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CURRENT DIAGNOSIS AND TREATMENT PRACTICES
FOR ATTENTION-DEFICIT HYPERACTIVITY
DISORDER WITH CHILDREN

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ABSTRACT

Attention-Deficit Hyperactivity Disorder (ADHD) is a condition that affects many children and their families. Given the severity and pervasiveness of ADHD, diagnosis requires a thorough and comprehensive evaluation procedure along with multimodal treatment strategies tailored to the specific needs of the individual child. The present study aimed to identify the current diagnostic and treatment practices for ADHD with children to ascertain their consistency with current scientific research and recommendations. Additionally, the study aimed to highlight cultural issues surrounding the diagnosis of ADHD with Maori and Pacific Islands children. The research was conducted in two stages consisting of two separate samples. First, data were collected from parents/guardians of 47 children currently diagnosed with ADHD via survey based questionnaires. Second, information was elicited, also via questionnaires, from practitioners who provided data for 19 of the children participating in the stage one of the study. Overall, findings from the present study reveal inconsistent application of the recommended diagnostic procedures as well as discrepancies between parent and practitioner reports. In addition, results clearly identified stimulant medication as the main treatment prescribed for children with ADHD. However, the establishment of appropriate ongoing monitoring for treatment effectiveness and possible side effects was lacking. The underuse of systematic behavioural treatments evident from the findings is of concern given that empirically-based literature emphasises the importance of multimodal therapy. Cultural differences identified in the study are discussed and limitations of the research are noted, along with suggestions for future research.

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CHAPTER ONE: INTRODUCTION

Attention-Deficit Hyperactivity Disorder (ADHD) is a condition characterised by impulsivity, hyperactivity, and inattention. It affects many children and their families and accounts for a large percentage of child clinical referrals. Its impact on society is considerable in terms of financial cost, disruption and stress to the individual, their families, peers and the school systems, along with its potential for contributing to criminality and substance abuse, particularly for those children with comorbid aggression (Hinshaw, 1994; Seidman, Biederman, Faraone, Weber, & Ouellette, 1997).

Along with recognition of an increase in the number of children being treated for ADHD are the growing public and professional concerns about wide variations in practice patterns and the dramatically increased use of psychostimulants. In the United States, the number of people diagnosed as having ADHD has risen from 900,000 in 1990 to more than two million in 1996 (Roberts, 1996). In New Zealand, the number of children being prescribed Ritalin for ADHD has risen sharply from about 300 in 1993 to approximately 3500 in 1999 (Aldridge, 1999). The increase in diagnosis and stimulant treatment for ADHD has raised questions about whether there has been a true increase in the prevalence rate of ADHD or is this growth due to other factors (e.g. a change in diagnostic criteria, improved recognition of the disorder, or increased rate of false positives; Goldman, Genel, Bezman, & Stanetz, 1998).

Since its inclusion as a psychiatric disorder, ADHD has, and continues to be, a topic that generates much debate and controversy. One of the problems here is that there is no single definitive test for this disorder. Additionally, ADHD is often found to share symptoms and coexist with several other childhood

disorders such as mood and anxiety disorders, conduct disorder, and oppositional defiant disorder. Consequently, this overlap may lead to diagnostic errors and possible inappropriate treatment. The most common conditions misdiagnosed as ADHD are mood disorders (notably depression) and anxiety disorders (Zametkin & Ernst, 1999; Cotugno, 1993). Due to the severity and pervasiveness of ADHD symptoms, and the relatively high incidence of comorbid conditions, a diagnosis of ADHD requires a thorough and comprehensive evaluation procedure to avoid misdiagnosis (Barkley, 1990).

Overseas studies suggest that reported assessment and treatment practice is not always consistent with methods supported by current research (Wolrich, et al., 1990). Clearly, some children are being diagnosed as having ADHD due to insufficient evaluation or a failure to use established diagnostic criteria (Goldman et al., 1998). In addition, there appears to be a serious underuse of systematic behavioural treatments (Wolrich et al., 1990).

Although medications have been shown to reduce core symptoms of hyperactivity, impulsivity, and inattention this does not necessarily imply that they are needed in all cases, nor that they help with skill development. Likewise, a favourable response to stimulants does not confirm a diagnosis of ADHD. In fact, a response can mask other problems and delay or prevent use of other interventions. Therefore, it is important to know not only how ADHD is diagnosed in New Zealand children, but also what forms of therapy other than stimulant medication are used in treatment. Hence, this was a main aim of the current study.

A relevant issue impacting diagnosis and ensuing treatment involves cultural differences. To avoid misdiagnosis of ADHD with minority groups, it is

imperative that cultural considerations are addressed. Clinical diagnosis can be detrimental to minority clients through a misunderstanding of patterns of cultural expression, unreliable research instruments, clinician bias, and institutional racism (Solomon, 1992).

In fact, differences in cultural perceptions of ADHD symptoms have been reported (Mann, et al., 1992), along with an increasing body of literature suggesting culture may affect how teachers and parents rate children's behaviour (Sonuga-Barke, Minocha, Taylor, & Sandberg, 1993; Du Paul, et al., 1997; Reid, et al., 1998; Epstein, March, Connors, & Jackson, 1998).

1.1 AIMS OF THE STUDY:

- To identify the current diagnostic and treatment practices for ADHD with children to ascertain their consistency with current scientific research and recommendations.
- To highlight cultural issues surrounding the diagnosis of ADHD with Maori and Pacific Islands children.

1.2 OBJECTIVES OF THE STUDY:

- To examine the actual diagnostic practices for ADHD with children by:
 1. Identifying the sources of information and evaluation tools currently utilised in the assessment of ADHD.
 2. To determine the criteria presently used to confirm an ADHD diagnosis.
- To identify cultural factors considered relevant in the assessment of ADHD with Maori and Pacific Island children.
- To describe and contrast current treatment strategies commonly used in the management of children with ADHD.

CHAPTER TWO: LITERATURE REVIEW

2.1 PRIMARY SYMPTOMS

There is general agreement among health professionals that excessive inattention, impulsivity and hyperactivity are the core clinical features of ADHD (Anastopoulos & Barkley, 1992; Hinshaw, 1994). These symptoms must occur at a degree that is inappropriate for the child's age or developmental level and pervasive across a variety of situations in order to warrant an ADHD diagnosis. Furthermore, this disorder can manifest in different ways. For example, some children exhibit only inattentive symptoms; others may be persistently hyperactive. The majority of children identified as having this disorder will have exhibited such symptoms as early as three years of age (Campbell, Breaux, Ewing, & Szumowski, 1986), but these become increasingly apparent once a child enters the school setting.

Inattention, Impulsivity, Hyperactivity

In relation to normal children of the same age and gender, most children with ADHD demonstrate difficulties with attention. They are often described as 'daydreamers' who become bored easily and who do not complete assigned work. Children with ADHD have greatest difficulties with persistence of effort, or sustaining their attention to tasks. For example, in free-play settings, these children display frequent shifts in play across various toys. These difficulties tend to become most apparent in situations requiring the child to sustain attention to dull, boring, repetitive tasks such as independent schoolwork or homework (Luk, 1985).

Given that attention is a multidimensional construct, efforts have been made to comprehend what specific attentional processes might be affected. One possibility is *selective attention*: “the ability to attend to relevant environmental stimuli or ignore irrelevant stimuli” (Wicks-Nelson & Israel, 1991, p.187). However, this hypothesis has not received strong support (Barkley, 1998; Hinshaw, 1994). While some studies indicate that children are drawn off task with the introduction of irrelevant stimuli, the general findings indicate that these children are no more distractible than normal children to extraneous stimulation (Steinkamp, 1980). Moreover, placing children with ADHD in environments that restrict irrelevant stimuli does not appear to alleviate their attentional problems (van der Meere, & Sergeant, 1988). Barkley (1998) argues that the attentional shifting displayed by children with ADHD is more representative of behavioural disinhibition (i.e. fails to follow rules or instructions when provided with competing, highly rewarding activities) than true distractibility.

Another hypothesis regarding attention, which has received more support suggests that *sustained attention* is deficient. This refers to the child’s ability to maintain attention to a task over a period of time. According to Barkley (1998, p.57), the “ problem appears consistently to be one of diminished persistence of effort or sustained responding to tasks that have little intrinsic appeal or minimal immediate consequences for completion.” However, investigations into the sustained attention hypothesis have not always been supported (O’Daugherty, Nuechterlein, & Drew, 1984).

The concept of impulsivity reflects the difficulty children experience in delaying a response, such as waiting for their turn in a game situation, beginning tasks before directions have been completed, or taking unnecessary risks. These children may also exhibit impulsivity by interrupting a

conversation or talking out of turn. Unfortunately, these behaviours are apt to annoy others and almost inevitably result in social difficulties (Barkley, DuPaul, & McMurray, 1990).

Hyperactivity is present in many children with ADHD and becomes most apparent soon after a child begins school and is unable to remain seated (Searight, Nahlik, & Campbell, 1995). It may be displayed motorically and/or verbally. These children often talk excessively and are constantly on the go and appear to be "driven". Porrino, Rapoport, Behar, Sceery, & Bunney, (1983) found children with ADHD to be more active, restless, and fidgety than children without ADHD. In addition, this feature contributes to a higher incidence of accidental injury among children with ADHD (Szatmari, Offord, & Boyd, 1989).

Although there is general agreement that inattention, impulsivity, and hyperactivity are the core symptoms of ADHD, there is some controversy over which features are most critical in making a diagnosis. Some writers propose that hyperactivity is the critical symptom. Barkley (1998) argues that the central deficit in ADHD is behavioural disinhibition. This refers to the child's inability to delay responding in situations where there are increased demands for behavioural self-regulation, particularly when adults are not present and the competing activities are highly rewarding.

It is important to note that primary symptoms of ADHD show fluctuations in response to different situational demands and caregivers. A major determinate of variation is the degree to which children with ADHD are interested in what they are doing. Although such problems usually appear in situations that demand highly repetitive, boring, or familiar tasks, many children with this disorder are able to remain engaged in activities requiring

relatively low demands for complex concentration such as free-play, television, or video games (Searight, Nahlik, & Campbell, 1995).

In novel situations, these children may also perform normally. For example, substantial problems may not occur during the first few weeks of school, particularly when the teacher and classroom are new. Similarly, during initial office visits to health professionals, children may display relatively normal behaviour (Barkley, 1990). Therefore, it is important that clinicians do not rely on these observations alone to conclude an absence of ADHD.

Moreover, these issues have significant implications for clinical diagnosis of ADHD. Barkley (1998) proposes that diagnosis should focus more attention on "the ability of the ADHD children to sustain attention, regulate activity, control impulses, and follow rules under conditions of tedium, especially boring, repetitive, or protracted work assignments, or under social conditions demanding restraint" (p.78).

Secondary functional deficits

Unfortunately, the primary symptoms of ADHD reflect impairments in areas of functioning that are necessary for mastery of major developmental tasks of childhood. Thus, many children with ADHD frequently display secondary functional deficits such as low levels of academic achievement, often despite normal intelligence (Barkley, DuPaul, & McMurray, 1990). McGee and Share (1988) found that 80 percent of New Zealand children with ADHD in their sample of 1000 children had various learning problems, with about one-half having difficulties in at least two areas.

These children may also suffer significant emotional and social problems. Because of an inability to control their impulsive and hyperactive behaviour in social situations, many children with ADHD alienate their peers, and experience difficulty maintaining relationships with teachers and parents (Abikoff, Gittelman, & Klien, 1980; Wodrich, 1994). Up to 75 per cent of children with ADHD may show significant behavioural symptoms of aggression and defiance (Kaplan & Sadock, 1998). In addition, this group also appears to experience more medical and health problems than do their peers, (Barkley, 1990). With such difficulties, it is not surprising that a significant minority of these children are anxious and/or depressed (Jensen, Martin, & Cantwell, 1997)

2.2 ETIOLOGY

Over the years, multiple causative factors have been posited for ADHD, yet to date, no single variable has been found to account for this extensively researched disorder. This is not surprising given the diverging subgroups of children with ADHD and its frequent comorbidity with other disorders. Nevertheless, there appears to be widespread support for the involvement of biological factors in the etiology of ADHD, and environmental circumstances have also been put forward as causal variables, as well as maintenance factors.

Environmental Toxins

For many years the role of environmental toxins such as food additives, sugar, and lead have been implicated as casual factors in ADHD and received much attention in the popular news media. Feingold (1973) proposed that food additives upset the central nervous systems of hyperactive children, and prescribed a diet free of them. However, well-controlled studies of the

Feingold diet indicate that dietary management is ineffective in most cases, with similar results being found for the hypothesis that excess dietary sugar may cause ADHD (Davison & Neale, 1996; Barabasz & Barabasz, 1996, Anastopoulous & Barkley, 1992). While some investigations have found a relationship between elevated levels of lead in the blood system of children and ADHD symptoms, this association is generally weak (Wodrich, 1994).

Contextual Factors

Block (1977) suggested that hyperactivity is a cultural phenomenon. That is, the effect of the interaction between the culture and the individual moderate hyperactivity levels. This cultural etiological view proposed that an accelerated pace of life brought about by technological advances over the last 50 years may make a child more prone to hyperactivity. A purely behavioural perspective would suggest that hyperactivity may occur because it is reinforced by the attention it elicits. Additionally, hyperactivity may be modelled on the behaviour of parents and siblings (Davison & Neale, 1996).

However, according to Anastopoulos and Barkley (1992, p.419), there is "little justification for claiming that poor parenting, chaotic home environment, or fast-paced lifestyles are in any way causally related to ADHD". Currently, psychosocial variables are not thought to play a primary etiological role in ADHD. However, they are not precluded and may be involved in shaping and maintaining ADHD related behaviours.

Pregnancy and birth complications

The idea that ADHD is traceable to prenatal complications has also not received strong support. Some studies have noted an increased incidence of inattention and overactivity among the offspring of pregnancies where

mothers consumed excessive amounts of alcohol and/or nicotine (Barkley, 1990; Striessguth, Barr, Sampson, Darby, & Martin, 1989). Results from other studies have not found a higher incidence of pregnancy or birth complications in the histories of ADHD children compared to controls (Barkley, DuPaul, & McMurray, 1990)

Other Biological Factors

Extensively investigated over the years has been the role of biological variables in the etiology of ADHD. Early ideas focused on brain damage or injury as a primary cause of ADHD behaviours. These ideas were derived from links between brain damaged adults and behavioural deficits, such as language loss or behavioural rigidity and disorganisation. Additionally, children who suffered from encephalitis in the 1917 and 1918 epidemic showed various behavioural problems including inattention and hyperactivity (Wicks-Nelson & Israel, 1991). Although some evidence suggests that brain damage can lead to ADHD, this accounts for fewer than 5% of the cases (Anastopoulos & Barkley, 1992).

Despite the lack of evidence for structural damage, the current view implicates neurological dysfunction in the etiology of ADHD, particularly the prefrontal- limbic areas of the brain (Lou, Henriksen, Bruhn, Borner & Neilsen, 1989). Recent investigations are now focusing on localised central nervous system deficits. Magnetic resonance imaging (MRI) studies have revealed subtle anomalies in caudate (Castellanos, et al., 1994) and corpus callosum size and shape (Giedd, et al., 1994; Steere & Arnsten, 1995).

These data are consistent with other imaging techniques including single photon emission computed tomography (SPECT) and positron emission tomography (PET). A PET study by Zametkin and colleagues identified

abnormalities of cerebral metabolism in the prefrontal and premotor areas of the frontal lobe in adults with ADHD who also had children with ADHD (Zametkin, et al., 1990).

In addition, ADHD is known to have neuropsychological consequences that are evident from psychological tests and measures of school failure. Research by Seidman, et al., (1997) examined the hypothesis that neuropsychological impairment in ADHD is present in older adolescents as well as in younger children. Findings from this cross-sectional study showed that younger and older probands with ADHD were significantly impaired on the Wisconsin Card Sorting Test, the Stroop test, and the Rey-Osterieth Complex Figure, regardless of various comorbid problems. Results suggest that neuropsychological features of ADHD do not attenuate during development. However, longitudinal research is needed to determine directly whether these impairments are persistent and continue into adulthood.

Genetic

According to DuPaul, Guevremont, and Barkley (1991), genetic inheritance is the most fruitful line of investigation into the causes of ADHD. Support here comes from numerous twin studies that have found the concordance rate to be higher in monozygotic twins than in dizygotic twins (McMahon, 1980; Goodman & Stevenson, 1989; Levy, Hay, McStephen, Wood, & Waldman, 1997).

Also strengthening the role of a significant hereditary contribution to the etiology of ADHD are family studies that reveal an increased incidence of ADHD among the biological parents and siblings of children with ADHD. Studies by Biederman et al., (1992) indicate that one in every four children diagnosed ADHD has a biological parent who is similarly affected and as

many as 20 – 30% of siblings of children diagnosed with ADHD also have this disorder (Biederman, Baldessarini, Wright, Knee, & Harmatz, 1989). However, it is difficult to establish the extent to which environmental factors may influence such findings.

In terms of specific genetic factors, it has been suggested that the inheritance of ADHD follows the pattern of a single dominant gene (Deutsch, Matthysse, Swanson, & Farkas, 1990). Another major genetic finding pertinent to ADHD has recently emerged through a study investigating the association between a rare thyroid condition, known as RTH, and ADHD. Findings indicated that 42 percent of adults and 70 percent of minors positive for RTH were also diagnosed with ADHD (Hauser, et al., 1993).

2.3 DIAGNOSTIC CRITERIA

For many years children identified exhibiting problems with distractibility, impulsivity, and overactivity were diagnosed with labels such as minimal brain dysfunction, minimal brain damage, and hyperkinetic impulse disorder. However, diagnostic terminology and criteria have changed considerably over time.

There are currently two terms for this disorder: Attention Deficit/Hyperactivity Disorder (ADHD) from the American Psychiatric Association's Diagnostic and Statistical Manual (DSM-IV, 1994); and Hyperkinetic Disorder (HD) from the International Classification of Diseases manual (ICD-10, 1993). After numerous operational definitions, the most

recent versions of the DSM and ICD manuals have similar but not identical criteria for ADHD and HD.

The main features of DSM-IV criteria for ADHD stipulate that at least six of the nine symptoms in the Inattention category and six of the nine symptoms in the Hyperactivity-Impulsive category must be present on a frequent basis over a minimum of six months to be considered clinically significant. A twelve-month duration of symptoms has been recommended when diagnosing children under the age of five (Searight, et al., 1995). Swanson, et al., (1998) recommend caution when diagnosing the syndrome in these children because informants can easily misinterpret oppositional behaviour as symptoms of ADHD. It may therefore be necessary to keep the diagnosis provisional for this age group.

Criteria also requires that some of the behaviours must have an onset prior to the age of 7 years and should be associated with functional impairment in two or more settings (e.g., home, school, and work). Diagnostic criteria require that symptoms must be maladaptive and inconsistent with developmental level. Finally, it is critical that alternative hypotheses are considered prior to a diagnosis since a hasty diagnosis of ADHD may mask other disorders and delay the use of other interventions (Jensen, et al., 1997).

Successive revisions of the DSM have shown consistency in retaining the core ADHD symptoms; inattention, hyperactivity, and impulsivity. However, subtyping systems have differed. DSM-III described subtypes of ADHD with and without hyperactivity. The revised third edition (DSM-III-R) abolished this distinction and implemented a unidimensional approach that grouped the domains based on one list of symptoms: inattention, hyperactivity, and impulsivity.

Now, due to the availability of more extensive research findings, the DSM-IV reflects several revisions regarding the diagnosis and subtyping of ADHD. The criteria for DSM-IV distinguish three subtypes:

1. Predominantly Inattentive - children exhibiting significant inattention symptoms but not most of the hyperactive/impulsive problems.
2. Predominantly Hyperactive-Impulsive - children whose difficulties are primarily from hyperactivity and impulsivity but are not particularly inattentive.
3. Combined - children displaying both inattention and hyperactivity-impulsivity.

Research assessing the validity of ADHD subtypes reveals relatively independent areas of impairment for each diagnostic group. Children in the Inattentive subgroup display fewer externalising problems but lower academic performance than the Hyperactive/Impulsive and Combined subgroups. Hyperactive/impulsive ADHD children are generally rated as no different than controls in internalising problems, intellectual functioning and academic achievement but display more extensive externalising and social problems (Farone, Biederman, Weber, & Russell, 1998; Gaub & Carlson, 1997; Bauermeister, Alegria, Bird, Rubio-Stipec, Canino, 1992).

Children in the Combined subcategory tend to show more severe and pervasive impairment in internalising and externalising behaviours, social functioning, and academic performance than the other groups (Farone et al., 1998; Gaub & Carlson, 1997) and are more likely to develop conduct disorder, oppositional disorder, and difficulties with peer relationships (Barkley, Grodzinsky, & DuPaul, 1992). Research suggests those children exhibiting comorbid aggression and conduct problems appear to be at greater risk for more significant maladjustment (DuPaul et al., 1991; Jensen, et al., 1997).

More recently, it has been suggested that subtyping the syndrome has highlighted the probability of two separate disorders rather than two subtypes (Barkley, 1998). Orford (1998) and Hinshaw (1994) recommend separating attentional difficulties from those of hyperactivity, and investigating their origins more closely, thereby enabling both sorts of disturbances to be understood and addressed more effectively.

2.4 DIFFERENTIAL DIAGNOSIS

A careful differential diagnosis should be carried out with each client to rule out other syndromes and to identify truly comorbid conditions. Symptoms of various psychiatric disorders, developmental disorders, medical conditions, and neurological disorders may mimic those of ADHD and therefore need to be ruled out (Cantwell, 1996). As stated in DSM-IV, the diagnosis of ADHD should be made only if "the disturbance is not better accounted for by another mental disorder" (American Psychiatric Association, 1994).

One of the many challenges facing clinicians in accurately diagnosing ADHD is differentiating the disorder from other disruptive behaviour syndromes, such as oppositional defiant disorder (ODD) and conduct disorder (CD). As a guideline, children with uncomplicated ADHD do not typically exhibit overt defiance and hostility toward parents, as do children diagnosed with ODD. Additionally, in contrast to children with ADHD, conduct disordered children are more likely to exhibit destructive behaviour and legal infractions such as assault, vandalism, and fire-setting (Searight, et al., 1995).

Barkley and Edwards (1998) suggest beginning a clinical interview with questions related to conduct disorder and oppositional defiant disorder. This

allows parents to release some of the frustration and emotional stress which is typically present in parents struggling to cope with their child's disruptive behaviour. Otherwise, according to these authors, they may be inclined to say 'yes' to any question. This procedure may lead to potentially more reliable and accurate answers to questions about ADHD.

Organic conditions also require consideration. Head injury, seizures, impaired vision and hearing, cerebral infections, poor nutrition, or insufficient sleep are all physical conditions that may cause poor attention and need to be investigated. Likewise, alcohol, abuse and neglect, and certain drugs can also interfere with attention and deserve consideration (American Academy of Child and Adolescent Psychiatry, 1997).

While mental retardation, borderline intellectual functioning, and learning disabilities are commonly mislabelled ADHD, early-onset mania or bipolar mixed state may be particularly difficult to distinguish from ADHD as they share many core features such as excessive verbalisation, motoric hyperactivity, and high levels of distractibility (Kaplan & Sadock, 1998).

Anxiety and depression in children also need to be evaluated. According to Zametkin and Ernst (1999), anxiety and mood disorders (notably depression) are the most common conditions misdiagnosed as ADHD. In support of this claim, research by Cotugno (1993) found that only 22% of the 92 children originally diagnosed with ADHD, who were referred to a community health centre were given a primary diagnosis of ADHD after a comprehensive evaluation and only 37% a secondary ADHD diagnosis. Substantial numbers were diagnosed instead with a primary anxiety or mood disorder. This study indicates that sufficient additional diagnostic evaluation techniques assessing cognitive, intellectual, personality, academic, social, behavioural,

developmental, and medical concerns, may contribute substantially to the differential diagnostic process (Cotugno, 1993). More importantly, this research adds weight to the ongoing debate surrounding the overdiagnosis of ADHD.

Research by Sabatino and Vance (1994) also found overdiagnosis of ADHD. Subjects in this study consisted of 75 children previously diagnosed with ADHD who had been referred to a multidisciplinary clinic because current interventions had not been effective. Diagnostic decisions by the clinic team in this study frequently disagreed with the original ADHD diagnosis. Of the 75 children referred to the clinic, 31 were confirmed with ADHD, while 44 were not confirmed.

On the other hand, for many children with confirmed ADHD, secondary depression may occur in reaction to their continuing frustration over learning difficulties, peer rejection, and often low self-esteem (Kaplan & Sadock, 1998). It is important to differentiate this condition from a primary depressive disorder, which is likely to be distinguished by dysphoria, anhedonia and an angry or irritable mood (de Mesquita & Gilliam, 1994).

In addition, distinguishing features of ADHD may be: earlier age of onset, a continuous, unremitting course, family history and worsening of symptoms when environmental demands are increased (Zametkin & Ernst, 1999; American Academy of Child and Adolescent Psychiatry, 1997). Conversely, mood and anxiety disorders generally have a later onset and are often episodic.

Given that these two disorders frequently occur along with ADHD, Zametkin & Ernst (1999) recommend treating the other disorder (i.e. anxiety or

depression) first and then notice whether the ADHD symptoms abate also. When they coexist, multiple diagnoses and treatment addressing both disorders may be required (de Mesquita & Gilliam, 1994). Barkley and Edwards (1998) have compiled a list of differential diagnostic recommendations to assist clinicians.

2.5 PREVALENCE

The true prevalence of ADHD has been difficult to establish due to a variation of definition over time and different countries. Estimates have varied from 1% to 20%, but the figure usually given in the United States has been approximately 3% to 5% of all school-age children. More recent studies generally confirm these estimates (e.g., Wolraich, Hannah, Pinnock, Baumgaerel & Brown, 1996; Baumgaertel, Wolraich, & Dietrich, 1995). In New Zealand, two separate longitudinal studies suggest the prevalence rate of ADHD to be between 2.1% and 4.8% of the general child population (Fergusson, Horwood, & Lynskey, 1993; McGee, et al., 1990).

The difference between some countries in the estimated prevalence of ADHD has generated some controversy. For example, rates have consistently been reported as higher in North America than in Britain. However, these variations may be due to differences in recognition, rather than in prevalence or severity of the disorder. Research by Holborow and Berry (1986) has partially resolved some of the debate on prevalence discrepancies of hyperactivity in different countries. They compared independent studies of hyperactivity in five different countries (New Zealand, Great Britain, Australia, Germany, United States). Results here clarify a good deal of

uniformity does exist between countries. In addition, prevalence rates of hyperactivity in this study, while on the lower side of the range, were comparable to those reported in Western studies.

2.6 COMORBIDITY

While there should be an emphasis on differential diagnosis, as introduced in the previous section, it is common for ADHD to be comorbid with other childhood psychiatric conditions. This further complicates the diagnostic process. In particular, disruptive behaviour disorders, such as conduct disorder (CD) and oppositional defiant disorder (ODD) are often found to co-occur with ADHD. Available data suggests that up to 50% of clinically referred children with ADHD exhibit concurrent ODD and between 30% and 50% meet the diagnostic criteria for CD (Barkley, 1990; Jensen, et al., 1997). Research by Kuhn and associates highlights the marked deleterious effects on the quality of life experienced by children with these comorbid conditions and stresses the need for more specific-syndrome interventions (Kuhne, Schachar, & Tannock, 1997).

Estimates of mood and anxiety disorders in children with ADHD range from 15% to 25% (Biederman, Newcorn, & Sprich, 1991). A longitudinal study in New Zealand revealed similar results: 26.4% of children with ADHD also had a comorbid anxiety disorder, 15.1% had a comorbid depressive disorder, and 47.2% had comorbid CD/ODD (Anderson, Williams, McGee & Silva, 1987).

Learning disability is also highly comorbid with ADHD, with figures varying from 10% to 35% depending of the population and on the criteria used (Barkley, 1990). Consequently, clinicians should carefully consider whether

formal psychometric testing is necessary. Research suggests children with comorbid learning disorders are more likely to be seen by a paediatrician while CD and ODD is higher in children referred to psychiatric settings (Cantwell, 1996; American Academy of Child and Adolescence Psychiatry, 1997; Epstein, Shaywitz, & Woolston, 1991). The reasons for this are unclear.

Tourette's and chronic tic disorder often coexist with ADHD and an estimated 50% to 80% of those with Tourette's disorder also have ADHD (Walkup, 1994). Although the occurrence of Bipolar Disorder with ADHD is less frequent than those conditions previously mentioned, Barkley (1998) views bipolar disorder as "one of the most serious and impairing of the comorbidities that may exist with ADHD" (p.153).

Overall, a large number of children with ADHD will have one or more comorbid conditions. However, without a thorough and comprehensive evaluation, the presence of these conditions may not be recognised and consequently appropriate intervention may not be offered.

2.7 DEVELOPMENTAL FACTORS

Recently, investigators have begun to focus their attention on developmental considerations related to childhood behaviour disorders. Although most children with ADHD will outgrow the behaviour-related symptoms, for some cases, these symptoms will begin in early childhood and persist into adulthood (Barkley, 1990). Manuzza, Klein, Bessler, Malloy and LaPadula (1993) report that 11% of children diagnosed with ADHD will have at least one major symptom as adults and perhaps 8% may still have the full syndrome.

However, with increasing age, the symptoms tend to become more subtle. Research has found that on average, the rate of ADHD symptom intensity declines by 50% approximately every 5 years (Hill & Schoener, 1996). Furthermore, hyperactive symptoms appear to decline more quickly than do the impulsive or inattentive symptoms (Hart, Lahey, Loeber, Applegate, & Frick, 1995).

While some children display signs of ADHD as early as infancy, most begin to exhibit clear ADHD-related difficulties between three and four years of age (Campbell, et al., 1986). As they enter preschool settings, the child's high activity levels, poor attention to group activities, impulsive behaviour, and physical aggression will often come to the attention of others. As these children get older and go to primary and, later secondary school, hyperactivity tends to be replaced by restlessness, fidgetiness, and disruptive behaviours (Werry, 1995).

Longitudinal studies have found that approximately 50% of preschoolers diagnosed with ADHD will receive the same diagnosis in later childhood or early adolescence. However, about half exhibiting milder symptoms can be expected to improve within a year (Bradley & DuPaul, 1997). Consequently, Barkley (1990) suggests that caution be used when diagnosing ADHD in children under the age of 5 years.

The most significant difficulties arise for children with ADHD in middle childhood, when they are increasingly required to comply with rules. Associated complications may also emerge during this period: poor peer relationships, learning difficulties, and feelings of low self-esteem (DuPaul, Guevremont & Barkley, 1991). They may also begin to develop comorbid symptomatology including noncompliant behaviour (Cantwell, 1996).

Research indicates children with ADHD exhibiting noncompliant behaviours may be at increased risk of deviant behaviour in adolescence. For example, a New Zealand study of over 900 children examined the relationships between 8 year old children diagnosed with ADD and exhibiting conduct problems and later alcohol, tobacco, and illicit drug use. Results indicated that the association between childhood ADD and adolescent substance use was attributable only to associated conduct problems at 8 years of age rather than to ADD per se. In other words, attention deficit behaviours, in the absence of conduct problems, were not associated with later substance use (Lynskey & Fergusson, 1995).

Once children with ADHD move into their adolescent years, the majority improve with respect to inattention, impulsivity, and especially overactivity (Bradley & DuPaul, 1997). However, with their peers exhibiting similar improvements in these areas, an ongoing discrepancy still exists between the two groups. Research suggests that approximately 70% to 80% of diagnosed children continue to meet ADHD diagnostic criteria in mid-to late adolescence (Barkley, Fischer, Edelbrock, & Smallish, 1990). Additionally, the pattern of associated concerns accompanying ADHD in adolescence is highly similar to that found in younger children with ADHD (Barkley, et al., 1991). However, as discussed, there may be a more subtle presentation.

2.8 GENDER DIFFERENCES

Research using clinic samples indicates that boys are six to nine times more likely to have ADHD than girls. The ratio drops to 3 or 4:1 in community-based samples (Cantwell, 1996). The Christchurch Health and Development Study, reported New Zealand prevalence rates of between 2.8% to 4.8% for

ADHD, in a birth cohort of approximately 1,000 children, with boys being 2 to 7 times more likely to be diagnosed with ADHD than girls (Fergusson, Horwood, & Lynskey, 1993). Another New Zealand-based longitudinal study by McGee, Feehan, Williams, Partridge, Silva & Kelly (1990) found similar results.

Results from a meta-analysis conducted by Gaub and Carlson (1997) investigating gender differences in ADHD found that girls have been found to display greater intellectual impairment than boys, were less hyperactive, and were less likely to demonstrate other externalising behaviours (e.g., aggression, conduct, and defiance problems). No gender differences were found in levels of impulsivity, academic performance, social functioning, fine motor skills, parental education, or parental depression.

It should be noted that the higher rate of ADHD referrals to clinics for boys than girls may reflect some level of referral bias. For example, the majority of ADHD children are referred to clinics because of overt problems such as aggression and antisocial behaviours. Since boys are more likely than girls to exhibit these behaviours boys will tend to be overrepresented in some ADHD prevalence estimates (Wolraich, et al., 1996). Adult informants may also focus on disruptive as opposed to inattentive behaviours. However, despite these issues, it appears that larger numbers of boys exhibit ADHD.

2.9 ASSESSMENT

Despite recent revisions to the DSM-IV, diagnosing ADHD still remains a difficult matter. This is mainly due to the degree to which ADHD symptoms vary as a function of situational demands, the likelihood that children with

ADHD will display comorbid conditions, and the issue of associated problems that mimic ADHD primary symptoms. Consequently, a multimethod assessment approach is necessary.

As part of a comprehensive evaluation of children presenting with attentional or hyperactive symptoms, the latest research and recommended guidelines suggest the use of standardised diagnostic criteria, such as DSM-IV or ICD-10 in making a diagnosis of ADHD (Goldman et al., 1998; American Academy of Child and Adolescent Psychiatry, 1997). DSM-IV criteria set by the American Psychiatric Association are used in New Zealand for establishing a diagnosis of ADHD (Lodge & Tripp, 1998).

The major focus of the assessment process is to (a) confirm or disconfirm the presence of ADHD; (b) determine conditions that often co-exist with ADHD; (c) consider differential diagnosis; (d) delineate types of interventions; and (e) to identify the child's psychological strengths and weaknesses and how these may affect treatment planning (Barkley 1998). Throughout this process, the child's age and developmental level must be considered.

Overall, important components of the diagnostic approach should involve the following (American Academy of Child and Adolescent Psychiatry, 1997):

- A medical evaluation,
- A comprehensive parent and child interview,
- A mental status examination of the child,
- The use of rating scales,
- Direct observations,
- School-related assessments,
- Cognitive assessment of ability and achievement,

-
- Other ancillary evaluations if necessary (e.g., speech and language assessments).

Medical examination

There is no definitive medical test for ADHD (Wodrich, 1994). However, a comprehensive evaluation procedure for children being assessed for ADHD should include a complete medical history and a physical examination conducted within the past 12 months. A medical interview is useful in establishing differential diagnosis of ADHD from other medical conditions and to evaluate any coexisting conditions that may require medical management. Additionally, while a physical examination is seldom crucial in establishing an ADHD diagnosis, it can be useful in detecting physical problems that may be producing symptoms or to establish whether there are contraindications to the use of certain medications (Wodrich, 1994).

Sophisticated neurodiagnostic techniques such as the electroencephalograph, the computed tomography scan, the magnetic resonance imaging scan and the positron emission tomography scan have generally failed to detect ADHD with much precision and need not be used routinely in the evaluation of ADHD (Barkley, 1990).

Parent and Child Interview

A critical component in the evaluation of children being considered for ADHD is the interview process, particularly with the child's parents. Initial rapport is necessary to set the stage for further assessment and treatment issues. Some time with the parent and child separately is also recommended. Barkley (1998) suggests that some parents may be less forthcoming about their concerns with

the child present during an interview. Others may provide information that humiliates the child.

Parent interviews should consist of a specific developmental and symptomatic history and a detailed medical, neurological, family, and psychosocial history (American Academy of Child and Adolescent Psychiatry, 1997; Barkley, 1998). An understanding of family stability, any marital discord, the nature of parent-child interactions, parental stress and maternal depression is necessary because of their relationship to both diagnosis and prognosis and to the designing of an effective intervention strategy (Bernier & Siegel, 1994).

While the child interview may be less useful for confirming a diagnosis of ADHD, it may aid in discovering alternative or coexisting diagnoses (American Academy of Child and Adolescent Psychiatry, 1997). For example, although self-reports of children's own disruptive behaviour may not be reliable (Barkley, 1998), their reports of internalising symptoms appear to be more reliable. These need to be considered (Hinshaw, 1994). Depending on the child's age and developmental level, the nature and content of the interview will vary. However, the objective remains consistent: to obtain the child's report of various types of psychiatric symptoms and their impact on the child's functioning (Cantwell, 1996). As mentioned previously, examiners should not confirm diagnostic impressions based only on informal observations of the child's behaviour during an office visit.

Rating Scales

Completed by parents and teachers, rating scales and behaviour checklists are considered an essential component in assessment (Barkley, 1998). They are a quick and relatively inexpensive method of obtaining information from a

variety of informants who have observed the child over time and in different contexts. Evidence regarding their reliability and validity is often available.

Rating scales can generally be divided into broad-band scales, that are also used to screen for comorbidity, and narrow-band scales more specific to ADHD. The most commonly used broad-band scales include the parent-completed Child Behaviour Checklist and the Teacher Report Form of the Child Behaviour Checklist (Achenbach, 1991). The Conners Parent and Teacher Rating Scales (Goyette, Conners, & Ulrich, 1978), the Home and School Situations Questionnaires-Revised (Barkley, 1990), the ADHD-IV Rating Scale (DuPaul, et al., 1997), and the Attention Deficit Disorder with Hyperactivity Comprehensive Teacher Rating Scale (Ullman, Sleator, & Sprague, 1985) are more focused instruments regularly used in the assessment for ADHD.

While rating scales are useful in assisting with diagnosis, caution is indicated due to certain limitations. For example, some instruments have not yet been revised to reflect DSM-IV criteria (Searight et al., 1995) and are subject to "halo effects" where the child is rated as 'all good' or 'all bad' based on the judgement of certain behaviours (Connors, 1998; Reid et al., 1998). Carey (1999) considers such instruments as "highly subjective and impressionistic" and that they "probably measure caregiver discomfort as much as they do the actual behaviour of the child"(p. 3).

Another problem is some may reflect cultural bias. Reid (1995) examined the extent to which behaviour rating scales constitute a valid measure for assessment of ADHD with culturally different groups. The author concluded that "the *normative* use of rating scales for identification of ADHD with culturally different individuals appears to be inappropriate" (p. 554). These

concerns have also been reiterated by others (e.g., DuPaul, et al., 1998; Epstein, March, Conners, & Jackson 1998; Reid, et al., 1998). Given such concerns, it is imperative that rating scales are not used in isolation to confirm the presence or absence of ADHD.

Direct observation

If possible, clinical observations of the child's behaviour in the naturalistic environment (such as at home and school) are recommended and can provide important data regarding the presence or absence of ADHD symptoms. The Child Behaviour Checklist-Direct Observation Form is considered by some as a useful instrument in the evaluation of ADHD (Barkley, 1990). A major disadvantage of direct observations is the amount of cost and time they require. Additionally, as mentioned previously, diagnostic conclusions should not be drawn from singular observations of the child's behaviour during clinical visits.

School-related assessment

School personnel can provide invaluable information in relation to the child's classroom behaviour, relationship with peers, and self-esteem. Additionally, they may provide advice on interventions previously attempted and their results (American Academy of Child and Adolescent Psychiatry, 1997).

Ancillary Evaluations

If indicated by clinical findings, speech and language evaluations may be required. Neuropsychological tests such as the Continuous Performance Task, the Matching Familiar Figures Test, the Wechsler Intelligence Scale for Children, and the Wisconsin Card-Sorting Test, may be useful to evaluate specific deficits but do not provide sufficient diagnostic information and need

not be used on a routine basis (Goldman et al., 1998; Zametkin & Ernst, 1999). In addition, the evaluation process requires any external factors such as exposure to neurotoxins (e.g., lead), to be ruled out.

Summary

Overall, there are many reasons why a child may be preoccupied, forgetful, and unable to attend to schoolwork. Rating scales and psychological tests in isolation are unlikely to provide sufficiently sensitive information about a child's psychological state. The child may be depressed or anxious about problems at home, school, or acting out following undisclosed or unresolved traumatic experiences, such as abuse. Consequently, symptoms arising from such events will not respond to treatments that do not address the underlying reasons. As mentioned previously, Sabatino & Vance (1994) found that a number of children not responding to ADHD interventions were in fact originally misdiagnosed.

In summary, assessment for ADHD must take into account not just the child, but also the family, the environment and systems within which the child operates. According to Bernier and Siegel (1994), ADHD problematic behaviour "is defined by the violation of behavioural norms in the systems in which the child participates as well as by the tolerance, adaptability, and other dynamics of those systems" (p.145). Therefore, it is essential that children being considered for a diagnosis of ADHD receive a thorough and comprehensive evaluation. This requires a multimethod assessment approach that gathers information from multiple informants, and across both multiple situations and time.

2.9.1 Current diagnostic practices for ADHD

Unfortunately, several overseas studies investigating ADHD assessment reveal a lack of standardisation. In 1987, a national survey was conducted to determine the diagnostic and management practices for ADHD among the paediatric profession (Copeland, Wolraich, Lindgren, Milich, & Woolson, 1987). Results showed that reported practices were not always consistent with methods suggested in the literature. For example, approximately 50% of respondents reported finding soft neurological signs helpful in diagnosing ADHD.

Many (77%) of paediatricians indicated the child's response to stimulant medication was a moderate to major diagnostic indicator. While approximately 60% of paediatricians utilised parent and teacher rating scales, few reported using the formal diagnostic criteria of DSM-III and instead tended to rely on paediatric literature relating to attention and hyperactivity deficits (Copeland, et al., 1987).

In 1990, this line of research was extended to include family practitioners. Patients of paediatricians and family practitioners in two cities were screened and the parents of children diagnosed with ADHD were interviewed. This study revealed results similar to those described in the 1987 study, in that only one fourth of family practitioners relied on DSM-III criteria to diagnose ADHD. The study also found family practitioners spent almost half the amount of time as did paediatricians in their initial evaluations; used parent and teacher rating scales less frequently; and reported depending more on the child's behaviour in their office when considering an ADHD diagnosis (Wolraich, et al., 1990).

Zarin, Tanielian, Suarez, & Marcus, (1998) reported comparable results in the psychiatric profession. Though all 81-practising psychiatrists surveyed included parent and child interviews as sources of diagnostic information, fewer used either direct observations (79%) or school reports (76%). Results also showed psychiatrist relied on standardised rating scales in only 64% of the cases.

An extensive literature review was conducted by Goldman et al. (1998) which investigated studies focused on the diagnosis and treatment of ADHD in children and adolescents. Once again, the review confirmed that a number of children are likely to receive an ADHD diagnosis with insufficient evaluation. Since that review, the most recent research to highlight problems in diagnosing attentional and hyperactivity in children is an impressive study by Wasserman, et al. (1999). A total of 401 paediatricians and family practising physicians took part in this survey-based study. These practitioners had caseloads of over 22,000 children. Main conclusions from the project found that 9.2% of the total sample showed evidence of attentional and hyperactive problems; diagnosis was not made more frequently with children from disadvantaged backgrounds; and that the primary care assessment of ADHD *lacks standardisation*.

Similar to earlier studies, Wasserman et al. (1999) reported only 53.5% of paediatric and family practice clinicians reported using school reports in arriving at an ADHD diagnosis, and only 38.3% used DSM IV criteria. Additionally, clinicians reported utilising standardised tools such as behavioural questionnaires in only 36.9% of cases assessed. According to Carey (1999), reasons underlying non-standardised assessment could include inadequate training, excessive pressure from parents and schools, or time and resource constraints.

In addition, Carey suggests "that the lack of standardisation and the confusion reflected by this study has been generated primarily by the nebulous official definition of ADHD" (p.2). Recommendations following the National Institutes of Health conference in November 1998 included the requirement for "further efforts to validate the disorder," that "basic research is needed to better define ADHD," and that "a more consistent set of diagnostic procedures and practice guidelines is of utmost importance."

Variations in diagnostic practices among professionals coupled with allegations of misdiagnosis/overdiagnosis (Sabatino & Vance, 1994; Cotugno, 1993) generate considerable concern regarding the consistency and accuracy of diagnoses. Unfortunately, research investigating the diagnostic practices of ADHD in New Zealand is lacking. However, Biddle (1998) examined dimensions of the family environment and the interaction with symptoms of ADHD. Included in this study was information on assessment and treatment procedures for ADHD. Data were collected, via a parent self-report questionnaire, on 77 children diagnosed with ADHD and their families living in the Auckland Metropolitan area.

Results showed that behavioural tests (not specified) were the most frequently used diagnostic tool in the assessment of ADHD (i.e. in 71 - 94% of cases depending of age group specified). Psychological tests (not specified) were undertaken with approximately 56% of children. In addition, findings revealed the widespread use of vision and hearing tests (60 - 70%) in the diagnosis of ADHD. However, the use of additional evaluation tools was not assessed. Subsequently, a major objective of the current research was to ascertain the sources and types of ADHD-related diagnostic information being utilised by practitioners in New Zealand.

2.10 CULTURAL ISSUES IN ASSESSMENT

Mental health professionals are often faced with the challenging task of assessing clients who come from cultural backgrounds different from their own. Unless clinicians are aware of cultural differences, increased risk of misdiagnosis can occur. In fact, in the United States, Adebimpe (1981, p.279) states that misdiagnosis across a range of disorders is more common in black clients, consequently leading to "a career of mistreatment from which escape is difficult." According to Solomon (1992), problems can result from misunderstood patterns of cultural expression, unreliable research instruments, clinician bias, and institutional racism.

Research has demonstrated that cultural background has an influence on interpretation of behaviour as normal or pathological (Tseng, Di, Ebata, Hsu, & Yuhua, 1986). This warrants particular consideration when judgements are made about childhood conditions. Given that children rarely consider their behaviour in need of intervention, this decision will generally depend on the degree of distress adults experience from the child's behaviour (Weisz, Suwanlert, Chaiyasit, Weiss, Walter, & Anderson, 1988).

Because many ADHD-related symptoms are found in all children to some degree, the diagnosis of ADHD is based more on intensity, frequency, and duration of the behaviour rather than its mere presence. Consequently, such judgements increase the possibility of observer bias (Mann, et al., 1992).

In fact, differences in cultural perceptions of symptoms have been reported. For example, Mann et al. (1992) found substantial and reliable differences in ratings of hyperactive-disruptive behaviours in children after raters observed identical video vignettes of four 8-year old boys participating in individual

and group activities. Raters in this study were mental health professionals from four different countries (China, Indonesia, Japan and the United States). A follow-up study by Mueller, et al., (1995) found similar results. These observer differences are likely to reflect different cultural standards for appropriate childhood behaviours.

While most ADHD cross-cultural research has made comparisons of children across different countries (Mann et al., 1992; Holborrow & Bery, 1986; Leung, et al., 1996) few have investigated the cross-cultural differences that may exist between children residing in the same country. However, more recent studies have begun examining this issue, with an increasing body of literature suggesting culture may affect how teachers (Sonuga-Barke, et al., 1993; Du Paul, et al., 1997; Reid, et al., 1998; Epstein, March, Connors, & Jackson, 1997) and parents (DuPaul et al., 1998) rate children's behaviour.

In the United States, research shows that African American children are diagnosed and rated by school teachers as significantly more hyperactive than are White American children, who are, in turn, rated as more hyperactive than Asian American children (Sata, 1990) and Mexican American children (Langsdorf, Anderson, Waechter, Madrigal, & Juarez, 1979; Ramirez & Shapiro, 1998).

From a sociological perspective, Langsdorf, Anderson, Waechter, Madrigal, & Juarez, (1979) propose the suppression of motoric activity is a less dominant cultural norm for African American children. Therefore, they would not inhibit their classroom activity levels to the same extent as White and Hispanic children. On the other hand, Mexican-American children are characteristically raised in homes that may be patriarchal and authoritarian. Research suggests parents prefer classroom behaviour that emphasises obedience, rule following,

and conformity (Ramirez & Shapiro, 1998). This makes overactive behaviour less likely to occur in the classroom. This may also apply to Pacific Islands children, although there is no specific research to indicate this is the case.

The possibility of ethnic or racial bias in teachers' assessment of children's behavioural problems has also been examined. Epstein et al. (1998) assessed for factor congruence and mean differences on the Connors Teacher Rating Scale across African American and Caucasian school children. Results from this study found that across both males and females teachers tended to rate African American children higher on factors relating to externalising behaviours compared to Caucasian children. Whether these differences were a result of teacher bias or a real difference was not determined.

However, research by Sonuga and colleagues (1993) attempted to address this issue directly by comparing teacher ratings (Rutter Questionnaire) of a large sample of Asian and English school children with observational measures (e.g. mechanical instruments of physical activity, direct observation of inattentiveness and activity levels during testing, and a standardised neurological test). Results showed that although Asian children were rated by teachers as equally hyperactive as their English classmates, mechanical and observational measures indicated they were less hyperactive in the classroom. A possible explanation for these findings could be direct observer bias. However, if this were the case, you would expect the inter-rater reliability ($r=.70$) between the two observers, one English and one Asian, to be a lot less than was actually reported.

Reid et al. (1998) examined the validity of the ADHD-IV Rating Scale School Version for Caucasian and African American students. The study found that teachers (93.4% Caucasian) rated African Americans higher on all symptoms

across all age groups. It was reported that, "at least some of the observed group differences were due to variation in the performance of the scale across groups as opposed to differences in actual behaviour exhibited by children" (Ramirez and Shapiro, 1998 p. 280).

Children from a minority culture may also be at risk for overidentification or underidentification of the ADHD disorder due to cultural differences in body language. For example, it has been noted that Puerto Rican children are more animated in their body movements and gestures, show more eye movement, touch more, and focus less on the listeners face than do White Americans (Bauermeister, Berrios, Jiminez, Acevedo, & Gordon, 1990). These styles of interaction may be misinterpreted by Western observers as symptoms characteristic of ADHD (i.e., impulsiveness, inattention, and overactivity). In fact, research by Achenbach, et al., (1990) demonstrated this point. They found that White American teachers tended to rate Puerto Rican children's behaviour as more distressing and in need of intervention than did Puerto Rican teachers.

Differences in body language have also been noted between Pakeha, Maori and Pacific Islands people in New Zealand (Metge & Kinloch, 1984). Generally, Pakeha encourage direct eye contact whereas Maori and Pacific Islands people consider this to be impolite or even an indication of confrontation. Therefore, they will look elsewhere during conversation. Obviously, Pakeha teachers may misinterpret this behaviour to mean a Maori or Pacific Islands child is not listening or uninterested. In terms of the DSM-IV criteria, this action may be viewed as a positive symptom - "often does not seem to listen when spoken to directly."

Additionally, Metge & Kinloch (1984) comment on the expressiveness of Maori and Pacific Islands people. They state "in general they place a high value on physical action, especially in the young, and on the spontaneous expression of feelings in action...." (p.28) and "children are used to living in a hive of activity, amid constant stimulation and in close contact with many people"(p.32). These behaviours have relevance when assessing for hyperactive actions in children from these ethnic backgrounds.

According to Barkley (1998), "one means of preventing overidentification of psychopathology in minority children is to ask - Do you consider this to be a problem for your child compared to other children of the same ethnic or minority group? Only if the parent answers "yes" is the symptom to be considered present for purposes of psychiatric diagnosis" (p. 217).

Reid (1995) offers important factors that must be considered when undertaking cross-cultural assessments. For example, it is necessary to examine whether the meaning of concepts such as "fidgets" or "talks excessively" changes when translated from an English, or Western context, to a non-speaking individual's native language or culture. Additionally, are there similarities in the conceptual meaning of the constructs? For example, the concept of 'dependency' is valued in some cultures, such as Maori and Pacific Island cultures, but generally has a negative connotation in Western society. Therefore, while an observer may rate a behaviour as being present, it may not be seen as deviant within a cultural context.

On the whole, given that ADHD as a disorder was derived from a Western perspective and most likely assessed by Western raters, we might reasonably expect problems in assessing culturally different groups (Reid, 1995). In order

to avoid misdiagnosis of ADHD in minority groups, it is imperative that cultural considerations are researched and addressed here in New Zealand.

2.11 TREATMENT

A multidisciplinary and multi-modal treatment strategy, tailored to the needs of the individual child, is recommended for this population (Barkley, 1998; Cantwell, 1996; American Academy of Child and Adolescent Psychiatry, 1997; Richters, et al., 1995). A multi-modal treatment strategy often combines pharmacotherapy and psychosocial interventions.

2.11.1 Pharmacotherapy

While medication has shown to be an effective treatment modality for reducing the core symptoms of ADHD (DuPaul & Eckert, 1997; Richters et al., 1995), a diagnosis should not constitute automatic drug treatment (Werry & Aman, 1993). Additionally, not all children respond positively to medication. In fact with some children, symptoms may actually become worse (Rapport, et al., 1988). What's more, a positive response to stimulants does not confirm a diagnosis of ADHD. Stimulant medication has been shown to produce similar behavioural changes with normal controls (Peloquin & Klorman, 1986).

Methylphenidate (Ritalin), a stimulant medication, is the most commonly used intervention for ADHD and appears to benefit 70% to 80% of this population (Searight, et al., 1995). Comparable with overseas rates, research indicates widespread use of Ritalin for the treatment of ADHD in New Zealand (Biddle, 1998). Dextroamphetamine, also a stimulant, is used considerably less often than Ritalin, but indications are that in some children it

is effective (Gillberg, et al., 1997). Tricyclic antidepressants are not commonly used in children with ADHD, but may be prescribed for those with comorbid anxiety or depression (Cantwell, 1996).

Ritalin increases the arousal or alertness of the central nervous system, with peak effects on behaviour occurring within 1 to 3 hours after oral ingestion and dissipates within 3 to 6 hours (Werry & Aman, 1993). Daily doses of Ritalin above 60 mg are not recommended and if symptoms do not improve after dose titration over a period of one month, or if symptoms worsen, the drug should be discontinued (Medsafe, 1999). Children typically receive a 10-mg dose in the morning and at noon. The second dose can be problematic on school days in terms of stigmatisation for the child and unskilled teachers being required to administer the medication. Dosage levels for dextroamphetamine are generally one half that of Ritalin.

Ritalin should not be used in children under 6 years of age, since safety and efficacy in this age group have not been established (Medsafe, 1999). Furthermore, it is recommended that stimulants be used with caution when there is a family history of tics, bipolar disorder, or cyclothymia (American Academy of Child and Adolescent Psychiatry, 1997).

While numerous studies have consistently demonstrated the efficacy of stimulant medications in the management of ADHD with most children, once the medication is discontinued symptoms reappear (Bergin & Garfield, 1994). Long term benefits with stimulants have not been demonstrated (Jacobvitz, Stroufe, Stewart, & Leffert, 1990). In addition, these medications appear to have weak or highly variable therapeutic effects on attentional, academic, behavioural, and social domains (Rapport, Denney, DuPaul, & Gardner, 1994; Swanson, et al., 1993).

Monitoring of medications

According to practice parameters set out by the American Academy of Child and Adolescent Psychiatry (1997), it is essential that stimulants and antidepressants be carefully prescribed and monitored for their effectiveness (i.e., multiple outcome measures in more than one setting). However, research indicates this is not always adequately accomplished (Barkley, 1998).

Initially, weekly phone contacts and visits at 4 to 6 weeks are recommended to monitor treatment response (American Academy of Child and Adolescent Psychiatry (1997). Progress should then be monitored every 3 to 6 months. An annual review by a specialist is recommended. Blood pressure should also be monitored at appropriate intervals. Behaviour rating scales, standard assessment forms, and feedback from parents and teachers are recommended methods for monitoring treatment response (Barkley, 1998). Additionally, carefully monitored medication free trials at home and during the school year can provide information on continuing efficacy of and need for medications as well as minimising side effects (American Academy of Child and Adolescent Psychiatry, 1997).

Side effects

Research conducted by Barkley, McMurray, Edelbrock, & Robbins, (1990) suggests stimulant medication, when given in therapeutic doses, are generally safe and produce only minor degrees of side effects in most children with ADHD. However, results showed that 3.6% of the sample had side effects that were sufficiently serious to warrant immediate discontinuation of medication. Therefore, systematic monitoring before and after trials of medication is warranted.

Adverse effects such as headache, loss of appetite, jitteriness, and insomnia are commonly associated with stimulant medications (Goldman et al., 1998), and some children will exhibit motor tics (Caine, Ludlow, Polinsky & Ebert, 1984; Gillberg et al., 1997). Rebound, characterised by a deterioration in the child's behaviour occurring late afternoon and evening following the use of stimulant medication, also occurs in a minority of children (Barkley, 1998). It is unclear, however, to what extent children's height is affected by long-term use of stimulants (Gillberg et al., 1997; Spencer, Biederman, Harding, O'Donnell, Faraone, Wilens, 1996). If growth suppression does occur, it appears to be dose-related (Cantwell, 1996). Furthermore, no clear evidence exists that suggests treatment with stimulants increases the risk of illicit drugs (Lynskey & Fergusson, 1995; Barkley, 1998). Nevertheless, parents should monitor the administration of medications carefully with teenagers who have a tendency toward antisocial behaviour (Zametkin & Ernst, 1999).

2.11.2 Psychoeducational treatment

The provision of educational material and consultation with the child, parents, and significant others are considered valuable aspects of a comprehensive treatment package. Information should include: research on etiology (including heritability), symptoms of the disorder, its clinical course, and prognosis. According to Zametkin & Ernst (1999, p.3), "parents should be told that ADHD is a brain-based disorder, commonly but not universally inherited, without a clear cause." By placing the child's symptoms within an individual, biopsychosocial framework, parents may stop feeling guilty about their child's behaviour, thereby alleviating some of the stress and allowing for improved communication between the child and parents (Bogas, 1993).

Advice on availability of support services and resources in the community should be made known to the families of children diagnosed with ADHD. In

addition, treatment options, medication effects and side effects, as well as myths regarding ADHD should be addressed (American Academy of Child and Adolescent Psychiatry, 1997).

2.11.3 Psychosocial interventions

As mentioned previously, an exclusive reliance upon pharmacotherapy as a treatment for ADHD is not recommended. While stimulant medication can reduce the core symptoms of ADHD in some children, this type of singular intervention is inadequate given the complex nature of this syndrome. Clinical management typically requires multiple treatment strategies that enable the development of compensatory skills for coping with this chronic and pervasive behavioural condition (Anastopoulos, DuPaul & Barkley, 1991).

Furthermore, the child's disruptive behaviour may contribute to chronic stress in parents, which may produce unproductive parenting practices that exacerbate the ADHD symptoms (Bernier & Siegel, 1994). Accordingly, intervention should be based upon an approach that takes into account the child's family and their environment. Therefore, psychosocial interventions commonly associated with the management of ADHD include parent management training, family therapy, behavioural modification techniques, individual psychotherapy, social skills training, cognitive behavioural therapy and any ancillary interventions needed.

Parent Management Training

According to Cantwell (1996), training parents to use contingency management techniques in conjunction with school behavioural programmes

can be highly effective. Likewise, parent management training may increase parents' own confidence in parenting and decrease family stress. The most effective parent training programmes include reviewing key information related to ADHD, providing information (written and verbal) on the principles of behaviour management, enhancing parental skills such as communication skills, problem-solving, negotiation, and contingency management strategies (Anastopoulos, et al., 1991; American Academy of Child and Adolescent Psychiatry, 1997).

Given the efficacy of parent training with oppositional defiant behaviours and conduct problems (Webster-Stratton, 1994), Barkley (1998) recommends its inclusion in the treatment of children with ADHD. This is especially relevant when parental distress is evident and when conduct disorder or opposition defiant disorder coexists with ADHD (Searight, Nahlik, & Campbell, 1995). Furthermore, research indicates parent training adds benefit to stimulant treatment (Ialongo, Horn, Pascoe, & Greenberg, 1993).

Family Therapy

Within the family context, problems typically addressed might include dysfunctional family patterns, marital conflict, and peer and social relationship difficulties (Bogas, 1993). Behavioural intervention incorporated into family therapy may help families with negotiation and problem solving. Barkley, Guevremont, Anastopoulos, and Fletcher (1992) compared three family therapies (behaviour management training, problem-solving and communication training, and structural family therapy) for treating parent-adolescent conflicts in adolescents with ADHD. Results found all approaches produced significant improvements in parent-adolescent communication, number of conflicts, and anger intensity. Improvements in parent-reported

school adjustment, internalising and externalising behaviours were also noted across conditions.

Behaviour Modification Techniques

The most prevalent type of behavioural programme for children with ADHD involves programmes which train parents and school personnel in such strategies as observing target behaviours, positive reinforcement, response cost, or time out. Research suggests combining positive reinforcement with punishment strategies, such as response cost or time out, generally leads to greater improvement than either alone (Pfiffner & O'Leary, 1987). However, to be effective, behavioural programmes should provide a high ratio of positive to negative consequences (Hinshaw, 1994) and both sets of consequences should be immediate, fair, and consistent (Lodge & Tripp, 1998).

Cocciarella, Wood, & Low, (1995) found brief behavioural therapy for children with ADHD improved attention, activity, and in particular impulsivity. This provides support for cost-effective behavioural treatments. In addition, behaviour modification techniques have been shown to be more effective for the treatment of ADHD than cognitive or cognitive-behaviour interventions (DuPaul & Eckert, 1997). However, inconsistent findings exist when examining the additional benefits of behavioural therapy when added to pharmacotherapy (Gillberg et al., 1997; American Academy of Child and Adolescent Psychiatry, 1997; Barkley, 1990).

School Intervention

The clinician's role in school-focused intervention may involve evaluating the need for specialised school intervention and facilitating school placement. Intervention should target academic performance, classroom behaviour and

peer relationships (Cantwell, 1996). Teachers should be trained in behavioural strategies that include token economies, attention to class rules, and administration of positive and negative consequences. In conjunction with parents, teachers may employ the use of daily report cards and homework notebooks to help compliance with assignments (American Academy of Child and Adolescent Psychiatry, 1997).

In New Zealand, as in some other countries, concerns about a child's academic performance or behaviour may result in a request by the school for an Individual Educational Programme (IEP). This programme generally involves the child's parent/s, teacher/s and any health or educational professionals working with the child and is "an action plan for educating a child based on the child's individual educational needs" (Lodge & Tripp, 1998).

A school with constrained resources is likely to prefer that children with ADHD receive medications rather than trying to implement behaviour-modification procedures. This may put stress on the parents to assume complete responsibility for their child's behaviour at school. Nevertheless, skilled parents and teachers, collaborating in implementing effective behaviour programmes, can reduce the need for medication (Bernier & Siegel, 1994).

Social Skills Training (SST)

One important negative aspect of ADHD relates to the presence of impaired social interactions. Training in social skills is designed to improve the child's interactions with peers, development of conversational and problem-solving skills, and improve anger and impulse control (Cantwell, 1996). Delivery of the programme in group settings where the problem behaviour occurs may

enhance generalisability (American Academy of Child and Adolescent Psychiatry, 1997).

However, literature regarding the efficacy of this strategy is inconsistent (Barkley, 1990). This may be due, in part, to the heterogeneity of children with ADHD and the differing etiology of social skills deficits with this population (American Academy of Child and Adolescent Psychiatry, 1997). In an attempt to address this issue, Pfiffner and McBurnett (1997) investigated the effectiveness of group SST and SST with parent generalisation training (SST-PG) in a small sample of 27 children diagnosed with ADHD. Findings indicate brief SST for children with ADHD can have a positive impact on their social skills and problem behaviour. Less evidence was found for generalisation of SST to the school setting. However, there were indications that the parent generalisation component may enhance transfer of SST to the school setting. Unfortunately, the small sample size was a major limitation of this research.

Individual Psychotherapy

Although not indicated for the treatment of the core symptoms of inattention, hyperactivity, and impulsivity, individual therapy may work to alleviate secondary symptoms (e.g., low self-esteem), comorbid disorders (e.g., anxiety and depression), and other types of associated symptomatology as well as helping in the development of a positive therapeutic relationship (Zametkin, 1995).

Cognitive-Behavioural Procedures

Cognitive behavioural therapy combines cognitive strategies with behaviour modification techniques in which major components include modelling, role-play, self-reinforcement, problem solving skills, and social skills training

(Whalen & Henker, 1991). In terms of efficacy, Kendall (1993) suggests that cognitive-behavioural training can reduce impulsivity in children with ADHD, but in terms of reducing other features, results are inconsistent. Research by Hinshaw, Henker, & Whalen (1984) however, found cognitive-behavioural procedures, such as self-monitoring and self-reinforcement improved on-task behaviour and academic accuracy in children with ADHD. Although cognitive or cognitive-behaviour interventions have been shown to be less effective for the treatment of ADHD than behaviour modification techniques (DuPaul & Eckert, 1997), results are sufficiently promising to warrant further clinical trials (Bergin & Garfield, 1994).

Dietary Interventions

Evidence for the efficacy of dietary intervention is minimal and inducing compliance to diets with children and adolescents is difficult. Hence, dietary treatment is not generally recommended, except maybe in the case of preschool children (American Academy of Child and Adolescent Psychiatry, 1997).

Ancillary Treatments

Ancillary treatments may include speech and language therapy, occupational therapy, and recreational therapy (American Academy of Child and Adolescent Psychiatry, 1997).

Future research into psychosocial treatment interventions for children with ADHD is necessary to address critical issues such as: generalising treatment gains across situations and behaviours, individual differences in terms of comorbid conditions, and increasingly the long-term efficacy of these strategies (Richters et al., 1995).

The aim of the present study was to determine whether current diagnosis and treatment practices for ADHD with children are consistent with scientific research and current recommendations. In order to gain a more thorough account of these processes, information from both parents/guardians and treating practitioners was gathered.

CHAPTER THREE: METHOD

Ethics

Approval to conduct the present research was received from Massey University Human Ethics Committee

3.1 Participants

The present study was conducted in two stages and consisted of two separate samples. First, data were collected from parents/guardians of children currently diagnosed with ADHD via survey based questionnaires. Second, information was elicited, also by means of a survey based questionnaire, from practitioners that diagnosed and/or were treating the children for ADHD.

Child sample

Parent/guardian surveys were completed for 47 children ranging in age from 4 years 5 months to 15 years 6 months with a mean age of 9 years (SD = 2.55). The sample consisted of predominately males, 85% (n=40) and 15% (n=7) females. A large proportion of sampled children, 76 % (n=36) were of Pakeha ethnicity, 21 % (n=10) were identified as Maori, and 2 % (n=1) was of New Zealand Indian ethnicity. Table 1 lists the demographic characteristics of the sampled children.

Table 1: Demographics of children with ADHD (n = 47)

		<i>Number</i>	<i>Percent</i>
Ethnicity	Pakeha	36	77
	Maori	10	21
	NZ Indian	1	2
Gender	Male	40	85
	Female	7	15
Age	7 and under	14	30
	8 - 10	16	34
	11 - 16	17	36

Approximately half the children surveyed, 49% (n=23), came from two-parent families, 11% were from single parent households, and parents of 23% (n=11) of the children stated they were separated. A large proportion (68%, n=32) of parents/guardians cited educational qualifications equal to or higher than school certificate and 32% (n=15) had no formal school qualifications.

The majority of children (n=32, 68%) live in households where the combined total income was \$40,000 or less. Seventeen percent of families were receiving between \$40,000 - 59,000, and 10% were earning \$60,000 or more. At least 28% of sampled children had family members (a sibling, parent, or grandparent) diagnosed with the same syndrome.

Practitioner sample:

Twelve practitioners responded to the present study and provided data for 19 children. The majority of data, 60% (for 12 children) came from paediatricians, 20% (for 4 children) from general practitioners, and 15% (for 3 children) from clinical psychologists. Eighty four percent of completed surveys were by male practitioners, and sixteen percent by females. A large proportion (90%) of practitioners were Pakeha, 2.5% cited Maori ethnicity, 2.5% European, 2.5% Asian and 2.5% identified themselves as South African.

3.2 Procedure

The present study was conducted in two stages:

- Stage one involved the recruitment of parents/guardians of children aged between 3 - 16 years diagnosed with ADHD who were subsequently invited to complete a self-administered questionnaire relating to referral, assessment and treatment issues relevant to their child.
- Stage two of the current study asked parents/guardians to identify practitioners who diagnosed, or who were treating their children for ADHD. After giving permission, these practitioners were mailed a self-administered questionnaire relating to diagnostic and treatment procedures employed for the sampled children.

Stage One

Recruitment

In order to recruit participants for the present study, announcements were placed in the Palmerston North local community notices; school newsletters in the Manawatu area; and Rotorua and Auckland ADHD support group newsletters. Kura kaupapa school notices were to be translated into Maori if required. However, this was not requested. Principals of certain schools in the Manawatu region were contacted by telephone or in person to explain the purpose of the study and a request was made to include notices in their school newsletters. All schools contacted (25 primary schools and 3 intermediate schools) agreed to this request. Notices were then delivered or sent by mail to these schools.

The notices were directed at parent/guardians of children currently diagnosed with ADHD who were aged between 3 - 16 years of age. The notice briefly explained the purpose of the study and requirements of the

participants (i.e. complete a 20 minute questionnaire). Contact telephone numbers and addresses of the researcher and her supervisor were included. In addition, school and ADHD support group newsletters contained a slip in which respondents could complete and return freepost to the researcher. Alternatively, they could deposit slips in an envelope at the school office which would be sent to the researcher at a later date.

Because a major aim of the current research was to identify any cultural issues that may need to be considered when diagnosing and treating Maori or Pacific Islands children, it was essential that every attempt be made to reach families from these ethnic groups.

Unfortunately, response rates for Maori and Pacific Islands families were low. Therefore, attempts to contact this group more directly were considered. Discussions were held between the researcher and several social workers who expressed considerable concerns regarding children on their caseloads who were receiving treatment for ADHD. Subsequently, an application was forwarded to Child, Youth and Family Services (CYFS) for assistance in this matter.

A proposal for research access was submitted to the Research Access Committee for Child, Youth and Family Services and approved. Wellington and Manawatu area managers for this service (six in total) were contacted firstly by telephone and then by mail, and given details of the study and their anticipated involvement.

CYFS caseworkers were asked to identify from their caseloads children currently being treated for ADHD and inform the parent/guardian of that child about the purpose of the study and invite them to contact the

researcher if interested. Given that potential respondents may not have access to a telephone, and that contacting the researcher directly may involve a toll call for families, the most effective option involved CYFS caseworkers obtaining parent/guardian consent for their names, addresses or telephone numbers to be released to the researcher. Upon receiving consent, the researcher would contact the potential participants directly.

Parent/Guardian Contact

The researcher contacted all respondents by telephone to explain in detail the purpose of the research and what their participation would entail. In addition, respondents received a full explanation of why additional ADHD-related information was being elicited from practitioners.

Mailing of survey material

A self-administered questionnaire (see Appendix C) was then mailed to respondents agreeing to participate in the study along with an information sheet (see Appendix A) explaining who the researchers were, the purpose of the research, and what they would be required to do. The information sheet also advised them of their right to decline to answer any particular questions, to withdraw from the study at any time, and that any information they provided was completely confidential to the researchers. Self-addressed, freepost envelopes were provided.

Attached to the information sheet were two consent forms (see Appendix B) to be signed by the parent/guardian of the ADHD diagnosed child. One provided agreement that the parent/guardian would participate in the study under the conditions set out in the Information Sheet. The other was agreeing to release of information by the practitioner relating to assessment and treatment procedures conducted for ADHD with the diagnosed child.

Participants were advised that a copy of the Practitioner Questionnaire would be made available for their perusal prior to mailing if requested. Those participants ($n = 5$) declining to the release of information were still included in the study.

A telephone call was made to nonresponders two weeks after mailing of the questionnaires to ascertain whether they had received the questionnaire. Four weeks later, nonresponders were contacted by telephone and advised of the study closure date. Those participants who had still not responded at the time of closure were mailed a letter, along with an additional questionnaire, advising them of an extension to the closure date allowing them the opportunity to still be included in the research.

A total number of 69 questionnaires were mailed to potential participants. The return rate was 68% (i.e., 47/69).

Stage Two

While parents/guardians of children diagnosed with ADHD provide valuable information regarding the assessment and treatment procedures as they experienced the process, it was acknowledged that participants may not necessarily have knowledge of all diagnostic and treatment practices employed by practitioners. In order to gain a more comprehensive description of the current procedures, it was considered necessary to examine the actual diagnostic and treatment practices implemented by the practitioner.

Therefore, all practitioners who were identified by parents/guardians as those who diagnosed or are currently treating their child for ADHD were mailed a

questionnaire (see Appendix E) upon receiving the release of information from parents. Along with the questionnaire was a copy of the parent/guardian consent form and a covering letter inviting the practitioner to participate and explaining the purpose of the study, who the researchers were, what would be required from participants, and their rights as participants. Confidentiality issues were also covered (see Appendix D).

A second mailing of questionnaires, along with a covering letter was sent to those practitioners who did not respond initially. Additionally, prior to closure date, contactable nonresponders were telephoned and advised of the study closure date.

Survey materials were mailed to General Practitioners, Clinical Psychologists, Paediatricians, and Psychiatrists in the Wellington, Auckland, Rotorua, Wanganui, and Palmerston North regions. The response rate here was 46% (19/41).

3.3 Instruments

The aim of the present study was to determine whether current diagnosis and treatment practices for ADHD with children are consistent with scientific research and current recommendations. In order to gain a greater understanding and obtain an accurate as possible account of these processes, information from parents/guardians, and treating practitioners of children currently diagnosed with ADHD was acquired. Subsequently, two separate self-administered questionnaires were developed. One required completion by the parent/guardian and the practitioner completed another.

The questionnaires were developed by the researcher on the basis of what current scientific research and recommendations suggest are necessary/essential elements required for an accurate assessment for ADHD and for effective management practices. Consultation was also held with parents of children diagnosed with ADHD, ADHD support group personnel, and two practitioners (General Practitioner, Senior Child Clinical Psychologist) prior to printing of the questionnaires.

Parent/Guardian Survey

An 8-page, self-administered questionnaire (see Appendix C) was designed to elicit information on referral issues, cultural issues, evaluation and treatment procedures, parent's level of satisfaction with these procedures, as well as child and parent sociodemographic characteristics. For the purpose of the study, participants were advised that the term 'Practitioner' referred to a general practitioner (doctor), psychologist, paediatrician, or psychiatrist.

Referral issues

To determine the most common source responsible for initially identifying ADHD-related symptoms in children, participants were first asked to circle, from a list of options (e.g. family member, teacher, myself etc.), who first suggested that their child be assessed for ADHD.

Similarly, participants were required to list all practitioners seen in relation to ADHD-related behaviours before receiving an actual ADHD diagnosis. This information would provide a more detailed account of the process children encounter prior to official diagnosis. That is, are children typically being diagnosed following one 30-minute visit to a practitioner, or is it a lengthy process involving a number of visits to a variety of practitioners?

Assessment issues

A major objective of this research was to ascertain the sources of information or evaluation tools currently being utilised by practitioners to assess children for ADHD. Acquisition of this information was obtained by requesting participants to identify, from a checklist provided, as many procedures as they understood to be used in the evaluation procedure. The list included important components considered necessary for a comprehensive evaluation of ADHD, as recommended by the scientific literature (American Academy of Child and Adolescent Psychiatry, 1997; Barkley, 1998).

Assessment measures included: parent interview, child interview (alone), medical examination, observations at home and school, parent checklist, teacher checklist, school reports, brain scan, and EEG. An open space for recording other assessment strategies was provided.

Additional assessment items required participants to identify the ADHD subtype classification (inattentive, hyperactive, or combined type) given to the child; any additional psychological conditions present at the time of assessment (anxiety, depression, conduct disorder, etc.); type of assessment-related feedback (verbal, written, or both) received from the practitioner; and whether any other biological family members had received an ADHD diagnosis. To identify whether a relationship existed between professional affiliation and types of assessment procedures undertaken, parents/guardians were asked to indicate from a list (general practitioner, psychologist, psychiatrist, other), the diagnosing practitioner.

Cultural issues

Several culture-related items were included in the questionnaire in order to examine how reliable the current assessment procedures are in diagnosing ADHD with Maori and Pacific Islands children. Unfortunately, no Pacific Islands families responded to the current study. Parents/guardians were asked to indicate (yes, no, don't know) whether the diagnosing practitioner, treating practitioner, or teacher at time of assessment were from the same cultural background as the sampled child. In addition, an area was provided for participants to comment on any specific cultural aspects (factors taken into account, factors not taken into account) relating to assessment or treatment procedures.

Treatment issues

ADHD continues to be a controversial topic in the literature, among professionals, and in the general public. A major contributing factor to this debate surrounds what some consider to be the over-reliance of medication in the management of ADHD. Although treatment outcome studies have consistently demonstrated the efficacy of stimulant medication in reducing the core symptoms of ADHD, psychosocial interventions, targeted to meet the individual needs of each child, are strongly recommended as part of a comprehensive management strategy for ADHD.

Subsequently, an objective of the present study was to assess the current management practices for ADHD with children in New Zealand. Therefore, from a checklist of possible treatment approaches, parents/guardians indicated which treatment options the practitioner discussed, which they preferred, and what treatment/s the child is receiving or has received. The treatment list included: no options discussed, no treatment for child,

medication, behaviour modification, school intervention, parent training, family therapy, dietary interventions, individual psychotherapy and a space was provided for any other treatments to be noted.

Additional treatment items were investigated: treatment parents/guardians objected to; any they found improved the child's behaviour/school work; and if medication was prescribed - the name of medication and current average daily dose administered.

An essential aspect of management also includes ongoing monitoring for treatment efficacy. Moreover, when medication is prescribed monitoring helps establish further need or identification of side effects. From a list provided, parents/guardians indicated the type/s of ongoing monitoring established for their child by the practitioner and how often they visit the practitioner to monitor treatment effectiveness (see Appendix C). In addition, common side effects associated with psychopharmacological intervention were presented in checklist form and participants were asked to indicate as many as were applicable to their child while taking ADHD-related medication (see Appendix C).

Satisfaction scale

A 10 item scale was developed to gauge parent/guardian levels of satisfaction regarding ADHD-related assessment and treatment practices. The scale consisted of items such as (a) how satisfied were you with the amount of information you received from your professional about ADHD, (b) your involvement in the assessment procedure, (c) the type and amount of feedback from the assessment, (d) effectiveness of treatment etc. (see Appendix C). A 5-point Likert scale was used to rate each item ranging from (1) '*not at all satisfied*', (3) '*satisfied*', to (5) '*extremely satisfied*'. Participants were required

to circle the one number for each statement that best describes how satisfied they were with the procedures. Alpha reliability for this scale was found to be .9165.

Sociodemographic data

Demographic data were collected on the sampled child's gender, ethnicity, age at time of diagnosis, present age, and age when child first began displaying ADHD-like symptoms. Likewise, parents/guardians completing the questionnaire were requested to provide information on their gender, age, marital status, ethnicity, educational qualifications, and income level. Information relating to the composition of the household (whether any extended family members were living in the household and the number of people in the house) was also requested.

Treating Practitioner Survey

A 21-item, six page questionnaire (see Appendix E) was designed to ascertain actual assessment procedures responding practitioners conducted with the sampled children in order to confirm a diagnosis of ADHD and the type of treatment approaches employed to manage ADHD-related symptoms or any comorbid conditions which may be present. Also included in the questionnaire were items relating to clinical characteristics (DSM-IV symptom checklist, ADHD subtype, comorbidity) of the sampled child, cultural issues, and practitioner demographics. The relevant child's name appeared on the front page of each questionnaire.

Assessment issues

In contrast to the parent/guardian survey, practitioners were asked to list the information and assessment tools utilised in the evaluation process. Rather

than provide a checklist (as provided in parent/guardian survey), this question was based in broad terms to avoid leading the practitioner. Also in relation to this item, participants were required to include additional assessment information considered pertinent to the diagnosis that was conducted and reported by some other professional (e.g. practitioner received a physical examination report from General Practitioner). This would enable a more complete description on how and what information practitioners were basing their ADHD diagnosis and whether they were ruling out external factors, and whether they were considering differential diagnoses or comorbidity issues.

A comprehensive assessment for ADHD with children also involves utilising recommended diagnostic criteria. Hence, participants were asked to indicate whether clients were diagnosed according to DSM-IV or ICD-10 criteria. A "don't know" and 'other' option were also provided. Additional items contributing to the identification of diagnostic practices required practitioners' responses to whether ADHD-related symptoms were present prior to the age of 7 years, and if a family history of ADHD was evident.

A number of conditions have been found to coexist, or be confused, with ADHD. These need to be considered, and, if need be, excluded before treatment. Thus, practitioners were asked to note procedures they considered useful in differentiating ADHD from other child psychiatric disorders. From a checklist of mental health professionals, practitioners were asked to indicate who assessed and diagnosed the sampled child. This question was included as, for example, general practitioners (identified by some parents as treating the child) may be administering medication but did not necessarily make the initial diagnosis.

Treatment issues

Treatment items in this questionnaire were very similar to those presented in the Parent/Guardian questionnaire. The management item included a list of possible treatment options the practitioner discussed with the parents, which ones the parents indicated a preference for, and the treatment/s the child actually received (refer to Appendix E for checklist details). If medication was prescribed for the management of ADHD-related symptoms, details on type and current average daily dose were elicited. Furthermore, participants were to describe ongoing monitoring established with the child to monitor (or administer) treatment procedures.

Clinical Characteristics

Data on the clinical characteristics of children diagnosed with ADHD were compiled allowing for the analysis of relationships between the child's age, gender, and ethnicity and their subtyping, symptoms, and comorbidity.

If DSM-IV criteria were utilised in the diagnostic procedure, practitioners indicated from a checklist which subtype had been applied to the child. Additionally, a DSM-IV symptoms checklist, consisting of 18 items, enabled participants to indicate (by ticking boxes) which symptoms were present at the time of assessment to a degree that was maladaptive and inconsistent with the child's developmental level. To ascertain comorbid conditions, a checklist of common coexisting conditions was presented. This list included none, learning disability, depression/dysthymia, anxiety, conduct disorder, oppositional defiant disorder, bipolar disorder, Asperger's syndrome, autism, and an 'other' category. Participants were to identify which conditions were "considered but ruled out" and which were "confirmed". Additional information was requested on why/how the conditions considered were ruled out.

Cultural issues

A section was provided for practitioners to comment on any specific factors they considered relevant in order to obtain an accurate ADHD diagnosis with Maori or Pacific Islands children.

Sociodemographics

Demographic items included gender, ethnicity, professional affiliation, and experience level of practitioner. Practitioners' professional affiliation was assessed by means of a checklist of clinical professions. The list included: general practitioner, registered psychologist, clinical psychologist, child/adolescent clinical psychologist, paediatrician, psychiatrist and other. In addition, number of years in practice, whether part-time or full-time, was established to determine practitioner experience level, and to describe any noticeable differences in diagnostic and treatment practices between clinicians and the number of years in practice.

3.4 Data Analysis

Data analysis was conducted using the Statistical Package for Social Sciences (SPSS 9.0 for Windows) computer package. Descriptive statistics, chi-square statistics, correlations, and one-way analysis of variance (ANOVA) were used in the analysis for results. Due to missing data, the sample sizes varied slightly in the different analyses.

CHAPTER FOUR: RESULTS

Results of the present study are presented in two stages. Stage one comprises data pertaining to parent/guardian information, while stage two reports data provided by practitioners. Findings from both parent and practitioner surveys will be presented in the following format: First, statistics describe the composition of participants under study. Second, results relating to diagnostic practices utilised by practitioners are presented. Third, management practices employed by practitioners for children with ADHD are described and contrasted. Finally, cultural information regarding diagnostic practices for ADHD are examined.

Of the 69 surveys posted, completed questionnaires were received for 47 children after two mailings, for a response rate of 68%. Nineteen of the 41 practitioner surveys mailed were completed and returned after two postings, for a response rate of 46%.

4.1 Parent/Guardian Data

Child Sociodemographics

Demographic data were collected on the age at which the child first received a formal ADHD diagnosis. Results are presented in the following age groups: under 5 years, 5 - 7 years, 8 - 10 years, and 11 - 13 years. As indicated in Table 2 most children generally receive a formal diagnosis of ADHD within the first two years of entering the school system. That is, of the 47 children included in the study, twenty-four (51%) received a diagnosis between 5 - 7

years of age. Six (13%) were first diagnosed with ADHD under the age of 5 years; the youngest receiving a diagnosis at 3 years 6 months. Twelve (26%) children were in the 8 - 10 year age group, and 5 (10%) were diagnosed at the age of 11 years or older.

Table 2. Age of child when first diagnosed with ADHD (n = 47)

	<i>Number</i>	<i>Percent</i>
Age group		
under 5	6	13
5-7	24	51
8-10	12	26
11-13	5	10
Total	47	100

Diagnostic Practices

A major objective of the current study was to ascertain whether practitioners used assessment procedures considered necessary for a comprehensive evaluation of childhood ADHD. Results found inconsistent application of recommended procedures. According to parent reported information, only 12% of children received a diagnosis based on information compiled from all recommended sources and settings (i.e. parent and child interview, medical examination, direct observation, parent and teacher checklists, and school reports). However, approximately 50% were evaluated with a majority of diagnostic practices (i.e. one or two practices not conducted). Twenty-three percent of children were diagnosed without information collected across more than one setting (i.e. no data collected from teachers or school reports). The frequency of information and evaluation tools are presented in Table 3.

Table 3. Parent reported diagnostic practices for ADHD (n = 47)

	<i>Number</i>	<i>Percent</i>
Medical examination	38	81
Parent interview	46	98
Child interview (alone)	22	47
Direct observation	31	66
Parent checklist	42	89
Teacher checklist	31	66
School report	19	40
Brain scan	4	8
EEG	2	4
Bloodtest	1	2
MRI	1	2
SPELD report	1	2
Tova test	1	2

According to parent reports, 81% of children in the present study received a medical examination in their evaluation for ADHD. Not surprising, parent interviews were conducted in all completed cases (n=46, 1 missing data). However, only 47% of practitioners' diagnoses included interviews with the child alone. Chi-square analysis indicated that the child's age did not appear to directly influence whether or not an interview was conducted ($p > .10$).

A large proportion of practitioners (89%) were reported to have used parent checklists during the assessment procedure, fewer used teacher checklists (66%) and school reports (40%). Direct observations of the child's behaviour at home or at school were used in 66% of cases. As indicated in Table 3, ancillary techniques, not generally recommended for routine use in the evaluation of ADHD, were nevertheless noted as undertaken with a small minority of children. These included neurodiagnostic techniques such as brain scans (8%), the electroencephalograph (4%), and magnetic resonance imaging scan (2%), as well as blood tests (2%).

Analysis failed to reveal any significant differences between the diagnostic procedures employed by practitioners and the child's age, gender, or ethnicity with one exception. Direct observations were less likely to be conducted with children over the age of seven years than with children 7 years and younger ($z = 4.900, p = .034$).

In addition, analyses investigating the relationship between diagnosing practitioners and evaluation instruments employed in the assessment of ADHD were not undertaken with all cases. The reason was that several ($n = 9$) respondents indicated more than one diagnosing practitioner. This made it extremely difficult to ascertain which practitioner employed which specific instruments for those cases. Additionally, the relationships involving general practitioners ($n=1$), educational psychologists ($n=1$), psychologists ($n=1$), and psychiatrists ($n=1$) were not examined due to insufficient numbers.

However, 32 children were diagnosed by paediatricians only and therefore analysis was warranted. Diagnostic procedures used by paediatricians according to parent reports were as follows: medical examination ($n=26, 81\%$), parent interview ($n=32, 100\%$), child interview alone ($n=14, 44\%$), direct observation ($n=20, 63\%$), parent checklist ($n=28, 88\%$), teacher checklist ($n=19, 59\%$), and school report ($n=13, 40\%$).

When asked to indicate who first suggested the sampled child be assessed for ADHD, the majority of parents/guardians, 47% ($n=22$), indicated that they themselves identified ADHD-related symptoms in their children and initiated an assessment. The next most frequently mentioned were school personnel (19%), followed by psychologists (8%) and general practitioners (8%). In terms of ethnicity, Pakeha parents (53%) were more likely to identify ADHD symptoms in their children than Maori parents (30%) ($z = 11.408, p = .05$).

When examining coexisting mental health conditions identified at time of diagnosis, analysis showed comorbidity was present in 85% of the children surveyed. Learning disability (70%) was the most common comorbid condition identified at the time of assessment in addition to ADHD. As indicated in Table 4 oppositional defiant disorder (36%), conduct disorder (28%), and anxiety (21%) were the next most frequently reported comorbid conditions. A modest number of children had comorbid depressive disorder (6%), bipolar disorder (4%) and autism (2%).

Table 4. Parent reported comorbid conditions present in children with ADHD

	<i>Number</i>	<i>Percent</i>
No comorbidity	7	15
Learning Disability	33	70
Depression	3	6
Anxiety	10	21
Conduct Disorder	13	28
Oppositional Defiant Disorder	17	36
Bipolar Disorder	2	4
Autism	1	2

Interestingly, those children with comorbid depression (n=3) were all males aged between 8 - 10 years old. Similarly, only boys were assessed as having comorbid conduct disorder (n=13).

Feedback given to parents/guardians regarding diagnostic procedures was variable. Forty nine percent of respondents received both written and verbal feedback, and 10% indicated no feedback whatsoever. Thirty six percent received verbal but not written feedback, while 4% received some type of written, but not verbal feedback.

In terms of ADHD subtype classification reported by parents, 17% indicated that they did not know, 9% cited Inattentive type, 17% cited Hyperactive - Impulsive type, and 53% cited Combined type. There were 2 missing cases.

Treatment practices

Table 5 presents parent information on interventions employed by practitioners in the treatment of children diagnosed with ADHD. As expected, the most frequently employed strategy for the treatment of ADHD was pharmacotherapy (91.5%), with methylphenidate being by far the most common medication prescribed (in 80% of cases, $n=38$). The use of Dextroamphetamine was indicated in four (8%) cases and only one child was receiving Clonidine. Four children (8.5%), two males and two females, were reported as not taking medication at the time the survey was conducted.

Table 5. Parent reported treatment modalities for children with ADHD

	<i>Number</i>	<i>Percent</i>
Medication	43	92
Behaviour modification	20	43
School intervention	16	34
Parent management training	9	19
Family therapy	7	15
Dietary intervention	8	17
Individual psychotherapy	3	6

Daily dosage of medication ranged from 10mg to 50mg. Pearson Product-Moment correlation showed no significant relationship between the child's current age and average daily dose of Ritalin prescribed ($r = .233$, $p > .05$). While most practitioners limited the use of medication to school age children, as recommended, one child under the age of 6 (male aged 4years 5 months) was being prescribed both Ritalin (30mg daily) and Clonidine (75mg daily).

As indicated in Table 5, behaviour modification was the second most common treatment modality employed for ADHD; however, this intervention was adopted in a minority of cases. Less than half of the sampled children (43%) were receiving this intervention. School intervention was cited in only thirty four percent of cases, and indications were that girls (71%) were more likely to receive school intervention than boys (29%). Chi-square revealed a trend towards significance here ($\chi^2=4.656$, $df = 1$, $p = .07$). Few families reported receiving parent management training (19%) or family therapy (15%). Only 3 of the 47 children in the current study have been or are presently engaged in individual psychotherapy.

Overall, these figures are not surprising given the infrequency in which these treatment strategies were discussed initially with parents. When parents were asked to indicate whether or not they had discussed, and if they had expressed a preference for, certain treatment options with their child's practitioner, medication (93%) was the treatment regime most frequently discussed. However, only 23% of parents indicated they preferred this as a primary option.

Behaviour modification techniques were discussed with 62% of parents, school intervention with 38%, parent management training with only 29%. Family therapy was discussed with fewer than 20% of parents. The option of individual psychotherapy was examined with only 7% of parents. In contrast, dietary intervention was discussed with 17% of parents. This appears to have been considered a viable option as all of these parents (i.e., all 17%) indicated that their child has been placed on some type of dietary intervention.

Due to a small percentage of children receiving treatment interventions other than medication, it was difficult to analyse with any confidence differences

between age, gender or ethnicity and treatment modality. However, although not significant, as presented earlier, findings did suggest girls (71%) may be more likely than boys (29%) to receive school intervention ($p = .07$). No significant relationships were found between practitioners professional affiliation or assessment practices and type of treatment intervention employed ($p > .10$).

Side effects were reported in 36 (77%) children prescribed medication, as indicated in Table 6. The most prevalent were sleep problems (43%) and decreased appetite (43%), followed by stomachache (26%) and headache (21%). Nineteen percent of the sampled children experienced irritability and rebound, while nausea (6%), jitteriness (2%), and dry mouth (2%) were reported less often.

Table 6. Side effects present in children prescribed medication for ADHD

	<i>Frequency</i>	<i>Percent</i>
No side effects	11	23
Sleep problems	20	43
Decreased appetite	20	43
Stomach ache	12	26
Headache	10	21
Jitteriness	1	2
Nausea	3	6
Irritability	9	19
Rebound	9	19
Dry mouth	1	2

When investigating ongoing monitoring procedures for treatment efficacy, analyses indicated prescription renewal (77%) to be the most common method used for those children prescribed medication. Other methods often used in monitoring response to treatment were reports from parents or teachers (45%) and visits to the practitioner for any adjustment in medication dosage (38%). Only 21% of children were reported as being re-evaluated with parent rating

scales to determine treatment efficacy, with even fewer (6%) being reexamined through annual academic testing. Medication free trials at home (11%) and during school (2%) were employed with only a small percentage of children. Drug-placebo were not used by any surveyed practitioners to ascertain efficacy or ongoing need.

Chi-Square test for independence were conducted to determine whether the most prevalent comorbid conditions (i.e. learning disorder (LD), conduct disorder (CD), oppositional defiant disorder (ODD), and anxiety) present with the sampled children would have an influence on the type of treatment modality employed by practitioners. Given the efficacy of parent training programmes with conduct problems and oppositional defiant behaviour, it was anticipated that parents of children presenting with comorbid CD and ODD would be engaged more often in this treatment modality.

However, results showed that no parents of children with comorbid CD were receiving parent training and only 11% (n=2) of children with comorbid ODD had parents who participated in this type of programme. These findings are understandable considering this particular treatment option was not discussed with parents of children with comorbid CD and was only presented to 29% (n=5) of children with ODD. Parent training was presented to 32% (n=10) of families with children who had LD and 23% (n=7) undertook this programme.

On the other hand, behaviour modification was discussed with 62% (n=8) of parents whose children had co-morbid CD, and, not surprisingly, 88% (n=7) of these children were engaged in this technique. Similarly, only 47% (n=8) of children with comorbid ODD received behavioural management techniques although they were presented as treatment options to 70% (n=12) of parents

whose children had comorbid ODD. Fifty two percent (n=16) of children with LD and 50% (n=5) of children with anxiety were reported to be receiving behaviour modification. In these cases, it was presented as an option to 61% (n=19) of families of LD children and 70% (n=7) of anxious children.

Regarding school intervention, 15% (n=2) of children with CD received this modality (presented as an option to 23%, n=3), along with 18% (n=3) of those with ODD (presented to 29%, n=5), 39% (n=12) with LD (presented to 39%, n=12), and 30% (n=3) with anxiety (presented to 30%, n=3). Results also showed that no families of children with CD received family therapy (presented to 7%, n=1); however, 12% (n=2) of families with children who had ODD (presented to 18%, n=3), 16% (n=5) with LD (presented to 19%, n=6), and 10% (n=1) with anxiety (presented to 30%, n=3) participated in family therapy.

Furthermore, only 7% (n=2) of children with LD (presented to 7%, n=2) were engaged in individual psychotherapy along with one child (33%) who had depression (presented to 33%, n=1). Children with anxiety, CD, and ODD were not receiving individual psychotherapy as a treatment intervention. This is not surprising considering psychotherapy was not presented to these groups as a treatment option.

In terms of parent level of satisfaction with diagnostic and treatment practices, thirty-four percent of parents reported they were not satisfied with the amount of information received from practitioners regarding ADHD and diagnostic practice, with over half of these indicating extreme dissatisfaction. Forty-four percent of parents were not satisfied with the treatment options that were presented and 24% were extremely dissatisfied.

Additionally, forty percent of parents expressed dissatisfaction with ongoing monitoring established for treatment efficacy. Moreover, parents' greatest level of discontentment focused on information they received from practitioners regarding support systems and resources available in the community (60% dissatisfied) and the assistance they received from the school system (56% dissatisfied).

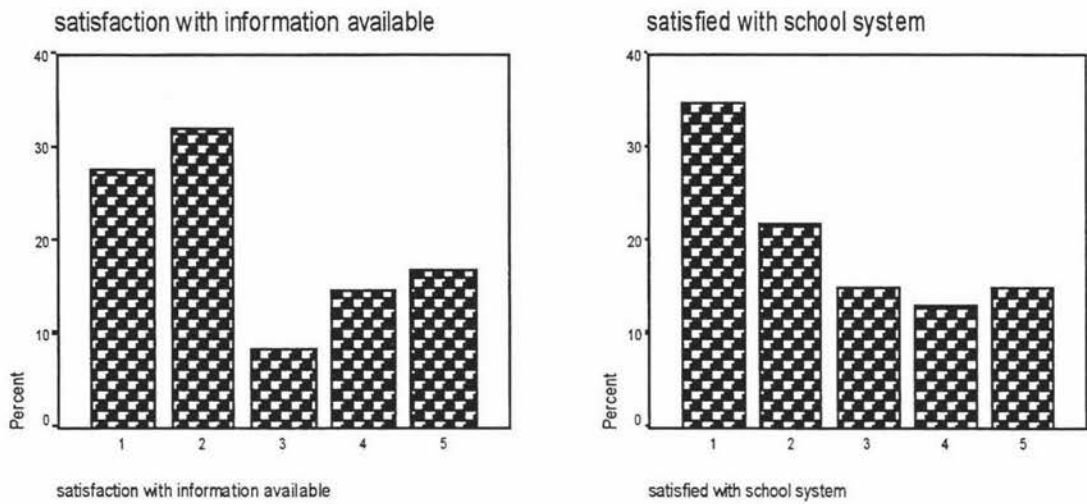


Figure 1 and 2: Parent reported level of satisfaction with ADHD practices
 1 = extremely dissatisfied
 3 = satisfied
 5 = extremely satisfied

One-way Analysis of Variance did not reveal any significant differences ($p > .10$) between parents level of satisfaction with practices and the child's subtype. Likewise, comorbid conditions did not appear to influence how satisfied parents were with the procedures conducted ($p > .10$).

Cultural issues in assessment of ADHD

As mentioned previously, 21% ($n = 10$) of the sampled children were of Maori ethnicity. In order to highlight cultural factors that may impact on the reliability of assessment with Maori children, parents were asked to indicate whether the child's teacher or the practitioners diagnosing and treating their child were from the same cultural background as themselves. Results indicated a large proportion (90%) of Maori children were diagnosed by practitioners from ethnic backgrounds different from their own, and 70% were treated by professionals from a differing ethnic group. Additionally, parent reports indicated 50% ($n=4$) of teachers who did complete rating scales ($n=8$) for Maori children in the assessment process were non-Maori.

When requested to indicate their level of satisfaction with practices surrounding diagnosis and treatment for ADHD, six of eight (75%) parents of Maori children were satisfied with the way their child's cultural background was taken into account during these procedures. Two (25%) cited extreme dissatisfaction with this issue. There were two missing cases. Results from the current study also indicated Maori parents were less likely than Pakeha parents to initiate an ADHD assessment for their children ($z = 11.408$, $p = .05$). No significant differences were revealed between ethnicity and diagnostic practices.

4.2 Practitioner Data

Diagnostic practices

Reports of diagnostic practices provided by practitioners generally confirm findings from parent/guardian data. That is, assessment of ADHD overall lacks standardisation; there was inconsistency in diagnostic procedures among the surveyed practitioners. A wide variation existed in the amount of information sought and evaluation tools used in these procedures. Only five (26%) practitioners employed most recommended procedures. Table 7 displays practitioner reported diagnostic practices employed.

Table 7. Practitioner reported diagnostic practices for ADHD with children

	<i>Number</i>	<i>Percent</i>
Medical examination	6	33
Parent interview	17	90
Child interview	5	28
Developmental/family history	9	48
Direct observation	4	23
Checklist/rating scale	8	44
School report	3	16
Teacher report	10	56
EEG	2	4
Extended family input	1	5
Other	5	27

Although the use of a physical examination was mentioned in the question relating to diagnostic practices, only 33% cited a medical examination as information they used in the evaluation process. Consistent with parent/guardian findings, parent interviews were indicated by most practitioners but only 28% reported conducting a child interview. Unfortunately, it could not be established from the information provided whether the interview was with the child alone or not. However, structured

clinical interviews were conducted in 21% of cases; but, one case only specifically indicated this procedure was employed with the child.

Forty two percent employed rating scales or checklists during the assessment procedure, with the Conners Parent and Teacher Rating Scales being the most commonly used (26%). Others utilised included: Parent and Teacher versions of the Child Behaviour Checklist (16%); Children's Depression Inventory (5%); Peabody Picture Vocabulary Test (11%); WISC-III (11%), and the Piers Harris Self-Concept Scale (5%).

Results also found over half of practitioners surveyed used teacher reports (56%) in arriving at their diagnoses and a modest 16% used school reports. Although not a recommended practice, four practitioners referred to trials of methylphenidate as a diagnostic test.

Few practitioners reported using direct observation of the child's behaviour either at home or school (5%). However, observations at time of assessment were reported in eleven percent of cases. Five percent of practitioners reported conducting observations but did not specify whether they were in the home, at school, or time of assessment. A developmental or family history was obtained in 48% of children surveyed. One practitioner included information from extended family members when making a diagnosis. A small number of children were assessed with the implementation of EEG's (n=1), CAT scans (n=1), and audiology (n=1), ophthalmology (n=1), occupational therapist (n=1), and neurotherapist reports (n=1).

Chi-square analysis failed to reveal any significant differences between diagnostic practices employed and child's age, ethnicity, or gender. Nor did statistics indicate significant differences between professionals affiliation and

the type of diagnostic procedures employed to confirm an ADHD diagnosis with the sampled children ($p's > .10$).

Somewhat reassuring, results from the present study found most (80%) practitioners used the formal Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) Fourth Edition criteria in arriving at their ADHD diagnoses, while 16% utilised DSM-III criteria. In contrast, General Practitioners (4%) did not use DSM or ICD-10 criteria but tended to rely on "past experience with several other similar children" or "accumulation of symptoms and observation." Furthermore, 90% of practitioners identified ADHD-related symptoms present in the sampled children prior to the age of 7 years.

Most children ($n = 16$, 85%) received an ADHD subtype classification. Table 8 presents the clinical characteristics of children for whom responding practitioners supplied data. Eleven percent had a ADHD subtype of inattentive type, 37% were assigned hyperactive type, and 37% were identified as combined type.

Table 8. Clinical Characteristics of children with ADHD ($n = 19$)

	<i>Number</i>	<i>Percent</i>
Subtype		
Inattentive	2	11
Hyperactive	7	37
Combined	7	37
Comorbidity		
Learning disability	9	47
Depression/dysthymia	2	11
Oppositional defiant disorder	6	37
Autism	1	5

As indicated in Table 8 learning disability was confirmed with 47% of children seen by responding practitioners. Approximately 37% had comorbid

oppositional defiant disorder; 11% depression/dysthymia; and one child had comorbid autism. Other comorbid conditions were considered but ruled out.

Treatment practices

Examination of practitioner data indicated widespread use of stimulant medication in the treatment of ADHD, with 82% of children receiving some form of medication (Table 9). In accordance with parent/guardian information, findings revealed underuse of other/alternative treatment interventions. Just over half (56%) of practitioners surveyed used school intervention in their treatment strategies, while 38% employed behaviour modification. Only twenty-five percent included family therapy or parent training as a management strategy for ADHD symptoms.

Few children received dietary intervention (n=1) or individual psychotherapy (n = 1). One practitioner included information on ADHD and support services as part of treatment intervention. Only five practitioners (28%) reported gathering multiple outcome measures, using more than one source and in more than one setting.

Table 9. Treatment strategies employed for children with ADHD (n = 19)

	<i>Number</i>	<i>Percent</i>
Medication	14	82
Behaviour modification	6	38
School intervention	9	56
Family therapy	4	25
Parent management training	4	25
Dietary Intervention	1	6
Individual psychotherapy	1	6
Information on ADHD & support services	1	6

In terms of ongoing monitoring established by practitioners for treatment efficacy, 42% cited monthly, 6-monthly, or annual visits with paediatricians or psychiatrists, and 29% enlisted feedback from school personnel. Only 17% utilised periodic re-evaluation with rating scales to determine efficacy. No practitioners surveyed obtained annual academic testing to monitor the child's progress, nor were placebo trials or medication-free trials at home or school employed to assess efficacy of and need for medication.

Cultural issues in assessment of ADHD

Ethnicity of the child did not account for any differences in diagnostic or treatment practices employed for ADHD. However, other significant findings were revealed. Fisher's Exact Test showed a significant trend ($z = 5.855$, $p = .06$) between Maori and Pakeha children surveyed and the subtype classification applied. That is, 80% of Maori children were classified as combined type whereas only 27% of Pakeha children were assigned this classification. The majority of Pakeha children (64%) were identified as hyperactive; in contrast, Maori children did not receive this subtype classification.

Differences ($z = 6.199$, $p = .03$) also emerged with the frequency of symptom No. 16 of DSM-IV criteria for ADHD - "Blurts out answers before questions have been completed". Practitioners identified this particular symptom as present in 80% of Maori children but only in 17% of Pakeha children.

In an endeavour to identify cultural factors considered relevant when assessing for or treating ADHD practitioners were asked to note any additional specific factors they considered when assessing or treating Maori or

Pacific Island children. The majority (n=7, 58%) did not identify any additional issues they would consider necessary when assessing or treating children from these ethnic groups.

Some practitioners however, reported the following: gathering of extended whanau input (n=4, 21%); co-work with Maori Mental Health Team (n=2, 10%) - "as Maori may be less likely to believe diagnosis and accept medication;" obtaining a genogram - whakapapa 1-2-3 generations (n=1, 5%); gathering information on Kohanga reo/preschool involvement (n=1, 5%); the use of Maori language when appropriate, which may improve therapeutic relationship (n=1, 5%); establishing families expectation of consultation (n=1, 5%); inquire about home life, church, and sport; and inquire about parents opinion of the child's behaviour and how they have tried to deal with it (n=1, 5%).

4.3 Comparison of parent and practitioner-reported diagnostic and treatment practices for ADHD

Analyses were undertaken to determine the consistency of data received by responding practitioners (n=19) with corresponding child information reported by parents or guardians. Differences emerged between parents' perception of the diagnostic procedures conducted for ADHD and practitioner reported practices. For example, when examining whether or not a medical examination had been conducted in the evaluation process, disagreement between parents and practitioners was evident in 10 (56%) cases. Nine parents indicated this procedure had been part of the assessment whereas the corresponding practitioners failed to report this procedure. One practitioner

indicated they had included a medical examination, and was contrary to parent report.

Similar results were found with both checklist/rating scales and direct observation. In both cases, nine (50%) parent reports differed from practitioner reports with parents, and not practitioners, indicating the presence of these procedures. Disagreement was evident with five (28%) cases of school report information. Once again, parents reported the use of the assessment procedure but practitioners did not.

Reports of parent interviews were corroborated between the two parties. However, responses pertaining to child interview procedures was not examined as it could not be established whether practitioners interviewed the child alone or in the presence of the parent.

In terms of treatment intervention strategies employed, inconsistencies were identified (except with medication) but to a lesser extent than those found with diagnostic procedures. Data on behaviour modification intervention differed in four (24%) cases with parents endorsing this intervention while practitioners failed to confirm this. In contrast, school intervention data revealed differences in four (24%) cases with practitioners, but not parents, reporting the use of this modality.

Parent and practitioner information differed (in $n=4$, 24% of cases) as to whether or not parents had received parent management training or dietary intervention. With both treatment modalities, three parents indicated usage, but the corresponding practitioners did not. In the other case, the parent indicated they had not used the modalities when the practitioner reported that they had.

Parents' (n=9, 56%) perceptions of their child's ADHD subtype classification conflicted with practitioner reported data. Parents (n=6) perceived their child as being combined type whereas practitioners assessed them as either hyperactive/impulsive (n=5) or inattentive (n=1). Two parents indicated their children were inattentive; practitioners in these two cases reported either hyperactive/impulsive or combined type. One parent reported hyperactive/impulsive type but the child was assessed as inattentive type by the practitioner.

Discrepancies were also evident with the following comorbid conditions: learning disorders (n=8), conduct disorder (n=6), anxiety (n=3), and depression (n=2). In all cases, parents acknowledged the presence of these conditions in contrast to practitioner reports. However, a different pattern was revealed when examining comorbid oppositional defiant disorder (n=8). That is, in five cases, parents were unaware practitioners had identified this co-existing condition in their children. In the other cases, three parents reported the presence of comorbid ODD when practitioners had not.

Finally, monitoring for treatment efficacy and potential side effects was investigated. Although five (26%) parents indicated rating scales as part of the monitoring process, only three (16%) corresponding practitioners cited the use of these instruments to monitor treatment progress. Eight parents (42%) indicated frequent reports from teachers and parents had been established with their children. However, no practitioner reports mentioned these procedures.

Placebo and medication-free trials at school were not employed as part of a monitoring plan according to both parent and practitioner reports. Practitioners did not indicate annual academic testing and medication-free

trials at home although two parents attested to academic testing procedures and three to medication-free trials at home. Overall, it is obvious that these were not insignificant discrepancies between parent and practitioner reports in a number of cases.

CHAPTER FIVE: DISCUSSION

5.1 SUMMARY

Due to the severity and pervasiveness of ADHD symptoms, and the relatively high incidence of comorbid conditions, a diagnosis of ADHD requires a thorough and comprehensive evaluation procedure to avoid misdiagnosis. In addition, treatment should be multidisciplinary as well as multimodal, and tailored to the needs of the individual child. However, overseas research suggests some children are being diagnosed as having ADHD with insufficient evaluation (Goldman et al., 1998) and there appears to be a serious underuse of systematic behavioural treatments (Wolrich et al., 1990).

Unfortunately, research investigating the diagnostic and treatment practices of ADHD in New Zealand is lacking. Therefore, the major aim of the present study was to identify the current diagnostic and treatment practices for ADHD with children in New Zealand to ascertain their consistency with current scientific research and recommendations. Overall, findings from the present study reveal inconsistent application of these recommended diagnostic and treatment procedures for ADHD as well as discrepancies between parent and practitioner reports.

According to both parent and practitioner-reports, wide variations in diagnostic procedures exist. A minority of children surveyed (11%) received a diagnosis of ADHD based on all recommended practices according to parent report. However, even here, there were instances (e.g., medical examination and school reports) where parents reported the use of a recommended

procedure, and the practitioner did not. Additionally, less than half underwent what might be considered a thorough and comprehensive evaluation for ADHD (i.e., information from multiple informants and sources, across multiple settings). Most apparent was an obvious neglect to employ school informants and information in the assessment process. Nevertheless, it was encouraging to find most practitioners reported utilisation of the formal diagnostic criteria of DSM-IV when assessing for ADHD. However, the use of structured interviews to capture this information was quite limited.

It is clear that stimulant medication (88%) and methylphenidate in particular (80%) remains the main treatment prescribed by practitioners for children with ADHD. However, findings revealed a relatively serious underuse of other forms of treatment. The lack of nonpharmacological therapies used with the majority of children and their families in the present study is of concern given that the empirically-based literature emphasises the importance of multimodality therapy for long-term beneficial outcomes (Barkley, 1998). Multiple treatment strategies are needed to enable the development of compensatory skills to cope with what can be a chronic and pervasive disorder.

In addition, given the large proportion of children being prescribed medication for ADHD, the establishment of appropriate ongoing monitoring for treatment effectiveness and possible side effects is essential. Unfortunately, findings indicate this practice is not always adequately accomplished with a large proportion of children not receiving adequate monitoring.

A second aim of the current study was to highlight cultural issues surrounding the diagnosis of ADHD. Many parents of Maori children in the

present study were dissatisfied with the manner in which their child's cultural background was considered. This is not surprising given that most children of Maori ethnicity were referred, diagnosed and treated by non-Maori practitioners. Of further concern was the finding that most practitioners in the current study did not indicate they would consider any specific cultural factors during these practices. Some practitioners (42%) however, did report co-working with Maori Mental Health Teams and identified additional factors related to the child's ethnic background when assessing this group of children. This latter finding combined with the majority of parents indicating some level of satisfaction with services, provides some encouragement. However, small numbers of participants limits generalisability.

5.2 MAJOR FINDINGS

The present study described the parent and practitioner reported practices employed in the assessment and treatment of children with ADHD. The practice parameters of the American Academy of Child and Adolescent Psychiatry, as well as other clinical guides, recommend the use of parent and child diagnostic interviews, school information, rating scales, observation, and complete medical/physical examination during the assessment process (American Academy of Child and Adolescent Psychiatry, 1997; Goldman et al., 1998). Findings from the present study revealed inconsistent application of these recommended diagnostic procedures for ADHD.

While a physical examination is not crucial in establishing an ADHD diagnosis (Wolrich, 1994), it is necessary in order to rule out any organic explanations for the presenting symptoms and to establish whether contraindications to the use of certain medications exist. However, only 33%

of cases based on practitioner report indicated using or having available, a medical examination in their assessment for ADHD. Parent data also confirmed some inconsistent application of this standard procedure. That is, twenty percent of parents indicated their child had not received a medical examination during the assessment procedure for ADHD. However, it is also the case that in almost half the cases where parents reported a medical examination, the corresponding practitioner did not. Thus, this figure of 20% looks to be an underestimate. One possible explanation for these findings could be that an examination had been conducted within the past 12 months of diagnosis. Another is that they simply were not referred to or conducted. Further investigation is needed to establish an accurate account of this practice.

Results suggest practitioners do not consider an interview with the child alone to be usual practice, and given the young age at which some children receive a diagnosis of ADHD, this may in some ways seem plausible. However, analyses showed that practitioners' decisions to conduct such an interview were not influenced by the child's age.

Direct observations (23% according to practitioner report) of the child's behaviour at home or school were not routinely conducted, and, when employed, were more likely to be with children under the age of 7 years. Additionally, practitioners infrequently requested school reports (40%). These rates are lower than those found by Zarin et al. (1998) in which 79% of U.S. based psychiatrists reported the inclusion of direct observations and school reports as components in the diagnostic assessment of ADHD.

Findings from the present study also indicated that teacher ratings of the child's behaviour via standardised checklists or rating scales were not used

consistently. Approximately one quarter of children surveyed received a diagnosis without any formal input from the school system (i.e. either a teacher checklist or school report). This is somewhat disconcerting given what appears to be in these cases a sole reliance on parent reports of symptomatology combined with observations in an office setting.

These findings are similar to reports from Wasserman et al.'s (1999) study that also revealed inconsistent utilisation of school reports and behavioural questionnaires in the evaluation for ADHD. In addition, Zarin et al. (1998) found only 64% of clinicians employed teacher rating scales and a study by Wolraich et al. (1990) showed family practitioners tended to use teacher rating scales (53%) less frequently than did paediatricians (74%).

One encouraging aspect of the current findings is that most practitioners reported utilisation of the formal diagnostic criteria of DSM-IV. Those practitioners not utilising these DSM criteria were general practitioners who tended to depend more on singular observations of the child's behaviour or reports from parents. However, given the small sample of general practitioners in this study, results must be interpreted with caution. By contrast, the proportion of practitioners using DSM criteria is much higher in the current study compared with paediatricians and family practitioners surveyed in the Wolraich et al. (1990) and Wasserman et al. (1999) studies. These studies found only 25% to 38% of practitioners utilised DSM criteria in the diagnosis of ADHD.

In terms of treatment for children with ADHD, results from the current study are consistent with overseas and New Zealand research which attest to the widespread use of stimulant medication in the treatment of ADHD (Biddle, 1998; Goldman et al., 1997). While stimulant medication reduces the core

symptoms of ADHD, this type of intervention on its own is inadequate given the complex nature of this syndrome. Clinical management typically requires multiple treatment strategies that enable the development of compensatory skills for coping with this chronic and pervasive behavioural condition (Anastopoulos, DuPaul & Barkley, 1991). A multimodal treatment approach is considered the ideal of sound clinical practice (Richters et al., 1995) and the failure to employ nonpharmacological intervention strategies in many cases in the present study is of major concern.

Less than half of the sampled children were receiving either behavioural modification programmes or school intervention. While it is possible that in some cases these programmes were initiated at school without direct parent involvement, this is unlikely given the need for informed consent before starting treatment.

Only three children in this study were engaged in psychotherapy, and very few families were undergoing active family therapy or parent training. Yet data also confirmed that a large proportion of these children appear to have clinically significant comorbid conditions. Thus, it was surprising to discover a lack of psychosocial modalities employed for these subgroups of children. Most surprising was the lack of non-medication treatment strategies employed for children with co-existing conduct disorder (CD) or oppositional defiant disorder (ODD).

The majority of these children received pharmacological intervention only. Parents were not often, if at all, presented with the option of parent training in behaviour modification techniques to assist in the management of these disruptive behaviours. This is surprising given research attesting to the efficacy of these interventions with conduct problems and oppositional defiant

behaviour and more significantly, given the poorer long term prognosis for children with these coexisting conditions (Jenson et al., 1997; Kuhne et al., 1997). Research by Khune, Schachar, & Tannock (1997) investigating the impact of oppositional defiant disorder and conduct disorder on ADHD highlighted the "need for assessment and intervention to go beyond the child alone and include the home setting" (p.1723). Findings suggest that if practitioners offer various options, including parent education and other psychosocial modalities, parents are more likely than not to consent to its use.

5.3 SPECIFIC FINDINGS

Diagnosis

Most of the sampled children received an ADHD diagnosis within the first two years of schooling (i.e. between 5 - 7 years of age). These results are consistent with literature that suggests symptoms are often identified when a child enters an environment which requires increased attention and restricted movement for long periods of time. Alternatively, symptoms may be identified earlier but practitioners in this study, with one exception, adhered to recommendations in the literature (Searight et al., 1995; Swanson et al., 1998) to keep the diagnosis provisional for children under 5 years of age as informants can easily misinterpret oppositional or even developmentally appropriate behaviour as symptoms of ADHD.

Although not a recommend practice, five practitioners referred to trials of methylphenidate as a diagnostic test. However, since children without ADHD have been shown to respond positively to stimulants (Peloquin & Klorman, 1986), and as many as 20% of children with ADHD may not

(Swanson, Sergeant, Taylor, Sonuga-Barke, Jensen, & Cantwell, 1998), this is not a valid diagnostic practice.

Comorbidity

When investigating the clinical characteristics of children in the present study, results showed the overall prevalence of comorbid conditions in this sample was 85% according to parent report. This figure is higher than that (69%) reported by Zarin et al., (1998). However, when examining co-existing conditions individually, conduct disorder, oppositional defiant disorder, anxiety, and depression were consistent with prevalence figures in the literature (Jensen et al., 1997; American Academy of Child and Adolescent Psychiatry, 1997; Anderson et al., 1987). Moreover, these findings are qualified by some significant discrepancies between parent and practitioner report.

Comorbid learning disorder on the other hand, was significantly higher than reports in the literature (70% reported by parents; 47% by practitioners). According to Cantwell (1996), the rate of children with comorbid learning disorder appears to be higher in paediatric samples while conduct disorder and oppositional defiant disorder is higher in psychiatric samples. The fact that a large proportion of children surveyed were seen by paediatricians may account for this relatively high prevalence of comorbid learning disorder. Again an issue to be mindful of here was that the figure of 70% reported by parents, is likely an overestimate when taking into account practitioner reports. That is, when comparisons of parent and practitioner data (n=19 children) were conducted, disagreement was evident with eight cases. Parents acknowledged the presence of learning disorder in contrast to practitioner reports.

Treatment

Given the efficacy of pharmacotherapy in the treatment of ADHD core symptoms, it is not surprising that the majority of children in the present study are prescribed medication. However, according to the practice parameters set out by the American Academy of Child and Adolescent Psychiatry (1997), it is essential that stimulants be carefully monitored for their effectiveness and potential side effects. This procedure should involve multiple outcome measures, by multiple sources, in more than one setting.

However, results in the present study suggest this is not always adequately accomplished. Although behaviour rating scales, annual academic testing, medication free trials, and feedback from parents and schools are recommended methods for monitoring treatment response, results showed that less than half of the children surveyed receive adequate ongoing monitoring. According to practitioner reports, very few enlisted feedback from school personnel, or utilised rating scales periodically to determine efficacy of medication and no practitioner employed annual academic testing, placebo trials, or medication-free trails at home or school. These findings are consistent with reports reviewed by Barkley (1998).

Given the typical routine schedule in which children take medication (i.e. morning and afternoon), parents may not be the best informants on effectiveness of medication. Therefore, including teacher information (reported to be obtained by only 29% of respondents) is crucial to evaluate medication effectiveness accurately.

Furthermore, given the high percentage of children in the present study who experienced side effects from medication, ongoing monitoring is essential. The most common side effects present in children surveyed who were prescribed

medication for ADHD (i.e. sleep problems, decreased appetite, stomach-ache, and headache) were consistent with those reported in the literature (Goldman et al., 1998).

The provision of educational material on ADHD and support services available in the community is considered a valuable aspect of a comprehensive treatment package. However, a relatively large proportion of parents (60%) in the present study reported moderate to extreme dissatisfaction with the amount of information they received from practitioners related to ADHD. Many parents contacted by the researcher expressed feelings of isolation and apprehension surrounding the diagnosis of ADHD and, in particular, about the consequences of a prescription of ADHD-related medication for their child. Some were uncertain of the long-term effects of stimulant medication. The provision of more extensive information to parents on ADHD is required to help alleviate such concerns.

Culture

According to findings in this study, parents of Maori children were less likely than Pakeha parents to initiate an ADHD assessment for their child. Whether parents of Maori children are less aware ADHD-related symptoms, or do not initially consider their child's behaviour to be maladaptive, warrants further investigation. Furthermore, a large proportion of Maori children surveyed were rated by non-Maori teachers, with instruments not normed for Maori. This is a concern which needs further investigation given the increasing body of literature that suggests culture may affect how teachers rate children's behaviour (Sonuga-Barke et al., 1993; DuPaul et al., 1997).

Children identified as Maori were also significantly more often classified as ADHD combined subtype compared to Pakeha children. In addition, the

DSM-IV criterion symptom "Blurts out answers before questions have been completed" was identified significantly more often in Maori children than their Pakeha peers. Reasons for these cultural differences were beyond the scope of this research but could be due to (a) children of Maori ethnicity are more inattentive and hyperactive than Pakeha children; (b) although parents may indicate that a behaviour is present it may not actually be seen as deviant within a cultural context; or (c) these cultural differences could be due to bias on the part of the observer. Further investigation is needed to account for current findings.

Direct comparisons of diagnostic and treatment practices for ADHD were conducted between practitioners accounts of these procedures and parent information. Results suggest that in many cases parents' perception of evaluation procedures and types of treatment interventions employed differed from reports by practitioners. That is, parents were more likely to confirm the existence of practices in contrast to practitioner accounts of these procedures.

Several explanations may account for these differences in reported practices. First, parents were provided with a checklist of diagnostic practices in the questionnaire which required minimal time to complete. In contrast, this question was based in broad terms in the practitioner questionnaire to avoid leading practitioners. Thus, the latter group may have neglected to mention procedures or considered it too time consuming to answer fully. Providing both groups of participants with identical checklists may have elicited more agreement, particularly given that some practitioners may have filled out questionnaires based on memory.

On the other hand, past research (Wolraich et al., 1990) suggests practitioners and parents may differ in their perceptions of what constitutes various aspects

of the process (e.g., a behaviour modification programme). That is, casual advice on behavioural strategies while in the practitioners office may be perceived as a behaviour modification programme by parents. Similarly, parents may perceive verbal reports from school personnel as checklist information gathered. Regardless of the reasons, extended discussion between these participants is required so both parties fully understand the process and the outcome (e.g., comorbid conditions, available treatment options).

Overall, for too many families, treatment options remain less than comprehensive: to a great extent the diagnosis and treatment a child and their family receives is dependent on the professional from whom they first seek help. Therefore, it is recommended that practice guidelines for ADHD be established and disseminated to practitioners to ensure children receive a comprehensive diagnosis and efficacious interventions.

5.4 LIMITATIONS

Although results of the present study provide important information about current diagnostic and treatment practices for ADHD, it is important to note potential limitations of the study. Firstly, due to the small sample of children in the current study (i.e. predominately Pakeha males), findings do not allow for a generalisation to the wider population of children with ADHD in New Zealand. However, the 5:1 male-to-female ratio found in this research is consistent with that described in other samples of children with ADHD (Zarin et al, 1998). Additionally, the percentage of Maori participants (21%) found in this study is comparable to the percentage of Maori in the general population.

Establishing an effective means of contacting Maori and Pacific Islands families to inform them of the present study proved difficult. A direct approach through Children Youth and Families Services (CYFS) was largely unsuccessful, even though CYFS was helpful in the process. Consequently, there were no Pacific Islands participants in the current study. Thus, results can not be generalised to this or other ethnic (e.g. Asian) populations in New Zealand.

Another limitation of the current study relates to the low practitioner response rate, which raises questions as to whether the respondents represented a biased sample of the total population of practitioners. One reason for this poor return rate was due to a substantial number of children (n=9) being assessed and treated by one practitioner who chose not to participate. Given the time constraints placed on practitioners, completing the surveys was unrealistic according to this individual.

In addition, the small sample of practitioners were from the Palmerston North, Auckland, Rotorua, Wellington and Wanganui regions. Thus, this sample may not be representative of practitioners throughout the country. Furthermore, several practitioner surveys were completed for a few children who received a diagnosis of ADHD up to 5 years previously. Therefore, diagnostic practices employed at that time may not reflect current practice. Direct evaluation of current child-practitioner contacts to determine actual practice is an important issue that needs to be investigated.

Given the high prevalence (85%) of comorbid conditions reported by parents, the sample may reflect a more serious subgroup of children with ADHD. Consequently, diagnostic and treatment practices employed with this group may be biased. Furthermore, parents here may consequently represent a more discontented group.

5.5 FUTURE DIRECTIONS

Despite the limitations of this research, the study did examine systematically how a sample of children in New Zealand are being diagnosed and treated for ADHD. Consequently, more specific research is now needed to determine the rationale for what clearly appears to be inconsistent application of recommended diagnostic and treatment practices. Research focusing on specific professional disciplines using a larger and more representative population throughout the country may provide for more accurate insight into these practices.

Future research may also investigate clinical characteristics of children referred to practitioners from diverse professions. First, studies could examine the validity of initial ADHD diagnoses. In addition, such studies could determine whether, for example, rates of conduct disorder and opposition defiant disorder are higher in psychiatric samples, and learning disorders higher in paediatric samples as reported in the literature (Cantwell, 1996). Studies should also consider whether the presence of co-existing conditions affect the short-and long-term response to treatment, and the course of these conditions after successful treatment of ADHD.

Findings from the present study revealed a lack of systematic behavioural treatments for children with ADHD. Whether practitioners are unfamiliar with the techniques or with research attesting to the efficacy of these interventions or whether they perceive some families as insufficiently equipped to maintain such strategies remains unclear. Additional research is needed to determine reasons for why non-pharmacological interventions are not presented routinely to parents as treatment options. Longitudinal data is

also required to investigate the long-term effects of stimulant medication on children with ADHD.

The void of studies on the subject of ADHD and Maori or Pacific Islands children suggests the urgent need for more research to be done in this area. Attempts to recruit Maori and Pacific Islands samples is imperative in order to address many of the cultural issues identified in this study. Given the verbal communication preference of these ethnic groups, it is recommended that future research adopt both quantitative and qualitative methodologies. Qualitative methods will be of major benefit in research which investigates specific ADHD-related symptoms to distinguish between those which seem to be universally perceived and those which are more culturally dependent. However, factors such as level of assimilation and acculturation affect ratings and need to be somehow addressed.

At present, there is a dearth of information regarding the validity of behavioural ratings across different cultural groups. Overseas research (Reid et al., 1998) suggests a halo effect is possible when teachers rate African American children for ADHD. Consequently, a disproportionate number of these children could be diagnosed ADHD combined type when it doesn't exist. Given findings of the present study which suggest Maori children may also be disproportionately classified as ADHD combined type, the "halo" hypothesis warrants investigation. Experimental research that compares teacher ratings on ADHD and observation data is needed to determine if there is a negative halo effect for Maori and Pacific Islands children.

In conclusion, multiple causative factors have been posited for ADHD. Yet to date, no single variable has been found to account for this extensively researched disorder. Diagnosis remains difficult due to the degree to which

symptoms vary as a function of situational demands, and the likelihood that children with ADHD will display comorbid conditions. Consequently, diagnosis requires a thorough and comprehensive evaluation procedure that involves multiple sources, from multiple informants, and across settings to avoid misdiagnosis. Furthermore, given the severity and pervasiveness of ADHD symptoms, and the relatively high incidence of comorbid conditions, multimodal treatment strategies are advocated which tailor interventions to the specific needs of the child.

Many unresolved issues surrounding ADHD need to be explored further, such as the problem of overdiagnosis or misdiagnosis, and the issue of generalising treatment gains across situations and behaviours. Future research into specific interventions known to have some efficacy is necessary to determine whether they can be combined to produce longer-term benefits for children with ADHD, while also being attentive to ethnic implications when conducting cross-cultural research.

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APPENDIX A

'PARENT/GUARDIAN INFORMATION SHEET'

The current research is being carried out by Denise Kingi (Ulu'ave), under the supervision of Dr Kevin Ronan, as part of her Masters degree in Psychology at Massey University, Palmerston North. If you have any queries regarding this study Denise Kingi may be contacted by leaving a message at the School of Psychology office, Massey University, on (06) 350 4118 or alternatively, contact Dr. Kevin Ronan on (06) 350 5799 Ext. 2069. In addition you can write to either researcher c/o School of Psychology office, Massey University, Private Bag 11222, Palmerston North.

What is this research about?

This study is concerned with identifying the current diagnosis and treatment practices for Attention Deficit/Hyperactivity Disorder (ADHD) with children in New Zealand.

What will I be asked to do?

If you are a parent or guardian of a child, aged between 3 – 16 years, who is currently diagnosed with Attention Deficit/Hyperactivity Disorder you will be invited to complete a questionnaire relating to your experiences of referral, assessment and treatment procedures for ADHD. You will also be asked to provide some very general background information. With your consent, a standard questionnaire will be sent to the practitioner currently treating your child for ADHD in order to collect additional information on the assessment and treatment procedures that were conducted. All information will be kept strictly confidential. If requested, this questionnaire can be made available for your perusal prior to it being sent out. Your participation in this research is voluntary and the attached consent forms are to be read and signed if participating.

How much time will be involved?

The questionnaire will take around 15 – 20 minutes to complete.

What can you expect from the researcher?

If you choose to take part in this study you have the right to:

- contact the researchers at any time to discuss any aspect of the study or to ask any questions;
- decline to participate;
- refuse to answer any particular question;
- withdraw from the study at any time;
- provide information on the understanding that it is completely in confidence to the researchers, to be used only for the purposes of the research;
- be given access to a summary of the findings of the study when it is concluded.

If you would like to take part in this study, please answer the questions provided in the questionnaire and return the completed and signed consent form (located on the back page) to the researchers in the envelope provided. Please keep this information sheet for your own reference. Thank you for your cooperation.

APPENDIX B

'CONSENT FORM'

I have read the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I understand I have the right to withdraw from the study at any time and to decline to answer any particular questions.

I agree to provide information to the researcher on the understanding that my name will not be used without my permission. *(The information will be used only for this research and publications arising from this research project).*

I agree to participate in this study under the conditions set out in the Information Sheet.

Signed:

Name: **Date:**

RELEASE OF INFORMATION CONSENT FORM

Confidential Records

I hereby **agree/do not agree** (if not circled, we assume 'agree') to the release of information, via a standard questionnaire, concerning the evaluation procedures conducted and treatment strategies implemented for Attention Deficit/Hyperactivity Disorder with my child. The records will at all times remain **strictly confidential**.

To: (Name of practitioner)

Address

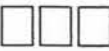
Parent/Guardian name:

Signature:

Name of child:

Date:

APPENDIX C

**PARENT/GUARDIAN QUESTIONNAIRE**

Please answer the following questions as best you can.

Instructions: For the purpose of this study the term "Practitioner" refers to a general practitioner (doctor), psychologist, paediatrician, or psychiatrist.

1. Who was the first person to **suggest** that your child be assessed for ADHD? (please circle)

Family member	1
Friend.....	2
Teacher/School official.....	3
Social Worker.....	4
Psychologist.....	5
Myself.....	6
General Practitioner (Doctor).....	7
Other (please specify)	8

2. Which practitioner **diagnosed** your child with ADHD and which practitioner is **now treating** your child for ADHD? (please circle)

	Diagnosed	Treating
General Practitioner (Doctor)	1	1
Educational psychologist	2	2
Paediatrician	3	3
Psychologist	4	4
Psychiatrist	5	5
Other (please specify)	6	6

3. Please list all the practitioners your child saw before being diagnosed with ADHD and list them in the order in which your child saw them.

Practitioner	Number of visits with practitioner	Length of time at each visit	Outcome(referred on, diagnosis given etc)
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____

4. Were either of the following individuals from the same **cultural background** as your child?
(Please circle)

Practitioner diagnosing your child	Yes	No	Don't know
Practitioner treating your child	Yes	No	Don't know
Teacher at time of assessment	Yes	No	Don't know

5. Which of the following **assessment procedures** were used to help make a diagnosis of ADHD for your child? (Circle as many as applicable).

Parent interview	1
Child interview (alone).....	2
Medical examination.....	3
Observation of child at home/school	4
Parent checklist of child's behaviour	5
Teacher checklist of child's behaviour	6
Child's school reports.....	7
Brain Scan	8
EEG	9
Other – specify	10

6. Were you given any **feedback** about how the practitioner arrived at an ADHD diagnosis?
(Please circle).

No Yes (if yes, please circle type of feedback)

Verbal.....	1
written	2
both	3

7. What **subtype** of ADHD was your child classified as? (please circle)

Don't know.....	1
Predominately inattentive type.....	2
Predominately hyperactive type.....	3
Combined type(inattentive and hyperactive).....	4

8. For the following questions please show (by ticking in the brackets) which treatment options your practitioner discussed with you, which one/s you said you preferred, and the treatment/s your child is currently receiving or has received (tick as many as applicable).

	Discussed with practitioner:	Parent expressed a preference:	Treatment actually received/or receiving:
No options discussed	()	()	()
No treatment for child	()	()	()
Medication	()	()	()
Behaviour Modification	()	()	()
School intervention	()	()	()
Parent training in child management	()	()	()
Family therapy	()	()	()
Dietary interventions	()	()	()
Individual Psychotherapy	()	()	()
Others (please specify)	()	()	()

9. Please list any ADHD-related treatment/s you **objected to**/did not want for your child.

10. Please list any ADHD-related treatment/s which you found to **improve** your child's behaviour and school work.

11. If your child is being prescribed medication for ADHD please answer the following questions (brand name and dosage of medication may be found on the container label)

Brand name/s of medication: _____

Current average daily dose: _____
(e.g. 10mg, 2 times daily)

12. What type/s of ongoing **monitoring** has the treating practitioner established for your child?
(circle as many as applicable)
- None1
 Annual academic testing2
 Frequent reports from teachers or parents3
 Parents completing rating scales annually4
 Prescription renewal5
 Medication-free trials at home6
 Medication –free trials at school7
 Placebo trials8
 Medication increase or decrease9
 Other (please specify)
10
13. Which of the following **side effects** has your child experienced while taking ADHD-related medication? (circle as many as applicable)
- None1
 Sleep problems2
 Decreased appetite3
 Stomach ache4
 Headache5
 Jitteriness6
 Nausea7
 Irritability8
 Rebound9
 Other – please specify
9
14. How often do you visit your practitioner to see if the medication is working? (please circle)
- Not on medication1
 Never2
 Monthly3
 Three monthly4
 Six monthly5
 Annually6
 When we (parents) initiate.....7
15. Which of the following **psychological conditions** was your child identified as having, in addition to ADHD, at the time of assessment? (Circle as many as applicable)
- None1
 Learning Disability2
 Depression3
 Anxiety4
 Conduct Disorder5
 Oppositional Defiant Disorder6
 Bipolar Disorder7
 Don't know8
 Other – please specify
9

16. What have you found to be the most distressing aspect of having your child diagnosed and treated for ADHD? (Please circle)

Perception of being blamed by others	1
Where to go for help	2
Not knowing what was wrong with your child	3
Not knowing who to believe	4
The school system	5
Administering medication at home/school	6
Lack of information from the practitioner	7
Other (please specify)	
_____	8

The following statements refer to your degree of satisfaction with help received from the practitioner and how effective treatment has been. Please circle the one number, using the scale below, that best describes how satisfied you feel about each statement.

	Not at all satisfied		satisfied		extremely satisfied
1. Amount of information you received from your practitioner about ADHD symptoms	1	2	3	4	5
2. Your involvement in the diagnosis	1	2	3	4	5
3. Feedback from the results of diagnosis	1	2	3	4	5
4. Information you received from the practitioner on treatment options for your child	1	2	3	4	5
5. Your involvement in the choice of treatment	1	2	3	4	5
6. Effectiveness of the treatment your child is currently receiving for ADHD					
(a) at home - with parents	1	2	3	4	5
- with siblings	1	2	3	4	5
(b) at school	1	2	3	4	5
(c) with peer relationships	1	2	3	4	5
7. Ongoing monitoring by the practitioner on whether treatment is effective	1	2	3	4	5
8. Information on support systems or resources available in your community	1	2	3	4	5
9. Taking you and your child's cultural background into account	1	2	3	4	5
10. The assistance from your child's school system	1	2	3	4	5

General Information

The following questions relate to the child diagnosed with ADHD. Please answer as best you can.

1. Is your child (Please circle)

Male

Female

2. How old was your child when he/she was first diagnosed with ADHD? (e.g., 5 years 3 months)

.....yearsmonths

3. What is her/his age now?

.....yearsmonths

4. How old was your child when you first noticed he/she displaying ADHD-type problems?

.....yearsmonths

5. Please indicate which ethnic group/s the child identifies with (circle as many as applicable).

- New Zealand Pakeha.....1
 New Zealand Maori.....2
 Samoan3
 Tongan4
 Cook Island5
 Nuian6
 Fijian7
 Asian8
 Other (please specify)
9

6. Do any other biological members of the child's family have, or have had, a diagnosis of ADHD? (Please circle)

No

Yes (if yes, what is their relationship to the child
i.e. brother, mother etc?)

7. Are there any extended family (e.g. grandparents, uncles, etc.) living in your house?

No

Yes (if yes, please list e.g. grandmother and aunty)

We would now like to ask you a few questions about yourself. Please circle the response that is most true for you.

8. Please indicate whether you are

Male

Female

9. What is your age? years

10. Marital status

Single 1
 Married 2
 Defacto 3
 Separated 4
 Widowed 5
 Divorced 6

11. Please indicate which ethnic group/s you identify with (circle as many as applicable).

New Zealand Pakeha 1
 New Zealand Maori 2
 Samoan 3
 Tongan 4
 Cook Island 5
 Niuan 6
 Fijian 7
 Asian 8
 Other (please specify)
 9

12. Which of the groups below show you and your partners highest educational qualification?

No school qualification 1
 School Certificate 2
 Universtity Degree or Diploma 3
 Any other Tertiary qualification 4

13. What is the combined total income of your household?

\$0 - 19,999 1
 \$20,000 - 39,000 2
 \$40,000 - 59,000 3
 \$60,000 - 79,000 4
 \$80,000 plus 5

14. How many people live in your home?

Thank you for taking the time to complete this questionnaire.

APPENDIX D

'COVERING LETTER TO PRACTITIONER'

DATE

ADDRESS OF PRACTITIONER

Dear

My name is Denise Kingi and I am currently conducting research related to Attention Deficit/Hyperactivity Disorder as part of my Masters degree in Psychology at Massey University, Palmerston North under the supervision of Dr. Kevin Ronan, Senior Lecturer, School of Psychology, Massey University.

This research involves examining the current diagnosis and treatment practices for ADHD as well as identifying certain clinical and treatment characteristics of children presenting with ADHD-related symptoms. **Name of participant** has agreed to participate in the present study and has identified yourself as the practitioner who diagnosed, or is currently treating her/his child for ADHD. **Name of participant** has been made aware of the reasons for collecting this information and consented to the release of such information, via a standard questionnaire, as per attached.

If you are willing to complete the enclosed Questionnaire could you please return it in the envelope provided as soon as possible. At no time during this research will your name be identifiable and the information you give will remain **strictly confidential**. It is assumed that filling in the questionnaire implies consent. Your assistance with this research would be greatly appreciated.

If you have any queries regarding this study please contact me on (06) 3536514 or my supervisor Dr Kevin Ronan c/o School of Psychology, Massey University or phone (06) 3505799 Ext. 2069.

Yours sincerely

Denise Kingi

APPENDIX E



TREATING PRACTITIONER QUESTIONNAIRE

Please complete the following questions in relation to the child referred to in the accompanying letter and named below. The parents have consented to the release of this information. Please use the back of the questionnaire if you require more space to answer any of the following questions.

NAME OF CHILD: _____

1. Which practitioner assessed and diagnosed the above mentioned client? (please circle)

Yourself1
 General Practitioner2
 Psychologist3
 Pediatrician4
 Psychiatrist5
 Other – please specify
 _____6

2. Was the client diagnosed by you (or some other health professional) according to the criteria of: (please circle)

DSM – IV1
 ICD – 102
 Don't know3
 Other (please specify)
 _____4

3. If using DSM-IV criteria, what ADHD subtyping was applied to this child? (please circle)

None1
 Predominately inattentive type2
 Predominately hyperactive type3
 Combined type4

4. How many times have you seen this client regarding ADHD-related symptoms?

5. Were any ADHD-related symptoms present in this child prior to the age of 7 years. (please circle).

Yes No Don't know

9. Which of the following symptoms were considered present during the assessment to a degree that is maladaptive and inconsistent with developmental level? (tick all that apply)

- Fails to give close attention to details/makes careless mistakes
- Has difficulty sustaining attention in tasks or play activities
- Does not seem to listen when spoken to
- Does not follow through on instructions/requests
- Has difficulty organizing tasks and activities
- Avoids/dislikes/is reluctant to engage in tasks that require sustained mental effort
- Loses things necessary for tasks/activities
- Is easily distracted by extraneous stimuli
- Is forgetful in daily activities
- Fidgets with hands or feet/squirms in seat
- Leaves seat when remaining seated is expected
- Runs about/climbs excessively in situations in which it is inappropriate
- Has difficulty playing/engaging in leisure activities quietly
- Is "on the go"/acts as if "driven by a motor"
- Talks excessively
- Blurts out answers before questions have been completed
- Has difficulty awaiting turn
- Interrupts/intrudes on others

10. Please indicate whether the child was either considered for or identified as having any of the following conditions which can coexist with ADHD (tick as many as apply)

	Considered but ruled out	Confirmed
None	()()
Learning Disability	()()
Depression/dysthymia	()()
Anxiety	()()
Conduct Disorder	()()
Oppositional Defiant Disorder	()()
Bipolar Disorder	()()
Asperger's syndrome	()()
Autism	()()
Other – please specify _____	()()

11. Of the alternative problems that were considered with the client and ticked above why/how were these ruled out?

12. Which of the following treatment options have you discussed directly with and for which one(s) did the clients parent(s)/guardian(s) express a specific preference? Please also indicate all treatment(s) the client is currently receiving (**tick as many as apply**).

	Discussed with Parent:	Parent expressed a preference:	Treatment currently receiving:
No options discussed.....	()	()	()
No treatment.....	()	()	()
Medication.....	()	()	()
Behaviour Modification.....	()	()	()
School intervention.....	()	()	()
Parent training in child management.....	()	()	()
Family therapy	()	()	()
Dietary interventions.....	()	()	()
Individual Psychotherapy.....	()	()	()
Others (please specify)			
.....	()	()	()
.....	()	()	()

13. If the client is being prescribed medication for ADHD please answer the following questions:

Brandname/s of medication:

.....

Current average daily dose: (e.g. 10mg or 5mg bid).....

14. What type of ongoing monitoring has been established for the client to monitor (or administer) treatment procedures?

General Information

The following questions are not specifically related to the referred client, but are general questions which may contribute to our understanding of current assessment and treatment practices for ADHD with children in New Zealand. Your contribution would be greatly appreciated. Please use reverse side of questionnaire if you require more space.

15. In your work with children, what other psychiatric disorders have you found to coexist most often with ADHD (circle as many as apply)?

- None..... 1
Learning Disability2
Depression/dysthymia.....3
Anxiety4
Conduct Disorder5
Oppositional Defiant Disorder6
Bipolar Disorder7
Don't know 8
Other - please specify
.....9

16. In your experience, what procedures do you consider to be most useful in differentiating ADHD from other child psychiatric disorders?

17. When assessing or treating children from a Maori or Pacific Island ethnic background are there any additional specific factors that you consider relevant in order to obtain an accurate ADHD diagnosis?

18. Please indicate whether you are (please circle)

Male Female

19. What is your professional affiliation? (circle as many as apply)

- General practitioner1
Registered Psychologist2
Clinical Psychologist3
Child/Adolescent Clinical Psychologist4
Paediatrician5
Psychiatrist6
Other - please specify7

20. How many years since graduating with your professional qualification (as indicated above) have you been in practice, whether full-time or part-time?

21. Please indicate which ethnic group/s you identify with (circle as many as apply)?

- New Zealand Pakeha1
New Zealand Maori2
Pacific Islander3
Asian4
Other - please specify5

Thank you for taking the time to complete this questionnaire.