), disinhibition, impulsivity, hyperactivity and/or concentration, especially selective and focused attention (Aust, 1994). These continuing problems may result in: emotional overreactions; "hot temper"; verbal or physical abuse; restlessness, general disorganization; hastily made decisions in employment, finances, personal relationships, and child-rearing; short-lived but significant mood swings; low stress tolerance; and poor social judgements (Ingersoll, 1988; Kelly & Ramundo, 1993; Weiss, 1991; and Wender, 1987).

History

The symptoms associated with attention disorders have been apparent as early as 1902. Still (as cited in Weiss & Hechtman, 1986) described a group of children who had a cluster of behavioral problems which he termed "defects in moral control." These individuals were described as being hyperactive and exhibited learning difficulties, conduct disorders and poor attention. The etiology was believed to be organic but environmental factors were also viewed as playing a role.

After the First World War, an epidemic of encephalitis lethargica was noted to result in postencephalitic behavior disorders in some children. These children exhibited behaviors that were very similar to those described by Still (Weiss & Hechtman, 1986). In the 1930's and 1940's, children with these behaviors were referred to as "brain damaged" or "brain injured" by Werner and Strauss (as cited in Reeve, 1990). In their studies it was found that brain injured individuals exhibited behaviors that were defined as hyperactive, distractible, impulsive, perseverative, and as having cognitive deficits (Weiss & Hechtman, 1986).

In the 1950's and early 1960's, studies found that some children displayed behaviors that were very similar to those who were "brain damaged," even though there was no history of brain trauma or the presence of abnormal neurological

signs that could be documented. It was assumed that neurological dysfunctions were present but were too subtle to be detected with medical procedures at the time. This led to the use of the terms "minimal brain damage" and "minimal cerebral dysfunction" (Reeve, 1990).

In the 1960's and 1970's, "hyperactivity" and the "Hyperactive Child Syndrome," became the terms for characterizing these children (Schwean, Parkinson, Francis, & Lee, 1993). A change in terminology occurred in part because of concerns regarding the use of medical terms to refer to a condition that was diagnosed using behavioral criteria. In addition, excessive motor activity at this time was considered to be the central problem (Reeve, 1990). Although not included in the first edition of DSM, the terminology changed to the "Hyperkinetic Reaction of Childhood" and was included in the DSM-II (Goodman & Poillion, 1992).

Throughout the 70's, many professionals agreed that difficulties in attention, concentration, and impulse control were becoming more critical than activity problems (Reeve, 1990). It was believed that a child's difficulty in academic and social areas was due to an inability to pay attention and inhibit responding rather than hyperactivity. In addition, the symptoms associated with the "Hyperactive Child Syndrome" were difficult to define and measure which

resulted in a low reliability (Spitzer & Williams, 1980).

In the DSM-III (APA, 1980), the diagnostic category was again changed and the term Attention Deficit Disorder first appeared. This category included three subtypes: attention deficit disorder with hyperactivity, attention deficit disorder without hyperactivity, and attention deficit disorder-residual. This latter subtype was reserved for individuals who were previously diagnosed as hyperactive but who have outgrown the characteristics warranting the label (Goodman & Poillion, 1992). This new terminology was very comparable to the old term in that both presumed that the disorder was best described as consisting of an essential configuration of symptoms that includes hyperactivity, impulsivity, attention-concentration, and a variety of other associated problems.

The change in the DSM-III was based on the argument that developmentally inappropriate inattention is virtually always present and often prominent in children described under the old term (DSM-II) where as excessive motor activity diminishes in adolescence (McMahon, 1984). This change broadened the assessment into a multiaxial system by defining specific criteria to be met for a case to receive the diagnosis (McBurnett, Lahey, & Pfiffner, 1993). The DSM-III arranged its fourteen symptoms into three groups to match what were considered the hallmark features of the

disorder: inattention (five symptoms), impulsivity (five symptoms), and hyperactivity (four symptoms). At least three symptoms of inattention, three symptoms of impulsivity, and two of hyperactivity were required to receive a diagnosis of ADD with hyperactivity. If a case presented three or more symptoms from both inattention and the impulsivity groups, but only one symptom from hyperactivity, the case received the diagnosis of ADD without hyperactivity. However, criticism became apparent with the DSM-III because of the complexity of requiring specific numbers of symptoms from several symptom groups. It was not clear whether the two were forms of a single disorder or represented two distinct disorders (De Quiro's, Kinsbourne, Palmer, & Rufo, 1994). Also, concerns were raised regarding the validity of ADD without a diagnosis of hyperactivity (McBurnett, Lahey, & Pfiffner, 1993).

A change in terminology to Attention Deficit Hyperactivity Disorder (ADHD) was made when the DSM-III was revised to the DSM-III-R (1987). This change reflected a shift from a three-dimensional definition to a single definition with the incorporation of the term "hyperactivity" into the title of the condition. Symptoms were used regarding hyperactivity as a child could have little or none. The DSM-III-R contained a single list of 14 symptoms, with any eight of which were sufficient to meet

the symptoms count criterion for the disorder of attention deficit hyperactivity disorder. The syndrome of ADD without hyperactivity was not included. A separate category of undifferentiated attention deficit disorder (UADD) was placed at the end of the child disorders' section. UADD had no diagnostic criterion and was applicable to individuals diagnosed as ADD but not specified by the ADHD criterion, including attention deficits unaccompanied by significant hyperactivity (McBurnett, Lahey, Pfiffner, 1993).

The most recent change in terminology occurred in the DSM-IV (1994) which lists nine characteristics of inattention and nine characteristics of hyperactivity and impulsivity. Diagnosis of AD/HD requires that the child exhibit at least six of the 18 behaviors. It attempts to separate the diagnostic criterion into two specific domains (inattention and hyperactivity/impulsivity) rather than the single, mixed list of 14 items such as on the DSM-III-R (Shaywitz, Fletcher, & Shaywitz, 1994). This revision was a reflection of the increasing evidence that attention deficit and hyperactivity and/or impulsivity are two distinct dimensions differing in the level of impairment, the presence of comorbid features, and social and cognitive development. In addition, this change reflected the belief that the symptoms of attention deficit hyperactivity disorder are not a unitary dimension as implied by DSM-III-R

or a three-dimensional approach as indicated in the DSM-III. The symptoms of inattention, impulsivity, and hyperactivity are still present. However, these symptoms may occur separately or concurrently, resulting in four subtypes:(1) attention-deficit hyperactivity disorder, predominantly inattentive type; (2) attention-deficit hyperactivity disorder, predominantly hyperactive-impulsive type, (3) attention-deficit hyperactivity disorder combined type; and (4) attention-deficit hyperactivity disorder not otherwise specified (Shelton and Barkley, 1994).

Symptoms

The inattentiveness of children with AD/HD is manifested by their inability to follow through on requests, particularly when the directions must be retained for a time before being carried out. Attention is represented by many components such as vigilance, divided attention, and sustained attention. Vigilance refers to the capacity to be ready to respond and the ability to sustain that readiness over time. Divided attention refers to the ability to simultaneously track two different sources of information. Ability in this area can be somewhat confused because of difficulties with sustained attention. Sustained attention refers to the child's ability to persist at a task until it is successfully completed. Schoolwork is often only

partially completed and completed sections are carelessly done. Many children with AD/HD are able to remain engaged with television or video games which have relatively low demands for complex concentration or memory (Pliszka, 1991). They experience difficulty starting and sustaining tasks in the classroom while others struggle to screen out distractions. Most experience difficulty completing routine, especially repetitive tasks which are required for successful classroom performance. Many AD/HD children experience difficulty dividing their attention (i.e., listening to the teacher and taking notes simultaneously). Others struggle with vigilance or readiness to respond (i.e., waiting for the next word during a spelling test). Beginning at age 5, children's capacity to pay attention increases dramatically. This pattern of increasing skill parallels the pattern of increasing demands placed upon children in the first grade classroom (Goldstein & Goldstein, 1990).

Impulsivity emerges as the child with AD/HD experiences difficulty appropriately delaying a response, such as waiting for a turn, raising a hand before speaking, or interrupting conversations. They have difficulty thinking before they act. They do not weigh the consequences of their actions, plan for future actions or follow rule-governed behavior. Even though they may know the rules and are able

to explain them in their environment, they do not appear capable of consistently controlling their actions and thinking before they act. Unfortunately, even repeated experiences do not appear to impact on this pattern of impulsive responding and may be a sign of immaturity (Goldstein & Goldstein, 1990).

Motor restlessness (hyperactivity) is usually apparent in the elementary school-aged children by their inability to remain seated. When they are sitting, children with AD/HD are often tapping their feet or fingers, rocking, and manipulating objects. The child with AD/HD also has a tendency to alienate peers by grabbing objects from others or failing to wait their turn in games. Rewards or feedback about behavior may only have a brief impact. A significant group of AD/HD children are excessively restless and overactive in situations when they must sit still. Additionally, most AD/HD children exhibit extremes of emotion faster and with greater intensity than is age-appropriate and many appear to be on an emotional rollercoaster (Goldstein & Goldstein, 1990).

Comorbidity of AD/HD with other disorders

AD/HD has a comorbidity (the coexistence of two or more distinct disorders or syndromes in the same individual) with other disorders such as motor disorders, medical disorders,

behavior disorders, emotional disorders, and academic disorders (McConaughy & Skiba, 1993). Motor disorders may include developmental coordination disorder, minor neurological dysfunction, and handwriting disorders such as dysgraphia (Goldstein & Goldstein, 1990). Medical disorders may include enuresis and encopresis, tics and Tourette Syndrome, sleep disorders, genetic disorders, neurological disorders and thyroid disorders (Schaughency & Rothlind, 1991).

Behavior disorders may include social skills deficits, oppositional behavior, conduct disorder, and antisocial personality disorder. It is estimated that approximately 40% of children and 65% of adolescents who have AD/HD exhibit concurrent oppositional defiant behaviors (Barkley, 1991; Weiss & Hechtman 1993, as cited in Searight, Nahlik, & Campbell, 1995). Between 21% and 45% of children and 45% to 50% of adolescents with AD/HD tend to meet the diagnostic criteria for conduct disorder (Barkley, 1991; Weiss & Hechtman, 1993, as cited in Searight et al, 1995). Conduct disorders are more distinguishable from AD/HD during the early elementary school years. Children with a conduct disorder, in contrast to those with AD/HD, are more likely to exhibit destructive behavior and legal infractions such as fire-setting, vandalism, cruelty to animals, or theft. Children with AD/HD may violate school and home rules, but

their misbehavior does not usually have the same destructive and disruled quality. The child with AD/HD may exhibit distractibility with sustained concentration and attention; however, these signs are usually not as significant as in the child with a conduct disorder. In addition, overt family dysfunction including inconsistent and unstructured home environments are much more likely to be found among children with a conduct disorder or an oppositional defiant disorder than AD/HD (Barkley, 1991, as cited in Searight et al, 1995).

Emotional disorders include demoralization, mood disorders, and anxiety. Children with AD/HD frequently have difficulty interacting effectively with other children. Tendencies to be first in line, taking another child's toy, or switching from topic to topic in conversation may alienate children with AD/HD from their agemates. Such alienation can lead to rejection and negative self-esteem for the child. Also, keeping up with a child who has AD/HD can be draining on the parents, teachers, or other family members. These individuals may reinforce the symptoms through appeasement and a negative relationship may exist between the child and significant others. Nussbaum, Bigler, and Koch (1986, as cited in Nussbaum & Bigler, 1990) found that self-esteem appears to be a major problem, since many of the tasks that children with AD/HD start are not finished

and therefore, the lack of positive learning experiences may lead to a negative self-esteem.

Academic disorders include underachievement, specific learning disabilities, speech and language disorders, and developmental disorders such as cognitive deficits. These children are more likely to receive lower grades in academic subjects, lower scores on standardized reading and math tests, and over half the children with AD/HD will fail at least one grade by adolescence (Zentall, 1993). Barkley, Fisher, Edelbrock, and Smallish (1992, as cited in Aust, 1994) found that children who were previously diagnosed with AD/HD were retained at least one grade (30%), suspended at least once (46%), expelled (11%), and dropped out of school (10%).

Other disorders which are associated with AD/HD children include a delay in the onset of talking in early childhood (Hartsough & Lambert, 1985; Szatmari, Offord, & Boyle, 1989). The strong association between language disorders and AD/HD suggests the possibility of a common antecedent to both disorders, perhaps a temperamental or neurological characteristic linked to deficits in behavioral regulation. Children with AD/HD have also been shown to have less knowledge about social skills and appropriate behavior with others (Grenell, Class, & Katz, 1987). During social interactions, they may exhibit an inability to vary their

communication strategies according to the setting and task, and are more likely to view events that happen to them as outside of their personal control or due to fate (Linn & Hodge, 1982). AD/HD children are more likely to talk than normal children, especially during spontaneous conversation (Barkley, Cunningham, & Karlsson, 1983). When confronted with a task in which they must organize and generate speech in response to specific task demands, they are likely to talk less, to be more dysfluent, and to produce less cohesive and coherent language (Hamlett, Pelligrini, & Conners, 1987). Children with AD/HD also tend to be poorer in complex problem-solving strategies and organizational skills (Hamlett, Pelligrini, & Conners, 1987). AD/HD children may perform well on memory tasks where materials are meaningfully structured but deficits may be apparent when organizational or elaborative strategies are required (O'Neill & Douglas, 1991).

Causes

Attention Deficit/Hyperactivity Disorder is not a "sickness" or "condition," but a diagnostic label based solely on a group of behaviors that tend to cause problems for children (Paltin, 1993). Goodman and Poillion's study in 1992 found that over 38 factors were evident in the literature regarding the cause of ADD. These factors were

classified into the categories of organic, intellectual and developmental, psychological, environmental, and birth complication factors. Miller (1995) suggested that the causes of inattention or activity problems can involve several factors. The primary causes may consist of factors which directly impair the central nervous system's capacity to regulate attention, inhibit responses, or control one's activity level. These causes may be a result of neurochemical, genetic, neurological, and toxicological factors.

Studies of neurochemical factors have focused on specific neurotransmitters (chemicals that affect the efficiency of brain's functions) that facilitate communication among the neuronal circuits implicated in this disorder (Riccio, Hynd, Cohen, & Gonzalez, 1993). Specific neurotransmitters include catecholamines (dopamine, norepinephrine, adrenaline, and noradrenaline) which appear to affect a wide variety of behaviors including attention, inhibition, response of the motor system, and motivation (Clark, Geffen, & Geffen, 1987a, 1987b). A study by Mefford and Potter (1989) suggested that an imbalance in these neurotransmitters may result in the decreased stimulation of the locu coeruleus (brain stem reticular activating system). Support for this conceptualization is provided in studies where ADD children are treated with Clonodine as well as

with other psychostimulants such as Ritalin (Pelham, Greenslade, Vodde-Hamilton, Murphy, Greenstein, Gnagy, Guthrie, Hoover, Dahl, 1990). Zametkin and Rapoport (1987) suggested that no single neurotransmitter is exclusively involved in the pathogenesis of ADHD and that it may involve the combined action of dompaminergic and noradrenergic systems. This is based on the belief that stimulant medications affect more than one neurotransmitter and because of the multiple interrelations among specific catecholamines and their precursors and metabolites.

Other researchers have focused on the concept that attention control may involve two separate neural systems. The first system is an activation system which is centered in the left hemisphere. It specializes in analytic, sequential, and routinized cognitive operations (motor responses) and is regulated by dopaminergic transmitters. The second system is an arousal system that is centered in the right hemisphere. It is responsible for holistic, parallel, and novel cognitive functions (perceptual orienting responses) and is regulated by the norepinephrinergic neurotransmitters (Tucker & Williamson, 1984). Others such as Levy (1991) suggested that the underlying dysfunction is a disorder of the dopaminergic circuits between the prefrontal and striatal centers (basal ganglia). While many studies seem to implicate

neurotransmitters, there are equally as many studies that suggest no relationship between neurotransmitters and ADHD (Zametkin & Rapoport, 1987).

Genetic causes of AD/HD tend to focus on a family pattern that seems to exist. Studies have shown that about 20% to 30% of children with ADD have a parent and/or sibling with similar attentional problems and therefore, they may have an inherited nervous system that makes them prone to problems with concentration and/or high activity levels (Nussbaum & Bigler, 1990). Specifically, relatives of children with ADHD are approximately seven times more likely to have ADHD than are the relatives of nonsymptomatic children (Paltin, 1993). Goodman and Poillion's study (1992) found that almost half of the authors indicated that there was a genetic cause for ADD. Other studies suggest that there are several genetic disorders, including Turner Syndrome and Fragile X Syndrome which include ADHD in their phenotype (Bender, Puck, Salenblatt, & Robinson, 1986; Hagerman, 1987; Hier, 1980).

Family studies have found increased rates of hyperactivity among first and second degree relatives of hyperactive children when compared to the rates among relatives of controls. Increased rates of alcoholism, sociopathy, and hysteria in the parents of hyperactive children are also likely (Cantwell, 1972; Morrison &

Stewart, 1973; Nichols & Chen, 1981; Singer, Stewart, & Pulaski, 1981). Alberts-Corush, Firestone, & Goodman's (1986) study found that attentional problems rather than impulsivity tends to occur more frequently in biological versus adoptive parents of ADHD children. However, these studies have been described as having methodological problems (Rutter, Macdonald, Couteur, Harrington, Bolton, & Bailey 1990). Although no one has isolated a specific gene that contributes to ADD, there is some evidence that ADD type behaviors tend to reoccur in families (Barkley, 1981).

Neurological causes of AD/HD tend to center around the possibly of a dysfunction in the reticular activating system (RAS). The RAS is a group of structures located in the lower region of the brain known as the brainstem and extend up to the cerebrum. The purpose of this system is to regulate one's level of alertness or arousal. Specifically, the RAS acts to filter out any irrelevant or unimportant information. The child with ADD may have a dysfunction in the RAS that negatively affects his or her ability to pay attention. For example, in order for children to pay attention to important information in the classroom, they must be able to ignore or filter out unimportant classroom distractors like someone walking down the hall or other children talking. With a dysfunctional "filter mechanism," the child may have difficulty filtering out or ignoring

common distractors which may result in distractibility and short attention span. Even though a dysfunction in the RAS seems to be a plausible explanation for ADD, no specific evidence exists to support it (Nussbaum & Bigler, 1990).

Other neurological factors tend to focus on different areas of the central nervous system. Children with AD/HD appear to demonstrate pronounced weakness on neurological tests sensitive to frontal lobe dysfunction (Barkley, 1994). In addition, difficulties with self-monitoring, behavioral disinhibition, and maturational deficits in the frontal cortex have been suggested as a causative factor. Some suggest a decreased blood flow to the striatum and prefrontal regions of the brain (Lou, Henriksen, & Bruhn, 1984; Lou, Henriksen, Bruhn, Borner, & Nielsen, 1989). There is also evidence that children with AD/HD demonstrate a greater incidence of neurological "soft signs," such as difficulties with fine motor and gross motor coordination and balance (Cantwell, 1983; Leung, Robson, Fagan, & Lim, 1994). It is suggested that maternal cigarette smoking and alcohol consumption during pregnancy may increase the risk of "soft" neurological damage, however, there is no consistent link to AD/HD (Barkley, 1991, as cited in Searight, Nahlik, & Campbell, 1995). In addition, Shelton and Barkley (1994) suggested that there is less agreement regarding the different dimensions of attention and the

neuroanatomical system associated with each dimension. For example, arousal or alertness is often assigned to the brainstem reticular activating system while selected or focused attention may involve the posterior cortical-subcortical sensory-processing pathways. Impulsivity and sustained attention is associated with the mesial orbital prefrontal regions of the cortex and its interconnections to the limbic system, and the prefrontal dorsolateral region (Mesulam, 1990; Mirsky, 1987; Posner, 1988).

Toxicological causes of AD/HD tend to focus on factors that involve an allergic reaction to certain foods, dyes, additives, and other environmental toxins. One popular theory in the mid-to late 1970's held that fluorescent lighting contributed to hyperactive behavior, however studies have shown no scientific support. Similarly, other researchers have found that a very small percentage of children with ADD may show an adverse behavioral reaction to certain foods although this negative reaction is more likely to be seen in children six years of age and younger (Nussbaum & Bigler, 1990). Therefore, in a few children with ADD, allergic reactions may play a role, but this proposed cause has been greatly overrated.

Studies have also reported that hyperactivity may be caused by one's diet (e.g., Feingold Diet) or eating too

much sugar (Nussbaum & Bigler, 1990). Although nutrition can have an effect on behavior, research does not show clearly that sugar causes ADD or hyperactivity (Kruesi et al., 1987: Rosen et al., 1988; Silver, 1987 as cited in Nussbaum & Bigler, 1990). Several environmental toxins have been found to be associated with hyperactivity. Often children who have a high amount of lead poisoning in their system from ingesting lead paint chips may become hyperactive or experience neurological impairment. Similarly, some children who are exposed to abnormally high amounts of pesticides or other poisons may become hyperactive (Nussbaum & Bigler, 1990). However, the majority of hyperactivity in children with ADD is probably not related to environmental toxins.

Other causes of inattention or activity problems may be intrinsic or extrinsic factors that may affect one's capacity to meet expectations. Intrinsic factors include information processing deficits, psychosocial distractors and medical disorders. Processing deficits may include: autistic spectrum disorders (Schaughency, Walker, & Lahey, 1988); language processing disorders (Cantwell, Baker, & Mattison, 1979); and learning disabilities (McKinney, Montague, Hocutt, 1993).

Psychosocial distractors may include: behavior disorders (Cantwell, Baker, & Mattison, 1979; Chess & Rosenberg, 1974; Love & Thompson, 1988; Trautman, Giddan, &

Jurs, 1990); emotional problems (Weiss & Hechtman, 1986); psychiatric illness (Gittelman, Mannuzza, Shenker, & Bonagura, 1985; Weiss & Hechtman, 1986); family stress (Paltin, 1993); and abuse (Weiss & Hechtman, 1986).

Medical disorders may include: neurological disorders (Riccio, Hynd, Cohen, & Gonzalez, 1993); endocrine disorders (Washington Post/New England Journal of Medicine, 1993 as cited in Aust, 1994); allergies (O'Shea and Porter, 1981); chronic illness (Wender, 1987); nutritional problems (Martin, 1980; Simopoulos, 1983); substance abuse (Searight, Nahlik, & Campbell, 1995); and medication problems (Pellock, Culbert, Garnett, Crumrine, Kaplan, O'Hara, Driscoll, Frost, Alvin, Hamer, Handen, Horowitz and Nichols, 1988 as cited in Goldstein & Goldstein, 1990). Extrinsic factors which may cause inattention include: parenting issues (Wender, 1987); situational mismatch (Paltin, 1993); adverse environment (Wender, 1987); and cultural factors (Block, 1977).

Diagnosis and Assessment

It has been suggested that by the time a child is referred for AD/HD, the clinician is frequently presented with a complex set of difficulties that may be affected by a variety of social and nonsocial factors. The diagnosis of AD/HD is not an easy task, since most children evidence some of the symptoms and there is no specific test for AD/HD as

there is for other medical problems such as diabetes or cystic fibrosis (Kleitsch, 1994). It is a disorder distinct from other disorders of childhood because of a difference in intensity, persistence and clustering of symptoms rather than the presence or absence of symptoms that confirm the diagnosis.

Due to the multidimensional nature of attention disorders and related features, no one approach will be sufficient. Each method of assessment offers particular strengths as well as limitations. Yet, the problems inherent in each can be partially addressed by employing multiple methods, from several sources, across different settings and informants. Shelton and Barkley (1994) suggested that it is important to ensure that a comprehensive battery includes measures that assess the particular behaviors listed in the diagnostic criteria. In addition, with the frequency of other behaviors and difficulties accompanying AD/HD, an assessment battery should include measures not only of AD/HD symptomatology but of other behaviors and skills as well (anxiety, peer relations, depression, oppositional or conduct problems, academic achievement, and executive language development). In addition, parent, teacher, and perhaps child self-report ratings are necessary in order to examine the pervasiveness and severity of the symptoms. Also, because the severity of the symptoms must be

developmentally inappropriate for the child's age and gender, the measures must have appropriate normative data.

When conducting an assessment regarding the possibility of AD/HD, it is helpful to examine the referral question. Information can be obtained regarding the problem behavior, the age of onset, and the frequency and pervasiveness of the problem across a variety of situations. For example, one particular referral source may define the problem in relation to a specific deficit while others may lump the problems associated with AD/HD into one problem behavior. Miller (1995), suggested that it is important to be aware of: Who says there is a problem? What is the main problem? When did the problem start? Where is the problem occurring? and Why are they seeking help now?

One way of answering the above questions may involve a review of the child's history (birth, family, and environment, etc.) through the use of structured and unstructured interviews. Examples of frequently used interviews include the Diagnostic Interviews for Children and Adolescents or the Child Assessment Schedule (See Appendix A). The interview may focus on the domains: of psychiatric, medical, and developmental history; school and educational background; and family history and psychosocial functioning. It is important to learn what may have influenced a child's development in the past, what may be

influencing it now, and whether any learning, medical, social, or emotional problems have been treated to date (Shelton & Barkley, 1994). There should be a review of developmental milestones, unusual medical problems, and so forth. Details of the child's school history and the history of any learning or psychiatric problems in the parents, siblings, grandparents, aunts, uncles, and cousins should be reviewed. Information should be obtained from the child regarding general interests in play and school, academic problems, difficulties with peers, family relations and conflicts. The interview with the teacher should involve questions about the child's current academic achievement, social functioning with classmates, and general classroom behavior. For example, is there a difference in behavior based on academic subject, teacher, and class size. Focus should also be directed toward the child's attention to tasks, impulse control in various situations, activity level, and ability to follow rules and instructions (Shelton & Barkley, 1994).

The use of structured interviews allow the clinician to assess the child's behavior in accordance with systematic, specific criteria for psychiatric disorders and standardized methods for obtaining information. Young, O'Brien, Gutterman, & Cohen (1987) indicated that structured interviews generally reduce both criterion variance (the

application of different rules to make diagnosis) and information variance (the use of different data collection methods). However, the use of structured interviews may also result in an overdiagnosis of AD/HD (false positive) especially if used alone. For example, some interviews are structured according to items pertaining to a single diagnosis clustered together. Others are arranged in relation to domains of activity in the child's life, such as family, friends, and school. Although all of the interviews are tied to DSM criteria, they vary in their procedures for diagnostic decision making. The best estimate approach to diagnosis in child psychopathology is by using multiple informants. For example, Hodges, McKnew, Burbach, & Roebuck (1987) found that the combination of information from the parent and child interviews correctly classified 77 of 80 subjects.

Once a detailed history has been obtained/reviewed, it is also a prerequisite to define the child's current functioning in a variety of settings such as home, school, and community. The child's functioning may include measures of attention, impulsivity, and activity level. The assessment may also include psychological and educational testing. In addition, as each area is assessed, constant reference should be made to the DSM-IV Diagnostic Checklist for AD/HD (See Appendix B). However, meeting the DSM IV

criteria does not "make" the diagnosis. By using the diagnostic criteria, Schaughency & Rothlind (1991) suggest that the criteria should answer four questions: (1) Does the child meet the diagnostic criteria for AD/HD?, (2) Does an alternative diagnosis or conceptualization account for the difficulties?, (3) Does this child display these behaviors to a developmentally inappropriate extent?, and (4) Do these behaviors impair the child's functioning in the school, social relations, and home?

One method of assessing the child's functioning is through the use of rating scales. There are many types of rating scales which can be used by different individuals to assess the child's behavior in a variety of settings (See Appendix C). The use of rating scales offers many advantages, especially their convenience, applicability to multiple informants, ability to gather information across long time intervals, and a large pool of normative data to establish developmental deviancy (Shelton & Barkley, 1994). In addition, by providing information on the child's functioning relative to normative data, they provide an objective way to assess severity of impairment or functioning. Schaughency, Frick, Christ, Neeper, & Lahey (1990, as cited in Schaughency & Rothlind, 1991) found the use of teacher ratings to be an efficient screening device for suspected adjustment difficulties.

While these scales are useful, they do have limitations. Some of the instruments have not been revised to reflect DSM-IV criteria. For example, researchers suggest a cutoff score of 1.5 standard deviations above the mean on the Conners Rating Scale; however, this may not be valid (Barkley, 1991 as cited in Searight, Nahlik, Campbell, 1995). Secondly, halo effects are a common limitation as children are nonspecifically rated as "all good" or "all bad." In addition, they do not provide sufficient information to generate a specific psychiatric diagnosis (Young, O'Brien, Gutterman, & Cohen, 1987), and one has to be careful regarding inconsistent judgements between parents and teachers. Studies suggest that teacher ratings should be given somewhat more credence than parents (Porrino, Rapoport, Behar, Sceery, Ismond, & Bunney, 1983). Symptoms of AD/HD are typically most evident in children in a school setting. When parents perceive these symptoms occurring with high frequency at home with little evidence of problem behavior at school, the possibility of family conflict or unrealistic parental standards should be investigated. Also, research has found that depressed mothers are particularly prone to perceiving their children as exhibiting behavioral problems (Shelton & Barkley, 1994).

Another area of assessment should include measures of attention, impulsivity, and activity level. Attention is

believed to be represented by many components such as vigilance, divided attention, and sustained attention. An example of one technique used to assess attention involves the Continuous Performance Test (see Appendix D). Many of the instruments used to measure attention may lack appropriate normative data, reliability and validity, and should not be used in isolation from interviews and rating scales. Although using tests such as the Continuous Performance Test (CPT) is appealing, the research on the clinical utility of these measures remains to be established, and there appears to be a high degree of false-negative results or classification of children as normal but who have an attentional deficit (Dupaul, Anastopoulos, Shelton, Guevremont, & Metevia, 1992; Trommer, Hoeppner, Lorber, & Armstrong, 1988). Shelton & Barkley (1994) suggest that these instruments may be most helpful when the scores are abnormal.

The most known measures for impulsivity are the Continuous Performance Test and the Matching Familiar Figures Test. These measures appear to discriminate AD/HD children from normal children (Campbell, Douglas, & Morgenstern, 1971). In addition, the Matching Familiar Figures Test has been used to differentiate between aggressive versus nonaggressive AD/HD children (Milich, Landau, & Loney, 1981 as cited in Shelton & Barkley, 1994),

and to measure the effect of stimulant drugs on one's behavior (Barkley, 1977). Many studies have used the Porteus Mazes, although the normative data for this task is outdated. However, with all of these instruments, there is a low intercorrelation, implying that each is measuring a different facet of impulsivity (Milich & Kramer, 1981 as cited in Shelton & Barkley, 1994). The behavioral rating of impulsivity appears to have more diagnostic utility at this time.

Measures of activity level center around assessing a variety of activities such as: motion of arms, legs, or trunk; locomotion; total body movement (Tryon, 1984). Reeve (1990) suggests that the level of activity can be measured by setting up elaborate playroom settings and observing the number of times a child changes from one toy to another or moves to a different part of the room. Other measures may include the use of an "actometer" which measures truncal activity over a prolonged time period. However, caution should be demonstrated as these measures lack normative data and are associated with low reliability and intercorrelation. Also, it does not take into account situational procedures and there appears to be a poor relationship with parent and teacher ratings of activity level.

Other measures of attention, impulsivity, and activity

may involve direct observational procedures. Various coding systems have been used to record behaviors such as off-task, out-of-seat, fidgets, locomotion, vocalizations, and attention shifts which are noted to occur more often in children with AD/HD. Some examples of direct observational assessment include the Revised Stony Brook Observation Code, Classroom Observation System, Child Behavior Checklist Direct Observation Form, School Situations Questionnaire-Revised, and the Home Situations Questionnaire-Revised.

Typically, the child is observed while working on academic like tasks in the clinic or while performing actual work in the classroom (Shelton & Barkley, 1994). In diagnostic decision making, it is necessary to determine whether a child is displaying these behaviors to an atypical degree. Research from developmental psychology suggests that there are developmental changes in each of the core features of AD/HD (attention span, impulsivity, and activity level). Because children may not manifest their problematic behaviors in a novel or structured situation, the absence of AD/HD symptoms in the clinician's office does not necessary rule out diagnosis. If such behaviors do occur, they provide important collateral evidence. A review of observational measures of AD/HD by Shaywitz & Shaywitz (1988) found them to be advantageous, as they can be conducted in the child's natural environment. Furthermore, they may be more objective

than other subjective reports used in interviews and rating scales. However, observational measures lack normative data and have a problem of high salience (Barkley, 1988 as cited in Schaughency & Rothlind, 1991).

The assessment of the child's psychological and educational functioning is another area which can assist in surveying the effect that AD/HD may be having on the child. The assessment battery should include either a direct assessment of the child's intellectual and academic abilities or at the very least, a review of recent academic/intellectual testing. Other areas that should be included are visual and auditory perceptual memory, and personality. This information is necessary because in order to make a diagnosis, the symptoms must be significantly different from what would be expected of other children of the same developmental age. If a child has some developmental delays, this must be taken into account, especially when establishing expectations for behavior.

For preschool-aged children, instruments could involve the Stanford-Binet Intelligence Scale-Fourth Edition or the Wechsler Preschool & Primary Scales of Intelligence-Revised. For older children, a common test is the Wechsler Intelligence Scale for Children-III. For academic achievement and more specifically for predicting achievement from intellectual abilities, the Woodcock-Johnson

Psychoeducational Battery-Revised and the Wechsler Individual Achievement Tests can be helpful. Children with AD/HD may also experience language problems as well as specific learning disabilities. This information is helpful in determining whether the child's difficulties may be indicative of other difficulties. For example, children with an auditory comprehension disorder including difficulties with auditory discrimination, perception, and sequential memory may behave in ways that are similar to children with AD/HD (Wilson & Risucci, 1986). The Goldman-Fristoe-Woodcock Auditory Skills Battery or the Gray Oral Reading Test may be helpful in determining if the child's difficulties may be due to an auditory-processing problem rather than to AD/HD. With the overlap between AD/HD and these auditory processing or "executive function" difficulties, it may be prudent to include a brief screening of speech-language functioning.

In some cases, additional neuropsychological or psychological testing may be necessary. Neurological examinations include the Test Battery for Nonfocal Neurological Signs, the Revised Physical and Neurological Examination for Subtle Signs (R-NESS), and the Special Neurological Examination. Psychological tests may include the Bender Visual Motor Test, Cognitive Control Test, Roberts Apperception Test for Children, Rorschach Inkblot

Test-Comprehensive System, Draw A Person, Piers-Harris Children's Self-Concept Scale, and the Reynolds Child Depression Scale.

These measures should not be solely used to diagnose the presence or absence of AD/HD. Studies looking at the information on a child's distractibility and/or inattention through the freedom from distractibility (FD) factor on the Weschler Intelligence Scale for Children-III do not consistently discriminate between children with or without AD/HD (Hodges, Horwitz, & Kline, 1982; Greenblatt, Mattis, & Trad, 1991). Also, children with AD/HD respond better to structured one-to-one situations with a novel adult, the typical setting of most testing situations. Therefore, it might be expected that children with AD/HD may seem less impaired in these situations.

Other areas of assessment generally include a physical examination and/or a mental status examination by a physician or paediatrician. The physical examination can consist of medical tests such as blood cell count, an electroencephalogram, or thyroid functions studies, if need be. In addition, a brief mental status examination may be carried out during the doctor's visit. The examination can be structured to include the dimensions of attention (e.g. digit span or sentence repetition tasks), concentration (e.g. recalling digits backwards or answering verbally

presented arithmetic problems), short-term memory (e.g. recalling words or hidden objects for several minutes), speech (note if articulation is clear and appropriate for age), language (note if language is coherent and organized), motor activity (note if appropriate for year level and situation), mood (note if normal, irritable, or dysphoric), and affect (note if stable, labile, or flat) (Searight, Nahlik, Campbell, 1995).

A final area of assessing the child's functioning and the possible affects of AD/HD involves peer assessments. Peer nominations of social status variables and aggression are sensitive markers of children's adjustment difficulties (Hops & Lewin, 1984; Pelham & Milich, 1984; Whalen & Henker, 1985). Peer assessments of children with AD/HD typically suggest that they tend to be rejected socially by their peers (Pelham & Milich, 1984; Whalen & Henker, 1985). Therefore, peers may be a socially valid and important source of information regarding children with AD/HD (Cornett-Ruiz & Hendricks, 1993). Other studies such as McCone and Schaughency (1990 as cited in Schaughency & Rothlind, 1991) found that peers are able to identify attentional problems among their classmates who are referred for adjustment difficulties and to differentiate among the externalizing behavior problems of their classmates.

Chapter II

Method

Participants

Participants were selected from five professional disciplines in rural and urban Newfoundland (population 600,000). These disciplines included psychiatrists (10), paediatricians (31), neurologists (29), and clinical and school psychologists (139). The psychiatrists, paediatricians, and neurologists were all registered medical practitioners as indicated in the Newfoundland Medical Directory (1995 edition). The clinical and school psychologists were all registered and provisionally registered psychologists as indicated in the directory of the Newfoundland Board of Examiners in Psychology as of January, 1996.

Materials and Procedure

A 7-item questionnaire (see Appendix F) was constructed after consultation with three psychologists. The items were organized into five sections and consisted of open and closed ended questions. A letter describing the study accompanied each questionnaire that was distributed (see

Appendix E). All of the questionnaires were sent to the participants with an attached envelope with prepaid postage. Questionnaires that were not received within five weeks of the mailing date received a second letter or telephone call to request their compliance (see Appendix G). The returned questionnaires were coded and entered into a data base.

In February of 1996, 209 surveys were sent to five specific groups of professionals who may be involved in the diagnosis of children with AD/HD. The discussion of the results will be presented in the order of the questions as they appeared on the questionnaire. The data were entered into a data base and analyzed through the use of cross tabulations. Factor analysis was not completed due to low cell sizes and the format of the questions. Correlations were attempted; however, initial results indicated negative relationships. Information will be presented in the form of frequencies and percentages.

Chapter III

Results

Question 1- Please indicate your particular profession.

Of the 209 surveys sent out, 110 participants responded (53 per cent). Of the 110 surveys which were returned, only

70 (64 per cent) surveys were completed and thus used in the analysis of the data. In relation to the specific professions that responded and completed the questionnaire, 10% of the neurologists responded, 29% of the paediatricians, 21% of the psychiatrists, and 38% of the psychologists. Forty surveys were not included for a number of reasons; six respondents were out of the province, eight respondents stated that they were not interested, and 26 respondents indicated either they did not see children or the topic was not congruent with their area of expertise.

Of the 70 participants who completed the survey, the majority were within the discipline of psychology. The 70 participants who completed the survey consisted of 29 clinical psychologists (41 per cent), 24 school psychologists (34 per cent), 10 paediatricians (14 per cent), six psychiatrists (10 per cent), and one neurologist (1 per cent).

Question 2(a)- Please indicate how you define Attention Deficit/Hyperactivity Disorder (AD/HD).

The results indicated that sixty-seven respondents completed this question while three respondents did not. The most common definition, selected by 42 respondents, centered around the different symptoms associated with AD/HD such as impulsivity, restlessness, distractibility, inattention, and

hyperactivity. Twenty respondents indicated the definition outlined in the DSM-IV and 16 respondents indicated the specific difficulties that the child may be experiencing such as intellectual, cognitive, academic, social, family, or behavioral problems. Nine respondents indicated that the symptoms of AD/HD should be apparent before the age of 7 years old. Six respondents indicated specific disorders which may contribute to the cause of AD/HD such as biopsychosocial, neurological, biological or genetic disorders. Five respondents indicated that the child with AD/HD may exhibit an inability to concentrate and to complete tasks that are age appropriate. Other definitions (such as learning disabilities, neurological signs, and the International Classification of Diseases' definition) were indicated by the respondents but were less frequently selected. The results are summarized in Table 1.

The results indicated that the psychiatrists, paediatricians, and clinical psychologists were more likely to select the specific symptoms associated with AD/HD when defining it. The school psychologists were more likely to select the specific symptoms and the criteria indicated in the DSM-IV. The neurologist who responded also selected the specific symptoms. The results are summarized in Table 2.

Table 1

Summary of Definitions Indicated by the Respondents when Defining AD/HD

Definition	Number of respondents
Specific Symptoms	42
DSM-IV	20
Specific Problems	16
Age of Characteristics	9
Specific Disorders	6
Completion of tasks	5
Not Selected	3
Other	3

The total number of responses is greater than 70 because the respondents selected more than one response.

Table 2

Summary of Definitions Selected by the Different Professionals when Defining AD/HD

Definition	Professional Disciplines				
	A (n=6)	B (n=9)	C (n=1)	D (n=27)	E (n=24)
Specific Symptoms	83%	78%	100%	67%	46%
DSM-IV	17%	11%	0%	26%	46%
Specific Problems	33%	11%	0%	26%	25%
Age of Characteristics	17%	0%	0%	22%	8%
Specific Disorders	0%	11%	0%	7%	13%
Completion of tasks	0%	11%	0%	4%	13%
Not Selected	0%	11%	0%	7%	0%
Other	0%	0%	0%	4%	8%

A = Psychiatrists; B = Paediatricians; C = Neurologists;
D = Clinical Psychologists; E = School Psychologists

Question 2(b)- Please indicate which term you use to refer to Attention Deficit Disorder.

The response to this question indicated that when making reference to AD/HD, 26% of the respondents used the term AD/HD, while 40% used the term ADD. Other terms which were frequently selected to describe AD/HD were ADD/ADHD (14%), ADD with and without hyperactivity (4%), hyperactivity (3%), ADHD if hyperactivity is present (1%), and other (1%). Ten per cent of the respondents did not answer this question. The results are presented in Table 3.

The results indicated that psychiatrists, clinical and school psychologists were more likely to refer to AD/HD by using the term ADD. However, they were also likely to select the term AD/HD. Paediatricians were more likely to select the term ADD with and without hyperactivity. The neurologist who responded selected the term ADD. The results are presented in Table 4.

Table 3

Summary of the Different Terms Used When Referring to AD/HD

Terms	Response
ADD	40%
AD/HD	26%
ADD/ADHD	14%
ADD/WH or WO/H	4%
Hyperactivity	3%
ADHD if Hyperactivity	1%
Not selected	10%
Other	1%

Table 4

Summary of the Terms Used by the Different Professionals When Referring to AD/HD

Terms	Professional Disciplines				
	A (n=6)	B (n=9)	C (n=1)	D (n=25)	E (n=22)
ADD	50%	11%	100%	52%	45%
AD/HD	30%	22%	0%	28%	32%
ADD/ADHD	17%	22%	0%	12%	18%
ADD/WH or WO/H	0%	33%	0%	0%	0%
Hyperactivity	0%	11%	0%	4%	0%
ADHD if Hyperactivity	0%	0%	0%	0%	5%
Not selected	0%	11%	0%	16%	17%
Other	0%	0%	0%	4%	0%

A = Psychiatrists; B = Paediatricians; C = Neurologists; D = Clinical Psychologists; E = School Psychologists

Question 2(c)- Please indicate whether or not you diagnose children with AD/HD.

As can be seen in Table 5, 40% of the respondents do diagnose children with AD/HD while 34% indicated that they do not diagnose children with AD/HD. Other responses included a team approach (10%), referral to others (7%), and other (e.g., screening) (3%). Six per cent of the respondents did not answer this question.

The results indicated that the psychiatrists, paediatricians, and clinical psychologists were likely to diagnose a child with AD/HD. However, the likelihood of these professionals making a diagnosis is not significantly different from the number of professionals who do not diagnose children with AD/HD. The school psychologists were either involved in making a diagnosis or were part of a team approach. Referring to others was also frequently selected by school psychologists. The neurologist indicated that he does not diagnose children with AD/HD. The results are presented in Table 6.

Table 5

Percentage of Professionals Who Diagnose Children with AD/HD

Diagnosis of AD/HD	%
Yes	40%
No	34%
Team approach	10%
Refer to others	7%
Not selected	6%
Other	3%

Table 6

Percentage of the Different Professionals Who Diagnose Children with AD/HD

Diagnosis of AD/HD	Professional Disciplines				
	A (n=5)	B (n=10)	C (n=1)	D (n=28)	E (n=22)
Yes	60%	50%	0%	50%	27%
No	40%	40%	100%	43%	23%
Team approach	0%	0%	0%	4%	27%
Refer to others	0%	0%	0%	4%	18%
Not selected	20%	0%	0%	4%	9%
Other	0%	10%	0%	0%	5%

A = Psychiatrists; B = Paediatricians; C = Neurologists;

D = Clinical Psychologists; E = School Psychologists

Question 2(d)- Please indicate what you feel is the percentage of children with AD/HD in Newfoundland.

Forty-nine per cent of the respondents felt that the percentage of children diagnosed with AD/HD in Newfoundland is between 0 to 5 per cent. Other responses indicated were 5 to 10 per cent (19%), 10 to 15 per cent (3%), 15 to 20 per cent (4%), greater than 20 per cent (1%), did not know (13%), and other (4%). Seven per cent of the respondents did not answer this question. The results are presented in Table 7.

The results indicated that psychiatrists, paediatricians, and clinical and school psychologists were more likely to select the percentage of 0 to 5 percent as the number of children diagnosed with AD/HD in Newfoundland. The neurologist did not know the percentage of children diagnosed with AD/HD in Newfoundland. The results are presented in Table 8.

Table 7

Percentage of Children Diagnosed with AD/HD in Newfoundland

Percentage of AD/HD Children	Response
0 to 5 percent	49%
5 to 10 percent	19%
10 to 15 percent	3%
15 to 20 percent	4%
> 20 percent	1%
Don't Know	13%
Other	4%
Not selected	7%

Table 8

The Percentage of the Children Diagnosed with AD/HD by the Different Professionals

Percentage of AD/HD	Professional Disciplines				
	A (n=5)	B (n=10)	C (n=1)	D (n=25)	E (n=24)
0 to 5 percent	60%	60%	0%	40%	63%
5 to 10 percent	0%	10%	0%	28%	21%
10 to 15 percent	0%	0%	0%	8%	0%
15 to 20 percent	0%	0%	0%	8%	4%
> 20 percent	0%	0%	0%	0%	4%
Don't Know	40%	0%	100%	12%	8%
Other	20%	10%	0%	16%	0%
Not selected	0%	20%	0%	4%	0%

A = Psychiatrists; B = Paediatricians; C = Neurologists; D = Clinical Psychologists; E = School Psychologists

Question 3- Please indicate which of the following items that you feel are characteristics of an individual with AD/HD and rank them in order with 1 being the most prominent.

Impulsivity was the most frequently selected characteristic when describing AD/HD. Other characteristics which were used to describe AD/HD included: inattention; motor restlessness; behavioral; organization and social; emotional; cognition; arousal and executive; reinforcement; comorbidity; and satiation problems. When asked to rank the different symptoms of AD/HD, inattention was selected as the most important characteristic. Other characteristics of AD/HD which were ranked in order of importance included: impulsivity; motor restlessness; organization; behavior; cognition; emotional; reinforcement; satiation; comorbidity; and, arousal, executive, and social problems. Twenty-two of the respondents either selected the different characteristics but did not rank them or ranked more than one item as either first or second in order of priority. The ranking of the frequency of the items selected and order of importance are summarized in Table 9.

The results indicated that psychiatrists, paediatricians, and clinical and school psychologists were more likely to select the principal symptoms of inattention, impulsivity, and motor restlessness as characteristics

associated with AD/HD. Some differences were noted in the frequency that the different professionals selected the other characteristics such as cognition, executive, reinforcement, and emotional problems. The neurologist did not respond to this question. The results are summarized in Table 10.

Table 9

Summary of the Different Characteristics of AD/HD Selected and the Order of Importance

Characteristic	Ranking of items selected	Ranking of importance
Impulsivity	1	2
Inattention	2	1
Motor Restlessness	3	3
Behavior Problems	4	5/9
Social Problems	5	-
Organization Problems	5	4
Emotional Problems	6	7/8
Cognition Problems	7	6
Arousal Problems	8	-
Executive Functions	8	-
Reinforcement Problems	9	10/11
Comorbidity	10	13
Satiation Problems	11	12

Table 10

Summary of the Characteristics Selected by the Different Professionals

Characteristic	Professional Disciplines				
	A (n=5)	B (n=8)	C (n=0)	D (n=17)	E (n=18)
Inattention	100%	100%	0%	94%	100%
Cognition Problems	100%	50%	0%	53%	50%
Impulsivity	100%	100%	0%	100%	100%
Behavior Problems	80%	88%	0%	65%	83%
Motor Restlessness	100%	100%	0%	88%	89%
Arousal Problems	80%	50%	0%	35%	61%
Executive Functions	80%	38%	0%	35%	67%
Social Problems	80%	63%	0%	59%	78%
Reinforcement Problems	80%	38%	0%	29%	67%
Satiation Problems	60%	25%	0%	24%	41%
Organization Problems	80%	75%	0%	53%	78%
Emotional Problems	80%	13%	0%	71%	67%
Comorbidity	40%	38%	0%	35%	50%

A = Psychiatrists; B = Paediatricians; C = Neurologists;

D = Clinical Psychologists; E = School Psychologists

Question 4(a)- Please indicate what you feel are the causes or factors which may contribute to AD/HD and rank them in order with 1 being the most important.

Neurochemical basis was the most frequently selected cause or factor contributing to AD/HD. Other causes of AD/HD reported were genetic, neurological, extrinsic factors, psychosocial distractors, processing deficits, toxicological, and medical disorders. When asked the most important cause or factor of AD/HD, neurochemical was also selected. Other causes of AD/HD, ranked in order of importance included: genetic; neurological; processing deficits; psychosocial distractors; medical; toxicological; and extrinsic factors. Sixteen of the respondents either selected items but did not rank them or ranked more than one item as either first or second in order of priority. The ranking of the frequency of the items selected and order of importance are summarized in Table 11.

The results indicated that psychiatrists frequently selected neurological factors while paediatricians selected neurochemical and neurological factors as the cause of AD/HD. Both disciplines ranked the others factors as of equal importance. The neurologist selected all of the items as of equal importance. Both disciplines of psychologists frequently selected neurochemical and genetic factors as the cause of AD/HD. The results are presented in Table 12.

Table 11

Summary of the Different Causes of AD/HD Selected and the Order of Importance

Cause	Ranking of items selected	Ranking of importance
Neurochemical	1	1
Genetic	2	2
Neurological	3	3
Extrinsic Factors	4	8
Psychosocial Distractors	5	5
Processing Deficits	6	4
Toxicological	7	7
Medical Disorders	8	6

Table 12

Summary of the Causes of AD/HD Selected by the Different Professionals

Cause	Professional Disciplines				
	A (n=5)	B (n=8)	C (n=1)	D (n=22)	E (n=18)
Neurochemical	80%	100%	100%	91%	100%
Genetic	80%	88%	100%	91%	94%
Neurological	100%	100%	100%	82%	67%
Toxicological	80%	88%	100%	64%	67%
Processing Deficits	80%	88%	100%	64%	72%
Psychosocial Distractors	80%	88%	100%	59%	83%
Medical Disorders	80%	88%	100%	55%	67%
Extrinsic Factors	80%	88%	100%	73%	72%

A = Psychiatrists; B = Paediatricians; C = Neurologists;

D = Clinical Psychologists; E = School Psychologists

Question 4(b)- In the above categories, examples were provided regarding possible causes of AD/HD. In the space provided, please indicate any additional examples that you feel are applicable to these categories.

Only 24% of the respondents commented on any additional causes of AD/HD. Highlights of the responses which were indicated were: dopamine and norepinephrine levels under the neurochemical category; parental, siblings, and twin studies under the genetic category; frontal lobe damage under the neurological category; maternal alcohol or psychoactive drugs during pregnancy under the toxicological category; auditory discrimination under the processing category; emotional abuse and neglect under the psychosocial category; hearing problems under the medical category; and, inconsistent parenting strategies under the extrinsic category.

Question 5(a)- Please indicate which types of assessment you feel are important for diagnosing an individual with AD/HD and rank them in order with 1 being the most important.

Measures of impulsivity were the most frequently selected type of assessment when diagnosing AD/HD. Other important areas related to assessing AD/HD included: attention and hyperactivity; academic, medical, history; psychological and neuropsychological; environment;

speech/hearing; and peer relations. However, when asked the most important area to focus on when assessing AD/HD, attention was selected. Other areas selected included: impulsivity; hyperactivity; academic; medical; psychological; peer relations; environment; neuropsychological; speech/hearing; and history. Twenty-one of the respondents either selected particular items but did not rank them in order of importance or ranked more than one item as either first or second in order of priority. The ranking of the frequency of the items selected and order of importance are summarized in Table 13.

The results indicated that psychiatrists frequently selected academic and medical areas when assessing AD/HD. Paediatricians selected areas of attention, impulsivity, and hyperactivity when assessing AD/HD. The neurologist selected all of the areas as important when assessing AD/HD. The clinical psychologists selected the area of impulsivity while school psychologists selected medical and psychological areas of assessment. The results are presented in Table 14.

Table 13

Summary of the Different Areas of Assessment of AD/HD Selected and Order of Importance

Assessment	Ranking of items selected	Ranking of importance
Impulsivity	1	2
Attention	2	1
Hyperactivity	2	3
Academic	3	4/7
Medical	3	5
History	3	-
Psychological	4	6/8
Neuropsychological	4	9
Environment	5	8/10
Speech/Hearing	6	11
Peer Relations	7	7/8

Table 14

Summary of the Areas of Assessment Selected by the Different Professionals

Assessment	Professional Disciplines				
	A (n=5)	B (n=5)	C (n=1)	D (n=22)	E (n=16)
Attention	80%	80%	100%	73%	88%
Impulsivity	80%	80%	100%	82%	81%
Hyperactivity	80%	80%	100%	73%	88%
Academic	100%	60%	100%	68%	88%
Psychological	60%	60%	100%	68%	94%
Medical	100%	60%	100%	64%	94%
Peer Relations	60%	60%	100%	41%	63%
Neuropsychological	60%	60%	100%	73%	88%
Speech/Hearing	80%	60%	100%	36%	69%
Environment	80%	60%	100%	59%	75%
History	80%	60%	100%	73%	88%

A = Psychiatrists; B = Paediatricians; C = Neurologists;

D = Clinical Psychologists; E = School Psychologists

Question 5(b)- Please indicate if there are any particular items or areas within the above categories that you feel are important for diagnosing an individual with AD/HD.

Fifty per cent of the respondents commented on the particular items associated with the different areas of assessing a child with AD/HD. Highlights of the responses were: attention (ability to filter out stimuli, selecting and maintaining focus, and observations of attention in different settings and by different people); impulsivity (incompleted items, jumping and moving around, distracted by stimuli, distractibility versus an inability to concentrate, acts without thinking, and observations of impulsivity in different settings and by different people); hyperactivity (motor activity, and observations of hyperactivity in different settings and by different people); academic (performance ability versus estimated ability, differences in all academic related areas, and possible learning disabilities); psychological (emotional problems, depression, poor defenses and self-esteem, and abuse); medical (hepatitis, thyroid problems, and seizure activity); peer relations (negative relationships and association with others, inability to keep friends, social isolation, and poor social skills); neuropsychological (thorough examination, and review of past assessments); speech/hearing (any physical or processing deficits, chronic ear

infections, and essential baseline assessment); history (detailed information as possible, and information regarding parenting skills and dynamics); and environment (observations of the child in different environments).

Question 6(a)- Please indicate which methods of assessment you feel are important when diagnosing an individual with AD/HD and rank them in order with 1 being the most important.

Interviews were the most frequently selected method of assessing a child with AD/HD. Other methods of assessing AD/HD included: psychological tests and observational procedures; measures of attention and the DSM-IV diagnostic checklist; measures of impulsivity; rating scales; measures of activity level, educational and neurological tests; mental status examination and peer relations; and physical examination. When asked the most important method of assessing AD/HD, the use of interviews was selected. Other methods of assessment included: observational procedures; rating scales; measures of impulsivity and educational tests; psychological tests; measures of attention; peer relations; mental status examination; neurological tests; diagnostic checklist; measures of activity level; and physical examination. Twenty-four respondents either selected a particular method but did not rank them or ranked

more than one item as either first or second in order of priority. The ranking of the frequency of the items selected and order of importance are summarized in Table 15.

The results indicated that psychiatrists frequently selected interviews, rating scales, observations, and neurological tests as methods of assessing AD/HD. Paediatricians selected interviews, psychological tests, measures of impulsivity, and educational testing as important. The neurologist selected all of the items. The clinical psychologists selected interviews, psychological tests, and observations as methods of assessing AD/HD. The school psychologists selected interviews, the DSM-IV checklist, and psychological testing as methods of assessing AD/HD. Some differences were noted among the different professionals when selecting the use of educational tests and measuring activity level. The results are presented in Table 16.

Table 15

Summary of the Different Methods of Assessing AD/HD Selected and Order of Importance

Method	Ranking of items selected	Ranking of importance
Interviews	1	1/2
Psychological Tests	2	5/6
Observational Procedures	2	2
DSM-IV Diagnostic Checklist	3	-
Measures of Attention	3	6
Measures of Impulsivity	4	4/7/8
Rating Scales	5	3
Measures of Activity Level	6	-
Educational Tests	6	4
Neurological Tests	6	11/13
Mental Status Examination	7	10
Peer Relations	7	9
Physical Examination	8	-

Table 16

Summary of the Methods Selected by the Different Professionals

Method	Professional Disciplines				
	A (n=4)	B (n=5)	C (n=1)	D (n=18)	E (n=18)
DSM-IV Checklist	75%	60%	100%	61%	94%
Interviews	100%	100%	100%	89%	100%
Psychological Tests	50%	100%	100%	83%	94%
Mental Status Examination	75%	60%	100%	44%	56%
Attention	50%	80%	100%	72%	83%
Impulsivity	50%	100%	100%	61%	78%
Activity Level	50%	80%	100%	50%	83%
Rating Scales	100%	80%	100%	44%	83%
Educational Tests	50%	100%	100%	50%	78%
Observational Procedures	100%	60%	100%	83%	94%
Peer Relations	75%	60%	100%	33%	67%
Neurological Tests	100%	60%	100%	61%	67%
Physical Examination	50%	40%	100%	39%	61%

A = Psychiatrists; B = Paediatricians; C = Neurologists;

D = Clinical Psychologists; E = School Psychologists

Question 6(b)- Please indicate if there is any particular test, scale, score, questionnaire, reference person, or any other item that you feel is associated with the above categories and is important when diagnosing an individual with AD/HD.

Fifty per cent of the respondents commented on the specific items associated with the different methods of diagnosing AD/HD. Highlights of the responses were: DSM-IV criteria (completed during observation of the child); interviews (obtain a good family history and use different sources); psychological tests (IQ and achievement testing); mental status examination (seldom reveals much information); measures of attention (use the Continuous Performance Test, interview and observe the child in different environments and from different sources); measures of impulsivity (interview and observe the child in different environments and from different sources); measures of activity level (interview and observe the child in different environments and from different sources); rating scales (different scales were indicated: Attention Deficit Disorder Rating Scale, Brown Attention Activation Disorder Scale, Child Behavior Checklist, Behavior Disorder Scale, Connors Rating Scale, Taylor's Rating Scale); educational tests (variety of tests which measure intellectual, cognitive, and academic functioning); observational procedures (observations of the

child in different environments, compare the child's behavior with other children their age, use of diaries and observation checklists such as the Home Situation Questionnaire or the Goldstein Behavior Observation Checklist); peer relations assessment (assessed either during observation or interview, assessment should include various sources, and assess social skills and self-esteem); neurological tests (the use of various test such as the Quick Neurological Screening Assessment); and physical examination (paediatric examination to rule out medical basis of behavior consistent with AD/HD).

Question 7- Please indicate in detail, the model or method which you use to diagnose an individual with AD/HD.

Respondents to this question reported a number of different methods for diagnosing AD/HD. Fifty-three respondents indicated a particular method, 9 respondents did not answer this question, and eight respondents indicated that they were not involved in the diagnosis of AD/HD. Of the 53 who indicated a particular method, over 62% indicated the importance of obtaining a history by interviewing the parents, family, teachers, child, and others. Fifty-eight per cent indicated the observation of the individual in the classroom, at home, during free play, and in other situations. Fifty-five per cent indicated the usefulness of

a psychological assessment which may include personality and intellectual testing. Forty-seven per cent indicated an educational assessment which may include testing of academic and achievement abilities. Forty per cent indicated the importance of referring and consulting with other disciplines such as psychology, medicine, neurology, and psychiatry. Thirty-four per cent indicated the usage of specific rating scales such as the Connors Rating Scale, and the ADHD Comprehensive Teacher Rating Scale. Thirty-two per cent indicated the need to review information regarding medical and developmental history and 27% indicated the importance of a medical examination.

The results presented in Table 17 indicated that psychiatrists indicated the need to obtain a history of the individual and a medical examination when assessing AD/HD. Paediatricians indicated the need to obtain a history of the individual and consult other professional disciplines. The neurologist did not respond to this question. The clinical psychologists indicated the need to obtain a history of the individual while school psychologists selected the use of observations and psychological testing when assessing AD/HD.

Table 17

Summary of the Model used by the Different Professionals

Model	Professional Disciplines				
	A (n=4)	B (n=8)	C (n=0)	D (n=17)	E (n=24)
Obtaining a History	75%	50%	0%	82%	50%
Observations	0%	38%	0%	53%	79%
Psychological Assessment	25%	13%	0%	53%	75%
Educational Assessment	25%	0%	0%	47%	63%
Consulting	25%	63%	0%	24%	54%
Rating Scales	0%	13%	0%	35%	38%
Medical/Developmental	50%	25%	0%	18%	42%
Medical Examination	75%	38%	0%	24%	8%

A = Psychiatrists; B = Paediatricians; C = Neurologists;

D = Clinical Psychologists; E = School Psychologists

Chapter IV

Discussion

The present study described the reported perceptions and practices of professionals in Newfoundland who diagnose children with AD/HD. There is a general consensus among the different professionals regarding their perceptions of Attention Deficit/Hyperactivity Disorder. However, there were some discrepancies between the professionals' perceptions of assessing AD/HD and the reported practices. Also, the results of this study contradict some of the inherent difficulties reported in the literature regarding AD/HD.

The results of this study indicated that the respondents commonly define AD/HD in relation to the different symptoms associated with it (e.g., impulsivity, restlessness, distractibility, inattention, and hyperactivity). The majority of the respondents reported that they do diagnose children with AD/HD; refer to the disorder as ADD; and perceive the percentage of children with AD/HD in Newfoundland to be between 0 to 5 per cent. Impulsivity was the most frequently selected symptom of AD/HD, while inattention was perceived as the most

important. Neurochemical factors were the most frequently selected cause of AD/HD and were also perceived as the most important. Measures of impulsivity were the most frequently used when assessing AD/HD, while attention was perceived as the most important area to assess. Both areas involved the observation of the individual's symptoms in a variety of contexts with multiple raters. Interviews were the most frequently selected method of assessing AD/HD and were also perceived as the most important. Emphasis was placed on the importance of obtaining a complete family history through a variety of family sources. Obtaining a complete history by interviewing a variety of informants and observing the child in a variety of settings were the most frequently reported practices of professionals when diagnosing AD/HD.

As demonstrated in the literature review, the topic of AD/HD is one of paradoxical and circular thinking. Changes in the vocabulary used to describe AD/HD, lack of a consistent definition, and the complexity of the disorder all attribute to the difficulty of accurately diagnosing a child with AD/HD. Goodman and Poillion (1992) suggested that the rationale for diagnosing ADD flows from the observation of the symptoms, to inference of the condition, to the validation of condition by observation of the symptoms. Even accepting the uncertainty associated with the concept of AD/HD presented in the literature and the limitations of the

questionnaire design used in this study, the findings raise some interesting points for discussion.

First, the findings indicate a general agreement among the professionals regarding their knowledge of the disorder. The results indicated that the respondents commonly define AD/HD in relation to the principal symptoms associated with it (e.g., impulsivity, restlessness, distractibility, inattention, and hyperactivity). Also, when asked to rank the items in order of importance, the majority of professionals placed more importance on the above symptoms associated with AD/HD compared with the other items selected. These results are very similar to a study by Cotugno (1993). Cotugno (1993) found that paediatricians and physicians placed greater importance on the symptoms of inattention, distractibility, and overactivity when defining AD/HD. The majority of professionals in Newfoundland who diagnose AD/HD are similar to professionals elsewhere in defining AD/HD in a consistent manner. This finding conflicts with the suggestion by Reeve (1990) and Goldstein & Goldstein (1990) that the criteria for defining AD/HD is confusing and that there is a marked difference of opinion as to the definition of AD/HD.

Secondly, the results offer some insight into the professionals' perceptions of the characteristics and causes of AD/HD. Inattention was perceived as the most important

characteristic while neurochemical factors were perceived as the most important cause of AD/HD. A study by Goodman and Poillion (1992) reviewed the literature in medical, psychological, psychiatric, and educational disciplines regarding the characteristics and causes of ADD. Over 69 items were cited as characteristics of ADD and 38 factors were cited as possible causes of ADD. Of all the single characteristics cited, there was no characteristic that all of the authors believed to be exhibited by children with ADD. Also, no characteristic was cited by more than 80% of the authors. Their findings indicated that inattention was the most frequently selected symptom followed by hyperactivity and impulsivity. Organic causes were cited by almost half of the authors followed by birth complications and environmental factors. Although the results of Goodman and Poillion's study are similar to this study, the implications are different. In the present study, there was high agreement among the different professionals. One may infer that professionals in Newfoundland have similar views of children who are AD/HD and the reason for their apparent difference from non-AD/HD children. Also, past research (Shaywitz, Fletcher, & Shaywitz, 1994; Goodman and Poillion, 1992) has suggested that because of the difficulty in defining children with AD/HD, the diagnostic label does not offer any advantages. However, in this study, it appears

that children labeled AD/HD do have a common set of characteristics that may contribute to the validity of the diagnosis.

Thirdly, the findings speak to the professionals' perceptions of the areas and methods of assessing AD/HD. The present results indicated that the principal symptoms of AD/HD such as inattention and impulsivity were perceived as the most important area to assess while the use of the interview was perceived as the most important method of assessing AD/HD. Shelton and Barkley (1994) suggested that it is important to use a comprehensive assessment battery including measures that assess the particular symptomatology and other related behaviors and skills. The present results regarding the areas and methods of assessing AD/HD tend to concur with such a multidimensional approach.

Finally, in the present study, only five professionals (10% of the paediatricians and 8% of the psychologists) reported using the response to stimulant medication when diagnosing AD/HD. This is considerably less than a study of 334 paediatricians by Copeland, Wolraich, Lindgren, Milich, and Woolson (1987) who reported that over 77% of the paediatric practitioners felt that the child's response to stimulant medication was a moderate to major diagnostic criterion. Therefore, the majority of professionals in this study do not rely on one's response to medication when

diagnosing AD/HD.

Despite these general findings, some of the results appear to concur with the difficulties noted in the literature. The pooled responses of all professionals diagnosing AD/HD, suggests that the diagnosis is made by a comprehensive assessment of the individual through a variety of methods. However, the findings suggest a different practice when the responses are reviewed for each professional discipline. For example, psychiatrists reported the practice of obtaining a history of the individual and a medical examination, but did not indicate the use of observations and rating scales. The same discrepancies can be found with paediatricians regarding the practice of using psychological and educational testing, and rating scales. Also, discrepancies are apparent with the practices of psychologists who reported the usefulness of information obtained through medical examinations and consulting other professionals. There are some differences in what practitioners perceive as important when diagnosing AD/HD and what they actually use. This is important since a number of professionals reported that they do diagnose children with AD/HD. It is possible that personal bias could influence a final diagnosis but it is impossible to infer this from the data.

Although there is much agreement among the different

professionals regarding the definition, characteristics, causes, and methods of assessing AD/HD, it is difficult to rate the importance of these items when the child is actually assessed. For example, although inattention was perceived as the most important symptom of AD/HD, it is difficult to comment on which symptoms of inattention are important or what type of inattention is important such as vigilance, divided or sustained. The present study does not allow one to examine whether the professional's perceptions of the different symptoms of inattention result in different methods of assessment or the overall likelihood of a diagnosis of AD/HD. This vagueness may be attributed to the questionnaire design.

It is of interest to note that a higher percentage of psychologists completed the questionnaire compared to the other professional disciplines. Thus the findings should be interpreted with caution, since they may not be generalizable to the other disciplines involved in the diagnosis of AD/HD. The results are congruent with the environment in which the professionals were located, such as hospitals, community, private practice, and school settings. The diversity of responses could be attributed to the participants' experience, work environment, and referred sample when assessing AD/HD.

Identification of children with AD/HD may be linked to

the professionals' work experience. Children with AD/HD may be referred to a number of different specialists. Concerns with problems of language, attention, and learning are referred to educators, paediatricians, child neurologists, and psychologists, while aberrant behaviors are referred to child psychiatrists. The value of assessing an individual lies in the attainment of information that is helpful for the purpose of communication, planning, and contributes to the prognosis and treatment. However, without a specific test for AD/HD, professionals may have to rely on their experience in assessing behavioral symptoms and knowledge about child development when deciding whether a behavior is developmentally inappropriate.

A study by Copeland, Wolraich, Lindgren, Milich, & Woolson (1987) found that the paediatrician's most frequent source of information about ADD was the definition provided in the paediatric literature rather then the DSM. Also, many paediatricians reported the use of methods such as soft neurological signs, activity level in the office, and response to medication which have all come under question when assessing ADD. Goodman and Poillion (1992) found a diverse range of characteristics and causes of ADD in the literature from several professional disciplines. They concluded that depending on one's perspective, two professionals could refer to a child as having ADD, and have

opposite profiles in mind and also make different diagnoses.

The professionals' work environment may shape one's perceptions and diagnosis of AD/HD. Psychologists encounter children with AD/HD in a setting that presents problems for a majority of these children. Usually, symptoms of AD/HD go unrecognized until children enter school on a full-time basis. Psychologists are also in a situation whereby they can obtain information in diverse contexts, from multiple informants, and employ various methods of assessment (Power, Atkins, Osborne, & Blum, 1994). Lahey et al (1988, as cited in Shaywitz, Fletcher, & Shaywitz 1994) suggest that while diverse groups of children evaluated in different settings may receive the same AD/HD diagnosis, significant differences characterize these children. Differences have been found when comparing children in mental health settings with paediatric clinics and children from referred and nonreferred populations. Comparisons of children from referred versus nonreferred samples revealed hyperactivity and impulsivity as the prominent factors of referred or clinical samples, while inattention was the prominent factor in studies of nonreferred populations. Differences were also noted in the different clinical populations. Other studies suggest that children referred to mental health settings may represent a more globally impaired group of children with AD/HD that are not typical of other AD/HD children (Loney &

Mitch, 1982 as cited in Shaywitz, Fletcher, & Shaywitz, 1994). A study reported in Newsweek (1996) found that paediatricians assess and diagnose children with AD/HD within one hour. With such diverse work environments and experience with AD/HD, it is difficult to assess whether some professionals may be focusing on characteristics of AD/HD that are more relevant to their ability to assess and treat rather then an unitary assessment. Also, practitioners may be focusing on diagnostic expediency rather than diagnostic accuracy.

The issue of sampling differences is another point of interest in the present study. Much of the current information based on AD/HD is derived from studies that examined clinically referred subjects. However, the extent to which the children in this study are representative of other populations is impossible to determine because the data were not collected. For example, there may be a difference in the children who were seen by the medical professionals as compared to the non-medical professionals.

The responses of the different professionals may also reflect other variables such as geographic factors (urban vs. rural), social factors (socioeconomic status), the medical specialty, and the presence of psychosocial stressors (family dysfunction or stressful life events) that have been shown to correlate with AD/HD and may increase the

likelihood of a diagnosis of AD/HD. Additionally, a diagnosis of AD/HD may vary depending upon community resources or diagnostic beliefs (Reid, Maag, Vasa, & Wright, 1994).

Limitations

It has been assumed that long questionnaires receive lower response rates than shorter questionnaires (Gay, 1992). However, some studies suggest that questionnaire length may not interfere with response rates (Berdie, Anderson, & Niebuhr, 1986). Berdie et al's study suggested that a four-page questionnaire could receive response rates that are comparable or even better than two-page questionnaires. Emphasis should be placed on content, rather than length. Participants are generally more likely to respond when the questions are relevant and interesting. It appears that the questionnaire used in this study may have been too long, or that the topic may have been more relevant for one discipline as compared to the other disciplines. Also, it appears that the questionnaire design may have been ineffective in discriminating the different professionals' understanding of the symptoms associated with AD/HD, the sample group which are assessed for AD/HD, and the significance of a diagnosis.

The format of the questionnaire may have also been a

factor. Certain questions asked the participants to rank a number of items by assigning a number from one to ten with one being the most important and ten being the least important. In some instances, the respondents ranked all of the items in a particular question as most important while other respondents ranked more than one item as being equal. Berdie, Anderson, & Niebuhr (1986) suggest that when ranking items, the respondents may or may not feel the same about two or more items being equal. Also, it assumes that the respondents can rank all of the items when they may not be able to (Berdie et al. 1986). With such a diverse topic, difficulty in ranking the items may be inherent, as, for example, the symptoms associated with attention may overlap cognitive and behavioral domains (Shaywitz, Fletcher, & Shaywitz 1994).

The specific wording of the questions and reference to the word "diagnosis" may have been a factor. The word diagnosis may have been ambiguous for certain respondents, as 36% of the sample reported that they do not diagnose AD/HD. Cantwell and Baker (1987) indicated that the word "diagnosis" in relation to diagnosing disorders involves three separate but interrelated steps. These steps include the diagnostic process itself, the use of diagnostic instruments, and the classification of the disorder. If one uses this interpretation, certain respondents may be less

likely to respond or indicate responses which are a reflection of their experience with the diagnostic process. It is unclear whether the responses are a result of the respondent's familiarity with the whole diagnostic process or just a particular component. Other studies argue against the need for and the use of the word "diagnosis" because of concerns about clinical utility and the effects of stigmatization and labelling (Schaughency & Rothlind, 1991). However, in some settings a diagnosis can provide a mechanism through which intervention is offered. Therefore, the effect of the term "diagnosis" may not only be an argument in semantics, but also reflects who does and does not receive services.

Summary

There are several conclusions that may be made about the study. Firstly, although members from each specific discipline were asked to participate in the survey, not all of the participants reported that they diagnose AD/HD in children. Therefore, the number of actual professionals in Newfoundland who diagnose children with AD/HD may be actually smaller than the number of professionals that exist in their respective discipline. Secondly, the diagnosis of AD/HD may have limited importance. It may reduce discomfort when knowing the child's difficulty and in some cases remove

the blaming of a teacher, parent, or child. However, it does not lead to a predictable set of expectations about his/her behavior and hopefully, effective treatments. Information presented in this study appears to answer the question of formulating a possible consensus of how children are diagnosed with AD/HD, but from the data it was not possible to factor out the important components of the disorder. It is impossible to know how accurately the professionals' reported practices reflect what they actually do in their office. This is especially important as the present study indicated that discrepancies do exist among the professionals' practices. For example, discrepancies and overlap exists among the professionals regarding the characteristics and causes of AD/HD. Diagnosing AD/HD may be an issue of children being fitted into a category of convenience rather then understanding how they learn and behave. Emphasis should be directed towards ensuring that children are able to succeed in all areas of development instead of validating AD/HD as a disorder. Knowing that a child has AD/HD probably means that the child needs more frequent direction than is typically provided and a reinforcement system which is constantly modified.

Future Research

Every child who moves too much or demonstrates off-task

behaviors is not AD/HD (Sabatino & Vance, 1994). The identification of children with AD/HD is important in ensuring that they receive appropriate educational interventions. When children are repeatedly unsuccessful in school, especially when this lack of success is evident across almost all aspects of their school experience, they frequently become aggressive and often develop inappropriate acting-out behaviors. Therefore, what we learn and come to believe about AD/HD will reflect the particular criteria used to define the disorder and the delivering of more effective services to children identified as having AD/HD (Shaywitz, Fletcher, & Shaywitz, 1994).

This type of study needs to be repeated using a modified version of the questionnaire. However, the sample group should be expanded to other disciplines such as audiologists, speech-language pathologists, guidance counsellors, teachers, and parents. It would be useful to see if there are any differences in the perceptions of AD/HD among professionals who diagnose AD/HD and professionals who are more likely to contribute to the diagnosis and deal with children with AD/HD after the diagnosis is made.

When conducting further studies on this topic, the idea of ranking the items from one to ten should be deleted and the respondents should be asked which items they feel are important. Secondly, the questionnaire should not use the

word "diagnosis," rather it should be replaced with the word "assess." However, the word "diagnosis" should remain in question 2.(b) for comparisons with other professional disciplines and geographic areas. Thirdly, the respondents should be given an opportunity to indicate the source of referrals made to them for the investigation of AD/HD.

This study suggests that the term AD/HD has different meanings and implications for the individuals who diagnose and treat it. Whether one defines it as a neurochemical disorder or by its symptomatology, the effects may be felt in many areas of the individual's life, from childhood to adulthood. AD/HD is not an label for dysfunction or an added dimension of one's behavior, but a serious problem that needs to be addressed with great insight and compassion.

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Appendix A

Interviews
- Diagnostic Interviews for Children and Adolescents (DICA/DICA-P)
- Child Assessment Schedule (CAS)
- Diagnostic Interview Schedule for Children (DISC/DISCP)
- Schedule for Affective Disorders & Schizophrenia for Children (K-SADS)
- Interview Schedule for Children (ISC)
- Child Assessment Schedule (CAS).
- Childhood History Form for Attention Deficit Disorder
- ADHD Clinic Parent Interview
- Semi-structured Clinical Interview for Children.

Appendix B

Diagnostic criteria for Attention Deficit/Hyperactivity Disorder

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 behavior 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 assignment, pencils, books, 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 it is inappropriate (in adolescents or adults, may be limited to subjective feeling of restlessness
(d) often has 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
(i) 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 years.

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 impairment 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).

Code based in Type:

Attention-Deficit/Hyperactivity Disorder, Combined Type: if both Criteria A1 and A2 are met for the past 6 months.

Attention-Deficit/Hyperactivity Disorder, Predominantly Inattentive Type: if criterion A1 is met but Criterion A2 is not met for the past 6 months.

Attention-Deficit/Hyperactivity Disorder, Predominantly Hyperactive-Impulsive Type: if Criterion A2 is met but Criterion A1 is not met for the past 6 months.

For individuals (especially adolescents and adults) who currently have symptoms that no longer meet full criteria, "In Partial Remission" should be specified.

Attention-Deficit/Hyperactivity Disorder Not Otherwise Specified: This category is for disorders with prominent symptoms of inattention or hyperactivity-impulsivity that do not meet criteria for Attention Deficit/Hyperactivity Disorder.

American Psychiatric Association. (1994). Diagnostic and Statistical manual of mental disorders (4th ed.). Washington, DC: Author.

Appendix C

Rating Scales-Broad Band Measures

- Comprehensive Behavior Rating Scale for Children (CBRSC)
- Stony Brook Child Symptom Inventory (SB-CSI)
- Child Behavior Checklist (CBCL)
- ANSER Questionnaire System

Rating Scales-Narrow Band Measures

- Conner's Rating Scales- Parent and Teacher (CPRS,CTRS)
- ADHD Comprehensive Teacher Rating Scale (ACTeRS)
- Brown Attention-Activation Disorders Scale (BAADS)
- Attention Deficit Disorders Evaluation

Rating Scales-Functional Measures

- School Situations Questionnaire (SSQ)
- Home Situations Questionnaire (HSQ)
- Academic Performance Rating Scale (APRS)
- Normative Adaptive Behavior Checklist
- Child Depression Inventory
- Parenting Stress Inventory (PSI)

Appendix D

Objective Measures Sensitive to Attentional Skills

A. Vigilance

Auditory Memory Span Test
Auditory Sequential Memory Test
Detroit Test of Auditory Attention for Unrelated Words
Detroit Test of Visual Attention for Objects
Wechsler Intelligence Scale for Children-Revised
    Digit Span subtest
Seashore Rhythm Test
Speech-Sounds Perception test
Gordon Diagnostic System-Vigilance Task

B. Sustained Attention

Rapidly Recurring Target Figures Test
Wechsler Intelligence Scale-Revised
    Coding subtest
Seashore Rhythm Test
Speech-Sounds Perception Test
Symbol Digit Modalities Test
Halstead Trail-Making Test
Illinois Test of Psycholinguistic Abilities (ITPA)
    Visual closure subtest
Gardner Motor Steadiness Test

C. Focused Attention

Stroop Color Distraction Test
Illinois Test of Psycholinguistic Abilities (ITPA)
    Visual closure subtest
Halstead Trail-Making Test
Rapidly Recurring Target Figures Test

D. Selective Attention

Rapidly Recurring Target Figures Test

E. Divided Attention

Wechsler Intelligence Scale for Children-Revised.
    Arithmetic subtest
Wechsler Intelligence Scale for Children-Revised.
    Digit Span subtest
Halstead Trail-Making Test

F. Impulsivity

Matching Familiar Figures Test
Wechsler Intelligence Scale for Children-Revised.
Mazes subtest
Gordon Diagnostic System-Delay Task
Halstead Trail-Making Test

Appendix E

Introduction Letter Sent With Questionnaire

To whom it may concern:

I am a graduate student in School Psychology at Memorial University. I am currently preparing my Masters Thesis and I am interested in carrying out a survey with professionals in Newfoundland who are involved in the process of diagnosing children with Attention Deficit/Hyperactivity Disorder (AD/HD). The questionnaire used in this survey is being sent to psychiatrists, paediatricians, neurologists, and clinical and school psychologists across the province. Specifically, it examines how different professionals define AD/HD; characteristics associated with AD/HD, causes of AD/HD, and the types of assessment and methods used for assessing AD/HD.

All information gathered in this study is strictly confidential with only myself having access to it. Once the questionnaires are analyzed, the questionnaires will be destroyed. This study has received the approval of the Faculty of Education Ethics Review Committee. The results of this study will be made available upon request. Subjects are free to omit any question within the questionnaire preferred to be omitted. It is hoped that the questionnaires will be

completed and returned to me by the end of March 1996. Dr. Stephen Norris, Acting Associate Dean, Research and Development, is available as a resource person.

I would value your opinion regarding this important issue and would appreciate you completing the enclosed questionnaire. If you have any additional points or comments, please attach them to this form. Please return the completed form in the enclosed, postage paid envelope, addressed to:

Paul Parsons
30 Johnson's Avenue
Corner Brook, NF.
A2H 1V8

Sincerely,

Paul Parsons
Graduate Student

Norman Garlie, Professor
Supervisor
Registered Psychologist

Appendix F

Questionnaire

1. Please indicate your particular profession.

Psychiatrist	____	Clinical Psychologist	____
Paediatrician	____	School Psychologist	____
Neurologist	____		

2. (A). Please indicate how you define Attention Deficit/Hyperactivity Disorder (AD/HD).

_____
_____
_____
_____
_____
_____
_____
_____

(B). Please indicate which term you use to refer to attention deficit disorder. _____
(C). Please indicate whether or not you diagnose children with AD/HD. _____
(D). Please indicate what you feel is the percentage of children with AD/HD in Newfoundland. _____

3. Please indicate which of the following items that you feel are characteristics of an individual with AD/HD and rank them in order with 1 being the most prominent.

Inattention	___	Cognition Problems	___
Impulsivity	___	Behavior Problems	___
Motor Restlessness	___	Arousal Problem	___
Executive Functions	___	Social Problems	___
Reinforcement Problems	___	Satiation Problems	___
Organization Problems	___	Emotional Problems	___
Comorbidity with Other Disorders	___		

Other

_____ ___

_____ ___

_____ ___

4. (A). Please indicate what you feel are the causes or factors which may contribute to AD/HD and rank them in order with 1 being the most important.

Neurochemical ____
(Examples include specific neurotransmitters/ an imbalance of these neurotransmitters/ their effect on the locu coeruleus (brain stem reticular activating system), activation system or arousal system).

Genetic ____
(Examples include family patterns of AD/HD and disorders which include AD/HD in the phenotype).

Neurological ____
(Examples include the reticular activating system (RAS), frontal lobe dysfunctions, decreased blood flow to the striatum and prefrontal regions, or neurological "soft signs").

Toxicological ____
(Examples include allergic reaction to diet, dyes, additives, sugar, fluorescent lighting, or lead).

Processing Deficits ____
(Examples include autistic spectrum disorders, language processing disorders, and learning disorders).

Psychosocial Distractors ____
(Examples include behavior disorders, emotional disorders, psychiatric illness, family stress, and abuse).

Medical Disorders ____
(Examples include neurological disorders, endocrine disorders, allergic disorders, chronic illness, nutritional problems, substance abuse, and medication side effects).

Extrinsic Factors ____
(Examples include parenting issues, situational mismatch, adverse environment, and cultural factors).

Other

_____ ____

_____ ____

(B). In the above categories, examples were provided regarding possible causes of AD/HD. In the space provided, please indicate any additional examples that you feel are applicable to these categories.

Examples of Neurochemical Causes

_____
_____
_____

Examples of Genetic Causes

_____
_____
_____

Examples of Neurological Causes

_____
_____
_____

Examples of Toxicological Causes

_____
_____
_____

Examples of Processing Deficits

_____
_____
_____

Examples of Psychosocial Distractors

_____
_____
_____

Examples of Medical Disorders

_____
_____
_____

Examples of Extrinsic Factors

_____
_____
_____

Other

_____
_____
_____

5. (A). Please indicate which types of assessment you feel are important for diagnosing an individual with AD/HD and rank them in order with 1 being the most important.

Attention	___	**Impulsivity**	___
Hyperactivity	___	**Academic**	___
Psychological	___	**Medical**	___
Peer Relations	___	**Neuropsychological**	___
Speech/Hearing	___	**Environment**	___
History (birth/family/ psychiatric/school)	___		
Other			
_____	___		
_____	___		
_____	___		

(B). Please indicate if there are any particular items or areas within the above categories that you feel are important for diagnosing an individual with AD/HD.

Attention

_____
_____
_____

Impulsivity

_____
_____
_____

Hyperactivity

_____
_____
_____

Academic

_____
_____
_____

Psychological

_____
_____
_____

Medical

_____
_____
_____

Peer Relations

_____
_____
_____

Neuropsychological

_____
_____
_____

Speech/Hearing

_____
_____
_____

History (birth/family/psychiatric/school)

_____
_____
_____

Environment

_____
_____
_____

Other

_____
_____
_____

6. (A). Please indicate which methods of assessment you feel are important when diagnosing an individual with AD/HD and rank them in order with 1 being the most important.

DSM-IV Diagnostic Checklist	__	**Interviews**	__
Psychological Tests	__	**Mental Status Exam**	__
Measures of Attention	__	**Measures of Impulsivity**	__
Measures of Activity Level	__	**Rating Scales**	__
Educational Tests	__	**Observational Procedures**	__
Peer Relations Assessment	__	**Neurological Tests**	__
Physical Examination	__	**Other**	__

(B). Please indicate if there is any particular test, scale, score, questionnaire, reference person, or any other item that you feel is associated with the above categories and is important when diagnosing an individual with AD/HD.

DSM-IV Diagnostic Checklist

_____
_____
_____

Interviews

_____
_____
_____

Psychological Tests

_____
_____
_____

Mental Status Exam

_____
_____
_____

Measures of Attention

_____
_____
_____

Measures of Impulsivity

_____
_____
_____

Measures of Activity Level

_____
_____
_____

Rating Scales

_____
_____
_____

Educational Tests

Observational Procedures

Peer Relations Assessment

Neurological Tests

Physical Examination

Other

7. Please indicate in detail, the model or method which you use to diagnose an individual with AD/HD.

Appendix G

Second Letter With Questionnaire

To whom it may concern:

In follow-up to previous correspondence regarding the diagnosis of Attention Deficit/Hyperactivity Disorder (AD/HD), I would appreciate your opinion regarding this important issue. If you have not done so at this time, could you please complete the questionnaire and return it to me at your earliest convenience. If you have any additional points or comments, please attach them to the questionnaire. Please return the completed form in the postage paid envelope, which was sent to you with the questionnaire, addressed to:

Paul Parsons
30 Johnson's Avenue
Corner Brook, NF.
A2H 1V8

Sincerely,

Paul Parsons
Graduate Student

Norman Garlie, Professor
Supervisor
Registered Psychologist