

**TEACHERS' AND COUNSELLORS' KNOWLEDGE AND EXPERIENCE
RELATED TO ATTENTION DEFICIT HYPERACTIVITY DISORDER**

JAIME WILDE

B.A., B.Ed., University of Lethbridge, 2001

A Thesis
Submitted to the School of Graduate Studies
of the University of Lethbridge
in Partial Fulfillment of the
Requirements for the Degree

MASTER OF EDUCATION

FACULTY OF EDUCATION

LETHBRIDGE, ALBERTA

May 2006

Dedication

To my amazing mother, who is my inspiration and role model and has been a source of support and encouragement throughout my life. To Jack Oldeheuvel, whose humor and support provided to be invaluable to me at times. To my other family members (Shian, Tammy, and Carrie) and wonderful friends who believed in me, constantly encouraging and supporting me throughout this process.

Abstract

This study was designed to assess teachers' and counsellors' knowledge and experiences related to ADHD and the use of stimulant medication. The sample population was comprised of elementary, middle school, and high school teachers and counsellors from two school districts in southwestern Canada. A descriptive, cross-sectional design using a self-administered questionnaire was used to obtain information. Results revealed that the teachers and counsellors responding to the questionnaire have limited knowledge about ADHD and the use of stimulant medication, although a large majority of them have experience with students with ADHD and are involved in the diagnosing and assessment process of ADHD. These results suggest that there is a need for in-service training regarding the diagnosis and characteristics of ADHD, different intervention strategies, and assessment of the effectiveness of these strategies. Teachers and counsellors need to become more familiar with empirical research and to base their practice on it, rather than on popular opinion. Finally, further collaboration is needed between teachers and counsellors and allied professionals, such as physicians and psychologists.

Acknowledgements

A huge “thank you” to my entire committee, who provided encouragement, support, and valuable feedback in helping me to complete my thesis. I would especially like to express my gratitude to Dr. Maggie Winzer, who has been an inspiration and role model to me in the academic world. I thank Dr. Winzer for challenging me, and I feel truly privileged to have had the opportunity to work with her. I am also grateful to my other committee members, Dr. Kas Mazurek and Dr. Noella Piquette-Tomei, for encouraging me and providing me with a different perspective.

My thanks also go to Dr. David Chorney for his encouragement and support in keeping me on track to complete this thesis, and to all the teachers and counsellors who took the time to participate in the study. I would also like to thank all the principals who helped me to distribute the surveys. Finally, I would like to thank Angela Payne, who helped me to distribute the surveys to the counsellors in her district.

Table of Contents

Dedication.....	iii
Abstract.....	iv
Acknowledgements	v
Table of Contents	vi
List of Tables	ix
List of Figures.....	x
Chapter 1. Introduction.....	1
Introduction to the Study	1
Background to the Problem.....	1
Significance and Purpose of the Study	3
Chapter 2. Literature Review.....	5
Introduction.....	5
Historical Recognition of ADHD.....	7
Prevalence of ADHD.....	8
Etiology of ADHD.....	9
Characteristics of ADHD.....	12
Assessment and Diagnosis of ADHD.....	13
Interventions for Children with ADHD.....	15
Stimulant Medication.....	15
Behaviour Therapy.....	18
Combination Therapy.....	20
Roles of Teachers and Counsellors	21

Teachers' Knowledge and Training Related to ADHD.....	22
Counsellors' Knowledge and Training Related to ADHD	26
Conclusion	27
Chapter 3. Methodology.....	28
Design of Study.....	28
Sample.....	28
Instrument.....	29
Data Collection.....	30
Data Analysis	31
Chapter 4. Results	32
Demographic Data.....	32
Data on Participants' Knowledge, Experience, and Opinions Related to ADHD	36
Knowledge Related to ADHD.....	38
Experience with ADHD Students.....	38
Opinions Related to Use of Stimulant Medication	40
Chapter 5. Discussion.....	42
Introduction.....	42
Teachers' and Counsellors' Knowledge About ADHD	43
Teachers' and Counsellors' Knowledge About Stimulant Medication	43
Side Effects.....	43
Effect on Academic Achievement	44
Diagnosis of ADHD.....	45
Teachers' and Counsellors' Experience with Students with ADHD.....	45

Teachers' and Counsellors' Opinions About the Use of Stimulant Medication...	46
Need for Additional Training	46
Effect on Behaviour and Academic Work	47
Effect on Peer Relationships.....	47
Other Methods of Intervention	48
Implications for Practice	49
Limitations of the Study.....	51
Chapter Six. Recommendations and Conclusion.....	53
Recommendations	53
Conclusion	55
References	57
Appendix A. Personal Data Questionnaire.....	66
Appendix B. ADHD Questionnaire	68
Appendix C. Administration Consent Letter.....	71
Appendix D. Participant Consent Letter	72
Appendix E. Frequency Distributions (%) of Teachers' and Counsellors' Knowledge ...	73
Appendix F. Frequency Distributions (%) of Teachers' and Counsellors' Experience....	75
Appendix G. Frequency Distributions (%) of Teachers' and Counsellors' Opinions	77

List of Tables

Table 1. Demographic Characteristics of Participants.....	33
Table 2. Means and Standard Deviations for Teachers' and Counsellors' Knowledge.....	37
Table 3. Means and Standard Deviations for Teachers' and Counsellors' Experience.....	39
Table 4. Means and Standard Deviations for Teachers' and Counsellors' Opinions.....	40

List of Figures

- Figure 1. Frequency distributions (%) of years of teaching and counselling experience. 35
- Figure 2. Educational level of participants..... 35

Chapter 1. Introduction

Introduction to the Study

As I was nearing completion of my education and training to become a teacher, I felt excited and exhilarated about applying my acquired knowledge in my own classroom. However, during my last teaching practicum I realized how ill prepared I was for dealing with children with behavioural disorders. In this teaching practicum, I worked with one particular student whom I will never forget. This student, who was classified with Attention Deficit Hyperactivity Disorder (ADHD), caused difficulty for me from the beginning of my practicum. It seemed that every day I had to meet with the student to come up with another creative technique to control the undesirable behaviour. Not only was the student's behaviour a concern, but he was also unable to interact successfully with his peers.

I realized that I knew very little about this particular disorder. As I tried to gain more knowledge about ADHD, I asked other teachers and counsellors what they knew about it. I was shocked to discover that very few had much knowledge about ADHD. This experience led to my desire to explore the area of teachers' and counsellors' knowledge and experiences related to ADHD.

Background to the Problem

Over the past few decades, Attention Deficit Hyperactivity Disorder has been defined in several ways, which has led to confusion among professionals concerning its diagnosis and evaluation procedures (DuPaul & Stoner, 2003). The fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR)* defines ADHD as "a persistent pattern of inattention and/or hyperactivity/impulsivity that is more frequent

and severe than is typically observed in individuals at a comparable level of development” (American Psychiatric Association, 2000, p. 78).

In terms of manifested behaviours, students with ADHD are at higher risk for academic difficulties and increased rates of noncompliance (Barkley, 1981). Their behaviours may include not completing school work, submitting messy or error-ridden work, blurting out answers, talking excessively, and not complying with classroom rules (American Psychiatric Association, 2000). Students with ADHD are also more likely to be rejected by their peers and tend to have fewer friends (DuPaul & Stoner, 2003). Stormant (2001) notes that students with hyperactivity tend to use aggression to deal with difficult situations with their peers and also have more problems in understanding how to approach social situations. Some common social performance difficulties that students with ADHD exhibit include inappropriate attempts to join peer group activities (for example, barging in on games), poor interaction behaviours (such as interrupting, not listening to peers), and losing their temper when conflict arises (Guevremont, 1990).

Many intervention strategies have proved to be successful in helping students with ADHD to succeed in school (Barkley, 1996). Intervention strategies such as stimulant medication, behaviour therapy, and a combination of both are the most popular choices amongst professionals working with students with ADHD (National Institute of Mental Health, 2003).

The collaboration of parents, teachers, school counsellors, other school personnel, and the identified students is vital to developing and implementing an effective intervention (DuPaul & Stoner, 2003). It is very important to continually reinforce these students’ strengths in order to minimize the negative impact (Brook, Watemberg, &

Geva, 2000). Teachers and counsellors can provide ADHD students with positive reinforcement through their guidance and assistance so that these students can be more successful at school and at home. To provide such reinforcement, it is vital that teachers and counsellors have an appropriate amount of knowledge and training regarding ADHD.

Significance and Purpose of the Study

In contemporary schools, teachers and counsellors play a pivotal role in identification, diagnosis, and intervention with Attention Deficit Hyperactivity Disorder (Piccolo-Torsky & Waishwell, 1998). However, concerns exist as to whether teachers and counsellors are adequately prepared and trained for their role in the identification and treatment of students with ADHD. Because teachers are placed in a position where they must provide other professionals with valuable information about students' behaviour and learning in regards to making a diagnosis (Sciutto, Terjesen, & Frank, 2000), teachers are required to possess a wide range of knowledge about ADHD (DuPaul & Stoner, 2003).

There have been limited studies on teachers' knowledge of Attention Deficit Hyperactivity Disorder; few, if any, have studied counsellors. As teachers and counsellors play a vital role with students who have ADHD, identifying teachers' and counsellors' knowledge and misperceptions about ADHD may lead ultimately to improved educational interventions.

The overarching purpose of this study is to examine the parameters of teachers' and counsellors' knowledge and experiences related to the diagnosis of Attention Deficit Hyperactivity Disorder and its treatment with stimulant medication. More specifically, this study will address four questions:

1. What knowledge base do teachers and counsellors have about ADHD?

2. How knowledgeable are teachers and counsellors about ADHD treatment with stimulant medication?
3. What professional experiences do teachers and counsellors have with students who are diagnosed with ADHD?
4. What are teachers' and counsellors' views about the effect of medication on students' behaviour and academic work?

Chapter 2. Literature Review

Introduction

Attention Deficit Hyperactivity Disorder (ADHD) has become one of the most common and controversial diagnosed disorders of childhood (National Institutes of Health, 1998). Research indicates that the diagnosis of ADHD is increasing among school-aged students. According to Barkley (1998) and Pastor and Reuben (2002), approximately 3 to 7 percent of children are diagnosed each year with ADHD. Such results indicate that a typical classroom will include at least one child who has ADHD (Reeve, 1990).

Increasing rates of ADHD are prompting researchers to study and explore this disorder extensively; many journal articles, books, and studies have been published on the topic. However, there is still limited information on teachers' and counsellors' knowledge about ADHD. Since ADHD students experience some of their greatest difficulties in the school setting, it is imperative that more research be completed from the perspective of those who work in the schools (DuPaul & Stoner, 2003).

Results from a number of studies indicate that teachers have less knowledge about ADHD than one would expect, considering their important role in its identification and treatment (Jerome, Gordon & Hustler, 1994; Kasten, Coury & Heron, 1992; Piccolo-Torsky & Waishwell, 1998; Snider, Busch & Arrowood, 2003; Stormant & Stebbins, 2005). Teachers and counsellors need to know how this disorder manifests in early childhood, how to identify young children who are at risk for ADHD, and how to design programs for reducing symptoms and enhancing academic, social, and family functioning (DuPaul & Stoner, 2003, p. 109). Sciutto et al. (2000) argue that teachers' lack of

knowledge about ADHD is one of the greatest obstacles to their helping students with this disorder. Moreover, Jerome et al. (1994) found that a high percentage of Canadian (97 percent) and American teachers (98 percent) expressed a strong interest in and desire for additional training about ADHD. Teachers' interest in learning more about this disorder most likely has to do with the comparatively high number of diagnoses that occur among students in the early elementary years, when ADHD is most likely to be diagnosed (APA, 2000).

Students with this disorder will more than likely face many difficulties throughout their school year. DuPaul and Stoner (2003) note that the core characteristics of ADHD -- inattention, impulsivity, and hyperactivity -- cause the most difficulties in three areas of the school setting: academic underachievement, noncompliance and aggression, and poor peer relationships. Students with ADHD have lower rates of on-task behaviour during independent work, and as a result, they complete less work than their peers (Barkley, 1981). In addition, DuPaul and Stoner (2003) report that roughly 20 to 30 percent of students with ADHD are classified as having a learning disability because of their deficits in specific academic skills.

ADHD students also display problems related to problem solving skills, expressive language abilities, and fine and gross motor skills. They experience higher rates of grade retention, school suspensions and expulsions, and have a higher chance of dropping out of high school (Barkley, 1981). Students with ADHD are also likely to exhibit aggression, a lower tolerance level for frustration, violent reactions to frustrations, noncompliance with teachers and parents, and argumentativeness (DuPaul & Stoner, 2003; Wender, 2000). According to the National Institute of Mental Health (2003), one-

third to one-half of children with ADHD are co-diagnosed with oppositional defiant disorder (ODD), which is associated with some of these symptoms. Given the increasing number of early diagnoses of ADHD and the many school-related difficulties associated with the disorder, teachers and counsellors need to be better informed about ADHD.

This literature review examines first the historical development and prevalence of ADHD, then its etiology, characteristics, assessment and diagnosis. The interventions generally used for children experiencing ADHD are reviewed, as well as teachers' and counsellors' current levels of knowledge and training about ADHD, as reported in the literature.

Historical Recognition of ADHD

Interest in and research on Attention Deficit Hyperactivity Disorder began as early as the late 1800s (Barkley, 1997). The symptoms of this disorder have not changed much over time. Children with ADHD are characterized as being hyperactive, distractible, inattentive, and aggressive (Reeve, 1990). However, the terms used to describe the disorder have gone through several changes over the years. In the mid-1800s, for example, a child displaying the ADHD characteristics was designated as "Fidgety Phil" by a German physician, Dr. Heinrich Hoffman (Barkley, 1997).

In the 1930s, children with the characteristics of ADHD were referred to as "brain injured" or "brain damaged," because brain injured individuals often display similar behaviours (Reeve, 1990). In the 1950s, the term used was "minimal brain damage," as professionals realized that many children who showed these behaviours had no history of brain trauma (Barkley, 1996). The terminology was subsequently amended several times. Such labels as "hyperkinetic impulse disorder," "hyperactive child syndrome," "learning

disability,” and others have been utilized.

In 1987, the disorder was labeled Attention Deficit Hyperactivity Disorder in the *Diagnostic and Statistical Manual of Mental Disorders*, 3rd edition (revised) (Barkley, 1996). The current DSM distinguishes three subtypes of ADHD, recognizing that some students will present both inattention and hyperactivity-impulsivity, while others may be more predominant in either inattention or hyperactivity-impulsivity. The three subtypes are the following: (1) ADHD, Combined Type; (2) ADHD, Predominantly Inattentive Type; and (3) ADHD, Predominantly Hyperactive-Impulsive Type (APA, 2000).

Prevalence of ADHD

Population surveys indicate that approximately 3 to 7 percent of children are diagnosed with ADHD (Barkley, 1998; Pastor & Reuben, 2002). Barkley (1996) found that prevalence rates fluctuate depending on the nature of the population, such as its ethnicity or whether it is urban or rural; the criteria that are utilized to define ADHD; and the age range of the individuals.

Wender (2000) reported that ADHD is far more frequent among males than among females. For instance, prevalence rates are approximately 2 to 3 percent in girls but 6 to 9 percent in boys during the 6 to 12 age period (Barkley, 1996). Pastor and Reuben (2002) note that over 50 percent of children with ADHD take stimulant medication for the condition. Approximately 12 to 34 percent require special educational services (DuPaul & Stoner, 2003).

Romano, Baillargeon and Tremblay (2002) attempted to estimate the prevalence rate of hyperactivity-impulsivity and inattention in the Canadian population of 2- to 11-year-old girls and boys. The results indicated that between 5 and 17 percent of 2- to 11-

year-old girls, and between 9 and 23 percent of 2- to 11-year-old boys demonstrated hyperactive-impulsive behaviours. The results for inattention were similar: 1 to 18 percent of 2- to 11-year-old girls, and 1 to 14 percent of 2- to 11-year-old boys manifested inattention behaviours.

Francis (1993) investigated the prevalence rate of ADHD in students from an urban Canadian school division. In this study, 9.65 percent of students were recognized as ADHD by the Conners Teachers' Rating Scale-Revised (1991), while the other students had no diagnosis. Of the diagnosed children, 14.03 percent were males and 5.53 percent were females. Also, 7.46 percent of students were recognized as ADHD by the ADHD Rating Scale (1987); of these, 12.22 percent were males and 2.98 percent females. These findings are within the expected ratios for males and females, approximately 3 to 1 (Barkley, 1998).

Etiology of ADHD

The research literature does not identify a single cause of Attention Deficit Hyperactivity Disorder. According to Barkley (1998), ADHD symptomatology may result from various causal mechanisms. There is some agreement that the neurochemical imbalances in the fronto-striatal networks of the brain play a major part in causing ADHD. Specifically, there may be irregularities in the monoaminergic systems concerning dopamine or norepinephrine mechanisms (Anastopoulos, 1996). This suggests that the brain is underactive in specific areas that are involved in inhibitory responses, attentional processes, and sensitivity (Brown, 2000).

Recent studies using Magnetic Resonance Imaging (MRI), on the frontal lobes of the cerebrum, temporal gray matter, caudate nucleus, and cerebellum of children with

ADHD have indicated 3 to 4 percent smaller brain volumes in all regions (National Institute of Mental Health, 2003). However, researchers caution that MRI is a research tool that cannot be utilized to diagnose ADHD.

There is considerable evidence that ADHD is a highly heritable disorder among first-degree biological relatives (DuPaul & Stoner, 2003). According to Wender (2000), fathers and close relatives of ADHD children have indicated that they themselves have ADHD characteristics. In addition, the siblings of ADHD children are more than likely to have ADHD problems. For Barkley (1996), research completed on twins validates the evidence for a genetic contribution to ADHD. Pennington, Gilger, Olson, and DeFries (1992) indicated that, if one twin was diagnosed with ADHD, the probability that the other twin would have ADHD was 81 percent for monozygotic twins and 29 percent for dizygotic twins. Other studies have compared the prevalence of ADHD among children and parents who are biologically related with that among children who are adopted. These studies have validated the heredity argument (Cooper, 2001).

Other theories suggest that ADHD symptoms are attributable to environmental factors such as lead poisoning, nutrition, and prenatal exposure to smoking or alcohol (Barkley, 1998). Wender (2000) notes that individuals who have been exposed to lead have developed both psychological and neurological problems, and that children with lead poisoning have been diagnosed as hyperactive. However, as Barkley (1997) cautions, even though some studies have shown a small correlation between lead levels and ADHD symptoms, the correlation is still insufficient to support this theory.

The theory that ADHD is caused by nutritional factors proposes that some children may be behaviourally sensitive to certain foods or food components, and

consequently that decreasing their exposure to these foods will improve their behavioural symptoms (Rojas & Chan, 2005). Feingold (1975) investigated this possibility and developed the Feingold Diet, advocating the benefits of a diet free of food additives and salicylates (cited in National Institutes of Health, 1982). Other dietary interventions have been suggested to improve ADHD symptoms, for example, the oligoallergenic diet and the sugar restriction diet (Rojas & Chan, 2005).

There is little research to indicate that these nutritional diets are effective in preventing or treating ADHD. Bateman et al. (2004), exploring the effect of a diet free of artificial colorings and sodium benzoate on children aged three, found no significant change in clinic-based test scores when children were placed on this diet versus the placebo. Wolraich and Lindgren (1994) looked at the effect that sucrose, aspartame, and a saccharin placebo had on children's cognitive, behavioural and motor abilities. The study involved 23 children aged six to ten, and 25 children aged three to five. In both age groups there were no significant effects of diet conditions in all cognitive, behavioural and motor measures. Such findings suggest that more rigorously designed studies are needed to evaluate the effectiveness of a dietary approach to ADHD.

Some studies have shown possible connections between smoking or alcohol use during pregnancy and the risk of ADHD (National Institute of Mental Health, 2003). Milberger, Biederman, Faraone, Chen, and Jones (1996) investigated the role of smoking during pregnancy, using 140 (6 to 17 years old) boys with ADHD and 120 normal subjects. They found that 72 percent of the ADHD children had a maternal history of smoking during pregnancy, compared to 8 percent of the normal subjects. Rodriguez and Bohlin (2005) examined the relationship between stress and maternal smoking with

ADHD symptoms in children. The 290 women in the sample were assessed at gestational weeks 10, 12, 20, 28, 32, and 36. Prenatal exposure to smoking and stress was associated with later symptoms of ADHD in their children, especially in boys.

Characteristics of ADHD

ADHD is a developmental disorder that usually begins in children's early years. It does not just suddenly appear in later years, although it may be diagnosed in late adolescent or early adulthood. As infants, ADHD children may be more restless and colicky than others. As they move through preschool, kindergarten, or first grade, manifestations of ADHD will be noticeable in these children (Teeter, 1998).

There are three core characteristics of ADHD: hyperactivity, inattention, and impulsivity. Hyperactivity has been described as "a child's frequent failure to comply in age-appropriate fashion with situational demands for restrained activity, sustained attention, resistance to distracting influences, and inhibition of impulsive response" (Whalen & Henker, 1980, p. 56). Some symptoms of hyperactivity include fidgeting with hands, squirming in the seat, inability to stay in the seat when required, and inappropriate behaviours in certain situations, such as running, climbing, and talking excessively (APA, 2000). Barkley (1996) points out that professionals and parents often describe hyperactive children as behaving "as if they are being driven by a motor, incessantly in motion" (p. 67). These children tend to lose interest quickly when someone is reading to them, play with their toys for a moment before moving on to the next thing, and often annoy or bother their classmates (Wender, 2000).

Inattentive children find it difficult to sustain attention during classroom tasks (Barkley, 1997) and may display inattention in academic, work, or social situations

(APA, 2000). They may be unable to sustain attention or react to tasks in the same way as others of the same age group. They tend to have more problems following rules and instructions than do others of their age group and appear to be more disorganized, distracted, and forgetful than their peers (Barkley, 1996). Winzer (1999) suggests that children with attention disorders find it difficult to focus on a task because they are unable to avoid immaterial stimuli. As a result, children who display inattention tend to avoid activities that require sustained self-application and mental effort (APA, 2000).

Children with impulsivity demonstrate poor impulse control; for example, they may act out without considering the consequences of their actions (Wender, 2000). Other characteristics of impulsivity include blurting out answers at inappropriate times, creating problems when waiting for a turn, and interrupting others (APA, 2000). Children with impulsivity may quickly become angry when things do not go as they wish; they may begin to kick toys or act aggressively towards classmates (Wender, 2000).

Assessment and Diagnosis of ADHD

The responsibility for diagnosing students with ADHD lies primarily with physicians. Brownell and Yogendran (2001), in a Canadian study, reported that 58 percent of students obtained this diagnosis from a physician, 27 percent from a general practitioner, and 14 percent from a psychiatrist. ADHD is very difficult to diagnose because it often coexists with other disorders, such as learning disabilities, conduct disorders, or mood disorders (Powell, Welch, Ezell, Klein, & Smith, 2003). Therefore, the assessment of children who are considered to have ADHD must be comprehensive and multimodal in nature (Anastopoulos, 1996). Information needs to be gathered from every perspective, such as ADHD's situational variability, co-morbid features, and the

influence of home, school, and social performance (Barkley, 1990, cited in Anastopoulos, 1996). Assessment may include the use of interviews, questionnaires, observations, and standardized measurements such as child behaviour rating scales, parent self-report measures, and direct behavioural observations of the child in natural and clinical settings (Anastopoulos, 1996). Using a multimodal system helps professionals to be cautious when diagnosing children with ADHD, allowing them to rule out possible alternative causes for children's inattention, hyperactivity, and impulsivity (DuPaul & Stoner, 2003).

According to the operational criteria of the *DSM-IV-TR* (APA, 2000), for a diagnosis of ADHD, symptoms of inattention, hyperactivity, or impulsivity must be present in children before age seven and must be displayed in at least two settings, such as school and home. Children must show six or more of the nine inattention symptoms that have persisted for at least six months and are inconsistent with their developmental level. The nine symptoms of inattention are the following: (1) fails to give close attention to details, (2) has difficulty sustaining attention in tasks, (3) does not listen when spoken to directly, (4) does not follow through on instructions and does not finish school work and other duties, (5) has difficulties organizing duties and work, (6) avoids tasks that require continued mental effort, (7) often loses things required for activities, (8) easily distracted by outside stimuli, and (9) often is forgetful (APA, 2000).

Children must show six or more of the nine hyperactivity/impulsivity symptoms that are inconsistent with their developmental level (APA, 2000). The nine symptoms of hyperactivity/impulsivity are these: (1) fidgets with hands or feet, (2) leaves seat often when required to be in seat, (3) runs about or climbs excessively at inappropriate times, (4) has problems participating in quiet activities, (5) is often on the go, (6) will talk

excessively, (7) often blurts out answers, (8) has problems when waiting for own turn, and (9) will often interrupt others. Thus, ADHD can be diagnosed by establishing the developmental deviance and occurrence of symptoms (DuPaul & Stoner, 2003).

Interventions for Children with ADHD

Once the assessment of ADHD is completed, interventions should be based on the child's assets and deficits; that is, they should aim to improve the multiple domains that are affected by ADHD (Teeter, 1998). Interventions must be individualized, and some must be used over a long period of time. Power, Hess, and Bennett (1995) suggest that teachers tend to prefer positive over negative interventions. It is best to use several interventions, as opposed to just one. Three popular treatments that have demonstrated great efficacy are stimulant medication, behaviour therapy, and combination therapy (Anastopoulos, 1996).

Stimulant Medication

Prescription of stimulant medication for students with ADHD is the most widely used management procedure and has generated the most controversy (Teeter, 1998). It is believed that children with ADHD have a neurochemical imbalance affecting the way in which neurotransmitters take impulses to the brain. Stimulant medication is designed to stimulate those parts of the brain that transmit information, so that the brain operates more efficiently. This efficiency results in positive outcomes, such as improved attention, concentration, classroom behaviour, and social skills (Reeve, 1990). Depending on the type of stimulant medication used, the effect can last from 3 to 10 hours (Hall & Gushee, 2002).

Prescribing stimulant medication is primarily the responsibility of physicians. Sax

and Kautz (2003) reported in a recent study that physicians prescribed medication to 77 percent of patients with ADHD, while psychiatrists and pediatricians were also responsible for prescribing medication. The stimulant medications that physicians most commonly prescribe to treat ADHD include psychostimulants such as Ritalin, Dexedrine, and Adderall (Doherty, Frankenberger, Fuhrer, & Snider, 2000). Antidepressants (Tofranil, Wellbutrin, and Prozac) and antipsychotic medication (Mellaril, Thorazine, and Hadol) are also used in the treatment of ADHD (Powell, Welch, Ezell, Klein, & Smith, 2003). In the United States, ninety percent of the stimulant drugs being produced are being utilized for students with ADHD, and production of the stimulant drug Ritalin has increased nearly 700 percent from 1990 to 1997 (Snider, Frankenberger, & Aspenson, 2000). LeFever, Dawson, and Morow (1999) report that the use of stimulant medication more than doubled among students between 1990 and 1995. In Canada, the annual use rates of Ritalin increased by 500 percent between 1990 and 1997 (GPC Factor Research Group, 1999).

The increased use of stimulant medication for ADHD has caused concern among many professionals because, although there are some positive outcomes from the use of stimulant medication, there are also some negative outcomes. For example, children taking stimulant medication may experience side effects, such as sleeping problems, weight loss, stomach aches, tics, depression, and headaches (Doherty et al., 2000).

Furthermore, there is no clear evidence that stimulant medication improves students' academic achievement. This issue is of concern since one of the greatest risks for students with ADHD is low academic achievement. Bromfield (1996) notes that medication does not make up for skills that students have never mastered, nor does it

address learning problems. Aman and Werry (1982) found no evidence to support short-term or long-term effects of Ritalin on academic achievement. Weber, Frankenberger, and Heilman (1992) found that Ritalin did not improve students' academic achievement after one to two years of treatment. In contrast, Satterfield, Satterfield and Cantwell (1980) found that stimulant medication did have a positive effect on academic achievement, and Kavale (1982) reported that Ritalin had moderate positive effects on academic achievement. DuPaul and Eckert (1997) conducted a meta-analysis study to examine the effects of school-based interventions on students with ADHD and found that medication had small positive effects on academic performance.

Since medication is one of the most widely used interventions for ADHD, one would expect teachers and counsellors to be reasonably knowledgeable about the medications most commonly prescribed. However, Snider et al. (2003) found that teachers had little knowledge about the use of stimulant medication and were unaware of its side effects, such as decreased growth rate; fewer than half of the teachers in the study knew that stimulant drugs such as Ritalin have abuse potential similar to that of Demerol and cocaine. Snider, Frankenberger and Aspenson (2000) conducted a study regarding the increase in diagnosis and treatment of ADHD. In this study, 69 percent of the teachers believed that stimulant medication was beneficial for treating ADHD, and 58 percent believed that medication improved students' academic performance, even though research on this issue is conflicting. In a study by Kasten, Coury and Heron (1992), 62 percent of special education teachers and 58 percent of regular classroom teachers believed that stimulant medication can improve students' academic performance. However, many of these teachers had little knowledge of the advantages and

disadvantages of stimulants, possibly because they lacked training about the use of stimulant medication.

Davino (1995), examining teachers' knowledge about ADHD students and stimulant medication, found that 45.6 percent of parents requested the teacher's opinion about putting their child on medication. The teachers in Davino's study expressed dissatisfaction with their college training and in-service training about the use of stimulant medication for students affected by ADHD. Clearly, if parents are asking teachers such questions, teachers need to be better informed.

Behaviour Therapy

Students with ADHD present considerable problems for their teachers. Most have problems with restlessness, attention span, and impulse control in the classroom. These difficulties manifest themselves in specific problems with sitting in their seats when asked to do so, finishing assignments, and refraining from disrupting the classroom (Barkley, 1981). Many methods of behavioural modification have been shown to be beneficial in controlling the difficulties of ADHD children in the classroom, such as the use of positive reinforcement, token economies, and time out for misbehaviour (Teeter, 1998). Such methods emphasize the consequences of behaviour and may be helpful in improving students' attention, impulse control, academic effort, and social interaction (Nelson-Wicks & Israel, 2006).

Positive reinforcement methods can also be useful in managing students' behaviour. When using positive reinforcement, teachers emphasize the positive rather than the negative; for example, they would use positive social attention and praise when interacting with ADHD students who are behaving appropriately (Barkley, 1981). They

would ignore any inappropriate behaviours and focus on praising the more appropriate behaviours as they occur. With ADHD students, it is important that teachers give reinforcers frequently and change the rewards often, because students with ADHD habituate quickly to reinforcers (Teeter, 1998).

Token economies involve students earning points or tokens based on their appropriate behaviour (Teeter, 1998). Tokens can then be exchanged for various privileges, such as free time, computer time, or tangible reinforcers. Barkley (1981) notes that it is best to utilize other behavioural methods along with the token economy method.

Time out from positive reinforcement has been shown to be effective with students with ADHD. Time out simply refers to students' taking time away from classroom activities because of their inappropriate behaviours. For instance, if a student displays inappropriate behaviour, the teacher will send the student to a time-out chair, where the student will stay for a specified amount of time. Teeter suggests that it is important to use this strategy cautiously, because some students may already have low self-esteem or feel rejected by their peers. Experiencing a time out too often may increase children's belief that they are isolated and may serve to alienate them further (Teeter, 1998).

Barkley (1981) notes that behavioural interventions are designed only to reduce the inappropriate behaviour; they will not completely eliminate it. However, behaviour interventions do increase the occurrence of more appropriate behaviours. Still, it is very likely that children with ADHD will continue to experience periodic problems in academic performance throughout their school years.

Combination Therapy

ADHD negatively affects multiple areas, including academic performance, interpersonal relationships, and possibly, later in life, occupational attainment.

Combination therapy involves using a combination of psychosocial interventions and stimulant medication for children with ADHD (Forness, Kavale, & Crenshaw, 1999).

One research group (MTA Cooperative Group, 1999) investigated the difference in effectiveness of interventions such as medication alone, behavioural treatment alone, and a combination of the two. The results indicated that medication alone was superior to behavioural treatment alone as an intervention for ADHD symptoms. Medication alone and combination treatment did not differ significantly across any domain. However, the combination outcomes were achieved with lower medication doses than were used in medication alone. Also, combined treatment was superior to behavioural treatment alone for ADHD symptoms. In a study by Glass and Weigar (2001), 213 teachers out of 235 chose the combination of medication and behaviour modification as the best intervention for children with ADHD.

Hechtman et al. (2004) explored the success rate of using intensive multimodal psychosocial intervention combined with stimulants in the treatment of ADHD. No advantage was found for the combination treatment over the use of stimulants alone. However, there were significant improvements in academic performance and emotional status with the continuation of all treatments (combination, medication only, and medication plus attention control) over a two-year period.

Abikoff et al. (2004) tested the combination of stimulants and psychosocial treatments mainly pertaining to social skills training, compared with stimulants alone and

stimulants with nonspecific psychosocial training. Neither the combination treatment, nor stimulants alone, nor stimulants with attention control provided an advantage for any area of social functioning in children with ADHD.

Roles of Teachers and Counsellors

Even though physicians make the final diagnosis, teachers play a pivotal role in the diagnosis and assessment of children with ADHD because they have daily exposure to children in a variety of situations. Teachers are able to provide information that is critical for the diagnosis of ADHD, because problem behaviour is more likely to occur in the classroom where strong demands are placed on children's regulatory skills (Sciutto et al., 2000). Snider et al. (2003) indicated that two-thirds of teachers were responsible for recommending that a student be assessed for ADHD. Lloyd, Kauffman, Landrum, and Roe (1991) concluded that teachers initiated three-fourths of referrals. Frankenberger, Farmer, Parker, and Cermak (2000) examined school psychologists' knowledge, attitudes, and experiences with ADHD and reported that teachers provided 77 percent of the initial referrals for ADHD diagnosis.

Like teachers, counsellors also play a role in the diagnosis and assessment of children with ADHD. Their role involves eliminating any physical, emotional, or social problems that may suggest other explanations for the behavioural problems (Schwean, Parkinson, Francis, & Lee, 1993). For example, children with low IQs may be placed in academic environments that are inappropriate for their level; children with high IQs may not be academically stimulated; or children may have language impairments (APA, 2000). Counsellors use their own assessment techniques, such as using non-standardized tools (interviews), to eliminate any other explanations for the child's behaviour.

As previously discussed, the *DSM-IV-TR* provides operational criteria to assist in the diagnosis of ADHD (Schwean et al., 1993). However, even though the *DSM-IV-TR* clearly outlines the diagnostic criteria for ADHD, it can be quite complicated for professionals such as teachers and counsellors who are not trained in its use. Many teachers and counsellors are expected to note the behaviour of a child who is suspected of having ADHD. Mattison, Gadow, Sprafkin, and Nolan (2002) explored the discriminant validity of the Child Symptom Inventory-4 (teacher version) in general and special education students by comparing teacher ratings of the frequency and severity of *DSM-IV* symptoms. They concluded that teachers' involvement in the assessment of childhood psychiatric disorders supports the importance of their receiving sufficient training in order to understand the *DSM-IV*.

Having more information about the etiology, course, and complications of ADHD would help teachers and counsellors to recognize the symptoms, which in turn would help them to devise more effective interventions for their students. Furthermore, with an increased knowledge of the *DSM-IV-TR*, teachers and counsellors would be able to collaborate more effectively with students' parents and with mental health professionals.

Teachers' Knowledge and Training Related to ADHD

Snider et al. (2003) conducted a survey that assessed teachers' knowledge, opinions, and experiences related to ADHD. They found that teachers had limited knowledge about ADHD and the use of stimulant medication. Sciutto et al. (2000) examined teachers' knowledge and misperceptions about ADHD and concluded that teachers tend to have limited knowledge regarding the nature, course, and treatment of ADHD. Sciutto et al. suggest that future educational interventions should include training

teachers more specifically about the characteristics of ADHD rather than just the primary symptoms identified in the *DSM-IV*.

Jerome et al. (1994) compared American and Canadian teachers' knowledge and attitudes concerning ADHD. The outcome indicated that the teachers had a general grasp of basic concepts about ADHD but seemed to have misperceptions regarding non-medical therapies and long-term prognosis. In addition, the teachers reported having had no opportunity to learn about ADHD during their educational experience or after graduation.

Stormont and Stebbins (2005) investigated preschool teachers' experiences, knowledge, and opinions related to ADHD. The preschool teachers reported feeling that they knew very little about the process of assessing ADHD in preschoolers. Teachers with graduate-level education knew more about ADHD than those with vocational-level degrees. Interestingly, teachers' years of experience and teaching status were not associated with their knowledge scores about ADHD. However, teachers who had more graduate-level education were better informed than those with undergraduate degrees. In this study, 72 percent of the preschool teachers indicated that they were not able to tell which students had ADHD, and 65 percent reported that they were not clear on the process of assessing ADHD.

Glass and Wegar (2001) examined teachers' perceptions about the causes of ADHD, which students they believed had ADHD, and treatments for the disorder. Three-quarters of the teachers believed that more students had ADHD than had been formally diagnosed. The high percentage indicates that, if teachers are labeling students as having ADHD, they need to be appropriately trained in identifying the characteristics of ADHD

so that they can make a proper distinction between ADHD and normal childhood behaviour.

Vereb and DiPerna (2004) explored the relationship between teachers' knowledge of ADHD and its various treatments. In this study, teachers who had training in ADHD had better knowledge about ADHD than did teachers without training. The results also showed no relationship between teachers' experience with ADHD students and their knowledge about ADHD. Brook et al. (2000), investigating teachers' knowledge and attitudes towards ADHD and learning disabilities, found that teachers' knowledge about ADHD was insufficient.

Snider, Busch, and Arrowood (2003) found that teacher referrals have a significant role in determining whether children will be diagnosed as having ADHD. They suggest that, if teachers refer students to be evaluated for ADHD, it is more than likely that they will rate the students high on characteristics associated with ADHD. Consequently, the children diagnosed with ADHD are considered to have a medical disorder that must be treated by a physician.

Teachers' knowledge of ADHD will likely influence their selection and implementation of interventions for children (Reid, Vasa, Maag, & Wright, 1994). Teachers are among the greatest agents of change for ADHD students; however, they also have the power to debilitate a student seriously (Schwean et al., 1993). Thus it is essential that teachers be properly educated about this disorder. Higher levels of knowledge and understanding should lead to more positive interactions between and among teachers, counsellors, and students. Unfortunately, research shows that teachers currently receive little if any training regarding ADHD. When asked if they could benefit from training, 50

percent of teachers in one study responded that they could benefit from additional training (Piccolo-Torsky & Waishwell, 1998). Snider et al. (2003) suggest including in teachers' training courses information on pharmacological and behavioural interventions, and on the difficulty of diagnosing disorders.

Kasten et al. (1992) found that, although most of the teachers in the study felt that they received too little training on the use of stimulants to control ADHD, the teachers frequently offered advice to parents regarding stimulants for their children. Teachers reported that they sought out reading materials and other sources on their own to learn more about ADHD.

Jerome et al. (1994), comparing Canadian and American teachers' knowledge about ADHD, concluded that both sets of teachers had little opportunity to learn about the disorder during their undergraduate coursework. In addition, 89 percent of Canadian teachers and 92 percent of American teachers reported receiving minimal training in ADHD after graduation. Jerome et al. argue that teacher training on this topic would be more effective if it involved outside professionals such as physicians and psychologists. Vereb and DiPerna (2005) found that teachers who received special training regarding ADHD were more knowledgeable about the disorder than were teachers who had no training. Reid et al. (1994) noted that teachers reported lack of training in ADHD as a major reason why they were unable to help ADHD students effectively. In addition, teachers who had more experience and training also displayed higher levels of confidence in determining interventions and improvements in students' behaviour. In a study by Bussing, Gary, Leon, Garvan and Reid (2002), teachers reported the need for training in areas such as managing their stress caused by ADHD students, modifying lesson plans,

and developing behavioural contracts.

Frankenberger et al. (2001) concluded that teachers are central participants in the increased use of medication among students. Thus, there is a need for enhanced in-service training for teachers, counsellors, and other professionals who are involved in the diagnosis and treatment of ADHD students. Teachers should have opportunities to engage in various types of training, such as pre-service course work, in-service workshops, and an appropriately structured curriculum (Teeter, 1998). Teeter suggests that teacher training could focus on areas such as the latest research on ADHD, the need for educational modifications, the introduction of empirically based educational interventions, and the developmental course of ADHD. Such training would help teachers to understand how ADHD affects students' academic achievement, behaviour, and social interactions.

Counsellors' Knowledge and Training Related to ADHD

Although little research has been performed in the area of counsellors' knowledge of and training in ADHD, one study did investigate counsellors' involvement with ADHD. Hall and Gushee (2002) found that school counsellors are increasingly responsible for administering medication to students with ADHD and act as facilitators among all parties to improve the management and treatment of students with the disorder. School counsellors can be responsible for collaborating with mental health workers, teachers, and parents to help students manage their ADHD. This role may involve gathering data, assisting with assessment, determining an appropriate intervention such as medication and/or psychosocial treatment, and monitoring ADHD students' progress in both behavioural and academic domains. Since they play a pivotal role with ADHD

students, school counsellors like teachers need current information regarding the disorder.

Conclusion

Attention Deficit Hyperactivity Disorder is the most common and controversial disorder of childhood. It is important for teachers and counsellors to keep up with current research and information on this topic because they are pivotal figures in the initial screening and diagnosis of children with ADHD (Snider et al., 2003). Teachers and counsellors need to be better prepared to assist students with ADHD in order to help them reach their full potential. Being better informed will enable teachers and counsellors to work more effectively with these students to optimize their academic achievement, increase their behaviour compliance, and maintain more meaningful social relationships.

Chapter 3. Methodology

Design of Study

A descriptive, cross-sectional design using a self-administered questionnaire (see Appendices A and B) was used to obtain information about two school districts in a Prairie province. In these school districts, teachers' and counsellors' knowledge and experiences regarding students with ADHD were examined using a questionnaire developed by Snider et al. (2003).

Sample

The sampling method utilized was nonprobability, purposive sampling. The sample population was comprised of elementary, middle school, and high school teachers and counsellors from School District One and School District Two in southwestern Canada. The 98 subjects in the study included 72.4 percent (n= 71) female and 27.6 percent (n= 27) male teachers and counsellors. Twenty percent (n= 20) of the participants were in the 24-29 year age range, 27.6 percent (n= 27) were in the 30-40 year age range, 28.6 percent (n= 28) were in the 41-50 year age range, and 23.5 percent (n= 23) were in the 51 and above year age range. Out of the 98 participants, 75 were teachers and 23 were counsellors.

School District One consists of 18 schools. The sample population for teachers in School District One was taken from seven elementary schools and two middle schools. School District Two has 16 schools. The sample population for teachers in School District Two was taken from one school, serving kindergarten to grade twelve. Since it was more difficult to obtain data from School District Two, only one school was used for data. The sample population for counsellors in both School Districts One and Two were

taken from all schools. Out of 180 questionnaires handed out to teachers in School District One and School District Two, 76 were completed, providing a response rate of 42 percent. Out of 30 questionnaires handed out to counsellors in School District One and School District Two, 22 were completed, for a response rate of 73 percent.

Instrument

The instrument used in this study was a questionnaire that was developed by Snider et al. (2003). The scale was replicated with the exception of 18 opinion statements that were deleted from the original scale. The developers did not indicate the reliability measure of the scale. The questionnaire consisted of two parts.

Part one, a personal data questionnaire, was designed to gather relevant demographic information. It consisted of 10 demographic questions that focused on the demographics of the sample (see Appendix A). Participants were asked to respond by filling in the box with a number that best represented them demographically. In part two of the questionnaire (see Appendix B), participants were asked to respond to 30 statements using a 5-point Likert-type scale (Strongly Disagree, Disagree, Not Sure, Agree, and Strongly Agree).

Items 1 to 13 of part two of the scale were designed to assess participants' knowledge about ADHD and the use of stimulant medication. Although this section assessed the participants' factual knowledge, a Likert-type scale was used instead of a True/False format. Snider et al. (2003) indicate that utilizing a Likert-type scale for these statements will provide more consistency in the format and increase the probability that participants' responses reflect their knowledge rather than guessing.

Items 14 to 24 of part two of the scale were designed to assess participants'

experience and involvement with students who have ADHD. The respondents were asked to indicate if they referred students for evaluation and to what extent they were involved in the diagnosis, assessment, and evaluation of students with ADHD.

Teachers and counsellors were then asked to respond to items 25 to 30 of the instrument, which elicited their views and opinions on the effects of stimulant medication on students with ADHD.

Data Collection

After the Human Subjects Research Committee at the University of Lethbridge approved the research, approval to conduct research in School District One and School District Two was obtained from the school district superintendents. The researcher sent copies of the proposal, survey, and consent letters to the Field Experiences office at the University of Lethbridge. The Field Experiences office directed the researcher's proposal, questionnaire, and consent letters to the appropriate superintendents for each district. The superintendents then indicated their research approval.

When approval was granted, the researcher contacted principals from several schools to request participation in this study (see Appendix C). Nine principals in District One and one principal in District Two agreed to participate in the research. The principals were given the choice of how they wanted to distribute the questionnaires. Most principals chose the option of the researcher coming to a staff meeting to hand out the questionnaires. The researcher then handed out the questionnaires to the participants in the staff meeting and departed before they began filling them out, as requested by the principal. The researcher then returned at a later date to collect the completed questionnaires from the principal. Other principals preferred the researcher to drop the

questionnaires off at the school to be distributed through the teachers' mailboxes. Again, the researcher returned at a later date to collect the completed questionnaires.

The researcher contacted the Counselling Consultant of School District One, asking if counsellors would be willing to participate in the study. It was agreed that the researcher would attend the counsellors' monthly meetings to distribute and collect the questionnaires.

The researcher contacted a counsellor of School District Two to ask if its counsellors would be willing to participate. It was decided that the researcher would provide 10 questionnaires, which the researcher later collected. Each included a consent letter (see Appendix D) outlining the purpose of the study, the participants' rights, and confidentiality. Questionnaires were returned with the consent forms.

Data Analysis

The mean, range, and standard deviation were calculated for all independent and dependent variables. The cut-off points for the mean indicated the scores as either positive, neutral or negative. Standard deviations were calculated and frequencies and percentages were obtained for all variables. The percentages in part two indicate teachers' and counsellors' knowledge. A reliability test was computed on the whole scale (alpha, 0.69). Demographic data were also presented in frequencies indicating information about the respondents' sex, age, and years of teaching and counselling experience. To compute the data, the researcher used the Statistical Package for the Social Sciences (SPSS 12.0) program.

Chapter 4. Results

This chapter illustrates the results concerning teachers' and counsellors' knowledge, experiences, and opinions related to the diagnosis of Attention Deficit Hyperactivity Disorder and its treatment with stimulant medication. First, the descriptive statistics are presented for the demographic data. Next, the descriptive statistics are presented for teachers' and counsellors' knowledge, experiences, and opinions related to this topic.

Demographic Data

Table 1 presents the demographic information about the participants in this study. The majority of the participants were female. Of the 98 participants, 76.5 percent were teachers and 23.5 percent were counsellors. The ages of the participants ranged from 24 to 51, with the majority of the participants aged between 30 and 50.

Table 1. Demographic Characteristics of Participants

Item	n	%
1. Age		
24-29	20	20.4
30-40	27	27.6
41-50	28	28.6
51+	23	23.5
2. Gender		
Male	27	27.6
Female	71	72.4
3. Occupation		
Teacher	75	76.5
Counsellor	23	23.5
4. Have you ever taught a child that was diagnosed with ADHD?		
Yes	82	83.7
No	16	16.3
5. Have you ever counseled a child that was diagnosed with ADHD?		
Yes	33	33.7
No	65	66.3
6. Have you ever requested an evaluation of a child who you suspected had ADHD?		
Yes	77	78.6
No	21	21.4

When the participants were asked whether they had taught a student who was diagnosed with ADHD, 83.7 percent responded that they had, while 16.3 percent responded that they had not. This suggests that a large percentage of teachers in this study have had experience teaching a student with ADHD. In regards to ever having counselled a student with ADHD, 33.7 percent responded with “Yes” and 66.3 percent with “No.” An overwhelming percentage of teachers and counsellors also indicated that they had requested an evaluation of a student who they suspected had ADHD.

Figure 1 illustrates the frequency distributions of participants’ years of teaching and counselling experience. A small percentage of participants had no teaching experience, while 43.9 percent of participants had 11 to 15 years of teaching experience. Another portion of participants (26.5 percent, $n = 26.5$) had between 1 to 5 years of teaching experience. As for counselling experience, a large percentage of participants had none (see Figure 1), possibly because a large portion of the sample consisted of teachers. However, 10.2 percent of the participants had 1 to 5 years of counselling experience. Also, some indicated (9.2 percent, $n = 9.2$) that they had 16 years or more of counselling experience, whereas no participants had 16 years or more of experience in teaching.

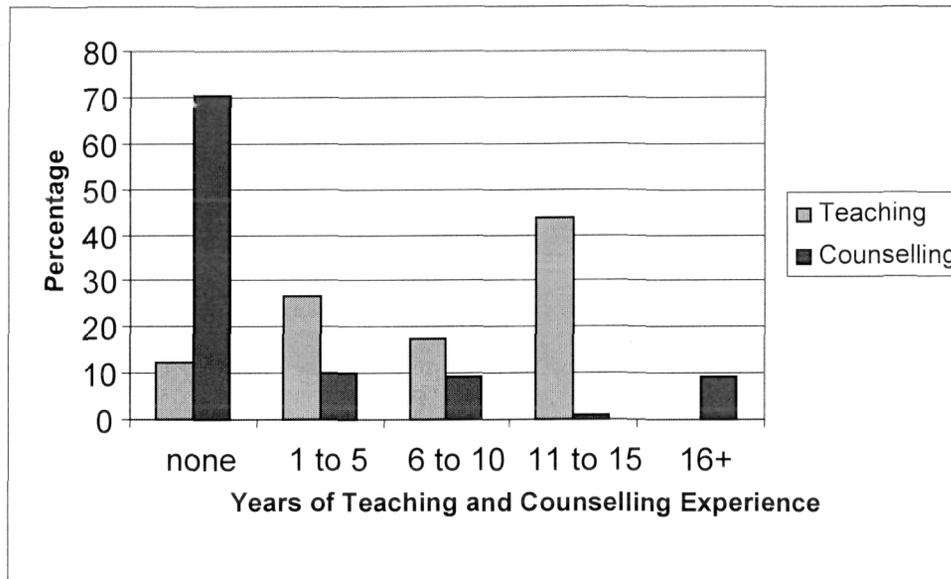


Figure 1. Frequency distributions (%) of years of teaching and counselling experience.

Figure 2 illustrates the educational level achieved by the participants. Most had attained a B.Ed., while some (23.5 percent, $n=23.5$) had attained an M.A. or M.Ed. A small percentage of participants had a college diploma, a B.A. or B.Sc.

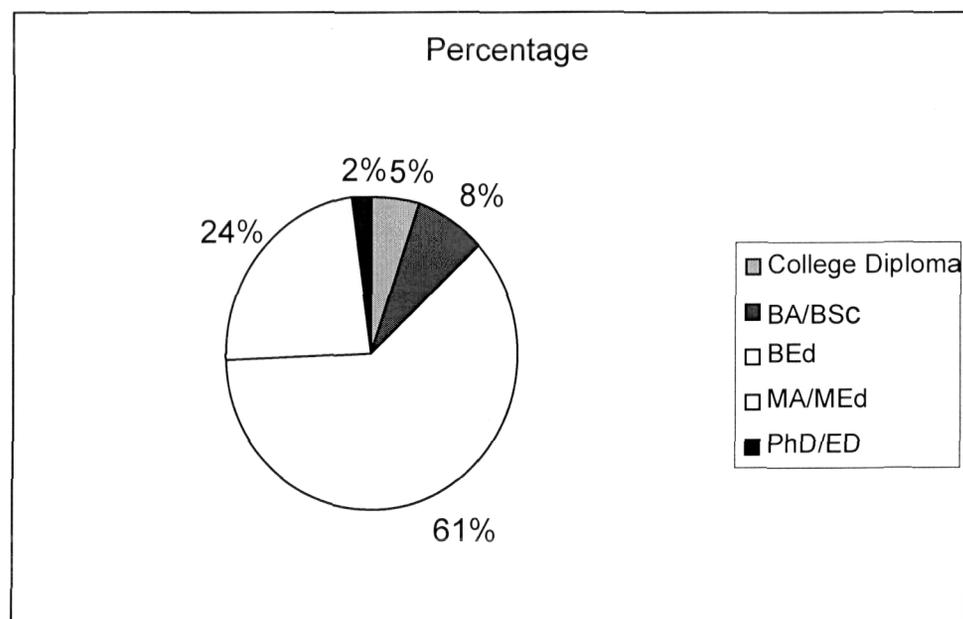


Figure 2. Educational level of participants.

When asked about professional development related to ADHD, a large percentage (64.3 percent, $n = 64.3$) of participants reported having had no training in ADHD, while 33.7 percent stated that they had experienced one to three training sessions in ADHD. The results for other training attended that was not directed towards ADHD indicated that 67.3 percent of participants had attended conferences, 14.3 percent seminars, and 2.0 percent other college courses.

Data on Participants' Knowledge, Experience, and Opinions Related to ADHD

Means and standard deviations for the 30 items were computed for teachers' and counsellors' knowledge, experiences, and opinions regarding ADHD. To organize the data, cut-off points on the means were established to describe levels of knowledge, and experience. Scores above 2.20 were considered positive (knowledgeable), scores from 1.50 to 2.20 were considered neutral, and scores below 1.50 were considered negative. Standard deviations were generally large enough to indicate that the scale discriminated among respondents. Reliability on the whole scale was alpha 0.69, indicating that the scale is a reliable measure. The means and standard deviations for the 13 knowledge-based questions are indicated in Table 2.

Table 2. Means and Standard Deviations for Teachers' and Counsellors' Knowledge

Item	M	SD
1. ADHD is the most commonly diagnosed psychiatric disorder of childhood.	2.52	.66
2. There is data to indicate that ADHD is caused by brain malfunction.	2.41	.61
3. ADHD symptoms may be caused by academic deficits.	2.53	.78
4. Stress and conflict in a student's home life can cause ADHD symptoms.	2.63	.70
5. Diagnosis of ADHD can be confirmed if stimulant medication improves the child's attention.	2.06	.81
6. Stimulant medication use may decrease students' physical growth rate.	2.19	.64
7. Stimulant medication use may produce tics in students.	2.12	.61
8. Adderall, Ritalin, and Dexedrine have abuse potential similar to Demerol, cocaine, and morphine.	2.23	.74
9. The long-term side effects of stimulant medications are well understood.	1.52	.68
10. Over time, stimulant medication loses its effectiveness.	2.16	.74
11. While on stimulant medication, students exhibit similar amounts of problem behaviours as their normally developing peers.	2.36	.76
12. Short-term studies show that stimulant medication improves the behaviours associated with ADHD.	2.67	.57
13. Studies show that stimulant medication has a positive effect on academic achievement in the long run.	2.39	.70

Knowledge Related to ADHD

Several items that concerned teachers' and counsellors' knowledge were found to be above the 2.20 cut-off point, indicating that teachers and counsellors were knowledgeable in these areas. Other knowledge-related items were found to fall below the 2.20 cut-off, showing that many teachers and counsellors were not knowledgeable in these areas. Overall, respondents were correct on only 5 (38 percent) of the 13 knowledge statements. On item 1 (ADHD is the most commonly diagnosed disorder of childhood), 61.2 percent of respondents strongly agreed and agreed. On item 3 (ADHD symptoms may be caused by academic deficits), 70.4 percent agreed and strongly agreed. On item 9 (Long-term side effects of stimulant medication are well understood), 58.2 percent of respondents strongly disagreed and disagreed.

Three statements drew the most incorrect responses: on item 2 (There is data to indicate that ADHD is caused by brain malfunction), 93.8 percent responded incorrectly; on item 11 (While on stimulant medication, students exhibit similar amounts of problem behavior as their normally developing peers), 82.7 percent responded incorrectly; and on item 13 (Stimulant medication has a positive effect on academic achievement in the long run), 86.7 percent responded incorrectly.

When the frequency distributions are examined, the high numbers responding with "not sure" indicate that teachers' and counsellors' knowledge is limited at best. For example, 61.2 percent of respondents were unsure if stimulant medication produces tics in students, and 56.1 percent were unsure of the physical results of stimulant medication.

Experience with ADHD Students

Table 3 provides the means and standard deviations for the 11 experience-based

questions.

Table 3. Means and Standard Deviations for Teachers' and Counsellors' Experience

Item	M	SD
14. I attempt pre-referral programs or intervention with students who are displaying ADHD-like symptoms.	2.81	.49
15. I refer students for evaluation if I believe they are exhibiting ADHD symptoms.	2.69	.70
16. I am involved in assisting with the initial diagnosis of ADHD.	2.43	.89
17. I am involved in assessing the effectiveness of stimulant medication for the treatment of ADHD.	2.19	.95
18. I can identify when a student has not taken his or her medication.	2.90	.34
19. I frequently participate on multi- or interdisciplinary teams that assess students or ADHD.	1.86	.97
20. My classroom is more manageable when my students with ADHD have taken their medication.	2.64	.62
21. I have heard of students in my district selling or giving away their stimulant medication.	1.89	.92
22. I have heard students attribute their successes (e.g., academic, social) to their medication.	2.33	.85
23. I have heard students say things like, "I forgot my medicine this morning, so I don't have to behave today!"	2.24	.92
24. I remind students diagnosed with ADHD to take their medication if I think they have forgotten to take it on their own.	2.51	.77

Three items relating to participants' experience with ADHD students were found to be above the 2.20 cut-off, indicating strong levels of agreement that they had various experiences with such students. On item 18 (I can identify when a student has not taken his or her medication), 90.8 percent agreed or strongly agreed; on item 14 (I attempt pre-referral programs and interventions with students displaying ADHD-like symptoms), 82.7 percent agreed or strongly agreed; and on item 15 (I refer students for evaluation if I believe they are exhibiting ADHD symptoms), 79.6 percent agreed or strongly agreed.

Opinions Related to Use of Stimulant Medication

Table 4 provides the means and standard deviations for the 6 opinion-based questions.

Table 4. Means and Standard Deviations for Teachers' and Counsellors' Opinions

Item	M	SD
25. Taking stimulant medication helps students with ADHD behave better in the classroom.	2.79	.48
26. Taking stimulant medication helps the students diagnosed with ADHD improve their relationships with their peers.	2.71	.56
27. Too many students receive stimulant medication for ADHD.	2.31	.77
28. Professionals (teachers, counsellors, psychologists) need more information about stimulant medication and their side effects.	2.92	.31
29. High doses of stimulant medication can improve behaviour but impair creative thinking and learning.	2.10	.72
30. If a student is receiving medication, other methods of intervention are unnecessary.	1.20	.54

Two items relating to teachers' and counsellors' opinions about ADHD students were found to be in the positive range. Of the respondents, 92.9 percent agreed and strongly agreed with item 28 (Professionals need more information about stimulant medications and their side effects), and 81.6 percent agreed or strongly agreed with item 25 (Taking stimulant medication helps students with ADHD behave better in the classroom).

One item relating to teachers' and counsellors' opinions about ADHD students was found to be in the negative range: 85.7 percent of participants disagreed or strongly disagreed with item 30 (If a student is receiving medication, other methods of intervention are unnecessary). The percentages of teachers and counsellors who agreed or disagreed with the opinion-related statements are illustrated in Appendix G.

Chapter 5. Discussion

Introduction

How best to assist children with ADHD is one of today's leading educational challenges (Piccolo- Torsky & Waishwell, 1998). Even though much research has been undertaken on the topic of ADHD, there is little research into teachers' knowledge, experience and opinions related to students with ADHD, and almost none into counsellors'. According to the National Institute of Mental Health (2003), ADHD affects approximately 3 to 5 percent of children. Children affected by ADHD experience problems in school such as academic underachievement, high rates of noncompliance, and problems in peer relationships (DuPaul & Stoner, 2003). Students with ADHD will have a better probability of success if their teachers and counsellors are equipped with more knowledge about ADHD.

This study attempted to determine teachers' and counsellors' knowledge, experiences, and opinions related to the diagnosis of Attention Deficit Hyperactivity Disorder in students and its treatment with stimulant medication. More specifically, this study addressed four primary questions:

1. What knowledge base do teachers and counsellors have about ADHD?
2. How knowledgeable are teachers and counsellors about ADHD treatment with stimulant medication?
3. What professional experiences have teachers and counsellors had with students who are diagnosed with ADHD?
4. What are teachers' and counsellors' views about the effect of stimulant medication on students' behaviour and academic work?

Teachers' and Counsellors' Knowledge About ADHD

The teachers and counsellors who participated in this survey had limited knowledge about ADHD and the use of stimulant medication, despite their important role in the diagnosis and treatment of ADHD in students. Of the 13 knowledge-based questions, participants answered only 5 (38 percent) correctly. These results are consistent with those of Snider, Busch and Arrowood (2003), in whose study teachers answered only 5 out of 13 knowledge questions correctly. Scitutto et al. (2000) also found that teachers needed more knowledge about the nature, course, and treatment of ADHD. In comparison, in a study reported by Jerome et al. (1994), Canadian and American teachers did comparatively well in terms of knowledge about ADHD. The finding by Jerome et al. that teachers and counsellors hold the misperception that ADHD is caused by brain malfunction corresponds with that noted by Snider et al. (2003).

Teachers' and Counsellors' Knowledge About Stimulant Medication

Side Effects

Although the teachers and counsellors participating in this study were well aware that the long-term side effects of stimulant medication are not fully understood, they were uninformed about its risks. Most teachers and counsellors did not understand, for example, that use of stimulant medication may decrease growth rate and produce tics in students, or that over time stimulant medication loses its effectiveness. In Barkley's (1981) study, among ten children with ADHD, several developed tics in response to stimulant medication, and the tics continued even when stimulant use was discontinued. Teachers and counsellors were also unaware that stimulant drugs such as Ritalin and Adderall have abuse potential similar to that of Demerol and cocaine. Snider, Busch, and

Arrowood (2003) also found that teachers had limited knowledge about the side effects of stimulant medication. Perhaps if teachers knew more about the possible side effects, they would be not so quick to recommend medication to physicians and the students' parents.

Frankenberger, Farmer, Parker and Cermak (2001) found that psychologists adequately understood that the long-term effects of stimulant medication were not well understood, but were unaware of the effect that stimulant medication has on students' growth rate. In that study, the psychologists did not agree with the notion that stimulant medication has abuse potential similar to that of cocaine and Demerol. Kasten, Coury, and Heron (1992) also found that over 50 percent of regular classroom teachers and 19 to 32 percent of special education teachers were unaware of the physical and behavioural side effects that stimulant medication may cause.

Effect on Academic Achievement

Another misconception of the teachers and counsellors in this study was the belief that stimulant medication has a positive effect on students' academic achievement in the long run. Most of the teachers and counsellors (86.7 percent) in this study believed this to be true. However, research has shown no measurable long-term academic achievement gains (Alto & Frankenberger, 1995; Frankenberger & Cannon, 1999; Weber et al., 1992). Alto and Frankenberger's (1995) longitudinal study revealed that students in first and second grade who were taking stimulant medication showed no improvement in academic achievement. In a follow-up study, Frankenberger and Cannon (1999) found that, when these children reached grade five, they did not attain the same level of the contrast group in academic achievement. Weber, Frankenberger and Heilman's (1992) study also showed that Ritalin did not increase the children's academic achievement.

Stimulant medication will reduce students' hyperactivity and impulsivity and improve their ability to focus, work, and learn (National Institute of Mental Health, 2003).

However, medication will not 'make up' for skills that a student does not have, nor does it address learning problems (Waldron, 1999).

Diagnosis of ADHD

Another misperception the teachers and counsellors had in this study was the belief that diagnosis of ADHD can be considered confirmed if medication improves the child's attention. In fact, Peloquin and Klorman (1986, as cited in Frankenberger, Lozar, & Dallas, 1990) stated that stimulant medication will improve short-term learning, attention, behaviours, and concentration in normal children as it does in children with ADHD. This raises the concern that possibly some children are being inappropriately diagnosed and treated with stimulant medication. Snider, Busch and Arrowood also (2003) suggested that seeing a behavioural change in students who are being medicated tends to confirm teachers' suspicions that the students do have ADHD. However, the teachers may in fact be incorrectly diagnosing these students on the basis of false assumptions. Glass and Wegar (2001) stress that teachers need to be educated about how to identify ADHD characteristics so that they can distinguish between ADHD and normal childhood behaviours.

Teachers' and Counsellors' Experience with Students with ADHD

The majority of teachers in this study (83.7 percent) reported having taught a child with ADHD; however, only 33.7 percent of counsellors reported having counselled a child with ADHD. This makes sense, since research indicates that there is an estimated one child with ADHD in every classroom (DuPaul & Stoner, 2003). Thus teachers should

have a substantial knowledge base about ADHD and how to work most effectively with these students. Barkley (1990, cited in Shapiro & DuPaul, 1993) suggests that, if teachers have a better understanding of the nature, causes, and outcomes of ADHD, they can provide better and more appropriate interventions for these students.

The majority of teachers and counsellors in this study (79.5 percent) strongly agreed or agreed that they were involved in referring students for an evaluation of ADHD. This confirms previous research indicating that teachers make more than half of such referrals (Frankenberger et al., 1990; Frankenberger et al., 1991; Lloyd, Kauffman, Landrum, & Roe, 1991; Snider, Busch & Arrowood, 2003). However, some researchers claim that a large percentage of children referred for ADHD are not subsequently confirmed as ADHD cases (Cotugno, 1993, cited in Scitutto et al., 2000). Even though a high percentage of teachers and counsellors participate in the referral of students for ADHD assessment, amazingly only 39.8 percent in this study agreed or strongly agreed that they were involved in team meetings that assessed students with ADHD. Barkley (1998) suggests that it is important to approach the diagnosis of ADHD as a multidisciplinary team. Thus, if teachers and counsellors are involved in referring and diagnosing students with ADHD, they should also be included in team meetings.

*Teachers' and Counsellors' Opinions About the Use of Stimulant Medication
Need for Additional Training*

Interestingly, 92.9 percent of teachers and counsellors in this study agreed or strongly agreed that they needed more information about ADHD and the use of stimulant medication. This is consistent with the findings of other research studies. Reid, Vasa, Maag, and Wright's (1994) results indicated that lack of training was one of the most

important barriers to teachers' ability to instruct students with ADHD effectively. In Jerome, Gordon and Hustler's (1994) study, teachers reported that they had little training concerning ADHD; in fact, a large percentage of the teachers in the study expressed an interest in in-service training related to ADHD. In a study by Bussing, Faye, Leon, Garvan, and Reid (2002), a large majority (94 percent) of teachers expressed an interest in more ADHD training. Vereb and DiPerna (2004) reported that teachers who had greater knowledge about ADHD had experienced more training than those teachers who had less knowledge of ADHD. Clearly, educating teachers and counsellors about this disorder will provide a better prognosis for students with ADHD.

Effect on Behaviour and Academic Work

The majority of teachers and counsellors participating in this study held positive views about the effect of medication on students' behaviour and academic work. Most (81.6 percent) reported that students with ADHD behaved better in the classroom when they started taking medication. This is consistent with the commonly held belief that stimulant medication generally helps students to become calmer and easier to manage, better able to follow classroom rules better, and less impulsive (Wender, 2000). Runnheim, Frankenberger and Hazelkorn (1996) also reported that medication was effective in decreasing the number of times that maladaptive behaviour occurred in the classroom.

Effect on Peer Relationships

A large number of teachers and counsellors (75.5 percent) agreed and strongly agreed that stimulant medication does help students to improve their relationships with their peers. DuPaul and Stoner (2003) reported that students with ADHD have many

problems with their peers, finding it difficult to make and maintain friends; in addition, the rate of peer rejection is even higher for students who display both aggression and ADHD. Research regarding the benefits of stimulant medication on improving peer relationships is conflicting (Abikoff et al., 2004; Mrug, Hoza, & Gerdes, 2001; Powell, Welch, Ezell, Klein, & Smith, 2003; Reeve, 1990). Mrug et al. (2001) reported that combination treatments with medication and behavioural therapy did not result in improved peer acceptance for students with ADHD. This study suggested that social skills training combined with medication would be the best intervention to target peer problems directly. Contrary to these findings, in a study by Runnheim et al. (1996, cited in Doherty et al., 2000), teachers of students with ADHD reported that, once taking stimulant medication, the students behaved more appropriately in social situations.

Other Methods of Intervention

Interestingly, the teachers and counsellors in this study believed that students with ADHD should be receiving other methods of intervention rather than medication alone. This is consistent with findings that suggest that using a multi-modal treatment is better for most students than simply relying on one method. The National Institute of Mental Health (2003) studied the effectiveness of different treatments on students with ADHD. The results indicated that long-term combination treatment and medication management were far superior to other treatment options; in some cases, such as academic performance, social skills, and oppositional behaviour, combined treatment was the best. In a study by Jerome, Gordon, and Hustler (1994), both American and Canadian teachers reported believing that medicine alone is not an effective intervention. Glass and Weigar's

(2001) study also indicated that, when teachers were given the choice of treatment, a large majority would choose combination (medication and behavioural) treatment.

Asked whether too many students with ADHD were receiving medication, 49.0 percent of teachers and counsellors agreed or strongly agreed, while 18.4 percent disagreed and strongly disagreed, and 32.7 percent were not sure. Stormont and Stebbins (2005) reported that 68 percent of preschool teachers believed that too many preschoolers with ADHD were prescribed stimulant medication.

According to Snider, Busch and Arrowood (2003), data provided by the U.S. Drug Enforcement Agency (2002) indicated an increase in the production of methylphenidate, ninety percent of which was consumed for treatment of ADHD. This growing level of production has raised concern among parents and professionals that perhaps teachers are too quick in recommending to parents that students with ADHD be prescribed medication (Portne, 2000).

Implications for Practice

Since, as the findings of this study suggest, teachers and counsellors are key participants in the lives of students affected by ADHD, it is important that these professionals be properly trained in and knowledgeable about the disorder. It appears that teachers and counsellors have limited knowledge about ADHD and the use of stimulant medication in its treatment. It would be beneficial for teacher education programs in colleges and universities to provide teachers with information that will broaden their perspectives about ADHD. Teachers and counsellors alike need to learn how to identify the characteristics of ADHD, so that they are cognizant of the distinction between ADHD and normal childhood behaviour. This is especially important since the findings in this

study revealed that a large percentage of teachers and counsellors are referring students to be assessed for ADHD.

In addition, in-service training related to ADHD should be provided for teachers and counsellors. Many participants in this study expressed a high level of interest in participation in in-service training about ADHD and the use of stimulant medication. In-service training would provide an excellent opportunity for the educational system to bring in outside professionals, such as physicians and psychologists, to educate teachers and counsellors about ADHD. The training sessions could usefully address topics such as general information about ADHD, medications and their side effects, diagnosis of ADHD, intervention options, and recent empirical research on ADHD.

A large percentage of the teachers and counsellors involved in this study stated that they were not included in team meetings regarding children with ADHD. If teachers and counsellors are recommending children for assessment, then they should be included in the consultation process along with other professionals. A closer working relationship between outside professionals and the teachers and counsellors who work with the students would help to reduce the incidence of inaccurate diagnosis and to improve the type of intervention chosen, resulting in a more comprehensive educational plan for students with ADHD.

In summary, the teachers and counsellors who participated in this study reported having limited knowledge about ADHD and stimulant medication. Most of the teachers and counsellors did not understand either the long-term side effects of stimulant medication or the effect of stimulant medication on students' behaviour and academic achievement. A high percentage of teachers are involved in referring and diagnosing

students with ADHD and in assessing the effectiveness of the chosen intervention. This situation raises questions about teachers' and counsellors' ability to recognize the characteristics of ADHD. Without a solid foundation of knowledge about ADHD, teachers and counsellors could easily confuse behaviour that is characteristic of ADHD with normal childhood behaviour.

The teachers and counsellors in this study expressed a high level of interest in additional training about ADHD and stimulant medications. A majority of teachers and counsellors held positive views that medication helped to improve ADHD students' peer relationships, school work, and behaviour. They also indicated that other methods of interventions should be used rather than medication alone. The overwhelming response by teachers and counsellors that they were willing to participate in additional training related to ADHD is a positive step towards their becoming more knowledgeable and informed about this disorder.

Limitations of the Study

One limitation of this study is the possibility of sample bias. Since the participants are all from a Prairie province, they may not accurately represent the entire Canadian population. Therefore, the sample used in this study may not be diverse in age, gender, ethnicity, and educational experience. Another limitation may be the large number of teachers compared to the small number of counsellors among the respondents; both school districts employed a large number of teachers but very few counsellors, which limited the sample size for counsellors.

Another possible limitation is the validity of the instrument. Snider, Busch, and Arrowood (2003) pilot tested the questionnaire with 15 teachers, making few changes.

However, many teachers and counsellors commented in written responses that they found some of the questions in the questionnaire ambiguous and confusing to answer. For this study, however, the researcher chose to use the original scale.

Finally, there is the possibility of research bias if teachers and counsellors who are more interested in ADHD were more likely to respond to the questionnaire than teachers and counsellors who are unfamiliar with ADHD. Furthermore, the teachers and counsellors who participated may have different perspectives and experiences regarding ADHD than those who did not participate.

Chapter Six. Recommendations and Conclusion

On the basis of the literature review and the data collected and analyzed for this study, a number of implications can be drawn and recommendations made. These fall into two areas: the need for pre-service and in-service training, and future research.

Recommendations

Since ADHD seems to be prevalent among students in many classrooms, it seems imperative that schools provide their teachers and counsellors with in-service training related to this disorder. The teachers and counsellors responding to this study reported that their schools offered no training in ADHD. In-service training for teachers and counsellors should focus on the characteristics and assessment of ADHD, the different interventions for ADHD, and various strategies that can help ADHD children in the classroom. Since many children are medicated for ADHD, teachers and counsellors should understand how the medication works, what types of medication are available, and what side effects the medication can have. One in-service training session would not be sufficient to cover all these important areas; several may be needed to train teachers and counsellors adequately about ADHD.

If school districts have limited time for additional professional development days but still recognize the importance of training teachers in this area, another alternative is to use mentoring. That is, teachers and counsellors who are knowledgeable about ADHD would mentor those teachers and counsellors who are not. This could be a rewarding experience for all participants involved and a benefit to the school system.

Many teachers and counsellors graduate from their education programs with limited if any information about ADHD. This is unfortunate, since research indicates that

at least one child in every classroom will be diagnosed with ADHD. Universities and colleges need to recognize the importance of educating their students about ADHD, so that when they graduate the students will understand this disorder. Students training for careers in teaching and counselling should have a required undergraduate class that focuses on ADHD and familiarizes them with the *DSM-IV*. Such training would also help to bridge the gap between the different professionals who are involved with the diagnosis, treatment, and assessment of students with ADHD. If teachers and counsellors had better knowledge and training about ADHD, other professionals might be more inclined to collaborate with them beyond basic duties such as completing the teacher rating scale and providing their student observations. Collaborating with other professionals would also more than likely reduce the incidence of misdiagnosis and improve the selection of effective interventions. Further studies might usefully investigate the current extent of collaboration among professionals who are involved in diagnosing and assessing students with ADHD.

The professions of teaching and counselling need, like other professions such as medicine or law, to base their decisions on solid empirical research. Those involved in education tend sometimes to base decisions on recent fads or popular opinions, rather than on research (Snider, Busch, & Arrowood, 2003). University programs encourage graduates in teaching and counselling to access current empirical research to guide their practices. School districts and administrators could provide in-service training for teachers and counsellors that focuses on current empirical research reported in recognized journals. School boards could allot some professional development days to give teachers and counsellors opportunities to learn about current research. They could also provide

resources such as research-based educational journals that teachers can access and read at their convenience.

School administrators need to decide carefully how to place students with ADHD in classrooms. Since this study indicates that teachers who have more knowledge and experience with ADHD students are best suited to working with these students, principals should attempt to place students with ADHD with those teachers.

Further research is needed into the effect of stimulant medication on long-term academic achievement. The current literature is conflicting on this topic. While a few studies found that stimulation medication improves academic achievement, the majority of studies found no long-term academic gains. In this study, a majority of the participating teachers and counsellors agreed that stimulant medication does indeed improve long-term academic achievement. However, most research indicates that there is not enough evidence that stimulant medication improves long-term academic achievement for students with ADHD.

In general, more research is needed in the area of teachers' and counsellors' knowledge about ADHD and the use of stimulant medication. ADHD is a growing concern among professionals and parents. If education is to become a more research-based discipline, then it must perform more research on such topics. For example, little or no research has been performed on the subject of counsellors' knowledge about ADHD and the use of stimulant medication. Such gaps need to be addressed.

Conclusion

This study suggests that teachers and counsellors have limited knowledge about ADHD and the use of stimulant medication, despite the pivotal role that they play in the

lives of students with ADHD. Their participation in the process of diagnosing students with ADHD suggests that they need to become more familiar with empirical research in order to increase their knowledge in this area. Pre-service education programs, and professional development days or in-service training should provide teachers and counsellors with opportunities to access empirical research that would improve their knowledge base about ADHD. It is vitally important that students with ADHD be correctly diagnosed and provided the best interventions, so that an educational plan can be constructed that will best meet the students' needs.

References

- Abikoff, H., Hechtman, L., Klein, R. G., Gallagher, R., Fleiss, K., Etcovitch, J., et al. (2004). Social functioning in children with ADHD treated with long-term methylphenidate and multimodal psychosocial treatment. *Journal of the American Academy of Child and Adolescent Psychiatry*, 43, 820-829.
- Alto, J. L., & Frankenberger, W. (1995). Effects of methylphenidate on academic achievement from first grade to second grade. *International Journal of Disability, Development and Education*, 42, 259-273.
- Aman, M. G., & Werry, J. S. (1982). Methylphenidate and diazepam in severe reading retardation. *Journal of the American Academy of Child and Adolescent Psychiatry*, 21, 31-37.
- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders: DSM-IV-TR* (4th ed.). Washington, DC: Author.
- Anastopoulos, A. (1996). Facilitating parental understanding and management of attention-deficit/hyperactivity disorder. In M. Reinecke (Ed.), *Cognitive therapy with children and adolescents* (pp. 327-343). New York: Guilford Press.
- Barkley, R. A. (1981). *Hyperactive children: A handbook for diagnosis and treatment*. New York: Guilford Press.
- Barkley, R. A. (1996). Attention-deficit/hyperactivity disorder. In E. J. Mash (Ed.), *Child Psychopathology* (pp. 63-111). New York: Guilford Press.
- Barkley, R.A. (1997). *ADHD and the nature of self-control*. New York: Guilford Press.
- Barkley, R. A. (1998). *ADHD: A handbook for diagnosis and treatment* (2nd ed.). New York: Guilford Press.

- Bateman, B., Warner, J.O., Hutchinson, E., Dean, T., Rowlandson, P., Gant, C., et al. (2004). The effects of double blind, placebo controlled, artificial food colorings and benzoate preservative challenge on hyperactivity in a general population sample of preschool children. *Archives of Disease in Childhood*, 89, 506-511.
- Bromfield, R. (1996). Is Ritalin overprescribed? Yes. *Priorities*, 8(3), 24, 26, 28, 60.
- Brook, U., Watenberg, N., & Geva, D. (2000). Attitude and knowledge of attention deficit hyperactivity disorder and learning disability among high school teachers. *Patient Education and Counselling*, 40, 247-252.
- Brown, M. B. (2000). Diagnosis and treatment of children and adolescents with attention deficit/hyperactivity disorder. *Journal of Counselling and Development*, 78, 195-203.
- Brownell, M. D., & Yogendran, M. S. (2001). ADHD in Manitoba children: Medical diagnosis and psycho-stimulant treatment rates. *Canadian Journal of Psychiatry*, 46, 264-271.
- Bussing, R., Faye, G. A., Leon, C. E., Garvan, C. W., & Reid, R. (2002). General classroom teacher's information and perceptions of attention deficit hyperactivity disorder. *Behavioural Disorders*, 27, 327-339.
- Cooper, P. (2001) Understanding ADHD: A brief critical review of literature. *Children and Society*, 15, 387-395.
- Davino, D. (1995). *Relationship between teachers' anti-stimulant attitudes and their experience with ADHD students*. (ERIC Document Reproduction Service No. ED380717)

- Doherty, S. L., Frankenberger, W., Fuhrer, R., & Snider, V. (2000). Children's self-reported effects of stimulant medication. *International Journal of Disability, Development and Education, 47*, 39-54.
- DuPaul, G., & Eckert, T. L. (1997). The effects of school-based interventions for attention deficit hyperactivity disorder: A meta-analysis. *School Psychology Review, 26*, 5-29.
- DuPaul, G., & Stoner, G. (2003). *ADHD in the schools* (2nd ed.). New York: Guilford Press.
- Forness, S. R., Kavale, K. A., & Crenshaw, T. M. (1999). Stimulant medication revisited: Effective treatment of children with ADHD. *Journal of Emotional and Behavioural Disorders, 7*, 230-233.
- Francis, G. (1993). Prevalence study: ADHD in elementary school children. *Canadian Journal of School Psychology, 9*, 16-27.
- Frankenberger, W., & Cannon, C. (1999). Effects of Ritalin on academic achievement from first to fifth grade. *International Journal of Disability, Development and Education, 46*, 199-221.
- Frankenberger, W., Farmer, C., Parker, L., & Cermak, J. (2001). The use of stimulant medication for treatment of attention-deficit/hyperactivity disorder: A survey of school psychologists' knowledge, attitudes, and experience. *Developmental Disabilities Bulletin, 29*, 132-151.
- Frankenberger, W., Lozar, B., & Dallas, P. (1990). The use of stimulant medication to treat attention deficit hyperactivity disorder (ADHD) in elementary school children. *Developmental Disabilities Bulletin, 1*, 1-13.

- Glass, C. S., & Weigar, K. (2001). Teacher perceptions of the incidence and management of attention deficit hyperactivity disorder. *Education, 121*, 412-420.
- GPC Factor Research Group. (1999, August). *Survey of Attention Deficit Hyperactivity Disorder (ADHD) diagnosis and treatment with methylphenidate among Canadian physicians*. Final report. Retrieved March 19, 2006, from www.hc-sc.gc.ca/dhp-mps/alt_formats/hpfb-dgpsa/pdf/medeff/methylphenidate_adhd-thada_e.pdf
- Guevremont, D. C. (1990). Social skills and peer relationship training. In R. Barkley (Ed.), *Attention deficit hyperactivity disorder: A handbook for diagnosis and treatment* (pp. 540-572). New York: Guilford Press.
- Hall, A. S., & Gushee, A. G. (2002). Medical interventions for ADHD youth: A primer for school and mental health counsellors. *Journal of Mental Health Counselling, 24*, 140-153.
- Hechtman, L., Abikoff, H., Klein, R. G., Weiss, G., Resnitz, C., Kouri, J., et al. (2004). Academic achievement and emotional status of children with ADHD treated with long-term Methylphenidate and multimodal psychosocial treatment. *Journal of the American Academy of Child and Adolescent Psychiatry, 43*, 812-819.
- Jerome, L., Gordon, M., & Hustler, P. (1994). A comparison of American and Canadian teachers' knowledge and attitudes towards attention-deficit hyperactivity disorder (ADHD). *Canadian Journal of Psychiatry, 39*, 563-566.
- Kasten, E. F., Coury, D., & Heron, T. (1992). Educators' knowledge and attitudes regarding stimulants in the treatment of attention deficit hyperactivity disorder. *Developmental and Behavioural Pediatrics, 13*, 215-219.

- Kavale, K. (1982). The efficacy of stimulant drug treatment for hyperactivity: A meta-analysis. *Journal of Learning Disabilities, 15*, 280-289.
- LeFever, G. B., Dawson, K. V., & Morow, A. L., (1999). The extent of drug therapy for attention deficit-hyperactivity disorder among children in public schools. *American Journal of Public Health, 89*, 1359-1363.
- Lloyd, J. W., Kauffman, J. M., Landrum, T. J., & Roe, D. L. (1991). Why do teachers refer pupils for special education? An analysis of referral records. *Exceptionality, 2*, 115-126.
- Mattison, R. E., Gadow, K. D., Sprafkin, J., & Nolan, E. E. (2002). Discriminant validity of a DSM-IV based teacher checklist: Comparison of regular and special education students. *Behavioural Disorders, 27*, 304-316.
- Milberger, S., Biederman, M.D., Faraone, S.V., Chen, L., and Jones, J. (1996). Is maternal smoking during pregnancy a risk factor for attention deficit hyperactivity disorder in children? *The American Journal of Psychiatry, 153*, 1138-1142.
- Mrug, S., Hoza, B., & Gerdes, A. C. (2001). Children with attention-deficit/hyperactivity disorder: Peer relationships and peer-oriented interventions. *New Directions for Children and Adolescents, 91*, 51-77.
- MTA Cooperative Group. (1999). A 14-month randomized clinical trial of treatment strategies for attention deficit/hyperactivity disorder. *Archives of General Psychiatry, 56*, 1073-1086.
- National Institute of Mental Health. (2003). *Attention deficit hyperactivity disorder* (NIH Publication Number: NIMH 3572). Bethesda, MD: National Institute of Mental Health, National Institutes of Health, US Department of Health and Human

Services. Retrieved September 1, 2005, from

<http://www.nimh.nih.gov/publicat/adhd.cfm>

National Institutes of Health. (1982, January). *Defined diets and childhood hyperactivity.*

Consensus Development Conference Statement. Retrieved March 19, 2006, from

<http://consensus.nih.gov/1982/1982DietHyperactivity032html.htm>

National Institutes of Health. (1998, November). *Diagnosis and treatment of attention deficit hyperactivity disorder.* Consensus Development Conference Statement.

Retrieved March 19, 2006, from

<http://consensus.nih.gov/1998/1998AttentionDeficitHyperactivityDisorder110html.htm>

Nelson-Wicks, R., & Israel, A.C. (2006). *Behavior disorders of childhood* (6th ed.).

Upper Saddle River, NJ: Pearson.

Pastor, P. N., & Reuben, C. A. (2002). Attention deficit disorder and learning disability:

United States, 1997-1998. National Center for Health Statistics. *Vital and Health Statistics, 10*, 206.

Pennington, B. F., Gilger, J. W., Olson, R. K., & DeFries, J. C. (1992). The external validity of age-versus IQ-discrepancy definitions of reading disability: Lessons from a twin study. *Journal of Learning disabilities, 25*, 562-573.

Piccolo-Torsky, J., & Waishwell, L. (1998). Teachers' knowledge and attitudes regarding attention deficit disorder. *ERS Spectrum, 16*, 36-40.

Portne, J. (2000). Texas board school warns not to push drugs for ADHD. *Education Week, 20*, 21.

- Powell, S. E., Welch, E., Ezell, D., Klein, C. E., & Smith, L. (2003). Should children receive medication for symptoms of attention deficit hyperactivity disorder? *Peabody Journal of Education, 78*, 107-115.
- Power, T. J., Hess, L. E., & Bennett, D. S. (1995). The acceptability of interventions for attention-deficit hyperactivity disorder among elementary and middle school teachers. *Journal of Developmental and Behavioral Pediatrics, 16*, 238-243.
- Reeve, R. E. (1990). ADHD: Facts and fallacies. *Intervention in School and Clinic, 26*, 70-77.
- Reid, R. R., Vasa, S. F., Maag, J. W., & Wright, G. (1994). An analysis of teachers' perceptions of attention deficit-hyperactivity disorder. *Journal of Research and Development in Education, 27*, 195-201.
- Rodriguez, A., & Bohlin, G. (2005). Are maternal smoking and stress during pregnancy related to ADHD symptoms in children? *Journal of Child Psychology and Psychiatry, 46*, 246-254.
- Rojas, N. L., & Chan, E. (2005). Old and new controversies in the alternative treatment of ADHD. *Mental Retardation and Development Disabilities Research Reviews, 11*, 116-130.
- Romano, E., Baillargeon, R.H., & Tremblay, R.E. (2002). *Prevalence of hyperactivity-impulsivity and inattention among Canadian children: Findings from the First Data Collection Cycle (1994-1995) of the National Longitudinal Survey of Children and Youth*. Working Paper. Final Report. Hull, PQ: Human Resources Development Canada Applied Research Branch.

- Runnheim, V. A., Frankenberger, W. R., & Hazelkorn, M. N. (1996). Medicating students with emotional and behavioral disorders and ADHD: A state survey. *Behavioral Disorder, 21*, 306-314.
- Satterfield, J. H., Satterfield, B. T., & Cantwell, D. P. (1980). Multimodality treatment: A 2 year education of 61 hyperactive boys. *Archives of General Psychiatry, 37*, 915-919.
- Sax, L., & Kautz, K. J. (2003). Who first suggests the diagnosis of ADHD? *Annals of Family Medicine, 1*, 171-174.
- Schwean, V. L., Parkinson, M., Francis, G., & Lee, F. (1993). Educating the ADHD child: Debunking the myths. *Canadian Journal of School Psychology, 9*, 37-52.
- Sciutto, M., Terjesen, M. D., & Frank, A. S. (2000). Teachers' knowledge and misperceptions of attention-deficit/hyperactivity disorder. *Psychology in Schools, 37*, 115-122.
- Shapiro, E. S., & DuPaul, G. J. (1993). A model for consulting with school personnel for students with ADHD. *ADHD Report, 2*, 8-9.
- Snider, V. E., Busch, T., & Arrowood, L. (2003). Teacher knowledge of stimulant medication and ADHD. *Remedial and Special Education, 24*, 46-64.
- Snider, V. E., Frankenberger, W., & Aspenson, M. R. (2000). The relationship between learning disabilities and attention deficit hyperactivity disorder: A national survey. *Developmental Disabilities Bulletin, 28*, 19-38.
- Stormont, M. (2001). Social outcomes of children with AD/HD: Contributing factors and implications for practice. *Psychology in the Schools, 38*, 521-531.

- Stormont, M., & Stebbins, M. S. (2005). Preschool teachers' knowledge, opinions, and educational experiences with attention deficit/hyperactivity disorder. *Teacher Education and Special Education, 28*, 52-61.
- Teeter, P. A. (1998). *Interventions for ADHD: Treatment in developmental context*. New York: Guilford Press.
- Vereb, R., & DiPerna, J. C. (2004). Teacher's knowledge of ADHD, treatments for ADHD, and treatment acceptability: An initial investigation. *School Psychology Review, 33*, 421-428.
- Waldron, T. (1999). Stimulants appear safe, effective, but questions remain. *Brown University Child and Adolescent Behaviour Letter, 15*, 1-2.
- Weber, K. S., Frankenberger, W., & Heilman, K. (1992). The effects of Ritalin on the academic achievement of children diagnosed with attention-deficit hyperactivity disorder. *Developmental Disabilities, 20*, 49-67.
- Wender, P. H. (2000). *ADHD: Attention-deficit hyperactivity disorder in children and adults*. New York: Oxford University Press.
- Whalen, C. K., & Henker, B. (1980). *Hyperactive children: The social ecology of identification and treatment*. New York: Academic Press.
- Winzer, M. (1999). *Children with exceptionalities in Canadian classrooms* (5th ed.). Scarborough, ON: Prentice Hall Canada.
- Wolraich, M. L., & Lindgren, S. D. (1994). Effects of diets high in sucrose or aspartame on the behavior and cognitive performance of children. *New England Journal of Medicine, 330*, 301-307.

Appendix A. Personal Data Questionnaire

Please note: Participation in this study is on a voluntary basis only. You may refuse to participate in this study simply by not completing this questionnaire. Refusal to complete this questionnaire will not have any consequences whatsoever. By completing this questionnaire, you are granting permission to the researchers to use the data provided for the study. Your data will remain strictly confidential and any reports of the results of the study will be completely anonymous.

Please answer the following questions by writing the appropriate number in the box.

1. Sex:

1. Male
2. Female

2. Age:

1. 24-29
2. 30-40
3. 41-50
4. 51+

3. Years of teaching experience:

1. 1-5
2. 6-10
3. 11-15
4. 16+

4. Years of counselling experience:

1. none
2. 1-5
3. 6-10
4. 11-15
5. 16+

5. Have you ever taught a child who was diagnosed with ADHD?

1. Yes
2. No

6. Have you ever counseled a child who was diagnosed with ADHD?

1. Yes
2. No

7. Have you ever requested an evaluation of a child who you suspected of having ADHD?

1. Yes
2. No

8. Education Level:

1. Community College Diploma
2. Bachelor Art/Science
3. Bachelor of Education
4. Masters of Art/Education
5. Ph.D./ED

9. Number of training sessions related to ADHD completed for staff development and training within the last year:

1. None
2. 1-3
3. 4-6
4. 7-10

10. Other training related to staff development completed outside of work within the last year:

1. Conferences
2. Seminars
3. Other College Courses

Appendix B. ADHD Questionnaire

Please show the extent of your agreement or disagreement with the following statements by placing an "X" in the appropriate category. Please answer all questions.

Item	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1. ADHD is the most commonly diagnosed psychiatric disorder of childhood.					
2. There is data to indicate that ADHD is caused by brain malfunction.					
3. ADHD symptoms (e.g., fidgets, does not follow through on instruction, easily distracted) may be caused by academic deficits.					
4. Stress and conflict in the student's home life can cause ADHD symptoms.					
5. Diagnosis of ADHD can be confirmed if stimulant medication improves the child's attention.					
6. Stimulant medication use may decrease the physical growth rate, (i.e., height) of students.					
7. Stimulant medication use may produce tics in students.					
8. Adderall, Ritalin, and Dexedrine have abuse potential similar to Demerol, cocaine, and morphine.					
9. The long-term side effects of stimulant medications are well understood.					
10. Over time, stimulant medication loses its effectiveness.					

Item	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
11. While on stimulant medication, students exhibit similar amounts of problem behaviours as their normally developing peers.					
12. Short-term studies show that stimulant medication improves the behaviours associated with ADHD.					
13. Studies show that stimulant medication has a positive effect on academic achievement in the long run.					
14. I attempt pre-referral programs or intervention with students who are displaying ADHD-like symptoms.					
15. I refer students for evaluation if I believe they are exhibiting ADHD symptoms.					
16. I am involved in assisting with the initial diagnosis of ADHD.					
17. I am involved in assessing the effectiveness of stimulant medication for the treatment of ADHD.					
18. I can identify when a student has not taken his or her medication.					
19. I frequently participate on multi- or interdisciplinary teams that assess students for ADHD.					
20. My classroom is more manageable when my students with ADHD have taken their medication.					
22. I have heard students attribute their successes (e.g., academic, social) to their medication.					

Item	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
23. I have heard students say things like, "I forgot my medicine this morning, so I don't have to behave today!"					
24. I remind students diagnosed with ADHD to take their medication if I think they have forgotten to take it on their own.					
25. Taking stimulant medication helps students with ADHD behave better in the classroom					
26. Taking stimulant medication helps the students diagnosed with ADHD improve their relationships with their peers.					
27. Too many students receive stimulant medication for ADHD.					
28. Professionals (teachers, counsellors, psychologists) need more information about stimulant medication and their side effects.					
29. High doses of stimulant medication can improve behaviour but impair creative thinking and learning.					
30. If a student is receiving medication, other methods of intervention are unnecessary.					

Appendix C. Administration Consent Letter

Dear Administration,

I am currently enrolled in the Master of Education program at the University of Lethbridge and am conducting research for a thesis entitled Teachers' and Counsellors' Knowledge and Experiences Related to Attention Deficit Hyperactivity Disorder.

The general purpose of this study is to determine teachers' and counsellors' knowledge and experiences related to the diagnosis of Attention Deficit Hyperactivity Disorder and its treatment with stimulant medication. There have been limited studies that have researched teachers' and counsellors' knowledge of Attention Deficit Hyperactivity Disorder. Thus, identifying teachers' and counsellors' knowledge and misperceptions about ADHD may lead to improved educational interventions.

Each teacher and counsellor who participates in the study is being asked to complete a questionnaire designed to assess his or her knowledge and experiences about ADHD and to gather information regarding his or her background. This task will take about fifteen minutes to complete. This research will be conducted based on voluntary participation; participants are free to withdraw from the study at any time without penalty and with assurance that their data will not be used in the analysis.

Complete anonymity and confidentiality will be maintained. No aspects of the data will use your staff members' names or allow identification of individuals. The data will be kept in a secure file that is accessible only by my supervisor, Dr. Maggie Winzer, and myself. This data will not be kept longer than five years upon completion of the thesis. The results of this study may be published and presented at various conferences.

I would very much appreciate your assistance in this study. If you have any questions or would like further information regarding the process or outcomes of this research, please feel free to contact me at any time by email at jaime.wilde@uleth.ca. You may also contact the supervisor of my thesis, Dr. Maggie Winzer, University of Lethbridge, at (403) 329-2461 or by email at margret.winzer@uleth.ca and/or the Chair of the Education Human Research Committee, Dr. Rick Mrazek at (403) 329-2452 or by email at mrazek@uleth.ca.

Yours sincerely,
Jaime Wilde

If you chose to do so, please indicate your willingness to give consent for the teachers and counsellors in your district to participate in the study, by signing this letter in the space provided below.

I, _____, agree to give consent for the teachers and counsellors to participate in this study.

Administrator Signature _____ Date _____

Appendix D. Participant Consent Letter

Dear Participants,

I am currently enrolled in the Master of Education program at the University of Lethbridge and am conducting research for a thesis entitled Teachers' and Counsellors' Knowledge and Experiences Related to Attention Deficit Hyperactivity Disorder.

The general purpose of this study is to determine teachers' and counsellors' knowledge and experiences related to the diagnosis of Attention Deficit Hyperactivity Disorder and its treatment with stimulant medication. There have been limited studies that have researched teachers' and counsellors' knowledge of Attention Deficit Hyperactivity Disorder. Thus, identifying teachers' and counsellors' knowledge and misperceptions about ADHD may lead to improved educational interventions.

Each teacher and counsellor who participates in the study is being asked to complete a questionnaire designed to assess his or her knowledge and experiences about ADHD and to gather information regarding his or her background. This task will take about fifteen minutes to complete. This research will be conducted based on your voluntary participation, and you are free to withdraw from the study at any time without penalty and with assurance that your data will not be used in the analysis.

Complete anonymity and confidentiality will be maintained. No aspects of the data will use your name or allow identification of individuals. The data will be kept in a secure file that is accessible only by my supervisor, Dr. Maggie Winzer, and myself. This data will not be kept longer than five years upon completion of the thesis. The results of this study may be published and presented at various conferences.

I would very much appreciate your assistance in this study. If you have any questions or would like further information regarding the process or outcomes of this research, please feel free to contact me at any time by email at jaimewilde@uleth.ca. You may also contact the supervisor of my thesis, Dr. Maggie Winzer, University of Lethbridge, at (403) 329-2461 or by email at margret.winzer@uleth.ca and/or the Chair of the Education Human Research Committee, Dr. Rick Mrazek at (403) 329-2452 or by email at mrazek@uleth.ca.

Yours sincerely,
Jaime Wilde

If you chose to do so, please indicate your willingness to participate in the study by signing this letter in the space provided below.

I, _____, agree to participate in this study.

Participant Signature _____ Date _____

Appendix E. Frequency Distributions (%) of Teachers' and Counsellors' Knowledge

Item	SD	D	NS	A	SA
1. ADHD is the most commonly diagnosed psychiatric disorder of childhood.	2.1	7.1	29.6	44.9	16.3
2. There is data to indicate that ADHD is caused by brain malfunction.	2.0	4.1	46.9	37.8	9.2
3. ADHD symptoms may be caused by academic deficits.	5.1	12.2	12.2	57.1	13.3
4. Stress and conflict in a student's home life can cause ADHD symptoms.	2.0	10.2	12.2	58.2	16.3
5. Diagnosis of ADHD can be confirmed if stimulant medication improves the child's attention.	4.1	25.5	33.7	31.6	4.1
6. Stimulant medication use may decrease students' physical growth rate.	2.0	10.2	56.1	28.6	3.1
7. Stimulant medication use may produce ties in students.	2.1	11.2	61.2	24.5	1.0
8. Adderall, Ritalin, and Dexedrine have abuse potential similar to Demerol, cocaine, and morphine.	1.1	17.3	39.8	31.6	10.2
9. The long-term side effects of stimulant medications are well understood.	12.3	45.9	30.6	8.2	2.0
10. Over time, stimulant medication loses its effectiveness.	2.0	18.4	42.9	33.7	3.0

Item	SD	D	NS	A	SA
11. While on stimulant medication, students exhibit similar amounts of problem behaviours as their normally developing peers.	1.0	16.3	29.6	51.0	2.1
12. Short-term studies show that stimulant medication improves the behaviours associated with ADHD.	-	5.1	22.4	63.3	9.2
13. Studies show that stimulant medication has a positive effect on academic achievement in the long run.	1.0	11.2	35.7	45.9	5.1

Appendix F. Frequency Distributions (%) of Teachers' and Counsellors' Experience

Item	SD	D	NS	A	SA
14. I attempt pre-referral programs or intervention with students who are displaying ADHD-like symptoms	1.0	-	13.3	65.3	17.4
15. I refer students for evaluation if I believe they are exhibiting ADHD symptoms	1.0	9.2	7.1	67.3	12.3
16. I am involved in assisting with the initial diagnosis of ADHD.	4.1	19.4	6.1	57.1	10.2
17. I am involved in assessing the effectiveness of stimulant medication for the treatment of ADHD.	9.2	24.5	9.2	49.0	5.1
18. I can identify when a student has not taken his or her medication.	1.0	-	8.2	65.3	25.5
19. I frequently participate on multi- or interdisciplinary teams that assess students for ADHD.	12.2	39.8	7.1	32.7	7.1
20. My classroom is more manageable when my students with ADHD have taken their medication.	-	7.1	19.4	43.9	25.5
21. I have heard of students in my district selling or giving away their stimulant medication.	17.3	30.7	15.3	29.6	7.1
22. I have heard students attribute their successes (e.g., academic, social) to their medication.	8.2	16.3	18.4	51.0	6.1
23. I have heard students say things like, "I forgot my medicine this morning, so I don't have to behave today!"	7.1	25.5	10.2	45.9	11.2

Item	SD	D	NS	A	SA
24. I remind students diagnosed with ADHD to take their medication if I think they have forgotten to take it on their own.	5.1	11.2	14.3	52.0	13.3

Appendix G. Frequency Distributions (%) of Teachers' and Counsellors' Opinions

Item	SD	D	NS	A	SA
25. Taking stimulant medication helps students with ADHD behave better in the classroom.	-	3.1	15.3	65.3	16.3
26. Taking stimulant medication helps students diagnosed with ADHD improve their relationships with their peers.	-	5.1	18.4	60.2	15.3
27. Too many students receive stimulant medication for ADHD.	3.1	15.3	32.7	32.7	16.3
28. Professionals (teachers, counsellors, psychologists) need more information about stimulant medications and their side effects.	-	1.0	6.1	53.1	39.8
29. High doses of stimulant medication can improve behaviour but impair creative thinking and learning.	3.1	18.4	46.9	24.5	7.1
30. If a student is receiving medication, other methods of intervention are unnecessary.	46.9	38.8	8.2	4.1	2.0