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The Diagnosis and Treatment of Attention Deficit Hyperactivity Disorder: Knowledge and Perceived Roles and Responsibilities of Teachers in the Seventh-day Adventist School System

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The Diagnosis and Treatment of Attention Deficit Hyperactivity Disorder: Knowledge and Perceived Roles and Responsibilities of Teachers in the Seventh-day Adventist School System.

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Declaration

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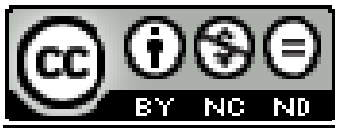

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And, finally, to the teachers and principals who participated in this research project. It is my prayer that this project will help you to be a further witness to the children and parents that you come into contact with.

Dedication

I dedicate this thesis to the memory of my grandmother, Lois Burnie Costello,
a loving mother and grandmother, a dedicated teacher and helper of teachers.
Her dedication lives on in the lives of others she touched.

I also dedicate this thesis to my mother, Michelle Lois Singer,
who has made more of a difference as a mother and teacher than she will ever know
or admit to. Thanks Mum, from the bottom of my heart.

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Abstract

Attention Deficit Hyperactivity Disorder (ADHD) is the most commonly diagnosed childhood behavioral disorder said to affect approximately 3-5% of the primary school-aged population. There has been much controversy about ADHD diagnosis and treatment in recent years. Research has identified teachers as one of the major parties which contribute to the diagnostic process, and there has been literature to suggest that teachers may play a part in the over- and under-diagnosis of ADHD. In light of this, and other research, teachers' sources of information about ADHD are questionable. A search of the Adventist Education website revealed that no policies existed in the Adventist schools in Australia for ADHD management.

Therefore the purpose of the research is to find out what teachers in the Seventh-day Adventist school system perceive their role and responsibilities to be. This research also compares teacher perceptions with what research outlines as the roles and responsibilities of the classroom teacher in the diagnostic and treatment processes of ADHD.

The research used a quantitative research design by way of a survey to examine teacher knowledge, opinions and perceived roles. The survey contained four sections including a demographic section and sections for each of the topics listed above, and used a five-point likert-type scale to attain responses from teachers.

Various forms were used in data analysis including t-tests, correlation analyses and descriptive statistics. Major findings revealed: that there were some differences in factual knowledge of ADHD between those who had experience with ADHD and those who had not, and those who were special needs teachers as opposed to classroom teachers; teachers were likely to be unsure about causes and prevalence of ADHD and treatment with stimulant medication; teachers performed poorly in relation to questions about diagnostic criteria and correct diagnosis regarding observation of the improvement of ADHD symptoms when on stimulant medication; teachers were generally aware of co-morbid disorders.

Other findings of the study pertaining to the opinions of teachers found that: teachers agree that stimulant medication improves symptoms associated with ADHD; teachers believe that ADHD is over-diagnosed, there are too many students on stimulant

medication and stimulant medication should not be the only form of treatment for ADHD; teachers are of the opinion that they need more information about ADHD; and teachers are not overly confident in their abilities to identify ADHD in children.

Major issues presented in relation to teachers' perception of their roles and responsibilities established that: A good portion of teachers were unsure if they would refer a child displaying symptoms of ADHD; teachers were likely to say they would be actively involved but did not follow through on questions which indicated that they would be involved; teachers are generally willing to be involved in most aspects of the diagnosis and treatment process however, they are apprehensive about administering medication; teachers, in general, did not attend valuable in-service or pre-service courses and were more inclined to receive their information from 'second-hand' sources (such as parents or other professionals); and a large percentage of teachers were unsure where they received their information from.

A need for teachers to become critical consumers of information was identified and teacher responses indicated that the training available was not sufficient in preparing them for their significant role in diagnosing and treating ADHD.

Therefore it is recommended: That in-service education about ADHD for teachers be targeted in Seventh-day Adventist schools; policies be developed in Seventh-day Adventist schools to address the role of the teacher in diagnosing and treating ADHD; pre-service training address some issues in ADHD; and teacher collaboration and support groups be formed especially between special needs teachers, those who have experience with ADHD and other teachers.

Chapter 1: Introduction to the Study

Introduction

This chapter introduces the topic to be studied, and examines the rationale or reasons why the study has been chosen. This leads to a hypothesis and the main purpose and aim of the research project. Specific objectives and research questions are included in the introductory chapter to give structure and a clear idea of where the study is headed. The scope of the study and organization of the report are also covered in this section to give a brief overview of what areas the research project covers.

Rationale

Prevalence of Attention Deficit Hyperactivity Disorder

Attention Deficit Hyperactivity Disorder (ADHD) is the most commonly diagnosed childhood behavioral disorder said to affect approximately 3-5% of the primary school-aged population (National Institute of Health (NIH) Consensus Statement, 1998, Introduction). A set of guidelines released by the New Zealand Ministry of Health identifies ADHD as the most common diagnosis given to children in child and adolescent New Zealand mental health services (New Zealand (NZ) Ministry of Health, 2001, 6). Research conducted in Australia reveals that "commencement and continuation of stimulant treatment has increased six-fold in NSW in six years" (NSW Department of Health Stimulant Sub-Committee, 1994 cited in National Health and Medical Research Council (NHMRC), 1997, Part 4.6.2). The NHMRC suggest that prevalence rates of ADHD are on the increase in Australia. However, this may not

necessarily have as much to do with an increased number of children as inaccurate diagnoses (State Health Departments, 1995, cited in NHMRC, 1997, Part 4.6.2 - Australia-Wide Data; NZ Ministry of Health, 2001, 6).

Controversy about ADHD Diagnosis and Treatment

Throughout the past century and especially in current years ADHD has been an issue of much speculation. While most of the controversy is centered around the treatment of ADHD, assessment and diagnosis of the disorder are also factors of equal concern (Bonn, 1996, 255).

Teachers' Role in Diagnosing and Treating ADHD

Research has identified teachers as one of the major parties which *contribute to* the diagnostic process, along with general practitioners, pediatricians, school psychologists and parents (Miranda, Presentacion, & Soriano, 2002). There is no doubt that the role teachers play in both diagnosis and treatment is a significant one (Doak, 2003). This raises the questions: Are Seventh-day Adventist teachers equipped for this responsibility? And how informed are they about the critical aspects of ADHD?

Over- and Under-Diagnosis and Teachers

Over- and under-diagnosis of ADHD is a major concern and there has been literature to suggest that teachers may play a part in this dilemma (Glass & Wegar, 2000). There are medical documents targeting general practitioners and pediatricians outlining the diagnostic procedure. However a search of the literature suggests that there has been little

evidence that such information is available for teachers. This lack of information leads to a few questions: Are teachers properly informed about diagnosing and treating ADHD? Is there research aimed at gauging teacher knowledge about ADHD? What do teachers perceive their role to be and are they confident to fulfill this role? What pre-service and in-service training is available to help teachers become aware of, and fulfill the role they play in diagnosing and treating ADHD?

Sources of Information about ADHD

There are a number of sources of information on the diagnosis and treatment of ADHD available to teachers, including professional journals and in-service courses. However, recent American research suggests that only 12% of teachers get their knowledge of stimulant medication from professional journals (Snider, Busch, & Arrowood, 2003, 54), which leaves open the question of where the rest of the teachers get their information from and the quality of the information they receive. Other research from the USA informs us that 94% of teachers would like more information about ADHD (Bussing, Gary, Leon, Garvan, & Reid, 2002, 333). Comparable figures were not available for Australian teachers, but a check of State Department of Education websites revealed very little in the way of in-service programs on ADHD available for teachers, and none at all in the Seventh-day Adventist school system.

Policies and Procedures in Schools

Teachers need to be aware of what is expected of them in regards to the care of a child with ADHD in their classroom. Although a small amount of information is

available from some Department of Education websites, the question remains open as to how often teachers access these websites. A search of the Adventist Education website revealed that no such information or policies existed in the Adventist schools in Australia.

Hypothesis

The researcher hypothesizes that, in the majority of cases, the teachers are the main group of referees regarding students with ADHD. Because this is the case the major research question asks: What do teachers perceive their role to be in diagnosing and treating students with ADHD and are they equipped to deal with such a role? It is hypothesized that the majority of Australian teachers enter into the profession unaware and ill-equipped for these responsibilities, and in-service teacher education and support on this topic is insufficient for the significant role teachers play in the diagnosis and treatment of ADHD.

Aim

Therefore the purpose of the research is to find out what teachers in the Seventh-day Adventist school system perceive their role and responsibilities to be, and how these perceptions compare with what research outlines as the roles and responsibilities of the classroom teacher in the diagnostic and treatment processes of ADHD. In addition, the research aims to gauge how prepared teachers are for this role.

Objectives

It is hoped that information gleaned from research outlined here and results from teacher questionnaires will ultimately present an accurate picture of the following in the Seventh-day Adventist school system:

a) What the teachers' position is in relation to their current knowledge, opinions and perceptions of ADHD;

b) Teachers' confidence in their role as a teacher confronted with ADHD;

c) The source and reliability of teachers' information about ADHD; and

d) How teachers can be better prepared for the critical role they assume in the diagnostic and treatment process of ADHD.

Research Questions

In response to the objectives outlined above research questions have been formulated to structure the study and findings. These are as follows:

1. How accurate is current teacher knowledge of the etiology of ADHD and the guidelines for diagnosis?

2. How do teachers' perceived roles and responsibilities in diagnosing and treating students with ADHD compare to those outlined in current research and school policy?

3. Do teachers feel that they are confident and equipped to deal with students with ADHD in their classrooms?

4. Where are teachers most likely to get their information about ADHD and how reliable is this information?

5. How effective is the training available to Australian Seventh-day Adventist teachers in preparing them for the role they play in the diagnosis and treatment of children with ADHD?

Scope of the Study

Attention Deficit Hyperactivity Disorder is a subject which has the potential be overwhelming. To avoid expansion into other areas of ADHD, the researcher kept to strict guidelines. Research articles were selected carefully and, although some medical perspectives were explored to gain an insight into the etiology of ADHD and treatment strategies, research predominantly focused on educational perspectives of schools, administrators, special education and regular classroom teachers, and how each of these related to ADHD. Participants in the survey were limited to Grades K-6 (primary) teachers and principals and surveys were only distributed to teachers in Seventh-day Adventist schools in each state of Australia.

Organisation of Study

This section aims to provide an overview of the contents of each section of the report.

Chapter 1 (this chapter) outlines the background information to the study and provides a rationale for the study. This leads to a hypothesis and subsequently the aim and specific objectives developed by the researcher. Research questions are included in this section also to supply the framework for the objectives to be explored. The scope of the study is given and also a brief organizational note.

Chapter 2 summarizes current literature relevant to the topic. The aim of the chapter is to provide a context for the study of teacher perceptions of ADHD and highlight the particular need for such a study to be undertaken. The chapter looks at some of the definitions of ADHD and begins by examining some medical and alternative perspectives of the disorder. The chapter then moves into more specific research

involving teachers, treatment and diagnosis. Finally, some of the policies and procedures from the State Education Departments are analyzed and information from Adventist and state schools regarding in-service courses is discussed.

Chapter 3 looks at the methodology used by the researcher to attain the results of the study. This chapter gives details about the participants, the survey instrument and questions, responses from participants, the procedure involved in formulating an appropriate survey and the method of data analysis.

Chapter 4 presents the results of the survey. The results will be presented in the respective sections of the survey to which they apply and brief explanations of the figures, using descriptive statistics, will also be provided. Correlations between data will be performed to find relationships between particular aspects and questions in the survey and determine whether these relationships apply to answering specific research questions. T-tests will also be examined to determine whether significant differences in knowledge, opinions or perceived roles exist between sub-groups in the sample group of teachers.

Chapter 5 discusses the findings of the study in relation to the research questions in chapter 1. Questions from the survey will be matched with research questions in this section and literature reviewed in Chapter 2. These will then be discussed in more depth. Chapter 5 also presents the final conclusions of the study, recommendations for practice in light of findings, limitations of the study and related topics for further exploration in the future.

Chapter 2: Review of Current Literature

Introduction

In answer to the research questions the literature review will include an outline of current literature available on diagnostic processes, an analysis of the different viewpoints on the treatment of ADHD, research conducted about teacher knowledge, perceptions and attitudes to ADHD and an outline of the availability of pre-service and in-service ADHD programs in Australia.

Definitions

Attention Deficit Hyperactivity Disorder (ADHD)

ADHD is defined by the APA (1994) as "a persistent pattern of inattention, impulsivity, and/or hyperactivity-impulsivity that is more frequent and severe than is typically observed in individuals at a comparable level of development" (APA, 1994, 78 cited in Salend & Rohena, 2003, 260). Behavioral symptoms as noted by Salend & Rohena (2003) may involve issues such as:

- Being inattentive to work or play activities;
- Not listening to others when spoken to;
- Not following directions at home or school;
- Having problems with organization and/or losing items;
- Being distracted;
- Moving or talking excessively;

- Acting in an impulsive manner; or
- Interrupting or failing to take turns in play or conversation (p. 260).

For a diagnosis of ADHD to be made these behaviours must be exhibited

- for at least six months prior to diagnosis;
- prior to the age of seven years-old;
- in two or more settings (home, school, clinic);
- separate from any other medical or psychiatric conditions such as mood disorders, depression, anxiety or schizophrenia (Salend & Rohena, 2003, 260).

ADHD Subtypes

The APA (1994) fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM – IV) identifies three sub-types of ADHD

1. Attention Deficit/Hyperactivity Disorder Predominantly Inattentive Type
2. Attention Deficit/Hyperactivity Disorder, Predominantly Hyperactive-Impulsive Type.
3. Attention Deficit/Hyperactivity Disorder, Combined Type

(cited in NZ Ministry of Health, 2001, p. v – Summary)

Medical Perspectives

There is some useful and reliable information regarding diagnostic and treatment processes of ADHD from a medical perspective. These papers are useful to this particular research project because they make references to the teacher's role, especially

in the diagnostic process, and they provide a background concerning medication and current practice in ADHD that teachers should be aware of.

The American Academy of Pediatrics' Guidelines

The Teacher's Role in Diagnosis

The teacher's role is specifically referred to in an article published in *Education Daily* (Gotsch, 2000, 5), which critiques the guidelines published by the American Academy of Pediatrics for the diagnosis of ADHD. The article specifically refers to teacher input, saying that it gives the medical expert additional insight. The article also states that teachers tend to be more objective in the diagnostic process than parents who are very emotionally involved.

In particular, the research paper by the American Academy of Pediatrics (AAP) (2000) outlines six specific recommendations for the diagnosis of ADHD, adapted from the APA DSM – IV (1994).

Interestingly, the teacher's contribution is mentioned in at least three out of the six recommendations and exclusively outlined in Recommendation Four, which states that "the assessment of ADHD requires evidence directly obtained from the classroom teacher (or other school professional) regarding the core symptoms of ADHD, duration of symptoms, degree of functional impairment and associated conditions" (AAP, 2000, 1158-70). Recommendation Four goes on to explain that the classroom teacher typically has the most information about the child's behaviour and therefore should be the one to provide the report to the medical professional (AAP, 2000, 1158-70).

Co-morbidity and Diagnosis

The AAP report also directs attention towards other disorders directly related to ADHD that may be mistaken for ADHD (Snider, Frankenberger& Aspenson, 2000). These disorders include Conduct Disorder and Oppositional Defiant Disorder, Mood Disorders/Depression, Anxiety and Learning Disabilities. As stated in Recommendation Four, the teacher needs to be aware of these disorders to exercise correct judgment (AAP, 2000, 1158-70).

New Zealand Ministry of Health ADHD Guidelines

A similar research paper published by the New Zealand (NZ) Ministry of Health (2001), provides guidelines for the assessment (diagnosis) and treatment of ADHD. The study is a more holistic one in comparison to the AAP guidelines. It has clear objectives and presents statistical evidence regarding the prevalence of ADHD, the developmental course of ADHD and relevant behaviour rating scales.

Subjects of particular relevance to the present paper included: ADHD as the most common diagnosis given to children in child and adolescent New Zealand mental health services; important factors relating to the prevalence of ADHD; a closer look at the developmental course of ADHD, including early and middle childhood and adolescence; the increased emphasis on the teachers role; a detailed clinical approach to diagnosis; and an evaluation of current rating scales (NZ Ministry of Health, 2001).

Environmental Factors Affecting Diagnosis

Of special interest was the section on prevalence rates and also the different role assumed by the teacher, differing that is from the guidelines in the AAP report. The

report suggests that prevalence rates cannot be accurately determined because of environmental factors such as differing diagnostic criteria, sampling methods, the degree of agreement among informants and most importantly the *country in which the child is diagnosed.* "Rates of ADHD and pharmacotherapy reported in the United States tend to be higher than in the United Kingdom" (Barkley, 1998, cited in New Zealand Ministry of Health, 2001, 6). This is not a new finding as it occurs in other studies (Bonn, 1996); however, it is representative of the inaccuracy of diagnosis. The setting in which children are diagnosed is also a factor, with those seen by a general practitioner more likely to receive medication than those observed by a teacher. Arngold, Erakanli and Egger (2000, cited in New Zealand Ministry of Health, 2001, 6) report a pattern of both under- and over-diagnosis and under- and over-prescribing of medication, depending on the primary person involved in diagnosis. Jensen (1999, cited in New Zealand Ministry of Health, 2001, 6) reported under-diagnosis and under-prescribing of medication.

The Teacher's Role in Diagnosis

In the report by the NZ Ministry of Health (2001, 11), the role of the teacher is portrayed as a more influential one. A statement highlighted in bold says that the teacher's role as *co-assessors* cannot be over-emphasized. The teacher is also listed as an appropriate professional to undertake assessment, in conjunction with the general practitioner.

National Health and Medical Research Council (Australia)

The only document that has been found in Australia that resembles the guidelines outlined above comes from the National Health and Medical Research Council (NHMRC) (1997) - a branch of the Australian government.

Criteria for Diagnosis

This document outlines criteria for diagnosis quite comprehensively. The document also outlines the three sub-types of ADHD, i.e., ADHD predominantly inattentive type, ADHD predominantly hyperactive type and ADHD combined type, and the typical characteristics of each (NHMRC, 1997, part 1.1.1 Characteristics of diagnostic systems). However, Barkley (1995 cited in NHMRC, 1997, part 1.1.2 - Unresolved diagnostic issues) and others are still unsure whether these could be separate disorders. In fact a number of unresolved diagnostic issues are mentioned including categorisation issues (between sub-types and co-morbid disorders), duration of symptoms, and diagnosis in multiple settings. A number of recommendations are made in this article, the first one being that "*As a minimum* the criteria in the DSM -IV should be fulfilled before making a diagnosis." (NHMRC, 1997, Part 1.1.2 - Recommendation 1).

Etiology and Genetic Factors of ADHD

Other factors such as genetic factors are discussed where more large-scale research is needed to determine genetic vs. environmental factors. Congenital and dietary issues, and factors relating to co-morbidity are also discussed, revealing that maternal substance abuse during pregnancy may be associated with ADHD. However, there is no

evidence to support the relationship between food additives, allergies and ADHD (NHMRC, 1997, Part 1.3 - Aetiology of ADHD; Rief, 1993, 4).

Management of ADHD: Drugs vs. Non-drugs

Educational management was explored in this document with various strategies suggested (NHMRC, 1997, Appendix B). A section on the management of ADHD, according to a consensus of professionals and lay people, advised that a multimodal approach was best and that individuals with ADHD should be viewed as a diverse group with varying symptoms. Other relevant results included the conclusion that there has not been enough research on the efficacy and long-term safety of stimulant drugs and that professionals' areas of interest (i.e., General Practitioner, Educator) influenced their opinions on drug vs. non-drug treatment. Educationalists favoured behavioural management techniques over drug treatment. The second point of reference suggested that more advisory information for health professionals, educators, parents and others be made available. Respondents indicated a great need for such information (NHMRC, 1997, Appendix C). Other areas of the document deal with educational management, addressing issues such as adjusting teaching strategies to cater to the strengths of the child with ADHD and the importance of consistency in management between home and school (NHMRC, 1997, Part 5.2 - Overcoming learning difficulties).

Categorisation of ADHD

Children with ADHD do not fall into the category of 'special needs'. It is stated that "No federal government policy on ADHD currently exists and additional funding received by the States from the federal government for those categorised as 'special needs' does not include the ADHD child" (NHMRC, 1997, Part 5.3 - Education policy

issues). The general analysis is that many States in Australia promote 'inclusive education' and a supportive learning environment for all learners, including children with ADHD (NHMRC, 1997, Part 4.6.2 - New South Wales Guidelines and Criteria).

Policies and Medication

Policies relating to children who need to take medication during the school day vary from state to state and there have been some examples of anti-medication prejudice with a recommendation that some caution be taken when giving medication to students (NHMRC, 1997, Part 4.6.2).

Prescription Rates

There is some data on the prevalence of ADHD issues relating to medication. The NSW Department of Health is responsible for monitoring prescriptions. Data on stimulant medication indicate that "commencement and continuation of stimulant treatment has increased six-fold in NSW in six years" (NSW Department of Health Stimulant Sub-Committee, 1994 cited in NHMRC, 1997, Part 4.6.2). Prescribers are predominantly pediatricians and four times as many boys as girls are treated (NSW Department of Health Stimulant Sub-Committee, 1994 cited in NHMRC, 1997, Part 4.6.2).

Overall prescribing rates in Australia range from less than 1.0 percent to approximately 2.5 per cent (Valentine, Zubrick and Sly, 1996, cited in NHMRC, 1997, Part 4.6.2 - Australia-Wide data), which does not support the rhetoric of over-prescription, a trend evident in the USA (Glass & Wegar, 2000). Prescription rates for the medication of ADHD are highest in Western Australia and New South Wales. However, this probably indicates differences in clinical perspective rather than differences in child

population. Those States with the lowest prescribing rates have had rapid increases in the recent years. (State Health Departments, 1995, cited in NHMRC, 1997, Part 4.6.2 - Australia-Wide Data). A recommendation is put forward that there be a uniform system of data collection throughout Australia to assist monitoring and research (NHMRC, 1997, Part 4.6.4 - Future monitoring).

National Institute of Health (NIH) Consensus Statement

The American-based National Institute of Health (NIH) (1998) released a statement concerning the diagnosis and treatment of ADHD. A panel representing the fields of psychology, psychiatry, neurology, pediatrics, epidemiology, biostatics, education and the public discussed the following questions about ADHD:

1. What is the scientific evidence to support ADHD as a disorder?
2. What is the impact of ADHD on individuals, families and society?
3. What are the effective treatments for ADHD?
4. What are the risks of the use of stimulant medication and other treatments?
5. What are the existing diagnostic and treatment practices, and what are the barriers to appropriate identification, evaluation, and intervention?
6. What are the directions for future research?

(NIH, 1998, Introduction)

Major findings of the consensus statement relevant to this study included:

- the absence of a valid test for ADHD;
- the absence of scientific evidence to support ADHD as a brain disorder;
- inconsistencies in prevalence rates across countries;
- co-existing (co-morbid) conditions complicating the diagnosis of ADHD;

- stimulant medication and psychosocial treatments as the most effective treatments identified;
- lack of research done into the long-term efficacy of psychosocial treatment or stimulant medication;
- stimulant treatment does not show improvements in academic achievement or social skills;
- the haste of general practitioners in prescribing medication could decrease the likelihood of educational intervention trials;
- diagnosis is inconsistent: sometimes over-diagnosed, sometimes under-diagnosed;
- communication between medical and educational services is very poor affecting the monitoring of treatment;
- cost is a major barrier to effective treatment as funding for children with ADHD is limited;
- developments in the future need to focus on long-term follow-up of treatment and treatment which will improve academic achievement of students with ADHD; (NIH, 1998)

Identification and Diagnostic Measures

The Conners' Teacher Rating Scale - Revised (CTRS - R)

The Conners' Teacher Rating Scale - Revised (CTRS - R) (see Appendix 1 for a copy of the CTRS - R – short form), written by Keith Conners PhD, is a likert-type scale designed to help detect ADHD in children and adolescents from ages 3-17. It was recommended in the *American Academy of Pediatrics* Research Paper (2000) and its

reliability was also evaluated in the *New Zealand Guidelines* (2001). Along with the Conners' parent rating scale, it was found to be one of the most "effective indices for discriminating between children with ADHD and normal controls" with "specificity and sensitivity values greater than 94 percent" (New Zealand Ministry of Health, 2001, 16-17). The Rating Scale comes in a long form and a short form and is quite easy to understand and complete (Conners, 1998, cited in Violence Institute of New Jersey, 2002). This would be one of the most useful tools currently available to teachers for recognizing ADHD in a student.

Over- and Under-Diagnosis of ADHD

On the question of over-diagnosis some insight can be gained from prominent ADHD experts Kollins, Barkley, and DuPaul (2001). They reveal that the increase in medication for the treatment of behaviour problems does not necessarily mean that over-diagnosis is taking place, but instead that these disorders have been grossly under-diagnosed and under-treated in previous years (Kollins et al., 2001, 1-24).

An Expert Opinion – Russell Barkley

Russell Barkley, who has been at the forefront of ADHD research since the late 1970s, has published numerous volumes, journal articles and conference papers on the diagnosis and assessment of ADHD. One of Barkley's books, 'Taking Charge of ADHD' provides useful information for teachers about ADHD. Barkley argues that "ADHD is a largely biologically caused disorder that has a substantial genetic/hereditary basis" (Barkley, 2000, p. x, preface). Barkley also states that ADHD is more a disorder of 'self-regulation' rather than just attention-deficit. Part III of the book 'Managing Life

with ADHD: How to cope at home and at school' is a section which is of utmost importance to teachers as it integrates home and school interventions. Barkley reflects that ADHD is still misunderstood in the general public including educational establishments (Barkley, 2000, p. xiii, preface).

Russell Barkley –Teacher Awareness and Management Techniques

Barkley (1994) also produced a video about managing ADHD in the classroom. Of interest to this particular study was a statement from the video that ADHD requires teachers' knowledge of the symptoms and patience and understanding. It was also stated that teachers who are unfamiliar with ADHD are disadvantaged. Myths about the causes of ADHD were discussed and teachers were warned that it should be taken seriously and treated as a real disorder. Among other techniques in behaviour management it was suggested that the vast majority of teachers do not have enough training in ADHD (Barkley, 1994). One teacher spoke of never coming into contact with ADHD and having no 'bag of tricks' to confront ADHD with. Perhaps the most relevant to the study was the statement that teacher understanding of ADHD and behaviour modification has an incredible impact on the academic careers of children with ADHD (Barkley, 1994).

Misdiagnosis: Reasons and Solutions

Reason 1: Narrow Investigation of Professional Opinions

There are other articles and books which present a differing view but nevertheless provide insight into diagnosis and treatment. One such article, by Hutchinson (1998, 6) has to do with the evaluation of both parent *and* child before diagnosing. This article quite forcefully argues the frequent misdiagnosis of children based on only two opinions,

the teacher and the physician. This assumes that no other testing is done before the diagnosis is made and drugs prescribed. The article presents a contrary view to the medically-based research saying that psycho-stimulants are not harmless but can have severe and long-lasting neurological and psychiatric effects.

Solution 1: Interviewing, Critical Assessment of Other Factors

Hutchinson (1998, 6) strongly argues that over-diagnosis takes place, and to alleviate the problem suggests that a series of three interviews with child and parents together, child alone and parent/s alone should be conducted. Additionally information on academic achievement from the school should be analyzed to determine whether or not disturbances stem from giftedness where boredom might be the problem. The article also suggests that the home environment should be assessed to determine whether or not these factors could be a problem.

Reason 2: Teacher Attitudes to Referral

Shaver (1998) postulates that there is a relationship between teachers' beliefs about teaching and also about ADHD and whether or not they are likely to refer students who have ADHD. This is a concern considering that teachers are the ones to make the referrals 50-80% of the time (Achenbach & McConaughy, 1987, cited in Carney, 2002, 5). Carney agrees that low-tolerance and lack of knowledge can lead to inaccurate referrals by teachers (Carney, 2002, 6).

Solution 2: Observed Teacher Behaviour

Shaver (1998) recommends that rather than the teacher submitting a self-report when referring a student for ADHD that the teacher's behaviour should instead be observed by an outside body and compared with the ADHD referral.

Reason 3: Cultural Influences on Diagnosis

Another view of over-diagnosis comes from a London publication and talks about differing diagnosis in different countries. Professor Jim Swanson (pediatric psychologist at the University of Toronto) (cited in Bonn, 1996, 255) responds to the incredible increase in diagnosis in the United States over recent years saying the increase is due to heightened public awareness especially in schools, which are now 'obliged' to identify students with the disorder. However, Eric Taylor (cited in Bonn, 1996, 255), a professor of developmental neuropsychiatry, presents quite the contrary view of Hyperkinetic Disorder (HD) (an alternative name for ADHD) in the UK saying that it is under-recognized. In a cross-cultural examination of teachers from the United States (US) and New Zealand (NZ) significant differences between attitudes to interventions used in the classroom were found (Curtis, 2003, p. vii). Teacher beliefs in NZ were the most influential on teacher's attitudes to intervention strategies whereas teacher's attitudes from the US were most influenced by student traits (Curtis, 2003, p. viii). The study also showed that the interventions, response cost and medication were more acceptable to teachers in the US than NZ teachers (Curtis, 2003, p. ix). Since teacher's attitudes

greatly affect diagnosis and treatment (Miranda et al., 2002) it is valid to say that this phenomena may contribute to misdiagnosis.

Solution 3: More Probing Questions and Structured Interviews

Swanson (cited in Bonn, 1996, 255) goes on to say that he would like to see a more rigourous approach to diagnosis in the USA, which has one of the highest rates of diagnosis, with experts giving more structured interviews and asking more probing questions of parents, teachers and the child in question.

A Multimodal Approach to Treatment

A multimodal approach is favoured by researchers as the most effective approach to treating ADHD (Miranda et al., 2002; Reid, 1999). This approach includes (a) educational accommodations, (b) promoting appropriate behaviour, (c) medical management, and (d) support services for children and parents (Reid, 1999, 2). This section will cover educational accommodations and medical management.

Medication

Stimulant medication has been proven to be effective in improving some behavioral problems. The use of stimulant medication to treat ADHD is the most common form of treatment (Snider et al., 2003, 46) and some would argue, the most effective (Austin, 2003, 290).

Stimulant medication works by stimulating the production of norepinephrine in the brain which allows for messages to transfer from one part of the brain to another and therefore improve brain functioning and attention/impulsivity. The brain of a child with

ADHD is said to produce less norepinephrine and dopamine and scientists speculate that this is a possible cause of ADHD (Austin, 2003, 292).

However because stimulant medication has some uncomfortable side-effects it is recommended that other educational and psychosocial interventions be explored first (Austin, 2003, 291; Fabiano & Pelham, 1998, 129) rather than medication first as the NIH Consensus Statement (1998) reported is often the case.

When making the decision about whether or not to medicate their children, parents of children with ADHD need to be able to make an informed decision. Teachers also need to be aware of the advantages and disadvantages of stimulant medication as often times they are involved heavily in the diagnostic and treatment process. Teachers' attitudes to stimulant medication are likely to affect their reports to practitioners and therefore it is important to gauge teachers' knowledge of stimulant medication and where it stems from as this will have implications to their attitude towards this issue (Dotto, 1998; Salazar-Zamora, 1999; Snider et al., 2003, 47).

Classroom Interventions

Reid (1999) suggests that "educational accommodations are directed at manipulating the classroom environment (or antecedents) in an attempt to prevent behaviour problems from occurring" (Reid, 1999, 2). Reid (1999) categorises classroom accommodations into three main areas:

1. classroom environment;
2. tasks/materials;
3. curriculum/instruction.

Changes to the classroom environment include changes to classroom management practices and to the physical set-up of the classroom. Classroom management practices recommended for teachers who teach students with ADHD include: daily schedules visible to the child with ADHD; planning cognitively challenging tasks for the morning period; communicating expectations through clear rules; monitoring and providing regular feedback to the child; frequent praise and appropriate reprimands; giving clear directions and assisting with smooth transitions between activities (Garrick-Duhaney, 2003, 272, 273; Reid, 1999, 2-4)

The physical setup of the classroom can be altered to improve outcomes for children with ADHD. Here are some ideas: Physically enclosed classrooms are better than open plan classrooms because they have less distractions; class size is important; a variety of different desks (stand-up desk, normal desk, study carrel) should be trialed to help avoid distractions; physical locations should be away from 'high traffic' areas and close to the teacher; and seating arrangements should take into consideration the children sitting near the child and what their behaviour is like (Flick, 1998, 51-52; Garrick-Duhaney, 2003, 270; Reid, 1999, 4-5). Pfiffner & Barkley (1998, cited in Reid, 1999, 5) also recommend that learners with ADHD should have individual desks.

Some types of tasks and materials can pose problems for children with ADHD. Specific problems can be related to task difficulty, task length and the feedback provided by the teacher (Reid, 1999, 5-7).

"Both the curriculum and the instructional methods can have a major effect on the behaviour of students with ADHD" (Reid, 1999, 7). Teachers should aim to engage the student with the methods of teaching they use because the more meaningful the child

considers the task to be the more involved they will become (Dunlap, Kern-Dunlap, Clarke, & Robbins, 1991, cited in Reid, 1999, 7). To increase the likelihood of the student becoming engaged in their work the teacher can adopt a teaching style which is enthusiastic and focused, elicit frequent active responses, use direct and highly structured teaching techniques, allow students a choice of activities, and adapt physical movement into the learning environment (Garrick-Duhaney, 2003, 272; Reid, 1999, 7-9). If students are actively engaged in learning then behaviour problems are less likely to occur.

Other interventions in the classroom focus on child-centred accommodations and teacher-centred accommodations. Child-centred accommodations like modeling instructions, modeling problem solving, teaching organizational structure and teaching self-monitoring allow the student to be in control (Flick, 1998, 52-53). Most importantly, teachers should have a good knowledge and understanding of ADHD so they know what to expect. However, other attitudes the teacher should adopt are: being flexible, allowing time, providing routine, establishing behavioural priorities, reinforcing good behaviour and providing consequences for inappropriate behaviour, using "success-orientated" programs and the use of 'priming' or pre-arranged reinforcements to help keep them on task (Flick, 1998, 52-53).

Garrick-Duhaney (2003) proposes a Functional Behavioral Assessment (FBA) be conducted to identify elements which can be focused on during interventions.

> FBA is a person-centered, problem-solving process that involves collection data to measure student behaviour; determining why a student engages in a particular behaviour; and identifying the instructional, social, affective, environmental and contextual variables that appear to lead to and maintain the behavior (Garrick-Duhaney, 2003, 268)

One of the methods in which teachers can collect and record data for an FBA is by using the ABC model (Antecedents-Behaviour-Consequence) (Garrick-Duhaney, 2003, 273-276). Antecedents refer to the event or stimulus which precedes the behaviour. Consequences look at the consequence or reinforcement event after the behaviour has occurred. So far the classroom interventions described have mainly covered Antecedents-based interventions so this next section will focus on Consequences-based intervention. Consequence-based interventions take the form of token economies (point systems), contingency contracts (If…then… contracts), cognitive-behavioural therapy which teaches more functional behaviours and alters thinking patterns, response cost or with-holding rewards when behaviour is inappropriate, peer-mediated interventions, social skills training to increase social awareness, family involvement and time out (Garrick-Duhaney, 2003, 273-276).

Other Educational Interventions suggested by Salend, Elhoweris and van Garderen (2003) involve giving complete and thorough directions, individualizing in-class and homework assignments, motivating students through various learning accommodations, promoting active responding and monitoring understanding, employing content enhancements which effectively introduce and review a topic, offering learning strategy instruction and employing culturally responsive teaching practices (Salend et al., 2003, 280 - 286).

A study conducted by Fabiano and Pelham (2003) revealed that behavioural interventions such as those above were found to be effective in the general classroom setting. However, the study highlighted the fact that although teachers may use these

strategies they needed to be *individualized* and *intensified* for outcomes to be as productive as possible (Fabiano & Pelham, 2003, 127).

Alternative Views on ADHD Diagnosis and Management

ADHD: A Reaction to Social Stress

Even though many experts endorse the use of psycho-stimulants to treat ADHD there are other qualified professionals who disagree with the use of stimulants. David Stein (PhD) (1999) provides a differing view to other experts, suggesting that Ritalin, the drug most often used to treat ADHD, is a dangerous and addictive drug for children to be dosed with (Stein, 1999, 6).

Furthermore, he suggests that often the educational system and general practitioners are ignorant and too quick to diagnose the 'disease' called ADHD (Stein, 1999, 4-5). Through his experience as a professor of psychology, Stein (1999) does not find ADHD to be a 'disease' but rather a result of the stresses placed on today's children. He proposes an alternative model for teachers and parents which is drug-free and aims to train parents and caregivers with the skills they need to foster healthy, independent workers and members of society.

Stein disagrees with other medical professionals, identifying Russell Barkley's theories as being false and misleading to parents and teachers. Stein identifies other parties in agreement with him such as The Drug Enforcement Administration. Although Stein seems to oppose most ideas common to other research on ADHD, he is in agreement that teachers play a major role in the lives of ADHD children and should be trained adequately, along with parents (Stein, 1999, 56).

A Literary Perspective

David Nylund (2000) has a similar view of ADHD as Stein (1999). Nylund (2000) compares the modern ADHD child to the character Huckleberry Finn and asks if society is over-reacting, or if ADHD is part of the scientific wave - where everything can be explained by science (Nylund, 2000, 17).

Nylund quotes some of the same sources as Stein (1999) using Breggin (1998, cited in Nylund, 2000) and others. The book begins with a critique of current practice in ADHD, again discrediting Barkley's research on a neurological cause for ADHD.

Nylund then suggests solutions. He uses 'post-modern therapies' which state that there is no absolute cause of ADHD; 'narrative therapy' which suggests that children separate themselves from the "problem" (ADHD) and talk about it as if it's a problem not a disease that they are stuck with; and lastly collaborative language systems (CLS) which allow the client to talk freely without the therapist making recommendations or assumptions.

These therapies are the basis on which Nylund (2000) has developed the SMART therapy. The therapy is broken down as follows: Step One: **S**eparating the problem, Step two: **M**apping the influence of ADHD on the child and family, Step three: **A**ttending to exceptions to the ADHD story, Step four: **R**eclaiming special abilities of children diagnosed by ADHD, Step five: **T**elling and celebrating the new story. There is also a chapter about using SMART strategies in the classroom, which includes using solution-focused classroom management, critical pedagogy, multiple intelligences, and other

techniques. It is clear that Nylund also addresses the idea that teachers need to be specifically trained when dealing with ADHD children (Nylund, 2000, 185-208).

Teacher Knowledge and Perceptions of ADHD

In 1994, a US study analyzing teachers' perceptions of ADHD found that lack of quality training was a major barrier to the teachers' confidence in dealing with ADHD. The study also revealed that teachers had low confidence levels and recommended that collaboration between special educators and mainstream teachers could be a solution (Reid, Vasa, Maag, & Wright, 1994, 200-201). This study which has obvious similarities to the current study being undertaken leads the researcher to ask, ten years on, have circumstances for classroom teachers in Australia improved in comparison to the US study on teacher perceptions of ADHD? Perhaps the following section will shed some light on this invaluable question.

Identification, Referral and Training

It is important that we review the research currently available on teacher knowledge and perceptions of ADHD. Research shows that "most parents who have children with ADHD believe that teachers play a key role in helping their children" (Goldstein, 2002, 6). Goldstein (2002) reports on a survey conducted by Feinstein Kean Healthcare which produced some results that are pertinent to the research topic. Half the teachers in this study revealed that they found it difficult to determine whether or not a child should be referred to a specialist for ADHD evaluation and half also said they did not notify parents when a child showed symptoms of the disorder. One in ten teachers did not believe that ADHD was a real medical condition. This article highlighted a need for

more teacher training as “56 percent of teachers said they had received little or no training about ADHD” (Goldstein, 2002, 6).

Palacios (2000) reveals that often teachers’ perceptions of ADHD are linked with the amount of experience or training they have received (p.3). Palacios sees teacher training in ADHD as an important factor in meeting the needs of children with ADHD in the classroom and in future life. “With information, knowledge and appropriate perceptions that correlate with the facts about ADHD the child is likely to have a much more successful adjustment in adolescence and young adulthood” (Palacios, 2000, 5).

The need for training is supported by Javorsky (2002) who compared a curriculum-based approach (Activity- and Novelty-Based) with a traditional workshop about ADHD and found that those who had the in-service on curriculum-based interventions were more empathetic and willing to accommodate for children with ADHD in their classrooms. The article recommends in-service education for preparing teachers to work with children with ADHD (Javorsky, 2002).

Major critical factors in working with ADD/ADHD children as identified by Rief (1993) included: teacher flexibility, commitment, and willingness to work with the student; and teacher training and knowledge about ADD/ADHD. Rief (1993) affirms that “every school site should have inservicing to educate staff about ADD/ADHD” (p. 5)

Behaviour Modification Training

Other research evaluates teacher knowledge of behaviour modification where two groups participated in a program which trained teachers in cognitive behaviour management techniques. Teachers in the group that were trained in these techniques were found to have increased knowledge of ADHD and techniques for behaviour

modification (Miranda et al., 2002, 12). This was said to be important because the "effectiveness of school-based interventions depends on the teacher" (Miranda et al., 2002, 13).

Teacher Knowledge and Attitudes to Stimulant Medication

Research by Snider et al., (2003), another US study, also looks at teacher knowledge of and attitudes to stimulant medication. This article argues that although there have been studies based on general knowledge questions about ADHD, there has been little research specifically targeting teacher knowledge of stimulant medication.

A knowledge of stimulant medication for teachers was called for after concerns that teachers were too quick to recommend medication for students (Portner, 2000) and after a hearing claiming that some schools force parents to put their children on drugs for treating ADHD (Sack, 2000). The study presents some common misconceptions that the general public and teachers may have about stimulant medication and ADHD. These include the misconception that stimulants have a different effect on those with ADHD than they do on the rest of the population and the misconception that being on stimulant medication improves academic performance of children with ADHD (Snider et al., 2003, 47).

Snider et al. (2003) present a circular procedure that could be a potential problem if teachers are not well informed about ADHD. The procedure begins with a teacher making a referral to a doctor and because the diagnostic process depends heavily on the teacher's report, since she/he made the referral, she/he is likely to give scores suggesting the child has ADHD and a diagnosis is made.

Reports such as ones cited in this review and others such as Piccolo-Torsky and Waishwell (1998, cited in Snider et al., 2003) indicate that teachers have had very little pre-service training. In addition to this only 12% of teachers in this particular study indicated that they relied on professional journals as their primary source of information on ADHD (Snider et al., 2003, 54). These factors suggest that teachers may be ill equipped to play the major role they play in the assessment of ADHD.

A study looking into teacher's attitudes to stimulant medication stated that:

> Teachers play a critical part in the evaluation and assessment of students with ADHD. Their attitudes and perceptions of students with ADHD, their involvement with parents and their views on stimulant medication are related to the effective or ineffective treatment of the disorder. (Davino, Lehr, Leighton, Miskar, & Chambliss, 1995 cited in Dotto, 1998, 2)

Therefore teachers' knowledge and attitudes to drug therapy influence the efficacy of such a treatment. Dotto (1998) also describes a link between teachers' knowledge and experience with ADHD and their view of medication. Dotto's recommendation is an important one for this study as she highlights the "critical need for improved teacher preparation and in-service programs concerning stimulant medication" (Dotto, 1998, 4).

Salazar-Zamora (1999) agrees that teachers play a big part in monitoring the effects of stimulant medication and seeks to find out their attitudes to different effects on the school environment. Salazar-Zamora (1999) also found that educators perceived that while stimulant medication did not affect student discipline, parental involvement, or the learning environment it did affect time involvement in the school environment. Other findings indicated that elementary educators agree that stimulant medication tends to improve student behaviour; however some elementary

educators are of the opinion that there are students on stimulant medication that may not truly need the medication (Salazar-Zamora, 1999).

It is clear from the articles outlined above, that teacher knowledge and attitudes to stimulant medication are important in the treatment of ADHD.

Pre-service Teacher's Knowledge and Opinions of ADHD

There is speculation as to whether pre-service teachers feel confident about teaching pupils with ADHD. A study with a similar basis to the present paper can be examined where questionnaires were sent out to students in their final semester at the University of Regina (Canada) to determine, knowledge, attitudes and experience. Results indicated that these pre-service teachers had received some instruction and experience at university regarding children with ADHD and perceived themselves to be reasonably knowledgeable about the subject. However there was an element who felt unprepared and would have liked more information and training in management techniques to use with children with ADHD (Robin, 1998, p. i). It would be interesting to see if results in Australian universities would differ from the results in this research.

Teacher Training and Stress Related to ADHD

In a recent study conducted about teacher information and perceptions in regard to ADHD, in a southeastern state of the USA, half of the teachers said they had received some pre-service training, and three-quarters had received brief in-service training. However 94% of the teachers who participated in this study indicated they would like more training in ADHD (Bussing et al, 2002, 333). The study also tested for teacher perceptions, mainly to do with confidence levels and identifying barriers to successful ADHD instruction. Teachers expressed lowest confidence in their ability to manage

stress related to teaching students with ADHD and barriers to successful instruction as class size and time requirements of special interventions for learners with ADHD (Bussing et al., 2002, 334). It is also suggested that lack of pre-service training and preparation is part of the reason for stress-related problems (Bussing et al., 2002, 333).

Inaccurate Incidence Rates Identified Due to Lack of Training

Another study examining teachers' perceptions also indicates that educational systems need to re-evaluate class sizes and teaching methods (Glass & Wegar, 2000). The study by Glass and Wegar (2000) collected some surprising results regarding teachers' perceptions of the incidence of ADHD, causes of ADHD and most desirable interventions for ADHD. Seventy-eight percent believed that ADHD is caused by a biological abnormality, which Brown (1995, cited in Glass and Wegar, 2000) believes to be part of "an increasing biological trend".

Teacher perceptions of the incidence of ADHD in their classrooms were extensively higher than the normal incidence rate of 3-5 percent. Some teachers reported incidence rates of 26 percent which is an equivalent of 1 in 4 children, with mean incidence rates for those formally diagnosed in public schools at 8 percent and private schools at 12 percent. Almost three-quarters of the teachers perceived that more students had ADHD than had been formally diagnosed (Glass & Wegar, 2000, 416).

It is not surprising then that Pilling (2000) identifies teachers as one of the factors contributing to higher incidence rates and misdiagnosis (Pilling, 2000, p. iii). As a result of this grossly inadequate representation of incidence rates it is recommended that teachers need more education on the characteristics of ADHD and those teachers who believe that a large proportion of their class suffers from ADHD should "re-evaluate their

teaching methods" (Glass & Wegar, 2000, 417). Carney (2002) suggests that as well as a lack of knowledge teachers' low tolerance for hyperactive and inattentive behaviours often lead to inaccurate referrals (Carney, 2002, 6; Shaver, 1998, 2).

Teachers' Beliefs on the Acceptance of Interventions

Doak (2003) cites evidence which claims that teacher's perceptions of the acceptability of a treatment program affect their potential success (Power, Hess & Bennett, 1995, cited in Doak, 2003, p. vi). Some of the variables which affect teachers' perceptions include: teacher efficacy, teacher perceived stress and pupil control ideology (how well they believe they can manage a child) (Curtis, 2003, p. ix; Doak, 2003, p. vi). Curtis' (2003) study shows that intervention acceptability for teachers in the United States and New Zealand was influenced by their beliefs about ADHD (p. viii). This highlights the need for proper education for teachers concerning ADHD as their beliefs will often be a product of what they know about the topic.

Pre-service and In-service Education Available for Teachers in Australia

Pre-service Training for Teachers

In light of some of the research referring to the importance of pre-service teacher training outlined above, it would be beneficial at this stage to review the teacher education subjects relating to ADHD offered in Australian Universities.

Investigation of various university websites revealed that subjects referring to the 'Atypical Child' or the child with physical, learning and behavioural problems appear in most teacher education programs. On average, throughout the course, one subject of this nature is completed. The subjects, dealing with the integration of children with physical,

learning and behavioural problems into the mainstream classroom, tend to be of a more general nature and give more emphasis to general principles of behaviour management.

A search conducted by the researcher of three NSW university websites (Macquarie University, October 2002 - Description of Units - Bachelor of Education; Charles Sturt University, 2003, Course Information and Subjects - Bachelor of Education; Avondale College Handbook, 2003-2004, 119, 239) revealed that, apart from the general principles contoured in the compulsory special education subject mentioned above, there was no specific training in ADHD available to pre-service teachers. Before further enquiry into other higher education institutes in Australia the researcher liaised with the Assistant Dean of Education at Avondale College, who advised that most universities in Australia have a similar level of training for undergraduate teacher education courses in regard to children with learning and behavioural problems.

Training consists of 1-2 compulsory subjects made up of general guidelines for integrating the atypical child into mainstream classrooms. These subjects only very briefly cover ADHD, if at all, and rarely delve into issues such as stimulant medication or etiology of ADHD. The Assistant Dean also suggested that reasons for the deficit in pre-service training for ADHD have to do with the lack of time available in the course for explorations into specific disorders, and also with the notion that these subjects should adopt a non-categorical approach to the education of students with disabilities.

The Assistant Dean expressed the view that information is often sought by teachers on a ‘need to know’ basis, that is, when they are confronted with a child with the disorder in their classroom.

Teacher Information, Policies & Procedures – State Departments of Education

A citation from the Individuals with Disabilities Education Act (IDEA; US Dept. of Education, 1997, cited in Carney, 2002, 5) states that "Schools and other institutions are ethically as well as legally mandated to provide appropriate accommodations to children diagnosed with ADHD. This statement suggests that schools are mandated to give medication and other interventions. In light of this the researcher consulted the websites of each State/Territory's Department of Education, to determine what information about ADHD was provided by each. It was found that only three out of the seven States/Territories provided any information on ADHD. This is not to say that these documents do not exist within the other States' Departments of Education, but they cannot be found on their websites. A later more probing search and further contact made via email produced no further information about policies and procedures relating to ADHD in public schools of Australia.

Department of Education - South Australia (SA)

The first and most detailed of the Department of Education documents comes from South Australia (SA). A small booklet is provided consisting of seven chapters. Only those relating to teachers and educators will be reviewed here (chapters 1, 2, 3 and 5).

Chapter one outlines the basic philosophy of ADHD, identifying subtypes and criteria for ADHD (Department of Education - SA, 2003, Chapter 1). The second chapter explains the assessment and diagnostic process of ADHD, issues relating to young children and ADHD, co-morbid disorders, and most importantly the role of the teacher in diagnosis. The document says that teachers may share their observations with parents.

However, they should not anticipate a diagnosis, i.e., telling the parents they think their child has ADHD (Department of Education - SA, 2003, Chapter 2).

The third chapter deals with behaviour management strategies for teachers and schools. Of particular interest is a section on managing teacher stress, which is also supported by other studies (Bussing et al., 2002).

The fifth chapter specifically looks at roles and responsibilities of those involved with the child. Since this study is specifically aimed at classroom teachers their involvement only will reviewed. The teacher should: encourage the student to be responsible for their behaviour; become familiar with and keep up with medical record cards and individual support plans of students; inform parents of concerns with the management plan regarding the child's health, learning or behaviour; work with other professionals such as school psychologists; ensure that learning strategies involve the learner who has ADHD, especially considering strategies which involve special planning for the child; and document and report on the child's behaviour. The latter does not involve making assessments on the effectiveness of medication (SA Department of Education, 2003, Chapter 5). Along with the booklet is a Learning Behaviour Questionnaire (Department of Education - SA, 2003) (see Appendix 2 for Learning Behaviour Questionnaire).

The Department of Education - Tasmania

The Department of Education - Tasmania gives a similar rundown for the identification and assessment of ADHD, but is mostly of a more general nature. The role of staff in identification is also presented in simple terms.

The Department recommends that questionnaires and standardised checklists will be more accurate if teachers withhold their own judgments. It also suggests that the initial steps should take place within the school (Department of Education Tasmania, 2003, Role of staff in identification). Medication, its effects, the duration of effectiveness and side-effects of taking medication are discussed at some length. The document discusses the responsibility and the vital role of the teacher and persons assisting with medication and calls for accurate reporting of the effects of medication (Department of Education Tasmania, 2003, Medication).

The Department of Education - Western Australia (WA)

The Department of Education – WA begins with the standard information for diagnosing ADHD. Some information is provided about the prevalence of ADHD, ADHD and behaviour, its effects on school performance and again the roles of school and teacher in supporting students diagnosed with ADHD (Department of Education - WA, 2003).

The role of the classroom teacher includes the adjustment of instruction to accommodate for the needs of the pupil with ADHD and also the collaboration with parents in managing a student with ADHD (Department of Education - WA, 2003, The Role of Classroom Teachers...).

Of particular significance is the Education Department's Administration of Medication Policy (1997) which states that "schools are *obliged to comply* with reasonable requests for assistance in the administration of medication" (Department of Education - WA, 2003, Administration of Medication).

Behaviour rating scales are strongly advocated in this particular document and a sample of a modified behaviour rating scale from the University of Massachusetts Medical Centre is included (see Appendix 3 for behaviour rating scale) (Department of Education - WA, 2003, Requests from medical practitioners).

These documents are excellent ones with information pertaining to the roles and responsibilities of a teacher. However they lack information on current research in this field and teacher perceptions and leave us guessing as to whether teachers regularly access this information.

Medication at School

There were some queries as to whether teachers, by law, were allowed to administer medication to students in schools, whether medication for ADHD or otherwise. A search of Department of Education websites throughout Australia displayed results from New South Wales, Queensland, Tasmania and Western Australia about ongoing prescribed medication to be taken at school. The last two states listed gave information directly referring to stimulant medication taken by students with ADHD. Some general principles were evident in the guidelines from all states if the administration of medication was to take place at school. These included:

- parents/caregivers notifying the principal in writing about the medication and other details about the medication (i.e. side-effects);
- parents/caregivers providing details of the name of the medication, how to administer it and how often it is to be administered;
- considerations about staff members competency and willingness to administer the medication;

- alternative plans in case the teacher decided upon to administer the medication is unavailable;
- what supervision was provided if the student is administering his or her own medication;
- provision of regular reviews of the plans above and how they are working.
- double checking of dosage and nature of medication given by a second person;
- medication being in its original container, clearly labeled by a health-care professional or pharmacist with the name of the student, the name of the drug, the name of medical practitioner prescribing it, the use-by date, dosage, time to be taken and other directions for use;
- teachers recognizing their responsibility to ensure safe practices concerning stimulant medication at school;
- the development of a system to ensure medication is given consistently at the right time/s;
- the amount of medication stored at school should not exceed one week's dosage and tablets should be counted and recorded appropriately by the staff representative appointed to give the medication;
- the responsibility of the staff representative appointed to administer medication to make sure that the medication is actually taken by the student;
- record keeping forms should be kept containing the name of the student, the name of the medication, the exact dosage of medication, the method of administering the medication, the name of the person on staff responsible for

administering the medication and the time the medication is to be administered;

- record keeping forms being updated with the following information each time the medication is taken: the signature of the person administering medication; the date and time the medication was given; the amount and type of medication administered; and the students initials or signature indicating they have received medication;
- systems which maintain the confidentiality of the student and their medical condition as they can be subject to bullying or teasing about their condition.

(Department of Education - WA, 2003, Administration of Medication; Department of Education Tasmania, 2003, Stimulant Medication; Department of Education – New South Wales (NSW), (200.), Medication at school; Department of Education – Queensland (Qld), (n.d.), Medication at school).

In-service Programs for Teachers

If knowledge and information for teachers about ADHD is on a 'need-to-know basis' as has been suggested, one would expect there to be information and training for teachers readily available when the need is identified.

A search into the in-service programs available to teachers dealing with ADHD produced less than adequate results. State Department of Education websites were thoroughly searched and contact was made resulting in no answer from the NSW Education department (n.d.) and information producing no reliable results from the Victorian Education Department (2003). There was one in-service program on the 'Stop-Think-Do' method of behaviour modification (Department of Education – Victoria,

2003), which can be used with a number of behavioural problems including ADHD. However no results looking at specific training for ADHD were obtained.

The National Director of Adventist Schools Australia, Australian Union Conference (AUC) of Seventh-day Adventists, was contacted about in-service programs about ADHD offered to teachers working in Adventist Schools in Australia. However, no answer was obtained and since other information was not forthcoming, it would be reasonable to assume that there is no significant in-service courses available in Adventist schools on ADHD.

From this information we can conclude that in-service programs for teachers may be insufficient for the significant role they play in diagnosing and treating ADHD.

Summary

A review of the current research on ADHD reveals that there are up-to-date guidelines aimed at pediatricians, general practitioners, parents and school social workers from America and New Zealand. Australia has released similar guidelines, although these are based on much earlier information and do not provide current statistics. In this respect, it has been identified that more current research for ADHD in Australia is needed.

The classroom teacher is identified as being an integral part of the diagnostic and treatment process in a substantial amount of research. Therefore research reviewed on teachers' perceptions and knowledge has revealed that more teacher education, both pre-service and in-service, is needed to ensure accurate diagnoses, combat stress related to teaching children with ADHD and provide information about strategies which help to

involve young learners with ADHD in the classroom. This information is based on teachers from predominantly American schools and no evidence of research undertaken in Australian schools was retrieved.

Enquiry into pre-service education available in some Australian institutes of higher education for the general classroom teacher revealed that ADHD was not specifically covered in course content. All higher education institutes reviewed showed similar results.

An educational point of view on ADHD has been addressed, with a multimodal (medication and behaviour training together) treatment process being the preference in Australia. Some Australian Departments of Education have provided information on the diagnosis and treatment of ADHD and also the school's and teacher's role. However, it is questionable as to where their information comes from because of the lack of references and evidence of research carried out in Australia.

Restatement of Purpose

In light of the research reviewed in this chapter, the purpose of this study is to find out what Australian primary teachers in the Seventh-day Adventist school system, perceive their role to be. Furthermore, the study compares teachers' perceptions with what research considers the role of the classroom teacher to be in the diagnostic process of Attention Deficit/Hyperactivity Disorder. In addition, the research aims to gauge how prepared teachers are for this role.

Chapter 3: Research Methodology

Introduction

This section of the report aims to analyze some of the procedures that took place in the formulation and implementation of the survey. An outline of the types of participants who were involved in the survey will be given and other factors such as response rate and some of the measures used in data analysis will be discussed.

Participants

Number and type of schools represented

The survey was sent out to each of the Adventist primary schools in the list of schools and teachers put out by *Adventist Schools Australia.* There are 50 Adventist primary schools in total in the Australian Union Conference. The researcher chose to limit the scope by choosing Adventist schools for three reasons: (i) the project is an undergraduate research project and the researcher felt that it would be too broad an objective to survey schools from other systems at this stage; and (ii) the limited focus on Adventist schools meant that it was easier to gain data from other states. Had the scope of the study been extended to other state and independent schools the subjects would likely be from NSW only; (iii) as revealed in the Literature review, there is little current research done in Australia on Attention Deficit Hyperactivity Disorder (ADHD) and no significant research in the Adventist system. The researcher felt that the Adventist system was a good starting point for possible extension in the future.

Number and type of teachers represented

Identical surveys were sent out to pre-service, general classroom and special education primary teachers in Adventist institutions across Australia (See Appendix 4 for a copy of the survey). Teachers were asked to identify what type of teacher (pre-service, general classroom or special education) they were by ticking the appropriate box in the demographic section of the survey. This information was to be used by the researcher to determine whether knowledge and opinions differed between these types of teachers.

From information gained from the Assistant Dean of the Education Faculty at Avondale College there were 27 pre-service primary teachers in their fourth year of study at Avondale College. Therefore 27 copies of surveys were made, however, not all were filled out due to absences, tardiness to class and personal choice.

Information about numbers of teachers in schools was gained from a document put out annually by *Adventist Schools Australia* listing the Adventist schools and teachers in each school. Unfortunately, this document is released in May and surveys needed to be sent out prior to this date, so numbers of teachers in each school may have been inaccurate. To somewhat counter this problem one extra copy per school was sent out. In total, the document listed 382 teachers in Adventist primary schools. Once the extra copy per school had been added, this number amounted to 432. Therefore 432 surveys in total were sent out to schools across Australia.

Survey Instrument

The survey (see Appendix 4) consisted of four pages, double-sided with 43 questions in total. The four pages included a cover-letter explaining the aims of the

research and instructions on how to fill out the survey. Section 1 – a demographic section - was located under the instructions on the second page of the survey. Each consecutive section was located on a new page, so as to keep sections separate and appear aesthetically pleasing. Questions were numbered and double spaced in between each question so as not to appear cluttered. The length of each question/statement was considered and questions were carefully and simply worded to ensure ease in reading and comprehension. Section 1 of the survey was to be answered by checking the boxes of the relevant details for each participant. Sections 2, 3, 4 were answered using a likert-type scale of 1 to 5. The scale meant the following: 1 - strongly disagree, 2 - disagree, 3 - neutral or undecided, 4 - agree and 5 - strongly agree. The likert-type scale was adopted for the following reasons: (a) it was easy for the participant to fill out; (b) it was less time-consuming for the participant; (c) it allowed for consistency between sections; (d) it allows for a person to give a degree to which they agree or disagree (like a continuum); and (e) it is easy to collate and graph, especially with quantitative data.

Discussion of Survey Questions

The survey was divided into four sections (see Appendix 4). The sections are explained briefly below and then explored in more detail in relation to research questions and purpose. Section 1 identifies some different variables of participants. It acts as a basis for relationships to be formed between these and other variables in later analysis. Section 2 aims to gauge how much teachers know about how stimulant medication affects students with ADHD and some of the basic diagnostic criteria for ADHD. Section 3 is more open in that it is trying to gauge what teacher's opinions of ADHD are, not looking at true/false type questions. Section 4 sets out to discover what teachers have

experienced with regard to ADHD in training and in the classroom and how teachers view their involvement with students with ADHD.

The survey will use quantitative data to access a wider range of Seventh-day Adventist teachers and gain a broader view of teacher's knowledge, opinions and perceived roles concerning ADHD.

Section One- Demographic details

This section included questions about the state where the participant lives, the type of teacher (pre-service, general, special) they are, their years of experience as a teacher, whether or not they had had experience with children with ADHD and where their initial teacher training was completed. The questions appeared in the above order. There were five questions in this section with participants mostly ticking the box which applied with the exception of the last question where the name of an institution was required. The areas covered in this section helped the researcher to be able to group the subjects in different ways to see if any of these factors influenced the teachers' knowledge, opinions, experiences or perceived roles. This section was not linked to any particular research question.

Section Two - Factual Knowledge about ADHD

There were 11 questions in this section and all were answered using a likert-type scale. This section was included to see how familiar teachers were with some of the basic information about ADHD.

Questions 1, 2, 5, 6, 7, 8 from this section were adapted from research conducted by Snider et al., (2003) into *Teacher Knowledge of Stimulant Medication and ADHD* and mostly centred around issues to do with causes and treatment of ADHD using stimulant

medication. This section will mainly gather data that relates to research question 1 (See Chapter 1 for research questions).

Other questions (3, 4, 9, 10, 11) were influenced by the information found in medical reports such as the American Academy of Pediatrics Guidelines (2000) and the New Zealand Ministry of Health ADHD Guidelines (2001) relating to the diagnostic criteria for ADHD. These also contribute towards answering research question 1 and part of research question 2 (See Chapter 1 for research questions).

Section Three - Teachers' opinions about ADHD

This section of the survey featured 12 questions based on the opinions of participants. Answers were indicated on a likert-type scale. Most questions from this section were, again, adapted from the study by Snider et al., (2003); however questions were adjusted to meet the aims of this study (the major focus of the Snider et al. study was on stimulant medication).

This section included questions which are grey areas in the research on ADHD and not necessarily as much true/false as Section 2. Questions 1-7 and 12 of this section have to do with the teacher's opinion of how stimulant medication affects behavioural, academic, organizational and social areas of the children's life, how effective stimulant medication is in treating the disorder and opinions relating to the amount of children on stimulant medication. This section partially answers research question 2 and provides valuable information for answering research question 3 (See Chapter 1 for research questions).

Other questions have to do with the amount of information about ADHD teachers have access to and opinions about how accurate teachers believe their own assessments

of children with ADHD are. These questions can be linked to research question 3 and particularly survey question number 9, will lend itself to answering research question 5 (See Chapter 1 for research questions).

Section Four - Teachers' Experiences and Perceived Roles

This section had 15 questions to answer using the likert-type scale of 1-5. Questions were adapted and re-worded from Snider et al. (2003), of a similar research design.

Questions 1-8 are loosely based around the likely degree of involvement a teacher has, or would expect to have, with students with ADHD. These questions would definitely be valuable when answering research question 2 (See Chapter 1 for research questions).

Questions 9-15 seek to identify where teachers mostly get their information about ADHD from and compare this with sources deemed to have the most accurate information about ADHD. Information gained from these questions will present a picture of where teachers stand in relation to research question 4 (See Chapter 1 for research questions).

It is hoped that this section will also reveal whether professional development concerning ADHD is taking place in schools as question 6 and 9, in direct link to research question 5 (See Chapter 1 for research questions), allude to pre-service and in-service course availability and effectiveness.

Response Rate

Surveys were sent out to Seventh-day Adventist schools within the first two weeks of March 2004. Surveys began to return at a steady rate in this period. However, the researcher's request that surveys be returned before Easter (April 9) was not observed and a round of emails was sent to remind schools to return their surveys as soon as possible. Another reminder was sent out in May 2004 leading to a few more returns from schools. The last group of surveys to be returned occurred in the first week of July 2004.

According to the records of the Seventh-day Adventist Australian Union Conference (AUC) as of May 2003 there were 382 primary teachers employed by the AUC. With 144 teachers out of the 382 returning their surveys this gave a response rate of 37%. Twenty-two out of the 27 pre-service primary teachers returned their surveys, giving a response rate of 81%. This means that an average of 40% of pre-service and in-service teachers returned their surveys.

Out of the 50 schools that surveys were distributed to, a total of 31 schools sent surveys back. However, one school did not return their surveys in time for them to be included in data analysis. Excluding this school, this gives us a response rate of 60% of schools who completed and returned their surveys. This suggests that perhaps there were (a) a large percentage of teachers in schools who chose not to complete the survey or (b) the 60% of schools who returned the surveys were made up of predominantly small schools.

Out of the 166 teachers who returned the surveys an average of 25% of teachers did not answer Section 1 which contained demographic questions. The state in Australia

that the teacher was from (question 1) could be determined by other surveys from the school. However other information would be lost when analysis was done as information would be too hard to retrieve from schools. This would not greatly affect findings. However, when relationships were made between demographic data and other variables it would need to be taken into account that results only represented an average of 75% of participants.

Procedure

Comprehensive research of current literature about ADHD began in March-April 2003. Research into current literature on ADHD has continued throughout the process and guided the research project undertaken.

Current research was particularly important to this study because (a) the researcher needed to become familiar with the disorder and the large amount of background information about ADHD, (b) the research project being undertaken was to be compared with other similar research and conclusions about ADHD, and (c) the researcher referred to similar research to structure the instrument (survey).

Looking at current research also influenced the formulation of the research questions in chapter 1, an important step in the process of this research project. These questions were formed after a considerable amount of time had been invested in reading background information and issues regarding ADHD. The researcher then came up with a hypothesis on which the research questions were based.

Research was carried out to determine whether qualitative or quantitative data collection methods were more appropriate to fulfill the aims and objectives of this particular project. It was decided a wide, general consensus of fairly controlled answers

would be the best way to find the information sought after. Consequently a quantitative data collection method was adopted.

The researcher consulted a number of different sources before finding a survey on which to primarily base the instrument for this research project. The article eventually decided upon was about *Teacher Knowledge of Stimulant Medication and ADHD* (Snider et al., 2003) which outlined a research design and objectives similar to this project. According to Snider et al., (2003) their survey was based on other earlier research into Teacher Knowledge of ADHD (Doherty, Frankenberger, Fuhrer & Snider, 2000; Reid, Vasa, Maag & Wright,1994; Runnheim, Frankenberger & Hazelkorn, 1996). The survey used in this project was adapted from the research of Snider et al., (2003), with some items added and some deleted to suit the purposes of the research project.

Later confirmation of the survey format was received when a number of dissertations about Teacher knowledge and opinions of ADHD (Curtis, 2003; Dotto, 1998; Palacios, 2000; Robin 1998; Salazar-Zamora, 1999; Shaver, 1998) were found to resemble the format and choice of questions present in the survey developed for the research project.

A draught copy of the survey was formed based on the research information above and members of the Avondale College Education Faculty edited the draught. After adjustments to the appearance of the survey it was pilot-tested on the Education Faculty members to find out approximate completion time and gain further editing and suggestions. Some grammatical errors were found and other minor changes made. It was also suggested that a letter to the supervisor be written, separate to the cover-letter to

applicants and this suggestion was complied with. The survey took between 5 -10 minutes to complete.

An application was submitted to the Avondale College Human Research Ethics Committee (HREC) in October 2003 and a Letter of Approval with some minor changes recommended for wording and subject sample size was received (see Appendix 5 for a copy of the Letter of Approval from the HREC).

Surveys were sent out to schools via the postal system with a return envelope, a letter to the supervisor (mostly the principal) in each school and the required number of surveys, each with a cover letter, inside.

On the return of the surveys, data was entered into a spreadsheet using Microsoft Excel. Once all data was entered in it was transferred into an SPSS program for further data analysis to take place.

Data Analysis Process

The survey instrument used quantitative data to meet research objectives. Descriptive statistics were used in analyzing the results from surveys.

Some correlations were performed on data to determine whether relationships existed between questions in the survey, and if the relationships were significant. It would then be decided whether or not the correlations would prove useful to meet the objectives of the present paper.

T-tests were also used to establish whether there were differences in knowledge, opinion or perceptions of ADHD between sub-groups, such as Special Needs teachers and regular teachers and teachers who have had experience with ADHD and those who have not. The results of these analyses will be presented in Chapter 4.

Chapter 4: Findings of the Study

Introduction

Results and findings are presented and discussed in this section of the report. This chapter is divided according to the sections of the survey (see Appendix 4 for a copy of the survey) so as to follow the format used in Chapter 3. Each section will begin by stating the pertinent research question to be answered (see chapter 1 for research questions). Further discussion of research questions will be found in Chapter 5. Results of various correlation analyses and T-tests will also be presented in this chapter.

Section 1 – Demographic Data

This section contains information, which relates to questions in other sections, and will help to answer research questions 1 – 4 (see Appendix 4). Topics to be analysed in this section feature information about participant distribution across states of Australia, teacher types, years of teaching experience, whether or not teachers have had experience with ADHD, and where initial teacher training was completed.

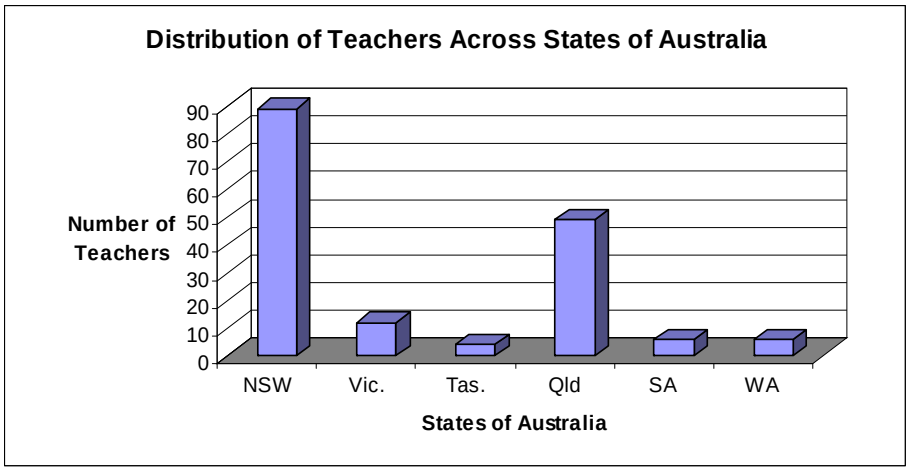
Information about State Ratios

The first question dealt with the states in Australia where teachers currently live and presumably teach. Data from each state of Australia, except the Northern Territory were received with most responses coming from New South Wales (NSW), then Queensland, and the least responses from Tasmania. This corresponds with the number

of Adventist schools in those states rather than indicating levels of response. However, the figures in Figure 4.1 below do show that over half of the research participants are from NSW so they will dominate the results somewhat.

Figure 4.1

Distribution of Teacher Responses



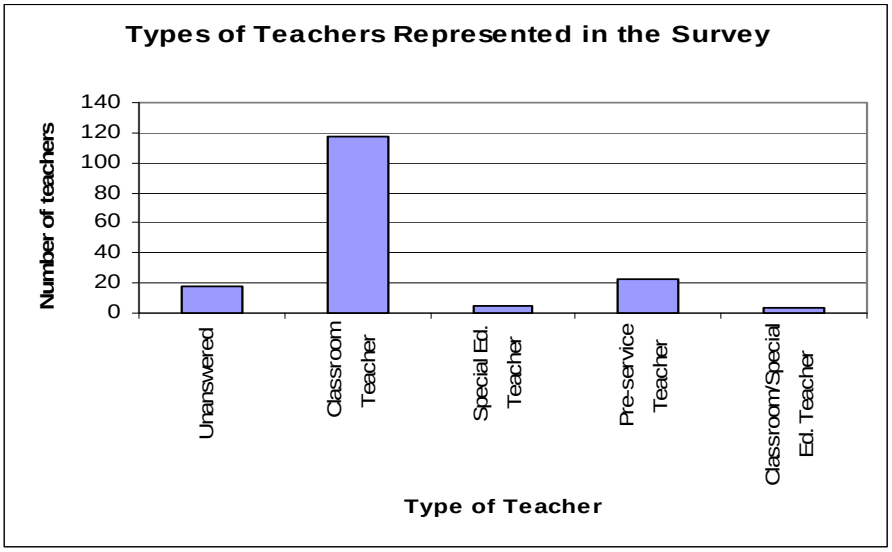
Teacher Type

This question was intended to ascertain possible differences between special needs, pre-service and classroom teachers' knowledge, opinions and perceived roles. However, it has also revealed a deficit within Adventist schools. As expected, there were a high percentage of classroom teachers (68%) and a moderate percentage of pre-service teachers (12.7%) as shown in Figure 4.2 below. However, there was a serious lack of people who identified themselves as special needs teachers. Only 2.9% of teachers considered themselves exclusively special needs teachers and a further 2.3% identified themselves as both classroom and special needs teachers. This means that there are only five school-based special needs teachers out of the sample size of 144 in-service teachers

that returned the survey. Although it is likely that there are more special needs teachers in Adventist schools that did not fill out the survey for various reasons, it is a surprisingly small number.

Figure 4.2

Distribution of Teacher Responses



The first research question sought to determine teachers' knowledge about ADHD. This included determining whether special needs teachers differed in their knowledge about ADHD from regular classroom and pre-service teachers. To determine differences in knowledge t-tests were performed on the means of responses from special needs teachers and compared with the means from classroom and pre-service teachers. From the t-test summary in Table 4.1, it can be seen that all but questions 1, 6, 9 and 10 are significant ($p<.05$). This means that there were significant differences in knowledge

of special needs and classroom/pre-service teachers, most likely to the advantage of special needs teachers.

Table 4.1

Significant Differences between Special Needs Teachers and Classroom teachers in Factual Knowledge about ADHD

(See section 2 of the survey in Appendix 4)

Questions	Mean	Std. Deviation	Sig. (2-tailed)
Question 1	0.065	0.944	0.393
Question 2	-0.340	1.101	0.000**
Question 3	-0.288	0.915	0.000**
Question 4	0.261	1.427	0.025**
Question 5	0.235	1.075	0.008**
Question 6	0.020	1.206	0.841
Question 7	0.791	1.201	0.000**
Question 8	0.359	1.139	0.000**
Question 9	0.013	1.088	0.882
Question 10	0.072	1.353	0.512
Question 11	-0.216	1.082	0.015**

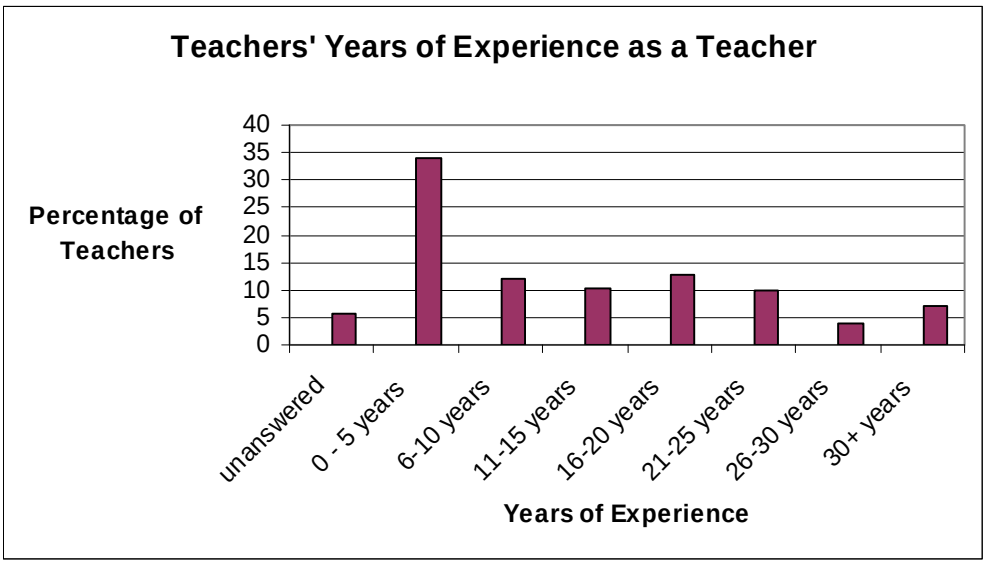
** indicates significance at the 0.05 level or below

Years of Teaching Experience

A number of factors which may influence other results became evident when looking at the responses from this question. The first area of note was the distribution of years of teaching. As indicated in Figure 4.3 there are an average number of representatives from each group present. However, one category does stand out above the rest (34%). This category refers to those who have had 0 - 5 years of teaching experience. In other words these are the new teachers, and in terms of the amount of years teaching, would be identified as the least experienced. This phenomenon may account for the large degree of uncertainty evident in other sections of the survey.

Figure 4.3

Distribution of Teacher Responses



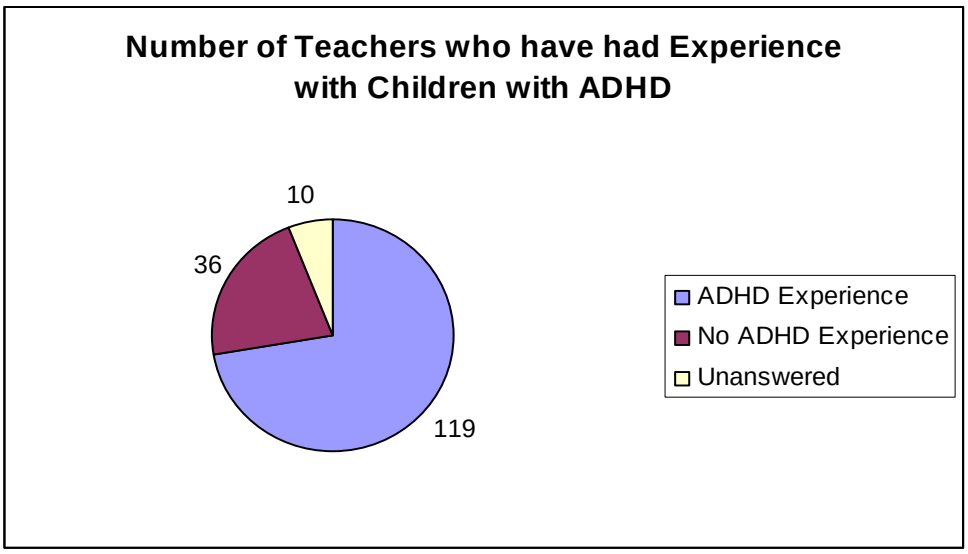
Correlations were analysed to determine whether teachers with more experience were more likely to be involved in the diagnostic process, whether they held different opinions of ADHD diagnosis and treatment or if they differed in where they were most likely to get their information from. No significant correlations were found in any of these categories.

Teachers' Experience with ADHD

Results from this question indicated that 119 (69%) of teachers have had experience with children with ADHD in their classrooms (Figure 4.4).

Figure 4.4

Distribution of Teacher Responses



One would expect those who have had experience with ADHD to be more knowledgeable, more confident in their opinions, and perhaps more involved in the diagnostic and treatment process. Therefore, an analysis of the 69% of people who identified that they had experience with ADHD, regarding each question in the survey, was conducted.

Results of a more general nature indicated that teachers who had experience with ADHD were less likely to be unsure and more likely to show a definite preference in their answers, by either having a higher percentage of people who agree or disagree with a statement or more daring answers, such as strongly agree or strongly disagree.

Significant differences, of a more specific nature, between those teachers who have had experience with children with ADHD and those who have not are indicated by the summary of the t-test in Table 4.2 below. These differences included teachers with experience having a greater knowledge of possible causes of ADHD (question 2) and more knowledge about the sub-types of ADHD (question 11).

Table 4.2

Differences in Factual Knowledge of Teachers who have had

Experience with ADHD and Teachers who have not

(See section 2 of the survey in Appendix 4)

Pairs	Mean	Std. Deviation	Sig. (2-tailed)
Question 2	0.231	1.116	0.033**
Question 8	0.102	1.127	0.350
Question 9	-0.065	1.113	0.546
Question 10	-0.120	1.221	0.308
Question 11	0.315	1.235	0.009**

** indicates significance at the 0.05 level or below

Teachers who have had experience working with children who have ADHD also differ significantly ($p<.5$) in a number of their opinions about ADHD. For example, as noted in Table 4.3, they are bolder in their opinions about the numbers of students on stimulant medication (Section 3, question 6), more confident in their abilities to identify students with ADHD (Section 3, question 10), and more likely to agree and agree strongly that stimulant medication can impair creative thinking (Section 3, question 12) (Table 4.2). Although not a significant difference (0.072) teachers who have experience with ADHD could also be seen to be more confident in their opinions about whether stimulant medication has any bearing on social skills (Section 3, question 5). These elements support the fact that teachers who have had experience with ADHD are more definite and forthright in a lot of their opinions.

Table 4.3

Differences in Opinions of Teachers who have had Experience with ADHD and Teachers who have not

(See section 3 of the survey in Appendix 4)

Pairs	Mean	Std. Deviation	Sig. (2-tailed)
Question 1	-0.093	1.115	0.390
Question 2	0.102	1.127	0.350
Question 5	0.204	1.166	0.072
Question 6	-0.352	1.202	0.003**
Question 7	0.196	1.262	0.111
Question 9	0.009	0.932	0.918
Question 10	-0.435	1.088	0.000**
Question 11	0.102	1.339	0.431
Question 12	-0.204	1.074	0.051**

** indicates significance at the 0.05 level or below

It seems that having experience with ADHD also affects the teacher's perceptions of their role in diagnosing and treating ADHD. Significant differences are evident in those that have and have not had experience with children with ADHD in relation to their confidence in identifying ADHD symptoms in a child (Section 4, question 1), and where they are most likely to get their information about ADHD from (Section 4, questions 10, 12), usually disagreeing more strongly with the more controversial sources of information such as the media and internet and also more likely to disagree that they mostly get their information from in-service and pre-service training (See Table 4.4).

Table 4.4

Differences in Role Perceptions of Teachers who have had Experience with ADHD and Teachers who have not

(See section 4 of the survey in Appendix 4)

Pairs	Mean	Std. Deviation	Sig. (2-tailed)
Question 1	0.435	1.138	0.000**
Question 2	0.130	1.177	0.255
Question 3	0.028	1.350	0.831
Question 7	0.167	1.180	0.145
Question 9	0.009	1.457	0.947
Question 10	0.259	1.383	0.054**
Question 12	-0.444	1.468	0.002**

** indicates significance at the 0.05 level or below

These differences suggest that those who have had experience with ADHD seem to be marginally more confident and involved in the diagnostic and treatment process, yet are lacking in some of the crucial knowledge about ADHD.

Teacher Training

The core group of respondents in the survey (69%) was from Avondale College and other Adventist Higher Education Institutions either in Australia or New Zealand. Almost 10% of respondents did not answer this question and 13% of participants did their training at State universities and colleges in Australia. Therefore it would be safe to say that most participants attended Avondale College and pre-service experiences and knowledge would be reflective of the program offered at Avondale College.

Section 2 – Factual Knowledge

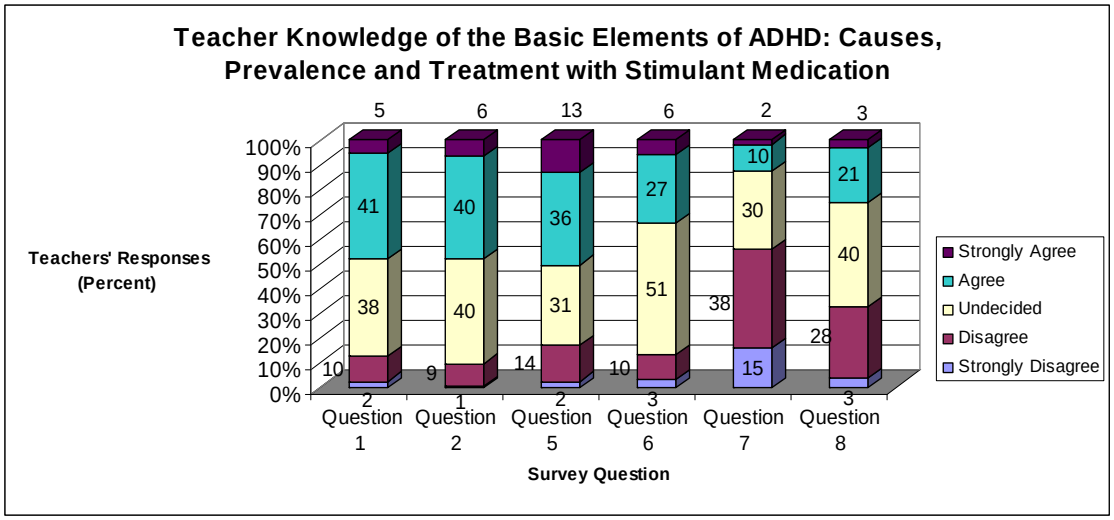
This section deals with teachers' responses to some of the basic factual knowledge about ADHD (see Appendix 4). The section contains results which would be relevant to research question 1 and 2 (See Chapter 1 for research questions). Results will be presented in two categories: (1) results from questions 1, 2, 5, 6, 7, 8 pertaining to causes, prevalence and treatment, specifically treatment with stimulant medication; and (2) results relating to other issues to do with diagnosis, such as behaviour on stimulant medication as an indicator of a correct diagnosis of ADHD, co-morbid (co-existing) disorders and ADHD, and key diagnostic criteria.

(1) Causes, Prevalence and Treatment with Stimulant Medication

The questions which contain information regarding the prevalence, causes and treatment of ADHD (1, 2, 5, 6, 7 and 8) indicated that teachers are highly uncertain on many of these issues (Figure 4.5). As indicated in Figure 4.5 below, teachers are unaware of or not willing commit to some questions that could almost be considered as general knowledge, such as questions 1 and 2. Question 1 refers to ADHD being the most commonly diagnosed childhood disorder (NIH Consensus Statement, 1998), which 38% of teachers were unaware of. Question 2 refers to the most widely held belief that ADHD is caused by problems in neurological functioning (Barkley, 2000), where a similar 40% of teachers were undecided. Responses to these questions indicate that many teachers have a lack of research-based knowledge.

Figure 4.5

Teacher Responses to Factual Knowledge Questions



Question 1 – ADHD as the most commonly diagnosed childhood disorder

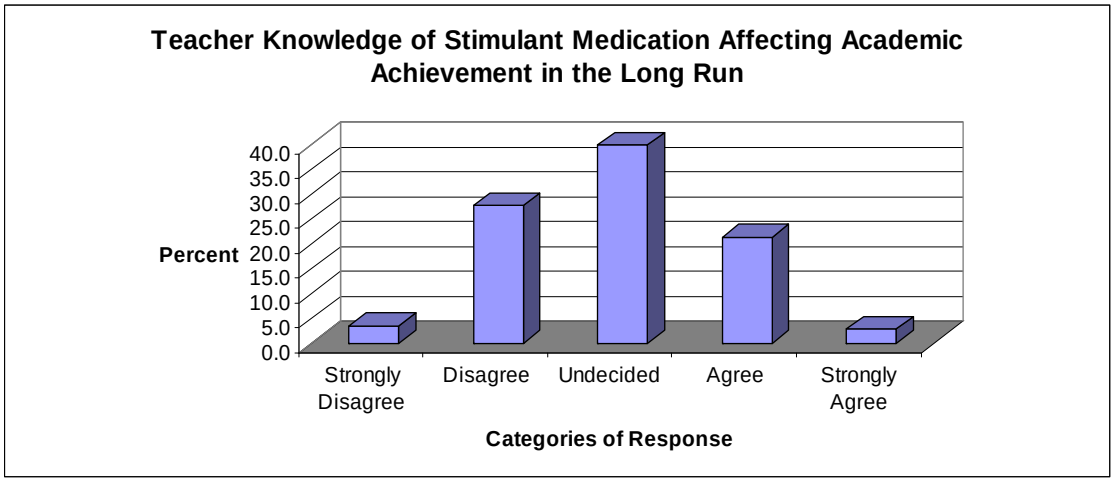
Question 2 – ADHD caused by problems in neurological functioning

Question 5 – abuse potential of stimulant medication

Responses to questions 5, 6, 7 and 8 in this section (see Figure 4.5, above), about the controversial effects of stimulant medication, match the results of uncertainty observed in questions 1 and 2. Participants who responded to these questions by indicating a neutral or undecided point of view were common, ranging from 30% to 51% of respondents. This uncertainty was reinforced by divided responses, such as found in Figure 4.6, further showing deficits in knowledge of the effects of stimulant medication.

Figure 4.6

Teacher Responses to Factual Knowledge about Stimulant Medication



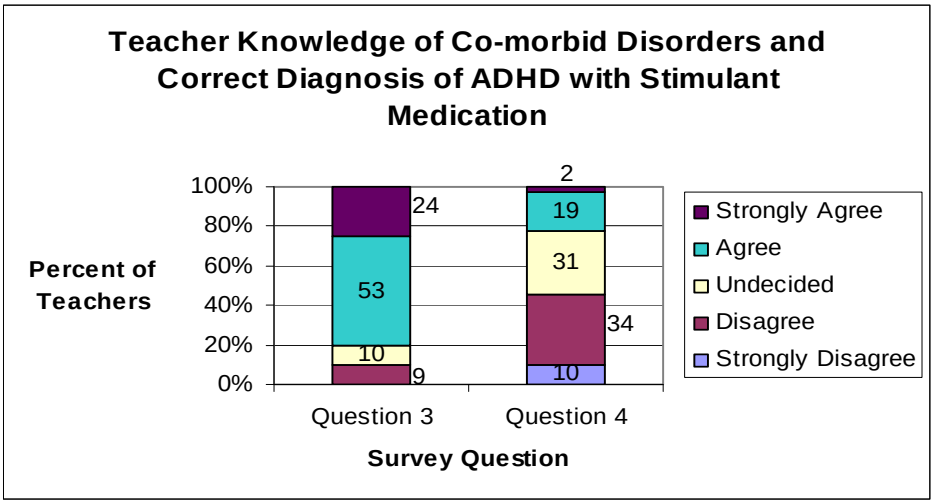
(2) C*orrect diagnosis, Co-morbid Disorders and Key Diagnostic Criteria.*

Teachers were marginally more confident in answering Questions 3 and 4 of this section with most in agreement that behavioural disorders and ADHD are linked (see Figure 4.7). It seems that teachers' sources of information educate them about the other problems that children with ADHD have, more than providing them with background knowledge of ADHD. This could point to the fact that education and training of teachers is not holistic enough.

Most teachers, as indicated in question 4 (see Figure 4.7), realise that a correct diagnosis does not simply mean the subduing of hyperactive or attention-deficit behaviours. However, as shown by Figure 4.7 it is of concern that a combined total of 40% of teachers either agree or are unsure whether a diagnosis is correct if stimulant medication is seen to improve symptoms of ADHD.

Figure 4.7

Teacher Responses to Factual Knowledge Questions

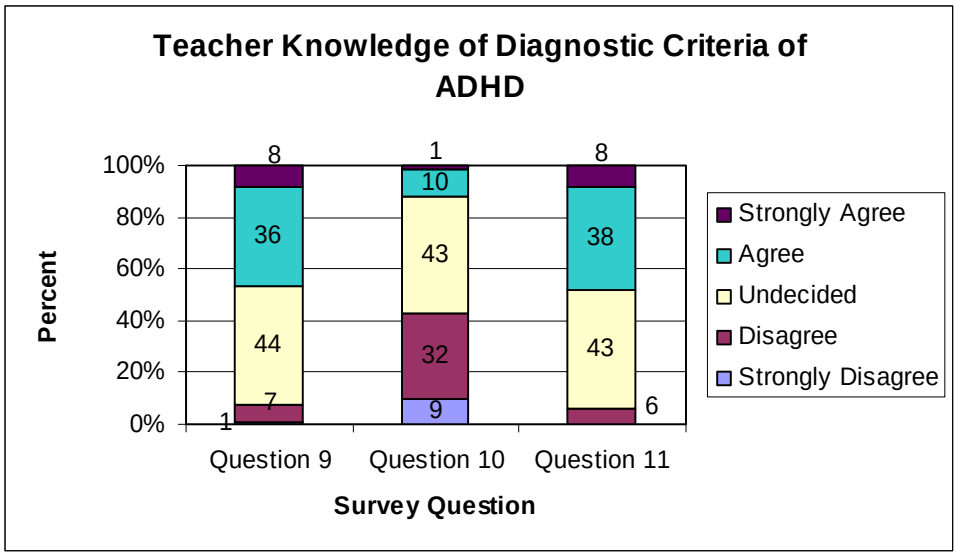


Question 3 –	Children with ADHD more likely to have other learning and behavioural problems (co-morbid disorders)
Question 4 -	Using stimulant medication's improvement of ADHD symptoms to confirm a diagnosis

This uncertainty reflects on the apparent uncertainty of teachers when answering questions 9, 10 and 11 about diagnostic criteria. Once again a trend is evident in the neutral or undecided category of response. Consistently, an approximate 43% of teachers appear to be uncertain about these standard criteria. In some cases teachers are not only unsure about criteria but misinformed and mistaken, as is the case with question 10 (see Figure 4.8). Question 10 states that to be diagnosed with ADHD children need to have displayed symptoms before the age of seven, which is one of the key diagnostic criteria (APA, 1994, cited in Salend & Rohena, 2003, 260). A combined total of 40% of teachers either disagreed or strongly disagreed with this statement (see Figure 4.8).

Figure 4.8

Teacher Responses to Factual Knowledge Questions



Question 9 – Symptoms present for six months in two out of three settings
Question 10 – Symptoms present before the age of seven
Question 11 – Three sub-types of ADHD

Section 3 – Teacher Opinions

Section 3 of the survey seeks to establish some of teachers' opinions on key issues relating to ADHD (see Appendix 4). This information relates to research questions 2 and 3.

Key issues covered in questions 1-7 and 12 of this section have to do with the teachers' opinion of how stimulant medication affects behavioural, academic, organizational and social characteristics of a child with ADHD; how effective stimulant medication is in treating the disorder; and opinions concerning the amount of children on stimulant medication.

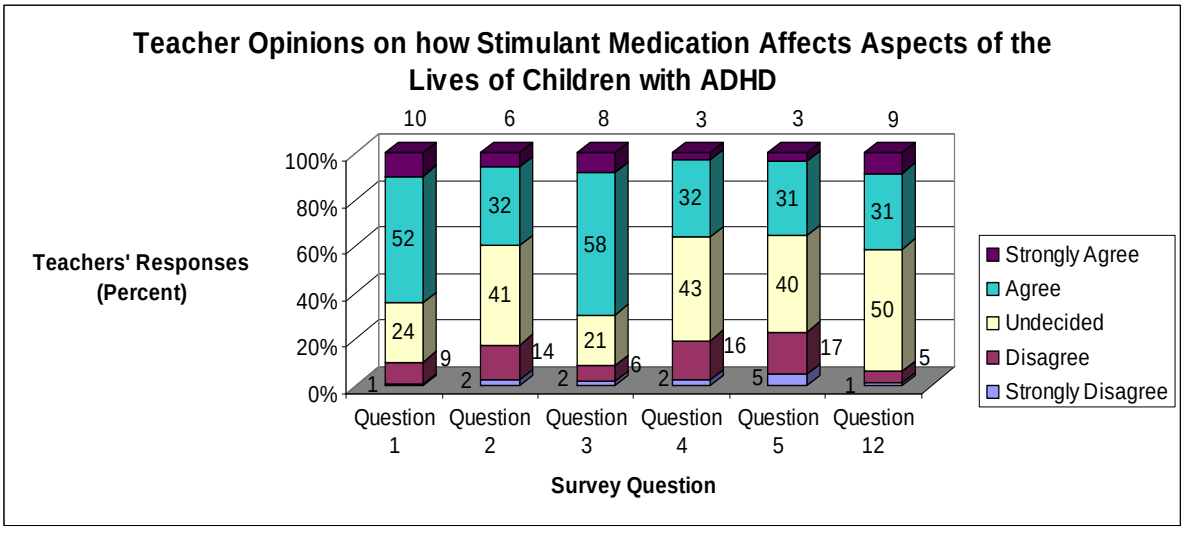
Other questions in this section (8, 9, 10, and 11) have to do with teachers' opinions on over-diagnosis in Australia, whether or not teachers need more information about ADHD and opinions about how accurate teachers believe their own assessments of children with ADHD are.

How Stimulant Medication Affects Aspects of Children's Lives

In general, teachers are of the opinion that stimulant medication is a productive method of treating ADHD in relation to behavioural, academic, organizational and social symptoms (see Figure 4.9).

Figure 4.9

Teacher Opinions of Stimulant Medication



Question 1 -	Behavioural Symptoms
Question 2 -	Academic Performance
Question 3 -	Concentration
Question 4 -	Organizational Skills
Question 5 -	Social Skills
Question 12 -	Creative thinking

Behavioural Symptoms (question 1)

Over 50% of teachers agree that students behave better on stimulant medication (see Figure 4.9). However a quarter (25%) of teachers are still unsure about this aspect, which may be something of concern, considering that this is a view widely supported by research about stimulant medication (Austin, 2003; NIH, 1998; Snider et al., 2003, 48).

Academic Performance (question 2)

There has been no reliable long-term research into whether stimulant medication helps students with ADHD to improve their academic performance. However many researchers (Alto & Frankenberger, 1994; Barkley & Cunnignham, 1978; Frankenberger & Cannon, 1999; Weber Frankenberger & Heilman, 1992 cited in Snider et al., 2003) believe that it has no affect on students' grades at school. This may be one of the reasons why teachers are unsure about this particular question, as indicated by the 41% of teachers who answered in the undecided category (see Figure 4.9). Teachers show a lack of knowledge on this particular issue in that 32% of them agree with this statement. This may suggest that teachers equate improvement in behaviour with academic improvement.

Concentration (question 3)

Teachers are fairly certain that concentration is improved by stimulant medication (see Figure 4.9). This is one of the more observable effects of medication and those who have had experience with children with ADHD would be able to observe these results more easily than the effects of stimulant medication on other aspects of performance, such as academic performance.

Organizational Skills (question 4)

Organizational skills are one of the areas where children with ADHD traditionally perform poorly (Salend & Rohena, 2003). However, teachers seem to be unaware of this fact in that 43% are neutral or decided. Perhaps this is not a phenomenon which has been observed by teachers so they are unaware of how stimulant medication affects the organizational skills of children with ADHD. It can be noted also that a number of teachers (32%) agree that organizational skills can be improved by stimulant medication, but a good percentage (16%) also disagree with this statement. As a group, teachers seem to be divided on this issue and the air of uncertainty increases.

Social Skills (question 5)

Research is indefinite about the improvement of social skills with stimulant medication (National Health and Medical Research Council (NHMRC), 1997) which may be a reason as to why teachers are not so sure. As Figure 4.9, above, indicates, 41% of teachers seem indefinite about whether stimulant medication helps to improve social skills. Reflective of question 4, moderate percentages of teachers who agree (32%) and teachers who disagree (18%) show that teachers are not united in opinions on this issue either.

Table 4.5 shows us that there were weak to moderate correlations with teachers' answers regarding the effectiveness of medication on behaviour, grades, organizational skills and social skills. Question 8 and question 6 showed a weak positive relationship, meaning that teachers who are likely to believe that there are too many students on stimulant medication are more likely to believe that ADHD is over-diagnosed in

Australia. These questions are obviously linked. A weak negative relationship existed between those who thought ADHD would be likely to improve organizational skills and those who agreed that ADHD was over diagnosed. This may be representative of teachers who do not believe medication to be an effective mode of treatment for ADHD.

Creative Thinking and Learning (question 12)

Some quite strong results are found in relation to stimulant medication and the effect that it has on children's capacity to think and learn creatively. Forty percent of teachers responding to categories 'agree' and 'strongly agree' identified that they believe a child's creativity is hindered by stimulant medication (see Figure 4.9). Half of the teachers who participated were unsure of whether or not they had an opinion on this particular effect of medication. This is not surprising, as it is not a well-documented fact, but simply included in the survey to see how teachers might react to such a comment. There were very low percentages (5%) who disagreed with this statement which leads the researcher to believe that although teachers feel there are plenty of positive effects of stimulant medication, they are of the opinion that there are also negative effects of stimulant education on children with ADHD, such as the possible impairment of independent creative thinking in the classroom.

Table 4.5

Correlation Coefficients for Teacher Opinions on the Effectiveness of Stimulant Medication

		Question1	Question2	Question4	Question5	Question6	Question8
Question1	Pearson's r	1.000	0.488**	0.388**	0.325**	-0.279	-0.127
Question2	Pearson's r	0.488**	1.000	0.488**	0.488**	-0.273	-0.177
Question4	Pearson's r	0.388**	0.488**	1.000	0.518**	-0.172	-0.336**
Question5	Pearson's r	0.325**	0.488**	0.518**	1.000	-0.144	-0.084
Question6	Pearson's r	-0.279	-0.273	-0.172	-0.144	1.000	0.389**
Question8	Pearson's r	-0.127	-0.177	-0.336	-0.084	0.389**	1.000

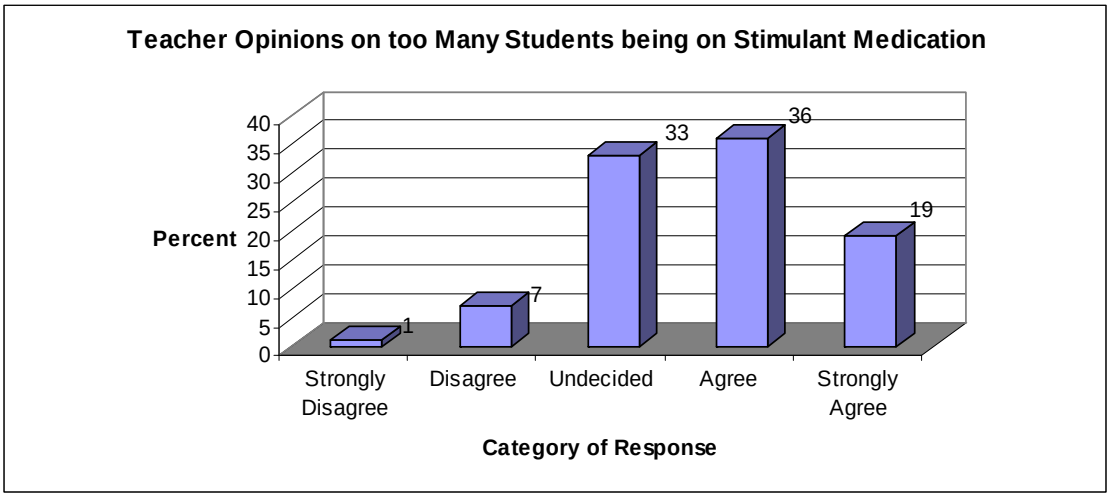
** indicates significance at the 0.01 level

The Amount of Children on Stimulant Medication (question 6)

Percentages of teachers who agree and strongly agree with question 6 imply that teachers in the Adventist system definitely believe that there are too many students on stimulant medication (see Figure 4.10). Although a lot of teachers have shown that they agree that medication helps children in many of the aspects of their lives which are important to school, they still believe that too many children are on medication. Perhaps this alludes to a feeling among teachers that misdiagnosis of ADHD exists, and therefore too many students who don't need to be on medication, are on medication. The high percentage of teachers (33%) that are not prepared to make a judgment about the amount of children on stimulant medication may not have an informed opinion about such issues. As professional teachers, an informed opinion about these topics is necessary.

Figure 4.10

Teacher Opinions of Stimulant Medication

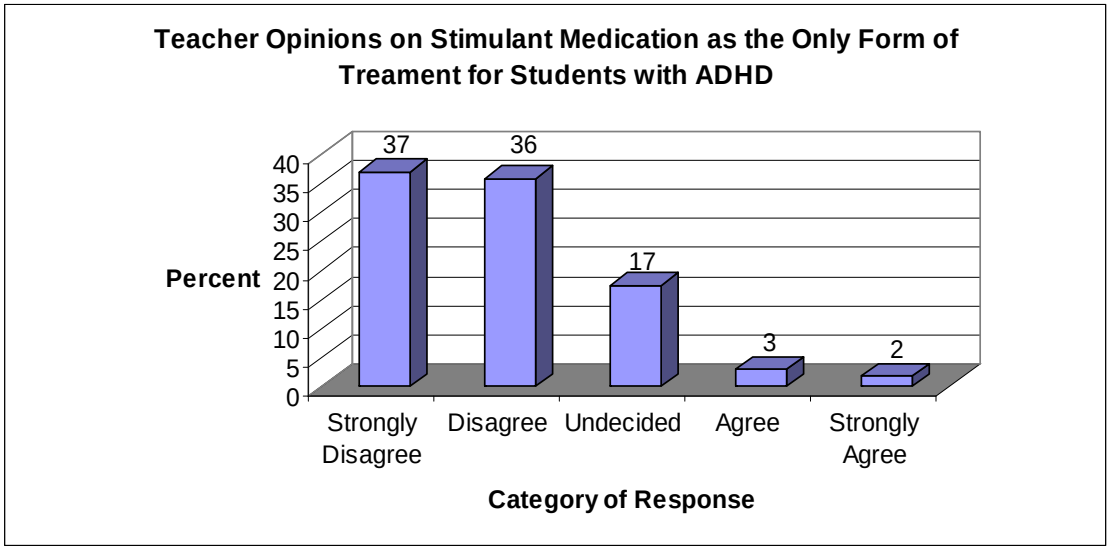


Effectiveness of Stimulant Medication as the Only Form of Treatment (question 7)

Some research shows that treatment with stimulant medication is not much improved by other forms of treatment, such as behavioural and cognitive training (NIH, 1998), although this is a highly controversial issue. Other research shows improvement in those children with ADHD who take part in other interventions (Austin, 2003, 291; Fabiano & Pelham, 1998, 129). Teachers in Adventist schools disagree with research that says stimulant medication is the only form of treatment for ADHD; with 36% of teachers disagreeing and 37% of teachers strongly disagreeing with this statement (see Figure 4.11).

Figure 4.11

Teacher Opinions of Stimulant Medication

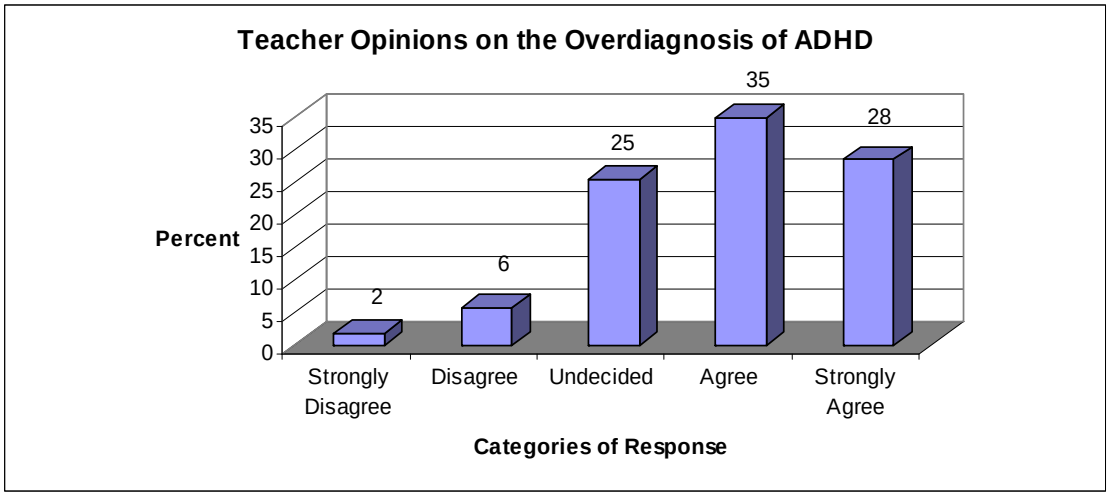


Over-diagnosis of ADHD in Australia (question 8)

Overwhelmingly, teachers feel that ADHD is over-diagnosed in children in Australia. With one of the highest percentages of teachers who strongly agree with a statement in the survey (28%) this is an issue that teachers are passionate about (see Figure 4.12). There is evidence in research to support the notion that misdiagnosis and over-diagnosis takes place in other countries (Bonn, 1996; Curtis, 2003; Hutchinson, 1998; Shaver, 1998), however, no Australian reports have proven that over-diagnosis of ADHD also takes place in Australia (NHRMC, 1997). This information is valuable to the present paper.

Figure 4.12

Teacher Opinions of Issues in ADHD

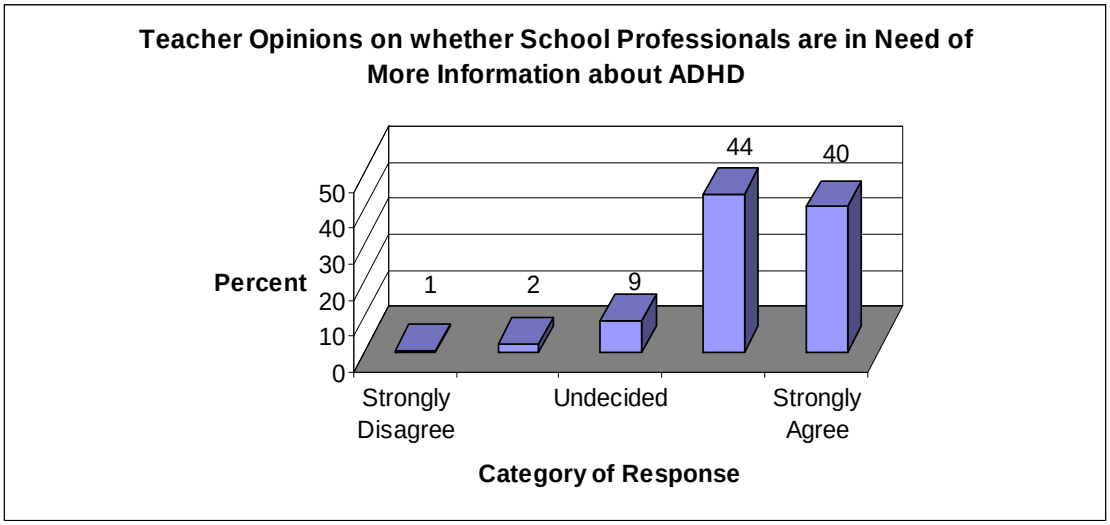


Response to Teachers Need for More Information about ADHD (question 9)

If there is one thing that teachers seem to be sure of, it is that they need more information about ADHD. Forty percent of teachers were in strong agreement about the need for more information, with a combined total of 84% of teacher in agreement and strong agreement (see Figure 4.13). These results also mirror results from other research into teacher in-service and pre-service education (Bussing et al., 2002, 333). Perhaps this reflects the high percentage of teachers who feel that in-service and pre-service education does not prepare them for their role as a teacher of children with ADHD (see Section 4, questions 6 & 9). This result is a positive one for teachers and the present paper, because (a) teachers are able to identify a need; and (b) it shows that teachers are aware of their knowledge deficits and this is a step in the right direction to proper education about teaching and caring for children with ADHD.

Figure 4.13

Teacher Opinions on Information about ADHD

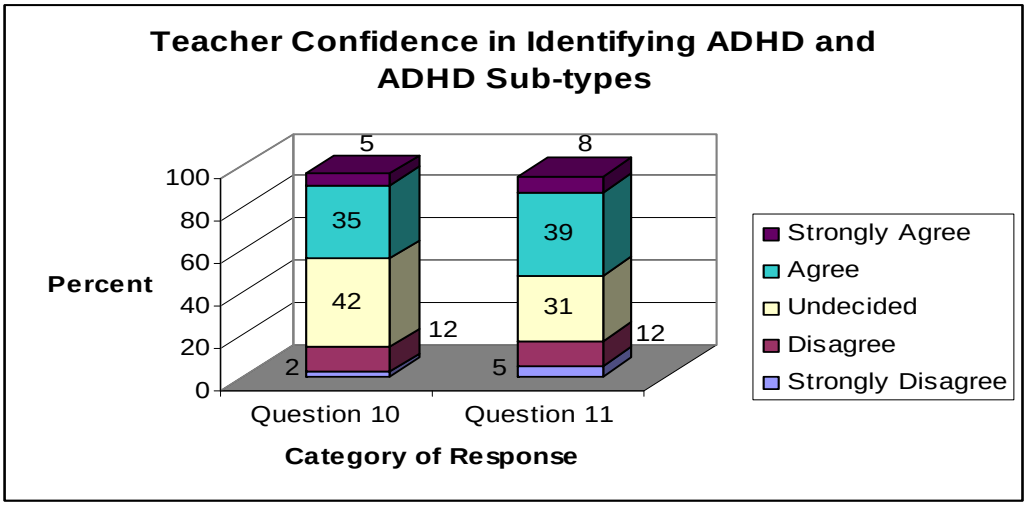


Teachers' Confidence in Identifying ADHD (question 10 & 11)

As indicated by some research articles teachers are not always accurate in their identification of pupils with ADHD (Carney, 2002; Glass and Wegar, 2000; Pilling, 2000). So, how accurate do teachers in Adventist schools believe themselves to be when identifying students with ADHD? Findings reveal that over 50% of teachers are either undecided or disagree that they can usually identify ADHD before it is formally diagnosed. This leaves approximately 40% of people who agree (35%) or strongly agree (5%) that they can identify children with ADHD (see Figure 4.14), which is positive, but not the definitive result needed when considering the role that teachers are expected to play in identifying ADHD. It is also questionable as to whether their identification would be accurate due to the lack of knowledge about diagnostic criteria evident in Section 2.

Figure 4.14

Teacher Opinions on the Identification of ADHD



Question 10 – identifying ADHD before formal assessment

Question 11 – identifying sub-types of ADHD

To be more specific, can teachers identify sub-types of ADHD in children? Teachers were unsure about ADHD sub-types when answering question 11 in the factual knowledge section of the survey and to some degree their uncertainty seemed to transfer over to their identification of the different sub-types in children with ADHD (see Figure 4.14). However the correlation is not as high as one would think. It would be expected that teachers who agreed and understood that there were three sub-types of ADHD would be more likely to be able to determine these sub-types in children. As Table 4.6 indicates, there is no significant relationship between these variables. This taken into account, as well as the fact that distinctions between hyperactive and inattentive children

are not difficult to observe, indicate that teachers may be confused or uncertain about this issue.

Weak correlations between data may also reveal that teachers who think they can identify students with ADHD before formal assessment are not necessarily familiar with key diagnostic criteria, which would be a worse scenario.

Table 4.6

Correlations between Teachers who are Confident that they can Identify ADHD before Assessment and Key diagnostic criteria.

		Section 3 Question 10	Section 2 Question 9	Section 2 Question 10	Section 2 Question 11
Section 3 Question 10	Pearson's r	1.000	.035	-.122	.163**
Section 2 Question 9	Pearson's r	.035	1.000	.139	.172**
Section 2 Question 10	Pearson's r	-.122	.139	1.000	.044
Section 2 Question 11	Pearson's r	.163*	.172*	.044	1.000

** Correlation is significant at the 0.05 level (2-tailed).

Section 4 - Teacher Experiences and Perceived Roles

This section aims to present findings concerning teachers' experiences and perceived roles (see Appendix 4). Some findings will be related to questions from other sections of the survey, using correlation analyses, to determine specific opinions and perceptions of ADHD evident in the sample teachers. Section 4 has relevance to research questions 2, 4 and 5 (See Chapter 1 for research questions).

Questions 1-8 of this section help us to identify what sort of role the teacher has played or is likely to play when dealing with a child who has ADHD. More specifically, questions 1-5 and 8 ask directly what the teacher would do, or sees as his/her role in these aspects, whereas questions 6 and 7 refer to experiences which are indirectly related to the

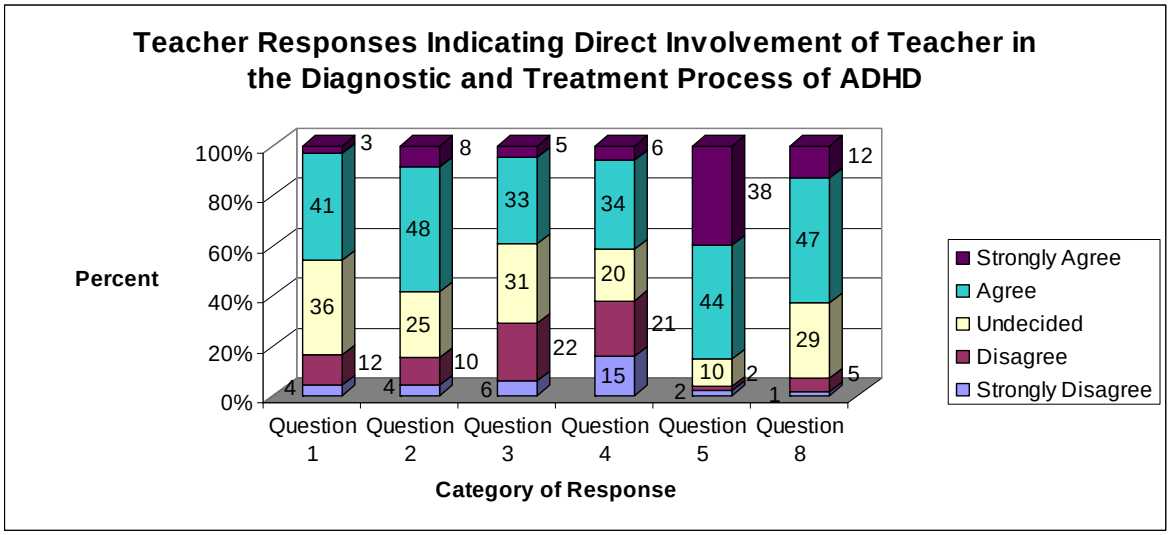
teacher or not directly within their control. These questions contain results which are pertinent to research question 2 and some information (combined with information from Section 3, question 9 and Section 4, question 9) which contributes to answering research question 5 (See Chapter 1 for research questions).

Questions 9-15 seek to establish the main sources of teacher information about ADHD. Findings can then be measured against sources identified as reliable in other studies. These findings would have obvious connections with research question 4 (See Chapter 1 for research questions).

Direct Involvement of the Teacher (questions 1-5, 8)

Figure 4.15

Role Perceptions of Teachers in the Diagnostic and Treatment Process



Question 1 – identifying ADHD symptoms
Question 2 – referring child displaying ADHD symptoms for assessment
Question 3 – being actively involved in the diagnostic process
Question 4 – giving medication to children
Question 5 – communicating regularly with parents of children with ADHD
Question 8 – using interventions other than medication in the classroom

On the whole, teachers showed a positive response to being directly involved with a child with ADHD, as Figure 4.15 indicates.

Most teachers (41%) agreed that they could identify ADHD symptoms in a child. However, 36% were not sure if they could (see Figure 4.15). Since teacher knowledge about diagnostic criteria was not overly stable, one would expect a positive relationship to exist between questions about diagnostic criteria and teacher confidence in identifying symptoms. This is not the case. Correlation results were insignificant, much like those shown in Table 4.6. Even though teachers are not confident, and even sometimes mistaken about diagnostic criteria, they seem reasonably confident in their abilities to identify ADHD symptoms in a child.

Although the majority of teachers (56% combining agree and strongly agree categories) would refer a student displaying symptoms of ADHD, it is a concern that 25% of teachers are unsure whether they would refer and 14% (combined total of disagree and strongly disagree categories) would not refer a student who was displaying symptoms of ADHD for assessment (see Figure 4.15). These results are reflective of other studies involving teachers and referral (Goldstein, 2002). Goldstein (2002) also suggests that teachers' lack of referral of ADHD children is reflective on their lack of training and confidence.

Teachers are apprehensive about being involved in the diagnostic process of ADHD, as shown by the 30% of teachers who answered in the undecided category in question 3 of this section (see Figure 4.15). Although there is a slight majority of teachers who would be likely to be involved (37% agree/strongly agree), there is a good

percentage (28% disagree/strongly disagree) who would not be likely to be involved in the diagnostic process (see Figure 4.15). Teachers may not know what being involved in this process entails, which may be a factor in explaining teachers' seemingly noncommittal attitude.

Correlations were analyzed to determine whether teachers who said they were likely to be actively involved, indicated their involvement by answering positively to question 2, 4, 5 and 8, which had to do with various ways of being involved. A moderate positive relationship existed between those teachers who identified that they would be actively involved in the diagnostic process and those that would be likely to refer a child displaying symptoms of ADHD for assessment (see Table 4.7). However, results were inconsistent and so it could be said that those who were *willing* to be involved may not actually *be* involved if the opportunity arose.

Table 4.7

Correlation Coefficients for Teachers' Perceived Level of Involvement on Teachers' Actual Level of Involvement

		Question 3	Question 2	Question 4	Question 5	Question 8
Question 3	Pearson's r	1.000	0.524**	0.256	0.223	0.169
Question 2	Pearson's r	0.524**	1.000	0.260	0.208	0.080
Question 4	Pearson's r	0.256	0.260	1.000	0.228	0.007
Question 5	Pearson's r	0.223	0.208	0.228	1.000	0.355**
Question 8	Pearson's r	0.169	0.080	0.007	0.355**	1.000

** Correlation is significant at the 0.01 level (2-tailed).

Another area where teachers are less sure about being involved is in administering medication. The Western Australian policy regarding teachers involvement in treatment states that "schools are *obliged to comply* with reasonable requests for assistance in the administration of medication" (Department of Education - Western Australia, 2003, Administration of Medication). As indicated in Chapter 2, other states require similar assistance if clear instructions are given about the administering of the medication, parental consent is obtained and an organized system for giving and checking the medication is in place. Almost as many teachers who agree or strongly agree that they would be willing to give medication (40%), indicate that they would not be willing to give medication (36% disagree/strongly disagree) (See Fig. 4.15).

It is understandable that a teacher is less likely to be involved in giving medication if he or she is either against it or are uninformed about medication. A correlation analysis of teachers who would be willing to give medication and those who responded positively to knowledge of medication and the effectiveness of stimulant medication on core ADHD symptoms, revealed that no correlation existed between those who would be willing to give medication and those who thought medication was effective in treating most symptoms of ADHD (Section 3, questions 1-5).

Correlation coefficients also revealed that no relationship existed between those who had factual knowledge of stimulant medication (Section 2, questions 4-8) and those who would be willing to give medication. It seems that even those teachers who agree with stimulant medication for the treatment of ADHD feel uncomfortable about giving medication to students with ADHD.

A high percentage of teachers are in agreement about the importance of communicating with parents about ADHD as shown in question 5 (Figure 4.15). Forty-four percent of teachers agree with this statement and a very sturdy group of teachers strongly agree at 38%. Correlations were performed to see whether teachers who see it as important to communicate with parents (question 5) actually receive most of their information about ADHD through parents (question 13). However, no significant relationship was found.

Fifty-one percent of teachers agree that they would be likely to use interventions other than stimulant medication with children with ADHD as shown in results from question 8 (see Figure 4.15). Teachers seem to feel more comfortable identifying with this statement than other statements regarding interventions with stimulant medication, although, 30% of teachers are still unsure or not willing to indicate the kinds of interventions that they would use, if any, with children with ADHD.

Indirect Involvement of the Teacher (Questions 6, 7)

Questions 6 and 7 ask teachers about what they have observed or experienced, rather than asking directly for what a teacher would do, given a certain situation. These questions are less of the teachers' opinion or perception and more of their actual experience.

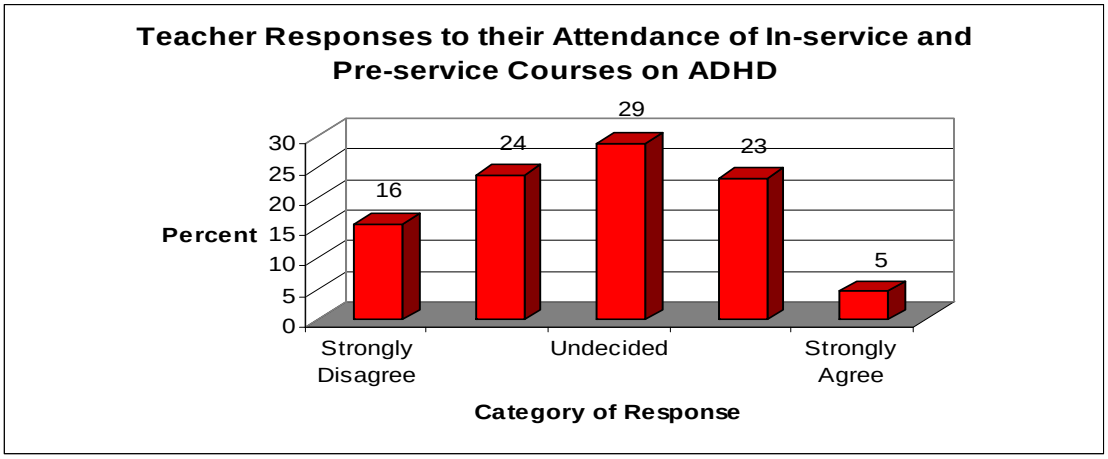
Question 6 gleaned some fascinating results. In regards to the attendance of pre-service and in-service courses that prepare teachers for their role in diagnosing and treating ADHD, teachers as a group, seem thoroughly undecided. The largest percentage of teachers in one category was neutral or undecided (29%) and teachers were spread almost evenly across categories, agree (23.7%) and disagree (23.1%). However a

distinction was made where more people strongly disagreed (15.6%) than strongly agreed (4.6%) (see Figure 4.16).

We could interpret teachers' responses in two ways. Either the level of disagreement means (1) that teachers do not attend in-service or pre-service courses; or (2) teachers do attend in-service or pre-service courses, but do not feel prepared by these courses. Whatever the case, teachers feel they are not receiving enough valuable information about ADHD.

Figure 4.16

Teacher Experiences of In-service and Pre-service Courses on ADHD



As is evident in Table 4.8, there is a weak positive correlation between teachers who attend in-service and pre-service courses and those who agree that they mostly get their information from in-service and pre-service courses (or in this case, the inverse, i.e. they do not attend valuable in-service/pre-service courses and do not get their information from these courses). One might have expected this correlation to be higher, given the elements that the questions have in common, however this could come down to

inconsistent data or the uncertainty with which most questions were answered in the survey.

Table 4.8

Correlation Coefficients for Teachers who Attend Pre-service and In-service Courses on ADHD and Teachers who identify In-service and Pre-service Courses as their Main Source of Information about ADHD

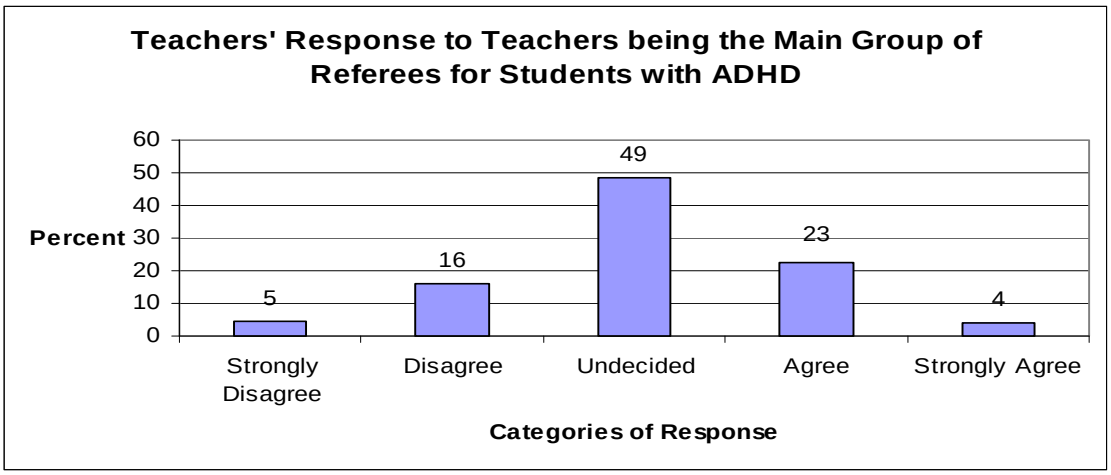
		Question 6	Question 9
Question 6	Pearson's r	1.000	0.398**
Question 9	Pearson's r	0.398**	1.000

** indicates significance at the 0.01 level

Not only are teachers in need of more training in ADHD, they also need to be informed about the referral process and their responsibilities, as question 7 reveals (See Figure 4.17). Research informs us that teachers make the majority of referrals in the USA (Frankenberger & Aspen, 2000 cited in Snider et al., 2003, 47). This does not seem to be the case in the present study as almost 50% (48.6%) of teachers are unaware about whether they are expected to refer children showing signs of ADHD (see Fig.4.17).

Figure 4.17

Teacher Experiences of the Main Group of People to Identify ADHD

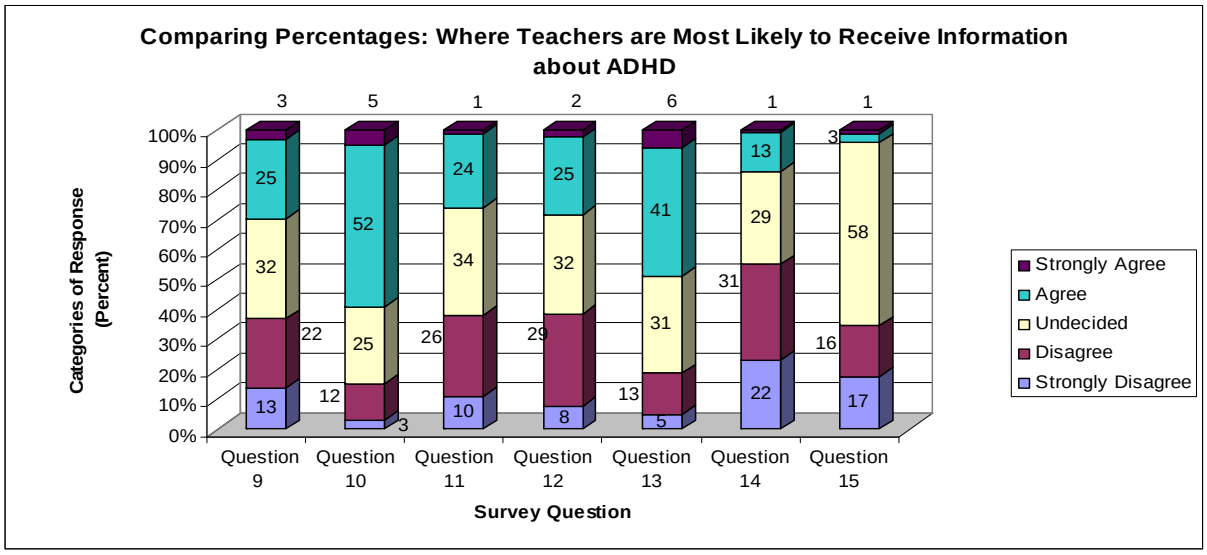


Teachers' Main sources of Information about ADHD

It is evident that teachers are not well-informed about particular aspects concerning ADHD at this point. Therefore, it would be advantageous to analyze teachers' sources of information. Section 4, questions 9-15 are all questions of a very similar nature, with the intent of finding clues to where teachers *mostly* receive their information about ADHD from. Figure 4.18, below, may shed some light on this matter.

Figure 4.18

Teacher Experiences of where they are Likely to Receive Information About ADHD



Question 9 - In-service/pre-service training
Question 10 - Other Professional
Question 11 - Professional Journals
Question 12 - The Media
Question 13 - Parents of Children with ADHD
Question 14 - The Internet
Question 15 - Other Organizations

It is evident that most teachers obtain their information from other professionals in the field (question 10, 52%), and from the parents of children with ADHD (question, 13, 41%) (see Figure 4.18). These sources are some good resources for teachers. However, teachers run the risk of depending on other people's knowledge as accurate, rather than seeking out and discerning information for themselves.

Other results showed indecision on the teachers' part, especially concerning information gained from in-service and pre-service courses, professional journal articles, the media, and the internet. The most surprising, and perhaps worrying, result is that

almost a quarter of teachers agreed that they mostly get their information from the media, which can be subject to propaganda and exaggeration (see Figure 4.18). The internet was not a popular source of information, with 30% disagreeing and 22% strongly disagreeing, that they would get their information from the internet. Some of those sources which one would expect to be higher in percentage would be pre-service and in-service courses and professional journals. However, only a quarter of people agreed that they mostly get their information about ADHD from in-service or pre-service courses/training and only 24% of people (see Figure 4.18) mostly accessed their information through journal articles which could be seen as one of the more accurate sources of information.

Another issue which arose was the consistently high percentage of teachers who were undecided about where they mostly receive their information about ADHD. An average of 38% of teachers, responding to questions 9-15, identified with the undecided category. It is possible that these teachers are unsure where they acquire their information from because they *do not* access information about ADHD from anywhere or they do not know *where* to access information about ADHD. This is where professional development could be of service to teachers.

Summary of Findings

Teachers surveyed were largely classroom teachers who had 0-5 years of experience, had attended Avondale College, mostly lived in NSW or Queensland, and had experienced children with ADHD in their classroom at some stage.

T-tests revealed that there were some differences in factual knowledge of ADHD between those who had and had not had experience with ADHD, and those who were special needs teachers as opposed to classroom teachers. T-tests also showed that teachers who have experience with children with ADHD differed in some of their opinions and role perceptions.

Teachers were likely to be unsure about causes and prevalence and treatment with stimulant medication. Teachers also performed poorly in relation to questions about diagnostic criteria and correct diagnosis, regarding observation of the improvement of ADHD symptoms when on stimulant medication. However, teachers were generally aware of co-morbid disorders.

Some of the teachers' opinions in Section 3 were surprising ones. On the whole, teachers agree that stimulant medication improves symptoms associated with ADHD. However, they do believe that ADHD is over-diagnosed, there are too many students on stimulant medication and stimulant medication should not be the only form of treatment for ADHD. Many teachers are of the opinion that they need more information about ADHD. However, a number of teachers agree that they can identify ADHD in children. This may be unfounded as their confidence does not correlate with knowledge.

Major issues were found with teachers' perceptions of referral and teacher involvement in Section 4. A good portion of teachers were unsure if they would refer or disagreed that they would refer a child displaying symptoms of ADHD and those teachers who indicated that they would be involved did not indicate active involvement in answers to other questions in this section. Other results indicated that teachers did not attend valuable in-service or pre-service courses and were more inclined to receive their information from 'second-hand' sources (such as parents or other professionals) as opposed to seeking out information for themselves in professional journals and on the internet. A large percentage of teachers were unsure where they received their information from, and it could be speculated that the reason they are unsure is that they may not receive any valuable information about ADHD.

The results will be further discussed in relation to research questions in the following chapter. Final conclusions of the study and recommendations will also be given in Chapter 5.

Chapter 5: Discussion of Research Questions and Conclusions

Introduction

The purpose of this section is to provide additional discussion on some of the issues presented in Chapter 4 as they relate to specific research questions. Comparisons will be made between the perceptions of teachers concerning their roles and responsibilities with children with ADHD and roles and responsibilities as outlined by research as optimum practice for teachers.

Conclusions will be drawn from the discussion of each research question and consequent recommendations will follow. The chapter will conclude with the limitations of the present study, suggested future studies stemming from this study and the final concluding statements.

Research Question 1

How accurate is current teacher knowledge of the etiology of ADHD and the guidelines for diagnosis?

This question seeks to establish what teachers know about some of the basic issues and guidelines for diagnosing ADHD. This information will be scrutinized in light of Seventh-day Adventist teachers' knowledge about: causes (etiology) of ADHD; prevalence; treatment with stimulant medication; issues in correct diagnoses; key diagnostic criteria and co-morbid disorders. Evidence in findings suggested some differences existed in the factual knowledge of both teachers who had experience with learners with ADHD and Special Needs teachers.

Causes of ADHD

Part of the controversy which surrounds ADHD has to do with the 'cause' of ADHD. Inverted commas are used in this case because part of the problem is that there is not an exact proven 'cause' for ADHD, so this may refer to a number of speculated possibilities, ranging from dietary and genetic factors to maternal substance abuse during pregnancy (NHMRC, 1997). However, the most widely held belief is that ADHD is a brain (neurological) disorder and is caused by problems in the functioning of the Central Nervous system (Barkley, 2000). The problem with this notion is that there is no valid medical test which confirms it (NIH, 1998, Introduction). This may give us some insight as to why some teachers are unsure about this question. However, the question (Section 2, question 2) in the survey did state that "*research indicates* that ADHD is caused by problems in neurological functioning" not that it actually *was* caused by problems in neurological functioning. If teachers were informed and well-read in current research they would be aware of such issues and more able to make a judgement, which was not evident in the 40% of teachers who claimed the undecided option.

Prevalence of ADHD

Teachers in the Seventh-day Adventist school system were unsure about prevalence rates of ADHD. Despite a number or sources (Snider et al., 2003; NZ Ministry of Health, 2001; Taylor, 1997 cited in Glass & Wegar 2000) identifying ADHD as the most commonly diagnosed childhood disorder, teachers seem to be undecided on this fact. Once again, this is a fact which appears in most research papers about ADHD.

Treatment with Stimulant Medication

The questions from this section of the survey were mostly questions with the purpose of finding out how much teachers know about the *effects* of stimulant medication. Teachers were slightly more confident on questions relating to stimulant medication, however not convincingly so, as the undecided option remained a common one. Snider et al., (2003) asserts that because teachers are among the first to identify ADHD in children it is most important that they stay abreast of the current developments in science. Teachers can also be called upon to give medication (Department of Education – Western Australia, 2004), and therefore it is essential, for legal and moral reasons, that they understand the effects of the medication that they are administering.

Stimulant Medication and Correct Diagnosis

A common misconception that exists has to do with people using stimulant medication as an indicator of a correct diagnosis of ADHD. That is to say that most people believe that stimulant medication has a different effect on those with ADHD than the general public (Snider et al., 2003). However, Peloquin & Klorman (1986, cited in Snider et al., 2003) state that children who do not have ADHD respond to stimulant medication in the same way as children with ADHD. Therefore this can certainly not be relied on as a confirmation of diagnosis. Most teachers in the Seventh-day Adventist system understand this misconception. However almost as many who disagree that this is a valid indicator of correct diagnosis are likely to be uncertain about this statement or agree that it can be used to confirm a diagnosis. Once again, this is an area for concern as

reporting by teachers is often relied upon to assess the effectiveness of medication as a treatment for a particular child with ADHD (AAP, 2000; NZ Ministry of Health, 2001). Teacher knowledge of stimulant medication can also influence teacher attitudes to medication (Dotto, 1998; Salazar-Zamora, 1999; Snider et al., 2003). Therefore it is vital that teachers' knowledge of stimulant medication remains 'up–to-date'.

Key Diagnostic Criteria for ADHD

As the teacher has been identified above as one of the main parties who identify children with ADHD, one would agree that they should be familiar with the key diagnostic criteria for ADHD. Unfortunately, teachers were not as informed about diagnostic criteria as would be expected. In the questions relating to diagnostic criteria, the highest percentages out of all five categories belonged to the neutral/undecided category. Apart from this, teachers blatantly disagreed with the given criteria in one of the items (Section 2, question 10 concerning the age before which symptoms of ADHD must be displayed), which definitely displays their lack of knowledge on diagnostic criteria.

Furthermore, these criteria appear in a number of information sources including Department of Education websites, research articles, and other information on the internet. In fact, almost any valid article about ADHD will contain this information. This leads the researcher to believe that teachers may not be accessing this information or realise that it exists and therefore remain uninformed about crucial issues such as these. Carney (2002) agrees that low-tolerance and lack of knowledge can lead to inaccurate referrals by teachers.

Co-morbid Disorders

The American Academy of Pediatrics (2000) advocates that teachers need to be aware of other disorders that may infringe on a correct diagnosis of ADHD and need to be careful that symptoms are not better described by some other disorder or disability. Teachers also need to be aware that children with ADHD are more likely to have other learning difficulties (Agency for Health Care Policy and Research, 1999; Barkley, 1996; Conners & Erhardt, 1998; Mayes, Calhoun, & Cromwell, 2000 cited in Snider et al., 2003). They also need to be willing, and have the knowledge and training, to cater for these differences.

Convincing results were produced from teachers in this aspect of knowledge about ADHD, with the majority in agreement that students with ADHD are more likely to have co-morbid disorders. As mentioned in chapter 4, it is interesting that most teachers seem confident of this fact, but less confident of other critical facts such as those mentioned thus far in this chapter.

Differences in Factual Knowledge of those who have and have not had experience with ADHD

In some items in the survey teachers who had experience with ADHD displayed a better knowledge of ADHD. This was particularly evident in questions relating to knowledge of what research identifies as causes of ADHD and knowledge of the subtypes of ADHD. This may mean that teachers with experience with ADHD can be used as resources for other teachers who haven't experienced a child with ADHD in their classroom before (Reid et al., 1994). This point of view is supported by Palacios (2000),

who agrees that teacher perceptions are linked to the amount of experience and training they have received and those with access to appropriate information and knowledge are likely to be able to support students with ADHD more successfully.

Significant Differences between Special Needs Teachers and Classroom Teachers in Factual Knowledge about ADHD

There were significant differences in knowledge between Special Needs teachers and classroom teachers identified in Chapter 4. These differences particularly related to causes of ADHD, knowledge of other learning and behavioural problems linked to ADHD, knowledge of a correct diagnosis of ADHD, knowledge of the abusive potential of stimulant medication, knowledge of research concerning long term effects of stimulant medication, and knowledge of whether stimulant medication affects academic achievement. There were also differences in knowledge about the sub-types of ADHD. It is assumed that Special Needs teachers are more knowledgeable on such issues, which is a result one might expect. It may be worthwhile in other studies to explore whether this superior knowledge base had any effect on opinions and perceived roles. These results have advantages for Seventh-day Adventist schools in that Special Needs teachers can be used as a resource for teachers to collaborate with in regards to students with ADHD.

Reid et al., (1994) suggests that collaboration between Special Needs teachers and classroom teachers is a possible way of eliminating barriers to effective instruction in ADHD. In light of their more accurate knowledge of ADHD, perhaps Special Needs teachers should take a more active role in the education of mainstream teachers and

ADHD. This may be a problem in Seventh-day Adventist schools as a deficiency of Special Needs teachers was identified in this study.

Conclusions

Teacher knowledge of ADHD is lacking in most areas, especially those critical to the correct diagnosis and treatment of ADHD such as key diagnostic criteria and treatment with medication. Teachers need to stay abreast of such issues if they are going to be effective educators of children with ADHD.

Recommendations

- It is recommended that teachers seek out information available in professional journals, websites and other electronic sources to increase their knowledge base of the critical aspects of ADHD.
- It is recommended that classroom teachers liaise with those who have had experience with ADHD and specific training such as Special Needs teachers as the present paper indicates these teachers are more knowledgeable about ADHD.

Research Question 2

How do teachers' perceived roles and responsibilities in diagnosing and treating students with ADHD compare to those outlined in current research and school policy?

This question explores the opinions and perceptions of teachers as they relate to their specific roles and responsibilities in the diagnosis and treatment of ADHD. This section will be discussed firstly in relation to teachers' opinions about and perceptions of

diagnosis and the role they play in diagnosis and ADHD, and secondly in relation to teachers' opinions and perceptions about the role they play in the treatment of ADHD.

Teacher Perceived Roles & Responsibilities in Diagnosis

Some insight into teacher perceptions of diagnosis can be gained from the priority they place on knowing and understanding key diagnostic criteria. As was mentioned in discussing research question 1, teachers are not informed about the diagnostic criteria of ADHD. In fact, they could even be said to be misinformed about some of the criteria which does not speak well of the priority they place on the role they play in diagnosis.

When examining the teacher perceptions of their role and responsibilities it would be useful to examine how accurate teachers perceive themselves to be in identifying students with ADHD. Teachers were asked whether they can usually identify ADHD in students before a formal assessment takes place and responses were predominantly uncertain or negative. Teachers were also asked if they were able to identify ADHD symptoms in a child, with slightly better results, however still with a large representation of undecided teachers. This suggests that teachers may not see it as their responsibility to (a) be involved in the assessment process; or (b) identify symptoms in suspected children with ADHD. The role of the teacher is portrayed as an influential one in both the New Zealand Guidelines for the Assessment of ADHD (NZ Ministry of Health, 2001) and the American Academy of Pediatrics' Guidelines (AAP, 2000), with the AAP (2000) specifically outlining teachers' contribution in regards to "core symptoms of ADHD, duration of symptoms, degree of functional impairment and associated conditions".

Similarly, in questions relating to teachers' referral for assessment of children with ADHD and teachers' self-proclaimed active involvement in the diagnostic process,

teachers seem wary and uncertain and are divided in their responses. This information may point to reasons why correlation coefficients between teachers' perceived roles and actual level of involvement are not significant.

Teachers also show a non-committal attitude to referring suspected students with ADHD in that they are not sure who makes the majority of referrals for ADHD. Research from the USA suggests that teachers are one of the main referees for children with ADHD (Achenbach & McConaughy, 1987, cited in Carney, 2002, 5).

It is easy to see then that although some teachers have identified that they would be involved in the diagnostic process their responses indicate uncertainty of their roles and responsibilities regarding knowledge of diagnostic criteria, identification of symptoms and referral of students with ADHD.

Teacher Perceived Roles & Responsibilities in the Treatment of ADHD

Teachers' perceptions of the role they play in treating students with ADHD can be identified in various ways from the present study. Firstly, teachers' attitudes to stimulant medication can be examined and secondly their perceptions of the role they play in communicating about medication and administering medication. How they perceive the use of other interventions to treat ADHD and how they prepare for their role in treatment by attending in-service courses will also give further insight into how teachers perceive their roles and responsibilities in treating students with ADHD.

Teacher Opinions on How Effective Stimulant Medication is in Treating ADHD

Teachers generally believe that medication is an effective treatment for symptoms of ADHD such as behaviour problems, low academic achievement, poor concentration, and poor organizational and social skills. Teachers especially advocate that stimulant

medication helps to improve behaviour, concentration, and social skills. Teachers' answers correlate with research about these facts (NIH Consensus Statement, 1998). However, the majority of teachers who agree that stimulant medication helps improve grades at school are in conflict with research which suggests that there are no results to prove this phenomenon (Alto & Frankenberger, 1994; Barkley & Cunnignham, 1978; Frankenberger & Cannon, 1999; Weber Frankenberger & Heilman, 1992 cited in Snider et al., 2003).

Other Teacher Opinions of Stimulant Medication

Although Seventh-day Adventist teachers agree that stimulant medication benefits children with ADHD, they also believe that there are too many students on medication and they definitely do not see it as the only form of treatment suitable for children with ADHD.

These strong opinions would suggest that teachers' perceive treatment with stimulant medication as an issue which is their responsibility to be informed about and involved in. However, as revealed in research question 1, teachers are uncertain about many issues in stimulant medication and are not necessarily informed about the use of stimulant medication in treating ADHD. Similarly, as shown in chapter 4, teachers do not perceive that it is their role or responsibility to administer medication to children with ADHD in their class, which is contrary to information presented on State Department of Education Websites.

Other Perceived Roles of Teachers in Treatment

However teachers agree that it is their role to communicate with parents about medication and other issues and it is also their role to provide other classroom-based interventions for students with ADHD, such as social skills training and behaviour modification.

The positive response to using interventions other than medication in the classroom means that teachers are likely to see it as their role to be trained in some of these interventions. However, teachers may not feel prepared for the roles that they perceive to be theirs in treating ADHD because of the lack of effective in-service training. This lack of training is reflected in other US studies (Goldstein, 2002; Javorsky, 2002; Snider et al., 2003).

Training is identified by Miranda et al. (2002) as important because the "effectiveness of school-based interventions depends on the teacher". This sentiment is reiterated by Davino et al., (1995) who states:

> Teachers play a critical part in the evaluation and assessment of students with ADHD. Their attitudes and perceptions of students with ADHD, their involvement with parents and their views on stimulant medication are related to the effective or ineffective treatment of the disorder. (cited in Dotto, 1998, 2)

Conclusions

Most teachers do not place a high priority on being able to identify students with ADHD as a lack of knowledge about diagnostic criteria suggests. Teachers are also not greatly confident in their abilities to identify a child before a formal assessment of ADHD takes place and therefore are not confident to make referrals of children who display symptoms of ADHD. Also teachers' responses of active involvement in the diagnostic process of ADHD were not statistically supported by significant correlations between active involvement and other questions in the survey which indicated actual involvement.

Although teachers believe medication is effective in treating ADHD they do not perceive their role as teacher of a student with ADHD to encompass the administration of medication. This is contrary to information supplied by State Education websites and their policies on ADHD.

Teachers see one of their major roles as providing interventions other than medication for learners with ADHD in their classrooms, but are hindered by the lack of accurate and valuable information from in-service courses.

Recommendations

- The researcher recommends that a policy, based on other State Education policies, specifically outlining the teachers' role and responsibilities in the diagnosis and treatment of ADHD be formulated by the Seventh-day Adventist Australian Union Conference. This policy should be circulated to all schools and teachers in the Seventh-day Adventist school system.

- It is also recommended that in-service education be provided for teachers which outlines basic knowledge about ADHD such as: diagnostic criteria; information about treatment techniques, which includes interventions with medication and other interventions; and critical analysis of current developments in scientific and educational research about ADHD.
- It is recommended that schools set up communication with a resident expert (possibly even a doctor, pediatrician or psychologist) whom teachers have access to either by face-to-face mode, telephone, or email, so they can communicate about any concerns or questions about ADHD.

Research Question 3

Do teachers feel that they are confident and equipped to deal with students with ADHD in their classrooms?

When answering the question of whether or not teachers feel confident and equipped to deal with ADHD, it must be determined what is meant by the terms 'confident' and 'equipped', in this particular scenario. It is also important to explain how either of these may be gauged in relation to the present paper. This may be done by observing how particular questions that suggest confidence, or lack thereof, have been answered by teachers and also by looking at the general way in which teachers have answered a broad range of questions in the survey. In determining whether teachers are equipped to deal with students with ADHD, one could revisit teacher knowledge of ADHD to find out whether teachers are equipped in this way. It would also be in the interest of this research question to find out whether teachers feel they have enough

valuable information to make a referral of a child for ADHD or introduce other interventions in their classroom for a child with ADHD.

Confidence of Teachers in Dealing with Students with ADHD

The New International Webster's Pocket Dictionary (2002) defines the term 'confident' as "self assured". This is added to by the definition of 'confidence' as "trust or faith in anything". In this case one might ask whether teachers are sure of themselves and their abilities when dealing with students with ADHD, or whether they trust themselves and have faith that they can provide children with ADHD with suitable instruction relevant to their situation.

One way of gauging teacher confidence is to examine teacher responses to 'loaded' items (items we can read into) in the survey. One such item (Section 3, question 10) refers to teachers' level of agreement with the statement 'I can usually identify students with ADHD before formal assessment takes place'. Teachers' level of agreement displays their certainty, or the degree to which they trust their abilities, both indicators of teacher confidence. In this case teachers indicated a lack of confidence as most teachers disagreed or were neutral on this particular item.

The next question, asking teachers to rate their confidence in identifying sub-types, showed that a good percentage were confident. However there was also almost as many teachers who were uncertain. These results were similar to those found when teachers were asked if they could identify ADHD symptoms in a child. The highest percentage agreed that they *could* identify symptoms however this was followed closely by the large percentage of teachers (36%) who were not confident in their abilities to

identify symptoms of ADHD. It could be concluded from these questions that teachers are not confident in their abilities to identify ADHD.

The likelihood of a teacher making a referral usually depends on their knowledge of ADHD and their confidence in their ability to identify ADHD in children (Carney, 2002). Therefore, the 35% of teachers who disagreed or were uncertain whether they would refer a child displaying ADHD symptoms, may not be confident in their ability to deal with students who have ADHD.

A study conducted about the confidence of teachers in dealing with students with ADHD and barriers to effective instruction revealed that teachers expressed lowest confidence in their ability to manage stress related to students with ADHD (Bussing et al., 2002). It is possible, given the low confidence levels highlighted thus far, that teachers in Seventh-day Adventist schools could also suffer from stress in managing pupils with ADHD if proper training is not implemented.

A glance at the results chapter in the present paper will indicate a high percentage of responses in the undecided/neutral category of response across the various sections. Given the uncertainty with which teachers have answered questions in this survey it would be fair to say that they have not indicated a ‘self-assuredness’ or a strong ‘faith’ in their abilities and therefore one could not name them, as a group, as confident teachers of students with ADHD.

How Equipped Teachers are to Deal with Children with ADHD

According to The New International Webster's Pocket Dictionary (2002), to 'equip' is to "prepare as by outfitting with supplies or training". In the present study, a teacher who is equipped would be someone who has the necessary training, therefore has accurate knowledge and possibly experience, to provide the best and most appropriate learning experiences for a child with ADHD. Can it be said that teachers in the Seventh-day Adventist system fit this profile?

Firstly, results which pertain to the teachers' knowledge base can be scrutinized to see whether they are equipped in this particular aspect. As has already been mentioned in the discussion relating to research questions 1 and 2, teachers fall short in their knowledge of critical factors of ADHD. This affects all other aspects of their treatment of ADHD, as knowledge has been identified as a precursor to attitudes to, and beliefs about, ADHD (Dotto, 1998; Salazar-Zamora, 1999; Snider et al., 2003).

Secondly, teachers reveal whether they are equipped in the manner in which they answer questions about their need for information about ADHD and the degree to which they agree or disagree about whether or not their in-service or pre-service training equips them to deal with and cater for children with ADHD in their classrooms. Responses of Seventh-day Adventist teachers to the statement, 'School professionals are in need of more information about ADHD diagnosis and treatment' were overwhelmingly affirmative with 40% in strong agreement and 44% in agreement. This item certainly suggests that teachers need more information and training to be able to be described as 'equipped'. This is also representative of other US studies where 94% of teachers

expressed the opinion that they would like more information about ADHD (Bussing et al., 2002).

Another item which further highlights this fact is the question that calls for teacher perceptions on whether or not they attend training courses which prepare (or equip) them for their role in diagnosing and treating ADHD. Seventy-three teachers out of the sample 166 teachers were uncertain in their response to this item and 60 teachers were in agreement. If teachers are uncertain of their involvement in effective in-service courses it could be interpreted to mean that they are not receiving information from in-service courses about the symptoms of a child with ADHD, how to go about referral or even other interventions which teachers are willing to implement. Lack of 'equipment', in this case training, is a serious barrier to effective instruction of learners with ADHD in this study. Barkley (1994) suggests that the vast majority of teachers do not have enough training in ADHD, so it appears that Seventh-day Adventist teachers are not alone in the need for more training.

In addition, teachers who feel as if they are receiving valid information do not seem to be showing that they are equipped in their responses to other questions, such as confidence in assessment and referral items and also factual knowledge about ADHD.

Conclusions

Teachers are seen to be confident in their abilities if they are 'self-assured'. When examining teacher confidence in dealings with students with ADHD, teachers were found to be unsure in their responses to do with assessment and referral. In fact, across the board, teachers were likely to give answers which showed the majority of teachers to

be unsure of particular issues in ADHD. Because of these factors, Seventh-day Adventist teachers as a group could not be named as confident.

Once, again teachers' poor knowledge points to fact that teachers are ill-equipped. Strong evidence given by teachers about their need for more information further emphasizes the reality that teachers are not equipped for the major role they play in the lives of children with ADHD.

The number of teachers who are unsure of whether or not they are equipped for their role in treating and diagnosing students with ADHD, suggests that teachers are not becoming effectively equipped by training. This could be identified as a barrier to effective assessment and intervention in ADHD.

The responses of teachers outlined above make it hard for this study to label Seventh-day Adventist teachers as teachers who are equipped to deal with and cater for children with ADHD in their classrooms.

Recommendations

- Teacher partnerships or support groups which allow a teacher to share information about ADHD or debrief about the problems they face with ADHD are recommended as useful tools to build teacher confidence in identifying and treating ADHD.
- It is recommended that frequent professional development which clearly targets classroom-based interventions and referral be made readily available to teachers, so as to fully equip them for the critical role they play in the life of a student with ADHD.

Research Question 4

Where are teachers most likely to get their information about ADHD and how reliable is this information?

The purpose of this question is to identify teachers' main sources of information about ADHD. In addition, the reliability of sources of information will be viewed in light of the positive or negative outcomes which have been highlighted in this study up to this point. Other research will also feature in the discussion of the various sources of information with the purpose of outlining reliable sources of information.

Teachers' Main sources of Information about ADHD

1. In-service/Pre-service Training

A quarter of teachers identified in-service and pre-service training as one of their main sources of information about ADHD. The lack of quality training about ADHD manifested thus far in this paper may be a reason for the lower numbers of teachers who see this as one of their major sources of information. After all who is responsible for the provision of in-service and pre-service training? Is it possible for teachers to attend in-service courses if there are none available in their school or community? It must also be pointed out that almost as many teachers who agreed that this was their main source of information, disagreed that they mostly received information through this mode. And what of the 32% who were undecided? These results do not create a picture of teachers who feel that they are receiving the information they need through a valuable source of information such

as this one. Javorsky (2002) recommends in-service training as instrumental in preparing teachers to work with children with ADHD and reports that often in-service training has an effect on teacher empathy for children with ADHD and their willingness to accommodate for them in the classroom. These are benefits that Seventh-day Adventist teachers seem to be missing out on.

2. Other Professionals

Information from other professionals was identified as one of the sources that most teachers agreed with. This would mean that other professionals are most valuable to teachers when seeking out information about ADHD. Snider et al., (2003) also found that 32% of teachers identified other professionals as the one source of information which they relied on the most. Other professionals may include a range of personnel including other classroom teachers, special education teachers, principals, itinerant experts, college/university lecturers, school nurses, school/general psychologists, general practitioners, pediatricians and others. All of these people are sources of information which could be useful to teachers. As Reid et al., (1994) advocate teachers should be encouraged to collaborate with other professionals to improve practice. However, as professionals themselves shouldn't teachers be more reliant on their own investigation of the facts as well as information from other people? What is suggested is that rather than teachers being just passive receivers of information, that teachers be active and critical seekers of information as well.

3. Professional Journals

This source of information presented similar figures to pre-service/in-service training, with approximately a quarter (24%) in agreement and a quarter (26%) disagreeing that they mostly receive their information from professional journals. Approximately 32% of people were neutral or undecided which may be representative of the people who have not considered journals as an option.

In a study conducted by Snider et al., (2003) results found that only 12% of teachers identified professional journals as the one source which they relied on the most for information about ADHD. Snider et al., (2003) go on to reflect that the educational field, as a whole, has not placed as much priority on research in the past, as other disciplines. They suggest this as a possible reason for teachers' lack of reliance on literature.

Snider et al., (2003) also propose that teachers may not have learned how to critically analyze research articles or may not have the time to do so. This is a fair assumption as many teachers are faced with demands that exceed the amount of time they have available. However this should not be an excuse for teachers to remain ignorant. Teachers need to look to research as a tool which will inform and guide the many decisions they have to make, especially concerning students with ADHD.

4. The Media

It is a concern that as many teacher who are likely to receive their information through in-service courses and professional journals, are likely to

receive their information about ADHD through the media. The media is a highly subjective source as they are influenced by many agencies and fads, including exaggeration and distortion of the facts. It is worrying that 43 out of 166 teachers in Adventist schools should base their opinions on the media. Although more people disagree with this option than others, it is still a phenomenon which needs attention in Adventist schools. If teachers are using the media as their information source, it is small wonder why they are confused and uncertain about issues in ADHD, due to the wide variety of varying information available in the media. Carnine (2000, cited in Snider et al., 2003) has revealed that education has been slow to make decisions based on research rather than on what is popular or feels good. This reliance on the media for information about ADHD may be evidence of such a trend in education.

5. Parents of Children with ADHD

Another popular source of information for teachers was through parents of children with ADHD. Obviously communication with parents is a desirable practice for teachers and parents can be a useful source of information concerning background knowledge of ADHD and the student with ADHD. However, teachers must be careful in the image they portray to parents. If the parent is the primary source of information for the teacher about ADHD, then the parent may perceive that the teacher is not interested in furthering his or her knowledge and practices used in teaching children with ADHD and therefore not believe them to be effectively educating their child. Also, if Goldstein (2002) is correct in stating that "most parents who have children with ADHD believe that teachers play a key role

in helping their children" (p.6), then parents also rely on teachers for information and interventions in the classroom. This poses a problem. If teachers are relying on parents, and parents are relying on teachers, then what is the primary source of information?

The solution is much the same as with teachers who receive their information mostly from other professionals. Teachers must take an active role in discovering and analyzing information about ADHD.

6. The Internet

The internet was one of the least popular sources of information for teachers. Twenty-two percent of teachers strongly disagreed that they get their information about ADHD from the internet and 31% disagreed. Only 13% of teachers agreed that they mostly get their information from the internet. Although other similar US studies, such as Snider et al. (2003), have not listed the internet as an item where teachers regularly receive information, the researcher thought it appropriate as a number of reliable organizations were found to post information on the internet which would not otherwise be *readily* available to the general public. In fact a good portion of online journals and reports were used in the present study which would not have been available to the researcher otherwise.

Most would agree that a good deal of caution is to be used when collecting information from the internet and it is recommended that it is not used as the only source of information. However, by ruling out the internet are teachers disadvantaging themselves by limiting their resources? This may be the case. Teachers constantly need to be on the lookout for, and exercising correct judgment

about, resources which could benefit their knowledge and therefore the lives of students with ADHD in their classrooms.

7. Other Organizations

Responses to this question in the survey indicated that the majority of teachers felt that most of the sources they would be likely to use had been covered by other questions. Even most of those teachers who agreed that they mostly get their information from other organizations did not identify what those organizations were. Therefore it can be assumed that teachers are not likely to get their information elsewhere.

How to Gauge Whether a Source is Reliable

To gauge, statistically, whether a variable is reliable it must produce the same results time and time again. Therefore, in this particular study, while we cannot truly gauge whether these sources of information are statistically reliable, we can look at the other results from teachers which tell us what sorts of outcomes the sources of information identified have produced in teachers. Outcomes may include:

1. Lack of accurate knowledge of ADHD;
2. Lack of confidence in their abilities to identify children with ADHD;
3. Lack of commitment to aid in the medication process;
4. Differing perceptions from research and state education policies concerning their roles and responsibilities in diagnosing and treating ADHD.

These all point to the fact that teachers are not accessing, or being given access to, reliable information.

Conclusions

Teachers are most likely to get their information from other professionals and parents of children with ADHD. There are problems with teachers choosing to mostly get their information from these sources. This is not necessarily because they are not reliable sources, but because there is a concern that teachers are not showing themselves to be critical and reflective consumers of research about ADHD. This is shown by the small number of people who mostly get information from professional journals. Teachers are relying on secondary sources of information, rather than primary sources of information.

Once again, a need was identified for more in-service education for teachers as this was not rated as a regularly used source of information. A lack of teachers who use professional journals as their main source of information was also identified which highlights the need for a concerted effort to emphasize to teachers the importance of relying on research to guide their knowledge and decisions.

Lastly, the idea was discussed that a source of information is only as reliable as the outcomes produced by the teachers who adhere to that source. Outcomes of the present paper, such as accurate teacher knowledge, opinions and identification of roles and responsibilities, have been found to be unstable.

Recommendations

- The researcher recommends that teachers are given research material to analyse and critically reflect on so that they will become familiar with these practices and be able to use them in their personal reading about ADHD.

- References for online journals and other useful websites should be made available by schools and use should be encouraged for teachers' professional development.

Research Question 5

How effective is the training available to Australian Seventh-day Adventist teachers in preparing them for the role they play in the diagnosis and treatment of children with ADHD?

To properly answer the question above, it needs to be analysed in sections. To determine how effective the training for Seventh-day Adventist teachers is, one first needs to know what training currently exists. The question is asking how effective the training is in *preparing teachers for the role they play in diagnosis and treatment*, which was a role identified in research question 2. This role should be re-visited to find out if the training available is relevant to the role that teachers play. Only then can it be determined if training is effective.

Training Currently Available to Seventh-day Adventist Teachers

Chapter 2 of this paper gives a profile of the pre-service and in-service training available to teachers in Seventh-day Adventist schools and tertiary institutions in Australia. While the search for information was not an exhaustive one, websites were thoroughly searched on a number of occasions and contact made via email with Departments of Education in both State and Seventh-day Adventist systems to determine the nature of the provision of in-service courses. The search was to no avail, with some in-service courses found, but none available specifically for ADHD. Although in-

services must exist somewhere in Australia for teachers it appears that information about them is not readily available. This leads the researcher to believe that there is a shortage of in-service courses targeting the teaching of students with ADHD. Rief (1993, 197-198) points out that it is the school administrator's responsibility to provide adequate training for teachers and time for teachers to collaborate on issues which they face in ADHD.

Pre-service courses do not rate much better as subjects about general principles for the inclusion of the atypical child are what is offered in most Australian universities. No specific information about ADHD is covered except as it relates to various broad tutorial topics.

Perhaps the facts outlined above are some of the reasons why teachers were very uncertain about whether or not they attended in-service or pre-service courses which prepared them for their role as a teacher of a child with ADHD. Perhaps this is also a reason why teachers could not identify this as one of their main sources of information about ADHD. This certainly is confirmed by the fact that teachers were almost unanimous in agreeing and strongly agreeing that school professionals were in need of more information about ADHD (See chapter 4).

These facts make it clear that the level of teacher training about ADHD leaves much to be desired.

The Role of a Teacher in Diagnosing and Treating ADHD

The role of a teacher in the diagnosis and treatment of ADHD is a significant one as revealed by a number of medical studies (AAP, 2000; NHMRC, 1997; NZ Ministry of Health, 2001)

The teacher's role in the diagnosis of ADHD may encompass the following:

- Having background knowledge of the aetiology, diagnostic criteria and sub-types of ADHD;
- Being able to observe the symptoms of ADHD in a child;
- Making an informed referral, based on observations of a child;
- Accurately completing reports about the child's behaviour and habits that aid a specialist in making a diagnosis of ADHD.

The teacher's role in the treatment of ADHD may involve:

- Discussion with parents about the decisions that they have made about the mode of treatment to pursue in treating their child for ADHD;
- Follow through with and evaluation of appropriate behavioural and social interventions in the classroom;
- Responsibility for administering medication if circumstances dictate;
- Reporting on the effectiveness of medication to parents and specialists;
- Responsibility to stay informed about different treatments for ADHD including medication.

(See Chapter 2 and research question 1, above, for more details)

How Effective Training is in Addressing the Role of the Teacher

Since there was no specific training identified in this study for ADHD and teachers responses did not strongly suggest otherwise it is reasonable to conclude that the training available is inadequate. Furthermore, the central role teachers play in the diagnosis and treatment of ADHD has been reiterated above. Therefore the low amounts of in-service and pre-service training co-ordinated with the significant role identified in research that teachers assume should almost speak for itself when asked if training is effective in preparing teachers for the role they play in diagnosis and assessment. The answer, of course, is no.

Conclusions

Given the evidence above of the amount of quality teacher training concerning ADHD available and the extensive outline of responsibilities listed for the teacher one would say that the training available to Australian Seventh-day Adventists teachers does not prepare them for the role they play in the diagnosis and treatment of ADHD.

Recommendations

- It is recommended that Seventh-day Adventist schools address the central role of teachers in diagnosing and treating ADHD, by providing regular training which specifically focuses on what responsibilities teachers have to parents with children with ADHD and the students themselves.

- It is also recommended that pre-service training, specifically Avondale college (as this is the largest institution where teachers in the sample were from), provide either an education elective on ADHD and related disorders, or set one of the essay topics and tutorial times aside for educating students about ADHD.
- It is also recommended that pre-service educators invite an expert or someone with experience, such as a special needs teacher, to speak to pre-service teachers either in lecture time or an optional seminar off-campus.
- The researcher recommends that school principals be responsible, or appoint someone on staff to be responsible, for researching particular in-service courses about ADHD which may be attended outside of the school, or brought into the school.

Limitations of the Study

Although the researcher did the best that she could with the resources available to her, there were some limitations on this study. These included:

- A response rate of 40% of in-service and pre-service teachers which meant that the range of responses that would have contributed more to the study were not available for analysis. Snider et al., (2003) identified a similar response rate (36.5%) of teachers in their study of *Teacher Knowledge of Stimulant Medication and ADHD*. Out of a study of all school professionals and their knowledge of ADHD, teachers had a considerably lower response rate than other professional groups (Snider et al., 2003). A possible reason for the low response rate in the present study may have to do with the way teachers viewed the survey (as a

'test'), and their possible lack of confidence with ADHD also may have influenced their choice to participate in the survey.

- The study is only representative of teachers in Seventh-day Adventist schools and excludes teachers from Public or Independent schools. This may mean that there are certain opinions or biases that exist within this group of teachers that may not be evident in other groups of teachers.
- Some of the questions in the questionnaire were based on theories about ADHD found in research, which may have accounted for the high percentage of neutral/undecided responses from teachers. Some of these questions included questions about the causes of ADHD (Section 2, question 2) and the effect of stimulant medication on creative thinking (Section 3, question 12).
- Teachers were limited to answering questions with the likert-type scale responses. There a number of teachers who wrote more on the survey, however these responses could not be used because of the nature of the quantitative research design. This may be useful to remember for further studies conducted in this area.
- The five-point likert-type scale (which includes a neutral/undecided category) may have contributed to the high percentage of neutral/undecided responses. Other scales that may be used include the four-point likert-type scale (which simply excludes the neutral/ undecided category), or a six-point likert-type scale which includes neutral categories 'neutral leaning towards agree' and 'neutral leaning towards disagree'.

Future Studies

This particular research project may give rise to other studies which would be useful for teachers, teacher educators, parents of students with ADHD and students with ADHD. Future studies may examine:

- the effectiveness of pre-service training in ADHD;
- teacher confidence and success with different interventions for ADHD;
- how the Seventh-day Adventist school system compares with Public and Independent school systems in their knowledge, opinions and perceived roles in diagnosing and treating ADHD;
- different teacher information sources for ADHD and comparison of sources to establish the most effective sources of information about ADHD for teachers;
- the opinions of parents of children with ADHD and students with ADHD about interventions used for ADHD in the classroom;
- qualitative data from teachers relating to stress levels when teaching ADHD and other barriers to the effective classroom instruction of ADHD.

Final Concluding Statements

The hypothesis of this study states that teachers are generally unaware and ill-equipped for the major role they play in the diagnosis and treatment of ADHD. Other research articles produced evidence that teachers do play a major role in diagnosing and treating ADHD and that there is a lack of knowledge among teachers in other countries.

A need for more training for teachers in ADHD was identified in the USA and Australia. Findings from the present paper supported claims that teachers' knowledge, opinions and perceived roles in diagnosing and treating ADHD were not up to standard.

Teacher knowledge in critical areas was found wanting and major opinions were revealed that teachers are not confident in diagnosing and treating children with ADHD. Teachers also feel that they need more information about ADHD.

Other results found that although teachers are generally willing to be involved in most aspects of the diagnosis and treatment process, they are apprehensive about administering medication.

Teachers are likely to get their information from secondary sources, such as parents or other professionals; therefore a need for teachers to become critical consumers of information was identified.

Lastly, teacher responses indicated that the training available was generally not sufficient in preparing them for their significant role in diagnosing and treating ADHD.

Finally, the Ultimate Purpose of Adventist Education is the "restoration of human beings to the image of their Maker through a saving relationship with Jesus Christ, and the *balanced development of the whole person* (Roy, 2003, 8). When the 'balanced

development of the whole person' is viewed in terms of a student with ADHD this involves employing the best interventions and strategies, as their teacher, to ensure the spiritual, academic and social aspects of a student's life are developed to their fullest potential.

One of the roles of the Adventist teacher is stated as demonstrating "*professional competence in teaching*, pastoral nurture and ministry" (Roy, 2003, 11). Teachers need to be confident in their abilities and feel prepared to address their role in diagnosing and treating ADHD and this includes being adequately trained to deal with the atypical child, such as a child with ADHD.

Teachers have a supreme influence on students with ADHD. Therefore, effectively educating teachers about ADHD may make the difference between a success story for a child with ADHD or a failure

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Appendices

List of Appendices

1. *Conners' Teacher Rating Scale – Revised (CTRS-R)*
2. *Learning Behaviour Questionnaire (Department of Education - South Australia)*
3. *University of Massachusetts Behaviour Rating Scale (modified) (Department of Education -Western Australia)*
4. *Survey Instrument*
5. *Letter of Approval - Human Research Ethics Committee*

Teacher Knowledge, Opinion and Perceived Role in Diagnosing and Treating ADHD: Survey

Instructions

Please follow these instructions when filling out the survey:

- The survey uses a likert-type scale of 1-5.
  1= strongly disagree, 2 = disagree, 3 = neutral or undecided, 4 = agree and 5 = strongly agree.
- Participants should circle the number that most closely corresponds with their opinion of the statement.
- Here is an example:

		Strongly Disagree				Strongly Agree
1.	Attention Deficit/Hyperactivity/ Disorder is the most commonly diagnosed childhood disorder.	1	2	3	(4)	5

In this case the participant *agrees* with this statement so they have circled a *4*

- On completion of the survey, please hand it to the appointed supervisor who will immediately place it in an envelope to be posted back to the principal investigator.
- Please do not write your name or any distinguishing marks on the survey sheet. This will help us to ensure your anonymity.

Section 1: Demographic Section

Please tick the box that applies.

1. In what state of Australia do you live?

☐ New South Wales ☐ Northern Territory ☐ Victoria ☐ Tasmania
☐ Queensland ☐ South Australia ☐ Western Australia

2. Are you a:
☐ Classroom teacher
☐ Special education teacher
☐ Pre-service teacher

3. Please indicate your years of experience as a teacher.

☐ 0-5 years ☐ 6-10 years ☐ 11-15 years ☐ 16-20 years
☐ 21-25 years ☐ 26-30 years ☐ 30+ years

4. Have you had experience with a child/ren diagnosed with ADHD in your classroom?
☐ Yes
☐ No

5. Please write the name of the higher education institute where you did your initial teacher training.

_____

Section 2: Factual Knowledge

Refer to instructions on the first page of the survey if needed.
1= strongly disagree, 2 = disagree, 3 = neutral or undecided, 4 = agree and 5 = strongly agree.

		Strongly Disagree				Strongly Agree
1.	Attention Deficit/Hyperactivity/ Disorder is the most commonly diagnosed childhood disorder.	1	2	3	4	5
2.	Research indicates that ADHD is caused by problems in neurological functioning.	1	2	3	4	5
3.	Children with ADHD are more likely than those without ADHD to have other learning and behavioural problems.	1	2	3	4	5
4.	You can be sure a diagnosis for ADHD is correct if stimulant medication improves child's attention and other symptoms.	1	2	3	4	5
5.	Most stimulant medications have abusive potential similar to other addictive drugs like cocaine and morphine.	1	2	3	4	5
6.	Stimulant medications can have side-effects such as stunted growth and higher incidence of tics and movement disorders.	1	2	3	4	5
7.	Researchers have a sound knowledge of the long-term effects of stimulant medication.	1	2	3	4	5
8.	Stimulant medication increases academic achievement in the long run.	1	2	3	4	5
9.	To be diagnosed with ADHD, symptoms must be present for six months or more in two out of three settings (e.g. home, school, clinic).	1	2	3	4	5
10.	To be diagnosed with ADHD a child must have displayed symptoms before the age of seven.	1	2	3	4	5
11.	There are three different sub-types of ADHD, Hyperactive, Inattentive and Combined types.	1	2	3	4	5

Section 3: Teacher Opinions

		Strongly Disagree				Strongly Agree
1.	Students diagnosed with ADHD behave better on medication.	1	2	3	4	5
2.	Taking stimulant medication helps students diagnosed with ADHD improve their grades at school.	1	2	3	4	5
3.	Stimulant medication helps students diagnosed with ADHD improve their concentration.	1	2	3	4	5
4.	Taking stimulant medication helps students diagnosed with ADHD improve their organisational skills.	1	2	3	4	5
5.	Students diagnosed with ADHD and taking stimulant medication have improved social skills.	1	2	3	4	5
6.	There are too many students with ADHD on stimulant medication.	1	2	3	4	5
7.	Stimulant medication is the only form of treatment needed for students diagnosed with ADHD.	1	2	3	4	5
8.	ADHD is over-diagnosed in the primary school-age children of Australia.	1	2	3	4	5
9.	School professionals (school teachers, nurses and psychologists) are in need of more information about ADHD diagnosis and treatment.	1	2	3	4	5
10.	I can usually identify students with ADHD before formal assessment takes place.	1	2	3	4	5
11.	I can determine which children are hyperactive-impulsive and which are inattentive types.	1	2	3	4	5
12.	High doses of stimulant medication improve behaviour but could impair creative thinking and learning.	1	2	3	4	5

Section 4: Teacher Experiences and Perceived Roles

		Strongly Disagree				Strongly Agree
1.	I am able to identify ADHD symptoms in a child	1	2	3	4	5
2.	I am likely to refer a child whom I see displaying ADHD symptoms for assessment.	1	2	3	4	5
3.	I am likely to be actively involved in the diagnostic process of ADHD.	1	2	3	4	5
4.	I would be willing to be involved in giving medication to students with ADHD in my class.	1	2	3	4	5
5.	I would see it as important to communicate regularly with parents of students with ADHD about medication and other related issues.	1	2	3	4	5
6.	I attend in-service (or pre-service) courses which prepare me for my role as a teacher concerning students with ADHD.	1	2	3	4	5
7.	In my experience, teachers most frequently refer students for ADHD assessment above parents, school-psychologists and physicians.	1	2	3	4	5
8.	I would be likely to use interventions for ADHD, other than medication, such as social skills training.	1	2	3	4	5
9.	I mostly get my information about ADHD from in-service or pre-service training.	1	2	3	4	5
10.	I mostly get my information about ADHD from other professionals.	1	2	3	4	5
11.	I mostly get my information about ADHD from professional journals.	1	2	3	4	5
12.	I mostly get my information about ADHD from the media.	1	2	3	4	5
13.	I mostly get my information about ADHD from parents of children with ADHD.	1	2	3	4	5
14.	I mostly get my information about ADHD from the internet.	1	2	3	4	5
15.	I mostly get my information about ADHD from other organisations not mentioned here. Please specify _____	1	2	3	4	5

End of Survey

- On completion of the survey, please hand it to the appointed supervisor who will immediately place it in an envelope to be posted back to the principal investigator.